

Coille Beith Wind Farm

Environmental Impact Assessment Report – Volume 2: Main Report

June 2025



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Chapter 1: Introduction

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1 Introduction

1.1 Introduction

- 1.1.1 This Environmental Impact Assessment (EIA) Report has been prepared by Ramboll UK Limited (Ramboll) on behalf of Coille Beith Wind Farm Limited ('the Applicant') in support of an application for consent¹ to construct and operate a wind farm and associated infrastructure with a generation capacity of greater than 50 megawatts (MW). The project is to be referred to as Coille Beith Wind Farm ('the Proposed Development'). The Proposed Development would include up to 11 wind turbines with a maximum blade tip height of 200 metres (m) above ground level (agl) on land approximately 18 kilometres (km) southwest of Lairg and 20 km northwest of Bonar Bridge, the Highlands, Scotland. The Site location is shown on **Figure 1.1** (EIA Report, Volume 3a), (approximate Ordnance Survey (OS) National Grid Reference (NGR) for Site centre: NH415986).

1.2 Purpose of the EIA Report

- 1.2.1 The EIA Report has been prepared to accompany an application to Scottish Ministers under Section 36 of the Electricity Act 1989². The EIA Report has been prepared in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (herein referred to as the 'EIA Regulations').
- 1.2.2 Where a development falls within one of the descriptions in Schedule 2 of the EIA Regulations 2017 and is considered likely to have significant effects on the environment then an EIA is required to be submitted with the application for consent. The Proposed Development falls within Schedule 2 as "*a generating station, the construction of which (or operation of which) will require a section 36 consent but which is not a Schedule 1 development.*"
- 1.2.3 Schedule 3 of the EIA Regulations 2017 lists the 'selection criteria' which must be taken into account by Scottish Ministers in determining whether a Schedule 2 development is an EIA development. These selection criteria relate to the nature, scale, and location of a proposed development and consequently, whether the project is likely to have significant effects on the environment.
- 1.2.4 For those developments listed under Schedule 2, the requirement for an EIA can be determined via a screening request made to Scottish Ministers. In this case, a screening request to Scottish Ministers was not sought since it was acknowledged at an early stage given consideration of the site and its nature, location, and the characteristics of the intended Proposed Development that an EIA would be required.
- 1.2.5 Establishing which aspects of the environment and associated issues are relevant for a particular project is captured in the EIA Scoping process. Scoping is the process of identifying those aspects of the environment and associated issues which may be significantly affected by any proposed development and therefore should be subject to detailed assessment and reported in an EIA Report. An EIA Scoping Report for the Proposed Development setting out the proposed scope of the EIA Report was submitted to the Scottish Government Energy Consents Unit (ECU) in July 2024 with a request for a formal Scoping Opinion. A Scoping Opinion was subsequently issued by the ECU on 30 September 2024.
- 1.2.6 Regulation 3 of the EIA Regulations prohibits the Scottish Ministers from granting Section 36 consent for EIA development unless they have first taken the environmental information provided in the EIA Report into consideration.
- 1.2.7 This EIA Report presents the findings of the EIA process by describing the Proposed Development, the current conditions at the site, consideration of reasonable alternatives, design evolution, predicted future change in the absence of the Proposed Development, and the likely impacts which may result from the construction, operation, and decommissioning of the Proposed Development, as well as any cumulative effects with other developments in the vicinity of the site that are operational, under construction, or in the planning system.
- 1.2.8 Where appropriate, mitigation and enhancement measures are proposed, and any residual impacts are reported including where beneficial effects on biodiversity can be achieved in line with National Planning Framework 4 (NPF4).

¹ An application for consent for the Proposed Development will be made to the Scottish Ministers under section 36 of the Electricity Act 1989, along with a request for a direction that planning permission be deemed to be granted under section 57(2) of the Town and Country Planning (Scotland) Act 1997 as amended.

² Electricity generation projects below 50 MW are authorised under the Town and Country Planning (Scotland) Act, 1997. Those over 50 MW are authorised under Section 36 of the Electricity Act, 1989.

- 1.2.9 This EIA Report has been prepared to meet the requirements of Schedule 4 (Information for Inclusion in EIA Reports) of the EIA Regulations and the Institute of Environmental Management and Assessment (IEMA) Quality Mark Criteria.
- 1.2.10 The Proposed Development for which the Applicant is seeking consent is as follows:
- 1.2.11 The erection and 50-year operation and maintenance of a wind farm development with an installed capacity of more than 50 MW, comprising up to 11 wind turbines, each with a maximum overall height to vertical blade tip of 200 m, together with ancillary development including internal transformers and related switchgear at each turbine; associated turbine foundations and hardstanding areas; a network of new, upgraded and existing access tracks with associated water crossings, passing places and turning heads; borrow pit; substation compound; temporary site construction compounds; network of electrical cables; and a concrete batching plant.
- 1.2.12 The Proposed Development has a secured transmission (132 kV) grid connection offer, connecting to Dalchork substation in 2032. Scottish and Southern Electricity Networks (SSEN) will provide the grid connection, including gaining the necessary consents. The exact route of the connection and the technology solution have not yet been determined and would be the subject of a separate Section 37³ consent. As such, the grid connection is not included within the scope of this EIA Report.

1.3 Other Planning Documents

- 1.3.1 The Application is accompanied by a Planning Statement, a Pre-Application Consultation (PAC) Report, and a Statement on Socio-economic Benefits which do not form part of the EIA Report.

1.4 The Applicant

- 1.4.1 The Applicant, Coille Beith Wind Farm Limited, is a wholly owned subsidiary of Statkraft UK Limited (Statkraft).
- 1.4.2 Statkraft is a leading company in hydropower internationally and Europe's largest generator of renewable energy. The Group produces hydropower, wind power, solar power and supplies district heating. Statkraft is a global company in energy market operations and has 6,000 employees in over 20 countries. Statkraft produces hydropower, wind power, solar power and supplies district heating, generating 62 terawatt-hours (TWh) of renewable power.
- 1.4.3 Statkraft is at the heart of the UK's energy transition. Since 2006, Statkraft has gone from strength to strength in the UK, building experience across wind, solar, hydro, storage, grid stability, EV charging, green hydrogen, and a thriving markets business. Statkraft has invested over £1.4 billion into the UK's renewable energy infrastructure and facilitated over 4 gigawatts (GW) of new-build renewable energy generation through Power Purchase Agreements (PPA). Statkraft develops, constructs, owns and operates renewable facilities across the UK and employs over 600 people in offices across Scotland, England, and Wales.
- 1.4.4 Further information about Statkraft can be found at www.statkraft.co.uk

1.5 EIA Process

- 1.5.1 EIA is a process that identifies the potential environmental effects (both beneficial and adverse) of a proposed development and proposes mitigation to avoid, reduce, and offset any significant adverse environmental effects.
- 1.5.2 As stated above, the Proposed Development is of a type listed in Schedule 2 of the EIA Regulations (item (1) "a generating station"). On the basis that *"the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location"* an EIA is required. In this case, the Applicant has volunteered to undertake an EIA rather than request a formal screening opinion.
- 1.5.3 All relevant assumptions made and limitations inherent to the EIA have been recorded with a view to demonstrating that the resulting EIA Report provides a robust basis upon which the competent authorities can make a planning determination.
- 1.5.4 The key stages in the EIA process adopted for the Proposed Development are summarised below.
- Scoping and Consultation**
- 1.5.5 The Applicant submitted a request for a Scoping Opinion to Scottish Ministers on 5 July 2024. This request was accompanied by an EIA Scoping Report, prepared by Ramboll on behalf of the Applicant,

³ An application for consent for grid connection of the Proposed Development will be made to the Scottish Ministers under section 37 of the Electricity Act 1989.

which set out a summary of the proposals, identified the likely significant environmental effects, and summarised the proposed scope of the EIA.

- 1.5.6 A Scoping Opinion was received from the ECU on 30 September 2024. The contents of this and other consultation responses received are summarised in **Technical Appendix 1.1** (EIA Report Volume 4), along with a list of all bodies consulted during the scoping exercise.
- 1.5.7 In addition to seeking a Scoping Opinion, the Applicant conducted public exhibitions to seek the views of the local community, as follows:
- 25th September 2024, Rosehall Village Hall and 26th September 2024, Oykel Bridge Hotel; and
 - 2nd and 3rd April 2025, Rosehall Village Hall.
- 1.5.8 In addition, the Applicant presented at community council meetings which included public Q&A sessions following the presentation. These were held as follows:
- 3rd March 2025, Creich Community Council, Bonar Bridge Community Hall; and
 - 13th March 2025, Ardgay & District Community Council, Culrain Hall.
- 1.5.9 Further detail on the key issues identified through the scoping and consultation process are described in **Chapter 3** (EIA Report, Volume 2).
- 1.5.10 Following scoping and baseline characterisation the EIA Report provides an impact assessment chapter for each of the following topics:
- landscape and visual amenity;
 - cultural heritage;
 - ecology;
 - ornithology;
 - geology, hydrology and peat;
 - traffic and transport;
 - noise and vibration; and
 - aviation and radar.

Topics Scoped Out

- 1.5.11 During the scoping process, there were a number of areas where it was identified that the Proposed Development would not give rise to significant effects on the environment and therefore have been scoped out of the EIA. These areas are described below.

Air Quality

- 1.5.12 The Proposed Development is not considered likely to give rise to significant effects on air quality. There is potential for it to give rise to some localised and temporary construction related air quality effects associated with dust (e.g. from foundation construction and the passage of vehicles along access tracks) and construction plant and traffic exhaust emissions. However, the nature of the construction activities is that they will be relatively short term, intermittent, and controllable through the application of good construction practice, and at sufficient distance from sensitive receptors to be considered low/negligible impact.
- 1.5.13 The potential for nuisance effects on residential or recreational amenity will be limited and will be strictly controlled in accordance with a detailed Construction Environmental Management Plan (CEMP). An Outline CEMP is included **Technical Appendix 2.1** (EIA Report, Volume 4). On this basis, there is no potential for significant construction or operational air quality effects and no Air Quality assessment has been undertaken as part of the EIA Report.

Climate Change

- 1.5.14 The Proposed Development itself will contribute to climate change mitigation through the generation of renewable energy and a corresponding reduction in carbon emissions from other more carbon intensive generation sources.
- 1.5.15 However, it is acknowledged that the Proposed Development will still give rise to carbon emissions associated with its construction. Accordingly, a Carbon Balance assessment has been prepared and submitted as a Technical Appendix to this EIA Report (**Technical Appendix 2.2**, EIA Report Volume 4). The report includes a calculation of the expected carbon savings over the lifetime of the Proposed Development and is presented using the latest version of the Scottish Government Windfarm Carbon Assessment Tool - Version 2.14.1.

- 1.5.16 The vulnerability of the Proposed Development to climate change has been considered as part of the detailed design process, which considered the potential consequences of climate change (e.g. increased flood risk potential and more extreme weather conditions). Embedded mitigation includes but is not limited to Sustainable Drainage System (SuDS), ultrasonic anemometers, and remote operational control system (controller and SCADA systems) which is linked to an ice detection application and fire detection and warning systems. Therefore, no further assessment has been conducted regarding the vulnerability of the Proposed Development to climate change and its climate change resistance.

Population and Human Health

- 1.5.17 The EIA Report considers human health in terms of amenity through the assessment of potential likely significant effects associated with water supplies, noise, traffic, visual amenity, and shadow flicker. No other sources or pathways for effects on human health have been identified.
- 1.5.18 As such a separate human health impact assessment chapter is not presented within this EIA Report.
- 1.5.19 Appropriate control measures to ensure potential effects on air and water quality are managed appropriately in the construction phase and addressed through the Outline CEMP included in **Technical Appendix 2.1** (EIA Report Volume 4).

Major Accidents and Disasters

- 1.5.20 The EIA Regulations require the consideration of the potential risks to human health, cultural heritage or the environment associated with the vulnerability of the Proposed Development to accidents and disasters. This requirement is interpreted as requiring the consideration of high consequence events (even if of low likelihood) which would result in serious harm or damage to environmental receptors.
- 1.5.21 Given the nature of the Proposed Development, the potential for effects related to the vulnerability to accidents and disasters is likely to be limited to those effects associated with extreme weather, mechanical failure, or structural damage. Relevant types of accident/disaster, given the predominantly rural context of the Proposed Development, include:
- severe weather events, including high winds, high rainfall leading to flooding, or extreme cold leading to heavy snow and ice loading;
 - fire;
 - traffic related accidents; and
 - mass movement associated with ground instability.
- 1.5.22 Severe weather resilience will be a core design component of the Proposed Development, and includes consideration of flooding resilience and the ability to manage the Proposed Development remotely in the event that it is inaccessible due to hazardous weather conditions. This will include consideration of designing out health and safety risks associated with construction and operation (including accidents and disasters associated with fire and traffic movements) in accordance with the duties under The Construction (Design and Management) Regulations 2015.
- 1.5.23 Potential risks and hazards associated with mass movement (peat instability) have been assessed and presented in **Technical Appendix 8.4** (EIA Report, Volume 4).
- 1.5.24 No other potential significant effects on human health, cultural heritage, or the environment associated with the vulnerability of the Proposed Development to accidents and disasters have been identified and therefore no specific Major Accidents and Disasters assessment has been included in this EIA Report.

Ice throw

- 1.5.25 Standard mitigation for the risk of ice throw comprises off-site monitoring to enable the deactivation of turbines on sensing ice accumulation, as well as physical and visual warnings for both site personnel and third parties. In line with current guidance, a permanent warning sign at the site's entrances is proposed to alert the public to the possibility of ice throw under certain weather conditions. Considering the above, no potential significant impacts as a result of ice throw from the Proposed Development are anticipated and no ice throw assessment is provided within this EIA Report.

Socio-Economics, Tourism and Recreation

- 1.5.26 The Proposed Development is likely to introduce positive socio-economic effects associated with job creation, local investment, and the establishment of a community benefit fund. Rather than including an EIA assessment chapter for socio-economics, the Applicant has prepared a Statement on Socio-economic Benefits Report that supports the application.
- 1.5.27 The Proposed Development is limited in footprint to the permanent development infrastructure, such as the turbine infrastructure and associated ancillary infrastructure, including but not limited to access tracks. Thus, as explained in greater detail within **Chapter 2** (EIA Report Volume 2), land use change

is limited to approximately 0.88 % of the total area within the Site. This is not viewed as significant and as such no further assessment has been undertaken.

- 1.5.28 Regarding tourism, research undertaken to date⁴ has shown that onshore wind farms do not discourage or reduce tourism. As such, no further assessment on tourism has been undertaken; however, **Chapter 4** (EIA Report Volume 2) has assessed tourism-related receptors and concluded on effects.

Telecommunications

- 1.5.29 Tall structures such as buildings and turbines can adversely affect the performance of fixed telecommunications links, if positioned close enough to those links.
- 1.5.30 A telecommunications assessment in relation to the Proposed Development was undertaken and no telecommunication links were identified within, or in close proximity to the Site. Hence, no effects on the telecommunications network are anticipated as a result of the Proposed Development. However, potential means of mitigation of effects on fixed telecommunications links can include micro-siting of turbines, installation of higher performance antennae, or re-routing of links.

Baseline Characterisation

- 1.5.31 Baseline characterisation is the process by which the environmental conditions now and in the future (assuming no development on the Site) are established. The process has included a combination of desk research, Site surveys, and empirical study & projection.
- 1.5.32 The environmental baseline adopted for the purposes of the EIA is stated in each of the technical chapters provided in this EIA Report. The baseline is normally taken as the current character and condition of a site and surrounds, and the potential significant environmental effects of the Proposed Development are then assessed in the context of the current conditions.

Mitigation by Design and Consideration of Alternatives

- 1.5.33 Following the baseline characterisation, the information collected on environmental constraints was used to inform the consideration of design alternatives. An iterative process was followed, whereby the Applicant considered a range of wind turbine layouts and access proposals. The aim of the design element of the EIA process was to develop an optimal solution which seeks to maximise potential renewable energy generation, within technical and environmental constraints, while avoiding likely significant environmental effects. Further details on the design process adopted are set out within **Chapter 3** (EIA Report, Volume 2).

Impact Assessment

- 1.5.34 The next stage in the EIA process was to complete an impact assessment to determine the likely significant effects remaining following the implementation of mitigation by design. An assessment chapter has been provided for each issue where it is considered that there are likely significant effects associated with the construction, operation, decommissioning, or restoration phases of the Proposed Development. Each assessment chapter considers primary, secondary, direct, indirect, and cumulative effects, and defines the assessment methodology used and the criteria by which a significant effect is defined.

Additional Mitigation

- 1.5.35 The impact assessment is used to identify where additional mitigation is required to address likely significant effects, where it has not been possible to avoid the effect through design of the turbine or infrastructure layout. Mitigation has been considered following a hierarchy of first seeking to avoid effects, followed by seeking a reduction in effects to a level not considered significant, and finally where necessary and possible, offsetting or compensatory measures are considered.
- 1.5.36 **Chapter 12** (EIA Report, Volume 2) provides a summary of the mitigation measures provided in each of the technical chapters to avoid, reduce, or offset impacts which could give rise to significant residual effects. In addition, some good practice environmental management measures and commitments have been proposed to further reduce environmental effects, which are not considered to give rise to likely significant effects with or without mitigation.

1.6 EIA Project Team and Competency

- 1.6.1 In accordance with Regulation 5(5) of the EIA Regulations, by appointing Ramboll UK Limited the Applicant has ensured that the EIA Report has been prepared by 'competent experts'. The EIA Report has been compiled and approved by professional EIA Report practitioners at Ramboll, holding relevant undergraduate and post-graduate degrees, membership of the Institute of Environmental Management and Assessment (IEMA), and Chartered Environmentalist status with the Society for the Environment. The EIA Report meets the requirements of the IEMA EIA Quality Mark Scheme. This is a voluntary

⁴ BiGGAR Economics (2021). Wind Farms and Tourism Trends in Scotland [pdf]. Available at <https://biggareconomics.co.uk/wp-content/uploads/2021/11/BiGGAR-Economics-Wind-Farms-and-Tourism-2021.pdf> [Last Accessed: 08/03/2024].

scheme operated by IEMA that allows organisations to make a commitment to excellence in EIA and to have this commitment independently reviewed on an annual basis.

- 1.6.2 The project team comprises the companies presented in **Table 1.1**. A compiled statement on the competence of the lead author of technical reports is included in each of the impact assessment chapters providing details of the relevant professional memberships of the author, code, or practice followed and assessment methodology used.

Table 1.1 – Specialist Consultants

Team Member	Role and Responsibility
Statkraft UK	Project Developer
Ramboll UK	EIA Project Management Landscape and Visual Assessment Shadow Flicker
David Bell Planning	Planning and Policy
AOC Archaeology Group	Cultural Heritage
Fluid Consultants	Geology, Hydrology and Peat
Hayes Mackenzie	Noise and Vibration
Avian Ecology	Ecology and Ornithology
Pell Frischmann	Traffic and Transport
Wind Power Aviation Consultants	Aviation
McKay Forestry	Forestry

1.7 Structure of the EIA

- 1.7.1 This EIA Report comprises five volumes:

- **Volume 1: Non-Technical Summary (NTS):** The NTS provides a non-technical overview of the EIA Report and is intended for review by the general public. It includes a description of the Proposed Development and a summary of the predicted environmental effects.
- **Volume 2: Main Report:**
 - **Chapter 1: Introduction;**
 - **Chapter 2: Description of the Proposed Development;**
 - **Chapter 3: Site Description and Design Evolution;**
 - **Chapter 4: Landscape and Visual Assessment;**
 - **Chapter 5: Cultural Heritage;**
 - **Chapter 6: Ecology;**
 - **Chapter 7: Ornithology;**
 - **Chapter 8: Geology, Hydrology and Peat;**
 - **Chapter 9: Transport;**
 - **Chapter 10: Noise;**
 - **Chapter 11: Aviation; and**
 - **Chapter 12: Summary and Mitigation.**
- **Volume 3: Figures and Visualisations:**
 - **Volume 3a: Figures;**
 - **Volume 3b: NatureScot Visualisations; and**
 - **Volume 3c: The Highland Council Visualisations.**
- **Volume 4: Technical Appendices:** The technical appendices that are referred to in each Chapter of the EIA Report are compiled separately in Volume 4. They are numbered sequentially for each of the chapters in which they are principally referred to.

- **Volume 5: Confidential Information:** The technical appendices which contain confidential information are compiled separately in Volume 5 and made directly available to the relevant consultees.

1.8 Publicity of the EIA Report

- 1.8.1 The EIA Report will be published in accordance with Part 5 of the EIA Regulations and Part 4 of the Electricity (Applications for Consent) Regulations 1990 (as amended).
- 1.8.2 A notice will be published as follows:
- on the project website www.coille-beith.co.uk;
 - once in the Edinburgh Gazette;
 - once in the Herald; and
 - in the Northern Times and the Press & Journal for two successive weeks.
- 1.8.3 Following consultation with Community Councils, The Highland Council (THC), and the ECU, a paper copy of the EIA Report will be made available to view at the following publicly accessible locations:
- Kyle of Sutherland Hub, South Bonar Estate, Bonar Bridge, Sutherland, IV24 3AQ; and
 - Lairg Access Point, Community Centre, Main Street, Lairg, IV27 4DD.
- 1.8.4 The EIA Report, including all figures, technical appendices, and accompanying documents are available to view and download on the project website (www.coille-beith.co.uk).
- 1.8.5 The application documents will be available via the Scottish Government energy consents portal (<https://www.energyconsents.scot/Default.aspx>) and THC planning portal.
- 1.8.6 The Applicant will work closely with the ECU to ensure all statutory consultees who wish to receive a physical copy of this EIA Report will do so.
- 1.8.7 In the interests of sustainability and the drive towards Net Zero carbon emissions, reference to the paperless (project website/USB) version is strongly recommended. For anyone who has difficulty accessing the documentation online, a USB copy will be made available free of charge; hard copies are available on request at a charge of £1,500 per hard copy. Hardcopies of the Non-Technical Summary can also be made available free of charge by contacting UKProjects@statkraft.com.

1.9 Commenting on the Application

- 1.9.1 When the application for the Proposed Development is lodged with the Scottish Government the Applicant will advertise the application in accordance with legislation as noted above.
- 1.9.2 The advertisement will provide details of the date by when representations should be made. The Scottish Government will invite formal representations on the Proposed Development, which will be taken into account before any decision is reached on the application.
- 1.9.3 Any representations in relation to the application should be made to the Energy Consents Unit mailbox, at representations@gov.scot, or by post to The Scottish Government, Energy Consents Unit, 4th Floor, 5 Atlantic Quay, 150 Broomielaw, Glasgow, G2 8LU, identifying the Proposed Development and specifying the grounds for representation. Written or emailed representations should be dated, clearly stating the name (in block capitals), full return email and postal address of those making representations.

Chapter 2: Description of the Proposed Development

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2 Description of the Proposed Development

2.1 Introduction

2.1.1 This Chapter provides a description of the Proposed Development for the purposes of identifying and assessing likely significant effects. Information is provided on:

- the location of the Proposed Development;
- the physical characteristics of the Proposed Development, including, the land-use requirements during the construction and operational phases;
- the main characteristics of the construction and operational phase of the Proposed Development having regard to the type and quantity of expected residues and emissions; and
- the typical activities associated with the decommissioning of the Proposed Development.

2.1.2 This Chapter is supported by the following Technical Appendices which are presented in **Volume 4: Technical Appendices**:

- **Technical Appendix 2.1: Outline Construction Environmental Management Plan (OCEMP);**
- **Technical Appendix 2.2: Carbon Calculator;**
- **Technical Appendix 2.3: Forestry Impact Assessment;** and
- **Technical Appendix 2.4: Shadow Flicker Results.**

2.1.3 **Figures 2.1 to 2.12** are presented in **Volume 3a: Figures** and are referred to in the text as appropriate. The Figures are as follows:

- **Figure 2.1a: Proposed Development;**
- **Figure 2.1b: Proposed Earthworks;**
- **Figure 2.2: Typical Wind Turbine Generator – Front and Side Elevations with Tip and Hub Height;**
- **Figure 2.3: Typical Crane Hardstanding Dimensions and Details;**
- **Figure 2.4: Typical Wind Turbine Foundation;**
- **Figure 2.5: Typical Cable Formation;**
- **Figure 2.6: Indicative Substation Compound;**
- **Figure 2.7: Indicative Control Building Elevations;**
- **Figure 2.8: Typical Road Layout – Existing/Floating/Firm Strata Track;**
- **Figure 2.9: Indicative Construction Compound Layout;**
- **Figure 2.10: Typical Watercourse Detail;**
- **Figure 2.11: Indicative Main Site Eastern Access Junction;**
- **Figure 2.11a: Indicative Main Site Eastern Access Junction Visibility Splays;**
- **Figure 2.12: Cumulative Developments; and**
- **Figure 2.13: Typical Track Road Width.**

2.2 Site Location and Context

2.2.1 The Proposed Development is located on land ('the Site') which covers an area of approximately 1,306 hectares (ha) (inclusive of both access options) and is located approximately 18 km southwest of Lairg and 20 km northwest of Bonar Bridge, the Highlands, Scotland (approximate Ordnance Survey (OS) National Grid Reference (NGR) for Site centre: NH415986) as illustrated in **Figure 1.1** (EIA Report, Volume 3a).

2.2.2 The Site is located on the southern slopes of Strath Oykel. The Site is located within an area of commercial forestry, typical of the valley sides along Strath Oykel, while more open hills rise to the north and south of the valley sides. The River Oykel and singletrack A837 pass through the strath, around 2 km north of the Site, and there is another minor road around 2 km to the northeast that runs along the southern side of the river linking up areas of dispersed settlement.

2.2.3 Wind farms are an existing feature of the surrounding landscape. As illustrated on **Figure 2.12** (EIA Report, Volume 3a) there is a cluster of existing and consented wind farms to the east, southeast, and

northeast. The closest of these being the consented Strath Oykel wind farm immediately adjacent and the operational Rosehall and Achany wind farms, around 7.5 km northeast of the Site and located on the northern slopes and hills of the strath. Extending east of these and to the south of Lairg there are further consented schemes and a small operational scheme of three turbines south southeast of Lairg, around 17 km east as illustrated in **Figure 2.12** (EIA Report Volume 3a).

- 2.2.4 There are no residential properties located within the Site boundary; however, there are various farmsteads and dispersed rural properties to the northwest of the Site. The majority of settlement lies to the east of the Site along the A837, although there are a small number of properties located on the minor road south of the river extending between Doune and Inveroykel, the closest of which are located around 1.7 km northwest of the nearest turbine. The nearest settlement is at Rosehall (4.5 km northeast).
- 2.2.5 One Scheduled Monument (Langwell Fort and Dun) lies to the north of the Site.

2.3 Proposed Development

2.3.1 The Proposed Development would comprise up to 11 turbines of a maximum tip height of 200 m, along with associated infrastructure, arranged as illustrated in **Figure 2.1a** (EIA Report, Volume 3a). The Proposed Development would include the following key components:

- Up to 11 wind turbines, each up to a maximum tip height of 200 m (see **Figure 2.2**, EIA Report Volume 3a);
- Associated permanent foundations and crane hardstanding (see **Figure 2.3**, EIA Report Volume 3a);
- An internal transformer at each turbine location;
- A total of approximately 9.54 km of new on-site tracks with associated water crossings, passing places, turning heads, and approximately 4.1 km of existing tracks, upgraded as required (not including access options which are accounted for below) (see **Figure 2.1a**, **Figure 2.8** and **2.13**, EIA Report Volume 3a);
- A network of on-site buried electrical cables connecting the turbines to the on-site substation compound (see **Figure 2.5**, EIA Report Volume 3a);
- A substation and control building compound (selecting one of the two options, eastern or western) (**Figure 2.6**, EIA Report Volume 3a);
- Two temporary construction compounds and laydown areas (selecting one of the two options, eastern or western) (see **Figure 2.9**, EIA Report Volume 3a);
- A main Site entrance (one of two options) to the east or west of the Site, for use during construction and operation, designed to accommodate abnormal indivisible loads required for turbine components;
- Two access options, (with only one option taken forward if the Proposed Development were to gain consent);
 - An eastern access option, with a total of approximately 2.14 km of new on-site access tracks with associated watercourse crossings and approximately 3.16 km of existing tracks, upgraded as required (see **Figure 2.1a**, **Figure 2.8**, **Figure 2.11** and **Figure 2.13** EIA Report Volume 3a); or
 - A western access option with a total of approximately 3.18 km of new on-site access tracks with associated watercourse crossings and approximately 451 m² of proposed widening of an existing road (see **Figure 2.1 a**, **Figure 2.8** and **Figure 2.13**, EIA Report Volume 3a).
- Associated ancillary work, including:
 - Nature Enhancement Management Plan (NEMP) areas, and forest felling;
 - Extraction of rock from borrow pit; and
 - Concrete batching plant. This would be located within one of the temporary construction compounds or borrow pit search area.

2.3.2 Biodiversity enhancement measures for the Site may include, but not be limited to, options such as forest to bog creation, peatland restoration, riparian tree planting, ancient woodland enhancement, bird/bat boxes, and bug hotels. An Outline Nature Enhancement Management Plan (ONEMP) (see **Technical Appendix 6.5**, EIA Report Volume 4) would be developed for the operational phase and agreed with consultees.

2.3.3 The locations of the proposed turbines and other infrastructure would be subject to 'micrositing'. This process allows for minor changes in wind turbine or infrastructure locations to respond to possible variations in ground conditions across the Site, which would only be confirmed following detailed site investigation work carried out immediately prior to construction. This process also provides scope for

further mitigation of localised potential environmental effects through avoidance of sensitive features. It is anticipated that a micro-siting distance of up to 100 m would be appropriate for the Proposed Development and would form a condition accompanying consent, should it be granted. Any repositioning would not encroach into environmentally constrained areas and would be carried out under the supervision of an Environmental Clerk of Works (ECOW) and an appropriately experienced and qualified engineer. Further explanation is contained **Chapter 3** (EIA Report, Volume 2).

Wind Turbines and Turbine Layout

2.3.4 The coordinates of the proposed turbines are set out in **Table 2.1**.

Table 2.1 – Turbine Locations

Turbine Number	Easting	Northing
1	240449	898794
2	239724	898397
3	241190	898516
4	240272	898052
5	240479	897655
6	241117	897309
7	241512	896941
8	242181	897379
9	242675	897758
10	242409	898238
11	242324	898648

2.3.5 A Construction Environmental Management Plan (CEMP) would include detailed guidance on the application of the proposed micro-siting tolerance. An OCEMP is included in **Technical Appendix 2.1** (EIA Report, Volume 4).

2.3.6 The wind turbines to be installed at the Proposed Development would be up to 200 m maximum tip height. The exact model of wind turbine to be installed at the Proposed Development would be selected through a competitive procurement process. In each assessment in this EIA Report, a worst-case scenario of the turbine dimensions/characteristics relevant to that topic has been used. An example turbine for the Proposed Development is shown in **Figure 2.2** (EIA Report, Volume 3a).

2.3.7 Wind turbines are available in a variety of colours, the most common being white, off-white, or light grey. The finish is normally semi-matt. The colour of the turbines would be agreed in consultation with THC.

2.3.8 The candidate turbine has a generation capacity of 7.2 MW. The Proposed Development would have a total maximum output capacity of 79.2 MW.

Permanent Land Take

2.3.9 The Site is approximately 1,306 ha (inclusive of both access options) (see **Figure 2.1a**, EIA Report Volume 3a). Within this area the permanent land take would be limited to the wind turbine hardstanding area, access tracks, permanent crane hardstanding, and substation hardstanding which account collectively for approximately 0.88% of the total area within the Site (not including access options). This is in the scenario that access tracks etc. are left in situ to provide ongoing forestry and recreational access (with agreement with the planning authorities); it may be that through decommissioning, for which there would be a financial guarantee via planning condition, these elements of infrastructure are removed and therefore not permanent in nature. For the purposes of this EIA Report, and as a worst-case scenario, they are considered permanent.

2.3.10 The turbine foundation (see **Figure 2.4**, EIA Report Volume 3a) is made up of a central excavation of approximately 22 m diameter and an approximate depth of 3 – 5 m subject to prevailing ground conditions. Sloping batters would increase the excavated area to approximately 35 m diameter at ground level.

2.3.11 Each turbine requires a crane hardstanding to facilitate construction and maintenance. At each turbine there would be a 3,855 m² permanent hardstanding (see **Figure 2.3**, EIA Report Volume 3a).

2.3.12 A 2 m wide maintenance hardstanding would be created around the base of each turbine. The foundation excavation would be backfilled and covered with soil leaving only the concrete plinth exposed at ground level to which the steel tower would be attached.

2.3.13 The Proposed Development would result in the construction of approximately 9.54 km of new track (not including access options). The required running width of the track would be typically a minimum of 5 m

on straight sections, with 0.5 m wide shoulders on each side. Tracks would be wider on bends. Typical access track details are presented in **Figure 2.8** (EIA Report Volume 3a). There is also the potential to float approximately 1.6 km of track on-site where feasible (**Figure 2.1b**, EIA Report Volume 3a). The total permanent land take area for the new on-site track would be approximately 52,426 m², which includes turning heads.

- 2.3.14 The Proposed Development would also include the upgrade of approximately 1.8 km of existing track and approximately 450 m² of widening works.
- 2.3.15 Of the two substation options only one would be utilised. The substation compound would take up an area of approximately 10,500 m² (150 m x 70 m) (see **Figure 2.6** EIA Report Volume 3a). The substation compound would comprise a substation and control room building(s) (if required), including basic welfare facilities (e.g. a toilet and parking area), and potentially external electrical equipment. The building would accommodate all the equipment necessary for automatic remote control and monitoring of the Proposed Development in addition to the electrical switchgear, fault protection, and metering equipment required to connect the Proposed Development to the electricity network. Depending on the nature of the connection, there may be external electrical infrastructure adjacent to the control building(s).

Temporary Land Take

- 2.3.16 A temporary area of excavation around each turbine would be identified during detailed design once an accurate cut and fill profile has been identified.
- 2.3.17 In addition to the permanent hardstanding, an additional 1,795m² of temporary hardstanding for blade fingers and secondary crane pads during the construction phase would be required.
- 2.3.18 Two construction compounds are proposed which would require a hardstanding area of approximately 5,000 m² each, which could accommodate the temporary concrete batching plant.
- 2.3.19 One potential borrow pit location has been identified; this location is an existing borrow pit that would be expanded. The total area of the borrow pit required would be determined at a later stage once the exact quantity of material required is known and further site investigations have been undertaken.
- 2.3.20 Ancillary excavation works and material storage around other parts of the Proposed Development, such as those for cable trenching, would have a negligible impact on environmental receptors due to the very minor scale of the excavation or duration of the works and are not considered further in this EIA Report.
- 2.3.21 The area of approximate temporary and permanent land take associated with the Proposed Development is presented in **Table 2.2**.

Table 2.2 – Summary of Approximate Temporary and Permanent Land Take

Energy Project Elements	Temporary (m ²)	Permanent (m ²)
Turbines Hardstanding (including crane pad and blade pads)	19,745	42,405
On-site Access Tracks ¹ (new and upgraded, including turning heads)		up to 61,462
Substation Compound (one)		10,500
Construction Compounds (two)	10,000	
Borrow Pit	16,766	
Total Land Take	46,511	Up to 114,367

Turbine Foundations and Hardstanding

- 2.3.22 Turbines are typically fixed to reinforced concrete foundations, approximately 22 m in diameter. The foundations would be formed in excavations approximately 3 - 5 m deep, depending upon ground conditions (see **Figure 2.4**, EIA Report Volume 3a).
- 2.3.23 Prior to excavation, topsoil and existing vegetation would be lifted and stored. After completion the foundation would be backfilled with suitable excavated or imported material and the original vegetation would be reinstated around the permanent hardstanding areas where possible.
- 2.3.24 The Applicant is proposing that concrete for Site construction, including turbine foundations, would be batched on-site.
- 2.3.25 The turbines would be erected using mobile cranes. These require areas of hardstand adjacent to the turbine locations, which can support the load of the cranes on their outriggers. The permanent hardstands, approximately 2,686 m² and approximately 2,387 m² of temporary hardstands at each turbine, are formed by excavating soft ground, and infilling with compacted stone. Temporary hardstand areas would be required for laydown of turbine components and for a small support crane to assist the main erection crane.

¹ Not including the two access options.

Turbine Lighting

- 2.3.26 The Proposed Development would require visible aviation lighting under the current Civil Aviation Authority (CAA) policy statement². In order to mitigate the nighttime visual impact of the Proposed Development on non-aviation receptors a reduced lighting scheme has been designed and has been approved by the CAA. The reduced lighting scheme proposes 2000 candela steady red lights on three turbines (T2, T7, and T11), but no mid-tower lighting. Further detail is provided in **Chapter 11** (EIA Report, Volume 2).
- 2.3.27 In addition to lighting on the turbines themselves, low-level security lighting at the substation, would also be required.

Electrical Cabling

- 2.3.28 Electrical connections from the wind turbines to the on-site electrical substation and control building would be made via underground cables. All power and cabling on-site would be laid in trenches approximately 1-2 m wide and 1-2 m deep, located adjacent to the access tracks, in the verge or close to the track which would allow for easy access to lay the cable (refer to **Figure 2.5**, EIA Report, Volume 3a).

On-Site Substation

- 2.3.29 The substation compound would measure approximately 150 m x 70 m (approximately 10,500 m²), and would include a substation and control building(s) (if required) and potentially some external electrical equipment (refer to **Figure 2.6**, EIA Report Volume 3a).
- 2.3.30 The electrical cables would terminate at the substation, which is likely to be approximately 4,130 m² in size. Located within substation compound, the control building(s) (if required) would measure approximately 6 m x 43 m with a pitched roof up to 6 m, containing switchgear, control equipment, basic welfare facilities including a toilet and parking area (refer to **Figure 2.7**, EIA Report Volume 3a).

Temporary Construction Compounds

- 2.3.31 Two temporary construction compounds would be required to enable construction of the Proposed Development. The compounds would be located as shown on **Figure 2.1a** (EIA Report Volume 3a) noting that only one of the two construction compound groups would be taken forward. The compound areas would include:
- access tracks and internal circulation routes for vehicles and pedestrians;
 - lighting for security and safety during hours of darkness;
 - surface water management measures;
 - temporary office accommodation and welfare buildings (toilets, kitchen/canteen, drying rooms);
 - equipment storage;
 - a receiving area for incoming vehicles;
 - maintenance and refuelling facilities;
 - waste, recycling and materials management facilities;
 - general laydown areas and areas for batching plant; and
 - parking.
- 2.3.32 The temporary construction compounds' approximate dimensions would be 100 m x 50 m. The indicative layout of the temporary construction compound is shown in **Figure 2.9** (EIA Report Volume 3a).

Access and Site Tracks

- 2.3.33 **Table 2.3** provides further information on the proposed eastern and western access track options. As, previously stated, only one option would be taken forward for the Proposed Development.

Table 2.3 – Summary of Eastern And Western Access Land Take

Route	Description	Length	Land Take (m ²)
Eastern Access Option	Proposed Access Tracks	3.16 km	15,800
	Existing Access Tracks to be Upgraded	2.14 km	10,700
			Total = 26,500
Western Access Option	Proposed Access Tracks	3.18 km	15,900
	Proposed Widening to Existing Access		451
			Total = 16,351

² CAA Policy and Guidelines on Wind Turbines, CAP 764 (Draft June 2020)

- 2.3.34 The eastern access option (largely consented via Strath Oykel Wind Farm planning permission) would require approximately 3.16 km of new track to be constructed and approximately 2.14 km of existing track to be upgraded as required to connect the Site to the public road network, equating to a total land take of approximately 26,500 m². The western access option (largely consented via Meall Buidhe Wind Farm planning permission) would require approximately 3.18 km of new track and approximately 451 m² of widening works to an existing track to connect to the public road network, equating to a land take of approximately 16,351 m².
- 2.3.35 Further detail on access to Site are presented within **Chapter 9** (EIA Report Volume 2).
- 2.3.36 Typical access track design is shown in **Figure 2.8** (EIA Report Volume 3a). This figure shows the use of typical cut and fill access tracks.
- 2.3.37 Tracks would have a typical 5 m running width with appropriate widening on bends, at junctions and passing places.
- 2.3.38 In areas where the peat and topsoil are consistently less than 1 m deep, the vegetation and soil would typically be stripped to a suitable subsoil layer and the track (approximately 500 mm thick) would be constructed on the subsoil. The upper topsoil layer, together with turf, would be stored temporarily for use in landscaping and revegetating the track shoulders and track side drainage, where possible.
- 2.3.39 Once the soil has been removed, as described above, to a suitable founding layer, the road and running surface would be constructed by tipping and compacting aggregate to the required shape and thickness. Cross-sections of the final road shape following reinstatement of the roadside slopes by replacing the layers of excavated material in the correct order are presented in **Figure 2.8** (EIA Report Volume 3a).
- 2.3.40 Where it is not possible to avoid areas of deepest peat, floating tracks would be required to be constructed. Where peat depths of 1 m or greater are identified and suitable engineering criteria are met, for example shallow topography (below 5%), the Proposed Development would use floating road construction. The use of 'floating roads' in areas of deep peat eliminates the need for excavation and minimises effects on ecology and disruption to existing water paths and allows for some filtration. It is anticipated that an element of floating track would be required to minimise peat disturbance associated with the Proposed Development. The specific requirements for floating track would be confirmed once further detailed peat sampling has been undertaken.
- 2.3.41 The on-site track layout has been designed to minimise environmental disturbance and land take by wherever possible avoiding areas of deeper peat and steep slopes in excess of 12 degrees as well as, wherever possible, avoiding or minimising areas of identified environmental constraints.
- 2.3.42 The track layout has been carefully designed to minimise the number of watercourse crossings where possible, which are discussed below.

Borrow Pit

- 2.3.43 A borrow pit search area has been identified covering a total of approximately 16,766 m², to supply material to construct the Proposed Development. The borrow pit search area identified contains an existing borrow pit and if found suitable would be expanded upon. The use of this borrow pit would provide a volume of rock for the construction of the Proposed Development but allows for the current uncertainty of the quality of the rock at this location.
- 2.3.44 Stone would be required for various purposes, primarily track, and hardstanding construction. If the stone on-site is found suitable then a proportion of this could be won from foundation excavation and the remainder would be sourced from an on-site borrow pit or from off-site quarries.

Connection to Electricity Grid

- 2.3.45 A connection to the electricity grid network would be made at the Dalchork Substation, located approximately 2.5 km north of Lairg. The grid connection infrastructure, between the proposed on-site substation and the Dalchork Substation, would be the subject of a separate consent application and therefore not considered further in the EIA.

2.4 Construction Phase

- 2.4.1 The estimated construction period of the Proposed Development is approximately 18-23 months. This period is indicative only and may be subject to variation as a result of factors which include, but are not limited to, weather restrictions, ground conditions encountered through detailed investigation, turbine component and material delivery, timing of grid connection works and public highway constraints. However, this is considered to represent a realistic case for the purposes of assessment.
- 2.4.2 Felling required for the construction of the Proposed Development is anticipated to commencing in 2030-31. For further details on felling plans during the construction phase see **Technical Appendix 2.3** (EIA Report Volume 4).

- 2.4.3 Construction by the appointed main contractor would begin following agreement of the detailed design and approval of any pre-commencement conditions with the appropriate consenting authority. Key construction activities would involve:
- public road improvement and junction creation;
 - construction of main Site access track;
 - forestry removal;
 - construction of the temporary construction compounds and laydown areas;
 - construction of all access tracks;
 - design and construction of temporary and permanent drainage measures;
 - installation of concrete batching plant;
 - construction of turbine foundations, crane hardstanding and laydown areas;
 - excavation of cable trenches;
 - laying of electricity and communications cables in trenches;
 - construction of substation and control building;
 - delivery, installation, testing and commissioning of wind turbines and permanent meteorological masts and ancillary equipment;
 - installation of internal turbine transformers and switchgear in the nacelle; and
 - Site reinstatement and restoration in accordance with peat management plan, habitat management plan and forestry planting.
- 2.4.4 The works are likely to follow the order as detailed above, however many activities would be undertaken concurrently to minimise the overall construction programme.
- 2.4.5 The appointed contractor would develop the details of the Site design and construction methods in compliance with the Applicant's contract requirements and the EIA Report.
- 2.4.6 The access tracks would be left in place following construction to provide access for maintenance, repairs and eventual decommissioning of the Proposed Development. The construction works would be undertaken by a competent and experienced contractor in accordance with the project consent and any associated conditions and in accordance with good industry practice. Prior to commencing construction, a more detailed construction and reinstatement programme would be submitted to the consenting authority.
- 2.4.7 Traffic movements associated with the construction of the Proposed Development including required Heavy Goods Vehicles (HGVs) and heavy/abnormal load movements are described in **Chapter 9** (EIA Report Volume 2).
- 2.4.8 An indicative construction programme is provided in **Table 2.4**.

Table 2.4 – Indicative Construction Programme

Task*	Month																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		

*Task:

1. Site investigation/forestry felling
2. Site establishment/plant deliveries
3. Borrow pit working, access track construction and hardstanding areas
4. Foundations
5. Substation construction
6. Cabling
7. Erection of turbines
8. Site reinstatement and restoration

Hours of Work

2.4.9 The normal working hours would be as follows:

- Monday to Friday 0700 to 1900;
- Saturday 0700 to 1600; and
- no working on Sundays or public holidays without prior written approval from THC.

2.4.10 Outwith these specified hours, maintenance works, emergency works and construction works shall be limited to concrete pours, wind turbine erection, dust suppression, and the testing of plant and equipment, unless otherwise approved in advance in writing by the THC. The requirement for out-of-hours work could arise, for example, from delivery and unloading of abnormal loads or health and safety requirements, or to ensure optimal use is made of fair-weather windows for the erection of turbine blades and the erection and dismantling of cranes.

Construction Traffic and Plant

2.4.11 Vehicle movements associated with construction works would include:

- cars and minibuses for transporting construction personnel to the Site;
- HGVs for pre-construction delivery of Site offices, construction equipment and materials;
- HGV abnormal load vehicles for delivery of the turbine components and base rings;
- mobile road going cranes, used for the erection of the turbines; and
- standard HGVs for transporting electric cable, steel reinforcement for foundations, construction plant fuel and other items and equipment.

2.4.12 A Traffic Management Plan (TMP) would be agreed in consultation with THC and Transport Scotland. This would address the scheduling, routing and overall management of abnormal load movements along with the programming and management of all other HGV movements.

Watercourse Crossing Schedule

2.4.13 As noted above, the number of watercourse crossings has been minimised through site design. Nevertheless, there is a requirement for 25 crossings of watercourses as identified on 1:25k mapping. Of the 25 crossings, 14 are existing and 11 would be new crossings (based on western access option as a worst-case scenario), further detail is provided within **Technical Appendix 8.5**, EIA Report Volume 4.

Standard Mitigation and Working Methods during Construction

Construction Environmental Management Plan (CEMP)

2.4.14 The assessment in this EIA Report has been carried out on the basis that standard mitigation measures would be implemented during the construction work, including compliance with both project-wide and Site-specific environmental management procedures, which would be included in the CEMP. An OCEMP is provided in **Technical Appendix 2.1** (EIA Report Volume 4). A detailed CEMP would be agreed with THC and relevant statutory consultees prior to construction commencing. The CEMP would, as a minimum, include details of:

- construction methodologies;
- pollution prevention measures;
- public liaison provision;
- peat slide, erosion and compaction management;
- control of contamination/ pollution prevention;
- drainage management and sustainable drainage systems (SuDS);
- water quality monitoring;
- species and habitat protection measures;
- management of construction traffic;
- control of noise and vibration; and
- control of dust and other emissions to air.

2.4.15 **Technical Appendix 2.1** (EIA Report Volume 4) provides a list of generic mitigation measures that would be included in the CEMP and implemented during the construction and decommissioning of the Proposed Development. It would be a contractual requirement that the appointed contractor complies with the CEMP.

Watercourse Crossings

- 2.4.16 **Technical Appendix 8.7** (EIA Report Volume 4) contains details of the watercourse crossings required as part of the Proposed Development and the proposed crossing type together with the relevant requirements in relation to The Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended. **Figure 2.10** (EIAR Report Volume 3a) presents a typical watercourse crossing detail.

Private Water Supplies

- 2.4.17 A review of Private Water Supplies (PWS) has been undertaken for the Site and a 5 km buffer around the Site boundary (**Technical Appendix 8.6**, EIA Report Volume 4) which identified three private water supplies.
- 2.4.18 Mitigation to prevent pollution impacts on any downstream PWS would be set out in a Water Management Plan which would form part of the CEMP, to ensure that the Proposed Development would not lead to significant impact to water abstraction and other hydrological receptors. The contents of the CEMP and the Water Management Plan would be agreed with THC in consultation with the Scottish Environment Protection Agency (SEPA) prior to commencement of works.

Peat Management

- 2.4.19 **Technical Appendix 8.3** (EIA Report Volume 4) outlines the proposed working methods where the excavation of peat would be required and provides further details on potential volumes of peat excavated and the likely requirements for reinstatement/restoration. This provides details of the predicted volumes of peat that would be excavated for the Proposed Development, the characteristics of the peat that would be excavated, and how the excavated peat would be reused and managed. This document would be updated during the detailed design stage and agreed with SEPA prior to construction and would be included in the final version of the CEMP.
- 2.4.20 The detailed peat surveys across the Site have identified that approximately 232,294 m³ of peat would be excavated as part of the construction activities associated with the Proposed Development. The PMP outlines how peat would be recovered, managed, and reused within the Site.

Peat Slide Risk

- 2.4.21 **Technical Appendix 8.4** (EIA Report Volume 4) provides further technical information on the likely risk and hazards associated with peat instability, and the proposed standard mitigation and working methods that would be implemented during construction to seek to avoid adverse effects associated with peat instability.

Site Reinstatement and Restoration

- 2.4.22 Following commissioning of the Proposed Development, the construction site would be reinstated. Reinstatement would form part of the contractual obligations for the appointed contractor and would include all temporary works, such as crane pads, borrow pits, temporary compounds and laydown areas.
- 2.4.23 Following removal of the temporary works, best practise techniques would be used to ensure soils are replaced in the order they were removed with original vegetation reinstated around the permanent hardstanding areas where possible. Where required, reseedling of the temporary works areas would also be undertaken with an appropriate seed mix.

2.5 Operation and Maintenance Phase

Life of the Proposed Development

- 2.5.1 The expected operational life of the Proposed Development is 50 years from the date of commissioning. Wind turbines and wind energy projects are designed to operate largely unattended. Each turbine at the Proposed Development would be fitted with an automatic system designed to supervise and control a number of parameters to ensure proper performance (e.g. start-up, shut-down, rotor direction, blade angles etc.) and to monitor condition (e.g. generator temperature). The control system would automatically shut the turbine down should the need arise. Sometimes the turbines would re-start automatically (if the shut-down had been for high winds, or if the grid voltage had fluctuated out of range), but other shut-downs (e.g. generator over temperature) would require investigation and manual restart.
- 2.5.2 The wind turbines, substation, control room and ancillary infrastructure would be subject to ongoing maintenance throughout the operational life, with regular visits by wind turbine technicians and other staff and contractors.

Operational Use of Natural Resources, Residues and Emissions

- 2.5.3 The EIA Regulations require that the EIA Report provides an estimate, by type and quantity, of expected residues and emissions (such as water, air and soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced) resulting from the construction and operation of

the Proposed Development. In most cases, the effects during decommissioning would be similar to those during construction.

2.5.4 **Table 2.5** provides a summary of the anticipated residues and emissions.

Table 2.5 – Residues and Emissions

Topic	Potential Residues/Emissions
Water	<u>Construction:</u> Occasional and low quantity discharges could arise from pumping, or over-pumping in order to dewater foundation excavations and borrow pits. Pollution sources could arise as a result of soil erosion or from oil/ fuel or chemical storage and use. All discharges would be managed in accordance with the Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended by The Water Environment (Miscellaneous) (Scotland) Regulations 2017. The proposals for water the control and management of water quality and quantity from the Proposed Development are presented in Technical Appendix 2.1 (EIA Report Volume 4). All works in and around watercourses would follow best practice guidance and the OCEMP (Technical Appendix 2.1, EIA Report Volume 4). Further details of the assessment are presented in Chapter 8 (EIA Report Volume 2). <u>Operation:</u> Full details of the assessment are presented in Chapter 8 (EIA Report Volume 2).
Air	<u>Construction:</u> The construction phase would require the transport of people and materials by road, with associated emissions to the atmosphere. There are no air quality management areas within the vicinity of the Proposed Development. Overall, the quantity of air emissions is expected to be low relative to the general background air emissions from road traffic. No significant air emissions are anticipated. <u>Operation:</u> Due to the nature of the Proposed Development no significant point source or diffuse air emissions would be produced during its operation. The Proposed Development would contribute to providing renewable electricity, in turn displacing emissions associated with fossil fuel-based electricity generation elsewhere. The construction of the proposed infrastructure, and subsequent operation and decommissioning of the Proposed Development would include activities that either directly or indirectly result in CO₂ emissions. Technical Appendix 2.2 (EIA Report Volume 4) calculates the greenhouse gas emissions and carbon payback times for wind farm developments in Scottish peatlands and concludes that the Proposed Development would 'pay back' the carbon emissions associated with its construction, operation and decommissioning in a 2.7 year period.
Soil and Subsoil	<u>Construction:</u> Soil and subsoil excavation, handling and storage would be required during construction. All soil and subsoil would be stored temporarily for use in reinstatement, such that there would be no residue (surplus) remaining following the construction work. Further details on peat management are provided in Technical Appendix 8.3 (EIA Report Volume 4). <u>Operation:</u> No requirement for soil or subsoil excavation or handling during the operation phase has been identified. No pollution sources have been identified for the operational phase.
Noise and Vibration	<u>Construction:</u> Noise sources during the construction phase would include increased traffic flows and noise from construction plant. Further details are provided in Chapter 10 (EIA Report Volume 2). <u>Operation:</u> The wind turbines would generate noise during operation, and the noise levels would vary according to the wind speed. The location of residential receptors in relation to the Proposed Development was a consideration in the design development process and the predicted noise levels are within acceptable limits. Full details of the noise impact assessment are present in Chapter 10 (EIA Report Volume 2).
Light	<u>Construction:</u> Technical Appendix 2.1 (EIA Report Volume 4) notes that temporary lighting would be required at the temporary construction compounds for security purposes and to ensure that a safe working environment is provided to construction staff. In addition, temporary lighting could be required to ensure safe working conditions at infrastructure locations during construction. All temporary lighting installations would be downward facing and all lights would be switched off during daylight hours and out with working hours. <u>Operation:</u> It is proposed to install infrared lighting on the turbines in a pattern that would be acceptable to the Ministry of Defence (MoD) for aviation visibility purposes. The lighting proposed would not be visible to the naked eye. The substation buildings are likely to be equipped with passive infrared controlled security lighting. These would illuminate the substation compound area when activated. Any effect would be temporary and not expected to be significant during normal operation of the Proposed Development.
Heat and Radiation	No significant sources of heat and radiation have been identified during either the construction or operation phase of the Proposed Development.
Waste	<u>Construction:</u> Technical Appendix 2.1 (EIA Report, Volume 4) provides details on pollution prevention control and Site waste management that would be implemented during construction. A Site Waste Management Plan would be designed to follow the principles of: Avoidance; Minimisation; Separable; Recyclable. <u>Operation:</u> The power generation aspect of the Proposed Development would not produce any waste emissions or pollutants. The general operation and maintenance of the Proposed Development has the potential to produce a small amount of waste. This is likely to be restricted to waste associated with the control building from employees and visiting contractors and the storage of oils and lubricants.

2.6 Decommissioning Phase

- 2.6.1 At the end of the Proposed Development's operational life, a decision would be made as to whether to refurbish, remove, or replace the turbines. If refurbishment or replacement were to be chosen, relevant consent applications would be made. If a decision were to be taken to decommission the Proposed Development, this would entail the removal of all the turbine components, transformers, the substation and associated buildings. Foundations would typically be removed to a depth of 0.5 m below ground level to avoid environmental effects from removal. It is assumed that some portion of the access tracks and underground cables may be left in place; however this would be subject to further evaluation of the options and the submission of a Decommissioning, Restoration and Aftercare Plan no later than one year prior to the expiry of the section 36 consent.
- 2.6.2 The Decommissioning, Restoration and Aftercare Plan would set out environmental protection measures and restoration principles which would be implemented. This plan would be agreed with THC and currently these plans do not form part of this proposal. It is anticipated this would be secured by an appropriately worded planning condition.

A detailed assessment of the decommissioning of the Proposed Development has not been undertaken as part of this EIA because i) the future baseline conditions (environmental and other developments) cannot be predicted accurately at this stage, and ii) the proposals for refurbishment/ decommissioning are not known at this stage. However, an outline decommissioning strategy is included in the OCEMP (**Technical Appendix 2.1**, EIA Report Volume 4). It is assumed that the significance of impacts of decommissioning would be no greater, or less than the impacts of construction.

Chapter 3: Site Description and Design Evolution

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3 Site Description and Design Evolution

3.1 Introduction

- 3.1.1 This Chapter provides a description of the location and site context of the Proposed Development for the purposes of identifying and assessing likely significant effects. This Chapter also provides an overview of the design evolution and the reasonable alternatives studied by the Applicant, which are relevant to the Proposed Development and its specific characteristics, in accordance with regulation 5(2)(d) and schedule 4 (paragraph 2) of the EIA regulations. The Chapter provides a description of the main reasons for selecting the chosen layout, taking into account the effects of the Proposed Development on the environment.
- 3.1.2 This Chapter provides the following:
- A review of the site selection considerations, including a review of the planning history, context, and policy relevant to site selection and the site feasibility assessment;
 - An overview of the design objectives for the Proposed Development;
 - A description of the reasonable alternatives studied (noting that this is limited to those which are considered relevant to the Proposed Development); and
 - A description of the final Proposed Development.
- 3.1.3 This Chapter draws on issues considered in more detail in the relevant technical **Chapters 4 - 11** (EIA Report, Volume 2). It does not pre-empt the conclusions of the technical chapters but explains how potential environmental effects have informed the design of the Proposed Development.
- 3.1.4 This Chapter is supported by the following figures, included within EIA Report Volume 3a.
- **Figure 3.1: Design Evolution;**
 - **Figure 3.2: Environmental Constraints; and**
 - **Figure 3.3: HES Identified Impact on Setting.**

3.2 Site Selection and Consideration of Alternatives

- 3.2.1 National Planning Framework 4 (NPF4) was adopted by the Scottish Government on 13 February 2023 and sets out the overarching spatial strategy for Scotland to 2045. The foundations for the spatial strategy as a whole are the global climate emergency and the nature crisis. NPF4 supports a large and rapid increase in electricity generation from renewable sources to meet Scotland's net zero emissions targets. It identifies that onshore wind energy development proposals will be supported in principle except for where these are located in National Parks and National Scenic Areas.
- 3.2.2 NPF4 identifies that there are significant opportunities to capitalise on the natural assets of Scotland to significantly reduce greenhouse gas emissions through increased renewable energy generation. The Proposed Development would make a valuable contribution to help Scotland meet its renewable energy and electricity production targets while supporting emissions reduction to combat global heating in the current climate emergency.
- 3.2.3 Regulation 5 (2) (d) and Paragraph 2 of Schedule 4 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations 2017) requires that an EIA report should provide: *"a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment."* (Scottish Government, 2017).
- 3.2.4 The Applicant's approach to site selection is outlined here in relation to alternative sites considered. The 'do nothing' alternative is also explained. The main alternatives considered for the site include design, turbine specification, location, size, and scale. This Chapter explores these options and explains how the final design of the Proposed Development has evolved.
- Do Nothing Alternative**
- 3.2.5 If the Proposed Development is not constructed, the land would continue to be used for commercial forestry and grazing. This option would have no beneficial impact with regards to the production of renewable energy, offsetting of greenhouse gas emissions, or contribution to Scotland's renewable energy and net zero targets. One possible environmental benefit to the do nothing alternative would be that the forest would maintain its role in carbon sequestration, helping to mitigate climate change by absorbing carbon dioxide (CO₂) from the atmosphere, albeit within the context of ongoing forestry management and periodic felling/harvesting. However, as set out in the Outline Nature Enhancement

Management Plan (ONEMP) (**Technical Appendix 6.5**, EIA Report, Volume 4) and Outline Peat Management Plan (OPMP) (**Technical Appendix 8.3**, EIA Report, Volume 4), biodiversity restoration and enhancement measures are proposed as part of the Proposed Development. On the basis of the potential beneficial environmental effects arising from the Proposed Development, the do nothing alternative is not considered to be the best environmental option. A consent application is therefore submitted to the Scottish Government Energy Consents Unit (ECU) to seek to contribute to Scottish targets and deliver more green electricity whilst also contributing to biodiversity enhancement measures on the site.

Site Selection

3.2.6 The Site for the Proposed Development is considered by the Applicant to be suitable for wind farm development for the following reasons:

- It is situated in an established area for onshore wind farm development;
- It is out with areas identified within NPF4 as unsuitable for wind development, e.g., National Scenic Areas and National Parks (NPF4 Policy 11);
- There are no planning policies, which in principle, preclude wind energy development on the Site;
- There is ongoing compatibility with the existing commercial forestry use;
- There is a minimum distance of 1.5 km required to be kept between the turbines and the closest inhabited residential properties;
- It has high wind speeds based on available data; and
- It has a secured viable grid connection to the electricity transmission network.

Current Land Use and Context

3.2.7 The 'Site', as defined by the red line boundary on **Figure 1.1** (EIA Report, Volume 3a) is located approximately 18 km southwest of Lairg and 20 km northwest of Bonar Bridge, the Highlands, Scotland and is centred on 241506, 89862. The Site occupies an area of approximately 1,306 hectares (ha) (inclusive of both access options).

3.2.8 The Site is located on the southern slopes of Strath Oykel and located within an area of commercial forestry, typical of the valley sides along Strath Oykel, while more open hills rise to the north and south. The River Oykel and singletrack A837 pass through the strath, around 2 km north of the Site, and there is another minor road around 2 km to the northeast that runs along the southern side of the river linking up areas of dispersed settlement.

3.2.9 NatureScot's (previously referred to as Scottish Natural Heritage (SNH¹)) revised National Programme of Landscape Character Assessment (2019)² identifies the Site as being primarily within the Rounded Hills – Caithness and Southerland Landscape Character Type (LCT). The Site is not located within a landscape designation or classification area.

3.2.10 There are six statutory designated Sites for nature conservation within 10 km of the Site:

- River Oykel Special Area of Conservation (SAC), located immediately northwest;
- Oykel Gorge Site of Special Scientific Interest (SSSI), located 240 m northwest;
- Kyle of Sutherland Site of SSSI, located 4.1 km east;
- Grudie Peatlands SSSI, located 5.5 km northeast;
- Caithness and Sutherland Peatlands SAC and RAMSAR, located 5.5 km northeast;
- Allandale Pine Wood SSSI, located 7.2 km south; and
- Amat woods SAC and SSSI, located 7.3 km south.

3.2.11 Within 1 km of the Site boundary, there is a Scheduled Monument - Langwell, fort and dun and one Category B Listed building - Suspension Footbridge, Brae Doune.

3.2.12 Wind farms are an existing feature of the surrounding landscape. As illustrated on **Figure 2.12** (EIA Report, Volume 3a) there is a cluster of existing and consented wind farms to the northeast, the closest of these are the operational Rosehall and Achany group of turbines, around 7.5 km northeast of the Site and located on the northern slopes and hills just beyond the strath. Extending east of these and to the south of Lairg there are further consented schemes and a small operational scheme of three turbines

¹ Please note that SNH changed its name to NatureScot and that documents written under the name of SNH will be referenced with the organisation's name at the time of publishing.

² Based on SNH Landscape Character Assessment 2019, available at <https://data.gov.uk/dataset/cce069c5-8a2b-4932-9fae-4f9023cd9d5b/snh-landscape-character-assessment-2019>.

south southeast of Lairg, around 17 km east. Strath Oykel Wind Farm is located adjacently to the east of the Site and received consent in January 2025. **Table 4.6** of **Chapter 4** (EIA Report, Volume 2) provides further detail on cumulative developments.

- 3.2.13 There are no residential properties located within the Site. There are various farmsteads and dispersed rural properties to the northwest of Oykel Bridge. The majority of settlement lies to the east of the Site along the A837, although there are a small number of properties located on the minor road south of the river extending between Doune and Inveroykel, the closest of which are located around 2.2 km from the nearest turbine. The nearest settlement is at Rosehall (4.5 km northeast).

3.3 Policy Considerations

- 3.3.1 The statutory Development Plan covering the Site comprises the following:
- National Planning Framework 4³ (NPF4) (adopted on the 13th February 2023);
 - The Highland wide LDP⁴ (HwLDP) (2012); and
 - The Caithness & Sutherland LDP⁵ (CasPlan) (2018).

3.4 Design Concept and Approach

- 3.4.1 The Applicant appointed a team of specialist consultants to advise on the design of the Proposed Development. Consistent with renewable energy policy, as outlined within the Planning Statement, the key overall objective is to maximise the energy generation potential of the Site, whilst having regard to the protection of sensitive environmental receptors. A design process was agreed with the team that included the following parameters:
- Relevant design guidance was derived from:
 - Good practice publications and industry standards (e.g. SNH (2017) Siting and Design of Wind Farms in the Landscape (Version 3a));
 - Planning policy documents (e.g. the Highland-Wide Local Development Plan (HWLDP); and
 - Consultation responses received through the pre-application consultation, EIA scoping, and post-scoping consultation.
 - A design brief was agreed with the Applicant to set out key parameters for the Proposed Development. The design brief subsequently set the scope for constraint mapping. The brief included:
 - a preliminary scoping turbine layout;
 - details of land available (illustrated by the Site boundary); and
 - requirements for Site construction compounds, substation, laydown areas, access track geometry, and crane hardstanding geometry.
 - The Applicant would be responsible for defining minimum acceptable turbine spacing and acceptable slope/gradient for tracks. Design guidance from the Applicant confirmed the following requirements for Site infrastructure:
 - minimum turbine set back of 100 m from Site boundary;
 - all watercourses should have a minimum of 50 m exclusion area placed around them, in order to ensure protection of water quality, in line with SEPA requirements;
 - with respect to turbine locations, all watercourses should have a 74 m exclusion area placed around them, in order to ensure bat mitigation was adhered to, in line with NatureScot guidance;
 - access track design should minimise the need for watercourse crossings;
 - road running width to be between 5 m and 6 m depending on gradient and bends;
 - road to have vertical grade no higher than 15%;
 - turning areas to be provided allowing loaded or unloaded blade transports (as required); and

³ Scottish Government, National Planning Framework 4 (2023).

⁴ The Highland Council, The Highland Wide Local Development Plan (2012).

⁵ The Highland Council, The West Highlands and Islands Local Development Plan (2019).

- where possible, borrow pit search areas should be an expansion of an existing borrow pit(s) and should be sited in locations that can be reached via existing tracks, in order to avoid the need to construct extensive sections of track to reach them and obtain materials.
- 3.4.2 Following agreement of the design brief, the team was instructed to undertake all necessary desktop studies and field work to identify key environmental receptors and constraints (including cumulative constraints) of relevance to the design and assessment of the Proposed Development.
- 3.4.3 Further analysis was completed to categorise design constraints as either 'hard constraints', 'soft constraints', or 'low constraints'. Hard constraints were defined as those features with formal protection as defined in legislation or adopted planning/industry guidance, whereas soft constraints were characterised as having potential to constrain the development but, subject to careful design consideration and/or mitigation measures, the Proposed Development could be accommodated. Low constraints were defined as areas which did not have any known physical constraints.
- 3.4.4 The Proposed Development layouts considered throughout the design evolution process are presented in **Figure 3.1** (EIA Report, Volume 3a). A summary of the key environmental constraints considered are shown on **Figure 3.2** (EIA Report, Volume 3a).

3.5 Constraints and Opportunities Identification

- 3.5.1 Following a baseline characterisation of the Site, the key environmental issues for consideration in the design process were identified. A summary of the key design considerations is provided in **Table 3.1**.
- 3.5.2 Issues were considered through design with the aim of 'designing out' significant effects. Where it is not possible to mitigate by design, the issues have been considered further as part of the EIA.

Table 3.1 – Preliminary Site and Design Guidance for Coille Beith Wind Farm

Topic	Analysis	Design Guidance
Landscape Fabric	The Study Area comprises undulating terrain with peaks exceeding 1100 m AOD and key features such as Strath Oykel, Glen Cassley, Loch Shin, and Loch Glascarnoch. The Site, on the southern slopes of Strath Oykel, rises to 400 m AOD, with streams flowing northeast into the River Oykel. Nearby are Lochan Phail to the west and Loch Mhic Mharsail to the east. The Site is part of the Meòir Langwell Wood commercial forest, with coniferous species and heather moorland. The wider Study Area features forestry, open waters like the Cromarty and Dornoch Firths, diverse coastlines, farmland, and scattered settlements. Key features include the Carnegie Club, Skibo Castle Golf Course, and an evolving context of energy developments.	- Using the simple landform, expansive scale, and uniform land cover of coniferous forestry within the Site and more widely within the area to help accommodate larger typologies of turbines and, ancillary elements without significant effects on characteristic landforms and landcover at the Site. - Preferential use of existing forest as a partial basis for site infrastructure, thereby reducing the extent of disturbance and loss of characteristic topography and landcover at the Site. - Use of a smaller number of larger turbines, in part, to reduce the footprint and land take of the Proposed Development whilst achieving the commercial and energy outputs required.
Landscape Character and Designations	From the production of the Zone of Theoretical Visibility (ZTV), the following designations/landscape classifications are of relevance: - NSA 36: Assynt – Coigach, 14 km northwest of the Site; - NSA 39: Wester Ross, 30km southwest of the Site; - NSA 40: Dornoch Firth, 18 km east of the Site; - WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis, which, at its closest, is situated approximately 1.7 km to the west of the Site; - WLA 32: Inverpolly – Glencanisp, approximately 22 km northwest of the Site; - WLA 34: Reay – Cassley, approximately 3 km north of the Site; - WLA 35: Ben Klibreck – Armine Forest, 25 km northeast of the Site; - WLA 37: Foinaven – Ben Hee, approximately 22 km north of the Site; - SLA 8: Ben Kilbreck and Loch Choire, 27 km northeast of the Site;	- Position of the Proposed Development within a landscape characterised by wind farm development, and the emergent pattern of development, provides opportunities for the Proposed Development to be located as 'infill' development and to avoid the geographical expansion of effects associated with existing and consented developments. - Potential for the Proposed Development to increase the level of cumulative effects on landscape character, focussed on the three character types on the Site.

Topic	Analysis	Design Guidance
	• SLA 9: Loch Fleet, Loch Brora and Glen Loth, 31 km east of the Site; • SLA 17: Ben Wyvis, 22 km south of the Site; and • SLA 18: Fannichs, Beinn Dearg and Glencalvie, 3 km to the southwest of the Site. The Study Area includes 30 distinct Landscape Character Types (LCTs) of relevance: • LCT 134: Sweeping Moorland and Flows; • LCT 135: Rounded Hills – Caithness and Southerland; • LCT 137: Cnocan – Caithness & Sutherland; • LCT 139: Rugged Mountain Massif – Caithness and Sutherland; • LCT 142: Strath – Caithness and Sutherland; • LCT 145: Farmed and Forested Slopes with Crofting; • LCT 328: Rugged Mountain Massif – Ross and Cromarty; • LCT 329: Rounded Mountain Massif; • LCT 330: Rounded Hills and Moorland Slopes – Ross and Cromarty; and • LCT 332: High Rocky Moorland and Plateau – Ross and Cromarty	
Visual Amenity	Key settlements within the Study Area include: • Rosehall settlement, 4 km northeast of the Site; • Achnanahanat settlement, 7.8 km east of the Site; • Areas of other notable settlements between Auchintoul and Altass, 6.5 km northeast of the Site; • Scattered farmsteads and rural properties to the northwest of Oykel Bridge; and • A small number of residential properties located 1.8 km north of the Site, along the southern side of the River Oykel. There are several key transport routes within the Study Area that would be subject to potential views of the Proposed Development including the A837, the A836 and a minor road 2.5 km northeast of the Site. Residential properties within 3 km of the Proposed Development. The Site is near the Cape Wrath Trail (1 km west) and a cycling route along the A836 (14.5 km east). Core Paths, include Rosehall Trails, and local paths within 10 km.	The key issues in respect of visual amenity relate to: • impacts on residential visual amenity of properties within 2.5 km of the Proposed Development's turbines; • effects on the amenity and character of key routes such as the A837 and A836; and • effects on the amenity of recreational routes, including the Rosehall Trails, the, cycleways and core paths; as well as key summits used by hill walkers. The landscape preferred development area ensures sufficient separation distance from the closest properties of at least 1 km.
Cultural Heritage	No designated heritage assets recorded within the Site and five non-designated assets within the Site, comprising farmsteads, townships and bronze age assets. The key consideration centres around impacts upon the Scheduled Monument - Langwell, fort and dun (SM5302) located within 1 km of the Site. There are six listed buildings within 5 km of the Site.	Turbines and infrastructure should be sited to avoid impacts upon known remains. Where assets cannot be avoided this is likely to require mitigation through preservation by record undertaken through archaeological watching brief or trial trench evaluation. Where possible, turbines should be sited to minimise impacts upon the setting of designated heritage assets and non-designated heritage assets of national importance, both creating separation through turbine siting for views from the assets. Efforts should be made to keep the turbines behind the ridgeline to the south of Langwell, fort and dun as it is the valley and the dun's relationship with the River Oykel that form its key setting relationships.

Topic	Analysis	Design Guidance
Ecology	The Site is dominated by semi-mature coniferous plantation woodland with a species-poor understory due to high needle cover. Key considerations include: • River Oykel SAC and the species within the river; • Localised areas of priority habitats present (specified in UK Biodiversity Action Plan, Annex I of the Habitats Directive, or the Scottish Biodiversity List, including dry heath (H12a), blanket bogs (M2, M17a, M19a), wet heath (M15b), marshy grassland (M23b) and acid grassland *U4, U5c). • Other constraints from protected species include water voles, pine marten, otter, and badger (although badger are unlikely to be present).	A 50 m buffer between works and infrastructure and the River Oykel SAC is suggested to avoid impacts on the SAC and the fish within the river. Crossings over the SAC should be minimised or avoided where possible. An 88 m buffer from blade tip to woodland edge to be incorporated into the design to avoid impacts on bats and a 74 m buffer from watercourses. Buffers on watercourses for bats and for pollution prevention (a minimum of 50 m) would avoid any significant effects for other protected species, including otter, water vole, and fish species. Infrastructure, turbines, and works should avoid Annex 1 habitats and potential Groundwater Dependent Terrestrial Ecosystems (GWDTEs) (where possible) in order to minimise impacts.
Ornithology	The Grudie Peatlands SSSI and Caithness and Sutherland Peatlands SAC and Ramsar located approximately 6.4 km northeast of the Site which support multiple breeding species.	A 500 m buffer around lek sites from works and turbines.
Geology, Hydrology, Hydrogeology, and Peat	A review of the SNH Carbon Rich Soil, Deep Peat and Peatlands Habitat Map (2016) and peat probing confirms that areas of peat and organic material are present across the Site. The Stage 2 peat probing survey confirmed that peat >0.5 m depth is present across 48.5% of the Site; and no peat (0 – 0.5 m depth) is present across 51.5% of the Site. Peat >1.0m depth is present at 24.1% of the Site. There are 3 private water supplies (PWS) within 5 km of the Site.	The design should avoid, as far as possible, siting turbines and infrastructure in areas of peat, particularly deep peat (>1 m depth). SEPA guidance is that 250 m/100 m buffers are needed for high and moderate GWDTEs respectively. Potential high GWDTEs should be considered; however, where the habitats are clearly linked to either rainfed systems or surface watercourses/ features, they should not be treated as a design constraint. The design should avoid placing turbines, and infrastructure within 50 m of natural watercourses in order to protect water quality. The design should aim to minimise the number of direct interactions with the water environment by designing out watercourse crossings where possible. Tracks should be perpendicular to watercourses at crossing points. Impermeable surface for infrastructure would require detailed drainage design to manage surface water runoff.
Noise	The Site is located within a rural location where background noise levels are relatively low. The predominant noise sources in the area are wind induced noise (wind passing through vegetation and around buildings), local watercourses, agricultural noise, traffic, and birdsong. There are a number of scattered residential properties around the Site.	IOA GPG guidance state 'If the proposed wind farm produces noise levels within 10 dB of any existing wind farm/s at the same receptor location, then a cumulative noise impact assessment is necessary'. The key design criteria for the Site should ensure that the 'Total ETSU-R-97 Noise Limits' are not exceeded by the cumulative operation of all turbines in the area. To enable wind farm noise for individual developments to be controlled 'Site Specific Noise Limits' must be set which take account of the proportion of the Total ETSU-R-97 Noise Limit which has been given to or could realistically be used by other schemes.
Traffic and Transport	The main transport impacts would be associated with the movement of general HGV traffic travelling to and from the Site during the construction phase of the Proposed Development. Each turbine is likely to require 11 abnormal loads to deliver the components to Site. The components would be delivered on extendable trailers which would then be retracted to the size of a standard HGV for the return journey.	There are two potential access options (eastern and western) with only one to be taken forward if the Proposed Development were to gain consent. It is proposed that access would be taken from the A837 to the east or west of the Site.
Aviation	The Site is located within Class G unregulated airspace and over 10 km to the west of Class E	The radar effects on RAF Lossiemouth would be mitigated against.

Topic	Analysis	Design Guidance
	Regulated Airspace designated N560 which takes traffic from Inverness to Wick and beyond. RAF Lossiemouth is located 85 km northwest of the Site. It operates a primary surveillance radar located on the airfield. RAF Lossiemouth provides a Lower Airspace Radar Service to aircraft operating below controlled airspace in the vicinity of the Site. The Site is located within Low Flying Area (LFA) 14, where military aircraft are permitted to fly as low as 250 feet above ground level. The Site is wholly located within a part of LFA 14, which has been designated by the MoD as a "low priority military low flying area less likely to raise concerns".	Since the proposed turbines are >150 m in height to blade tips, they would trigger a requirement for visible spectrum obstruction lighting. A reduced lighting scheme has been developed and approved by the Civil Aviation Authority (CAA). Radar-activated lighting systems would also be evaluated and considered for the Proposed Development.
Forestry	The Site contains approximately 650 ha of mainly coniferous plantation. Woodlands listed in the Ancient Woodland Inventory (AWI) (Scotland)⁶ and Native Woodland Survey of Scotland (NWSS)⁷ are present within the Site.	The design should seek to minimise woodland loss, ensure any "stand-off" distance is justified and minimised (e.g. for ecology (bat) mitigation). Compensatory planting would be required for permanent loss of all infrastructure including tracks (where not required as a forest road). The design should consider possible opportunity for "forest to bog restoration".

3.6 Design Evolution

3.6.1 **Figure 3.1** (EIA Report, Volume 3a) summarises the four key design iterations for the Proposed Development from scoping stage through to the design freeze layout. However, whilst these four layouts are considered to be the key design iterations, it should be noted that during the design evolution process numerous design iterations and revisions were produced, with turbine numbers having changed as they were removed, re-located and then re-added. For the purposes of assessment and to remain consistent, the turbines were re-numbered for the Final Layout (Layout 4).

Layout 1 (Scoping Layout)

3.6.2 Layout 1 (Scoping Layout) represented the original turbine layout proposed by the Applicant (**Figure 3.1**, EIA Report, Volume 3a).

3.6.3 At this stage in the Proposed Development design, it was considered that the Site could theoretically accommodate up to 19 turbines up to a 200 m maximum tip height. Layout 1 formed the basis on which initial environmental considerations were reviewed against and the Scoping Report prepared.

Layout 2 (Design Workshop 1)

3.6.4 Layout 2 represents a revised layout outcome which took account of:

- landscape and visual analysis of Layout 1 (Scoping Layout);
- known environmental constraints gathered post-scoping through on-site surveys; and
- feedback received during public consultation.

3.6.5 Regarding landscape and visual, the evolution of the turbine design incorporated key landscape views, designations, and classifications which include:

- Strath Oykel (and associated receptors within);
- Dornoch NSA; and
- Strath Cuileannach.

Along with key views from the following transportation routes:

- A836; and
- A837.

3.6.6 Following the landscape and visual analysis of the constraints mentioned above, the number of turbines was reduced from 19 to 10. Turbines were removed/repositioned to mitigate landscape and visual impacts by:

⁶ Ancient Woodland Inventory, available at: <https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland>. (Accessed 14/02/2024).

⁷ Native Woodland Inventory of Scotland, available at: <https://www.data.gov.uk/dataset/da3f8548-a130-4a0d-8ddd-45019adc1f3/native-woodland-survey-of-scotland-nwss>. (Accessed 14/02/2024).

- Ensuring a cohesive and balanced array in all views, considering the consented Strath Oykel wind farm;
 - Concentrating turbines within forested areas and locations where adjacent forest cover provides additional screening;
 - Avoiding prominent slopes above Strath Oykel to minimize impacts on Dornoch NSA;
 - Setting back from Strath Cuileannach;
 - Increasing buffers to residential receptors from approximately 1 to 2 km;
 - Avoiding intrusive views from sensitive receptors such as at Doune, Strath Oykel, and Dornoch NSA; and
 - Positioning turbines on the northern side of a prominent ridgeline between Glen Oykel and Strath Cuileannach, within a slight bowl to offer a degree of enclosure and screening.
- 3.6.7 In summary, the landscape and visual analysis resulted in turbines being relocated further south to avoid encroachment of turbines into Strath Oykel, resulting in less visual dominance of the Proposed Development on the landscape of the strath itself and the receptors within. To achieve this southern move, and to maintain turbine spacing, it was necessary to remove nine turbines from the layout.
- 3.6.8 Layout 2 also incorporated feedback received from members of the local community during public consultation. This also resulted in turbines being pulled further south away from the River Oykel and also the removal of the proposed battery energy storage system (BESS) after members of the public, including residents of nearby settlements, raised concerns.
- 3.6.9 A design workshop was held to review the landscape optimised layout against known environmental constraints at the time, as well as available wind data/analysis for the Site. Environmental constraints considered included nationally designated sites, watercourse buffers, areas of deep peat, radar visibility for aviation, proximity of residential properties, designated archaeology, designated woodlands, and local topography among other constraints. An initial area recommended by the landscape architects as having potential for turbine development (the 'landscape and visual developable area') was also taken into consideration.
- 3.6.10 Turbines were moved to reflect the constraints noted above, namely watercourses, areas of deep peat, noise considerations, designated ancient woodland, and cultural heritage concerns. Regarding the latter, turbines were moved in direct response to Historic Environment Scotland's (HES) feedback received in their scoping response. Turbines T3, T4, and T8 of Layout 1 were identified by HES as having the potential to raise significant adverse impacts on the setting of Langwell, fort and dun (SM5302). Whilst balancing other site constraints and turbine spacing, the identified turbines were pulled southwest to minimise effects on the setting of the scheduled monument, as illustrated in **Figure 3.3** (EIA Report Volume 3a). See **Chapter 5** (EIA Report, Volume 2) for further detail including a full setting assessment for the asset.
- 3.6.11 Turbines were moved away from ancient woodland to minimise potential impacts (further detail is provided within **Technical Appendix 2.3** (EIA Report, Volume 4).
- Layout 3 (Design Chill)**
- 3.6.12 Following on from Design Workshop 1 there were multiple layout iterations before Layout 3 was achieved. Changes made to achieve Layout 3 were in line with principles established in earlier layout iterations, for example, the consideration of SM5302 and HES' comments, as well as ancient woodland avoidance, amongst other established principles. Landscape and visual analysis identified a gap in the turbine array of Layout 2 from northern viewpoints which resulted in two distinct turbine groupings (T7, T8 and T10 presenting as one distinct group on the landscape, and all other remaining turbines another distinct group). To correct the gap, several scenarios were considered including a relocation of T6 and/or T7 (of Layout 2) closer together; however, due to other environmental constraints (namely, but not exclusively, peat and watercourses), this solution was suboptimal and it unsettled the balanced array elsewhere as a consequence of filling the originally identified gap, and raised technical wind resource issues. Therefore, an additional turbine was introduced into an unconstrained area to fill the gap between T6 and T7 of Layout 2; neighbouring turbines (T8 and T6 of Layout 3) were adjusted to maintain appropriate turbine separation.
- 3.6.13 The addition of an eleventh turbine improved the layout design in views from the north and maximised the available/secured grid connection capacity (79.2 MW). In addition to the changes made to address the landscape gap, the following environmental constraints, considerations, and mitigation by design were considered and incorporated into the layout:
- Landscape and Visual: Cumulative visual impacts; visible ridge lines; and sensitive landscapes.

- Cultural Heritage: Recorded heritage sites within the Site; setting of nearby Langwell Fort Scheduled Monument.
- Ecology: M17 and M19 peatland bog habitat; habitat on the Ancient Woodland Inventory; bat buffers; River Oykel SAC; watercourse buffers; watercourse crossing sensitivity; water voles, pine martins, deer all present on-site.
- Ornithology: Lekking black grouse; breeding barn owl and osprey; breeding waders (curlew).
- Forestry: Ancient woodland inventory.
- Hydrology, Hydrogeology, and Geology: River Oykel SAC, watercourse buffers, and PWS.
- Peat: Class 1 and 2 areas of peat; phase 1 peat probing data (peat depth); peat restoration areas; and peat instability features.
- Noise: Cumulative noise impacts in the Doune and Strath Oykel.

3.6.14 Based on changes outline above, the civil engineering team prepared internal site tracks and infrastructure. During the process of preparing internal tracks and infrastructure, the layout was further refined to account for engineering micro-siting of turbines to better align internal tracks and infrastructure, whilst taking into consideration known environmental and engineering constraints, as well as turbine spacing in the interest of wind resource. Locations within the Site for construction compounds and substations were identified taking into account the two potential access options (easterly or westerly).

Layout 4 (Design Freeze Layout)

3.6.15 Layout 4 represents the finalised design freeze for the Proposed Development, which responds to the results of the detailed peat probing of Layout 3. Principally, for purposes of the assessment, turbines have been renumbered from T1 to T11. Layout 4 is presented in **Figure 3.1** (EIA Report Volume 3a).

3.6.16 From Layout 3 to 4 the following adjustments were made:

- T1 was micro-sited southwest to align infrastructure better with an existing track and to remove turbine hardstanding out of an area of deeper peat;
- Infrastructure and track associated with T2 (formerly T9) was re-oriented northwest to avoid an area of deeper peat and the adjacent temporary construction compound was removed as it was within an area of deeper peat;
- A proposed borrow pit adjacent to T2 was relocated northeast, out of deep peat and to an existing borrow pit location;
- T3 was micro-sited southwest to avoid earthworks in an area of deeper peat and to improve overall wind yield;
- T4 (formerly T2) was moved northeast and turbine hardstanding and track were reoriented to avoid a watercourse buffer;
- Infrastructure associated with T5 (formally T4) was micro-sited to pull earthworks out of a watercourse buffer;
- T6 (formerly T5) was moved southwest and turbine hardstanding was reoriented to bring the turning head out of a watercourse buffer;
- T8 (formerly T7) was relocated west to avoid an area of deeper peat;
- Infrastructure associated with T9 (formerly T8) was reoriented to avoid an area of deeper peat;
- T10 was relocated east to move the turbine and hardstanding out of a watercourse bat buffer and to also improve wind yield;
- T11 was relocated west to move the turbine hardstanding out of a watercourse buffer; and
- Eastern substation option was re-oriented to better align with the proposed track and the two construction compounds were moved and re-positioned to avoid areas of deeper peat.

3.6.17 The design evolution of the turbine layout accounted for the key environmental issues and the key design considerations as provided in **Table 3.1**.

3.6.18 At this stage, the Applicant explored different access options as shown on **Figure 2.1** (EIA Report, Volume 3a). As a result, the Site boundary was amended to include a potential access option to both the east and west of the Site.

3.7 Micro-siting

- 3.7.1 In order to be able to address any localised environmental sensitivities, unexpected ground conditions or technical issues that are found during detailed intrusive site investigations and construction, it is proposed that the consent includes provision for a 100 m micrositing allowance for the Proposed Development.
- 3.7.2 The technical assessments in **Chapters 4 – 11** (EIA Report, Volume 2) have considered the potential for horizontal micrositing and it is considered that the Proposed Development could be microsited within 100 m without resulting in potential significant effects, except within watercourse buffers or where notable deep peat is identified. Within this distance, any changes from the consented locations of greater than 50 m would be subject to approval of the Environmental/Ecological Clerk of Works (EnvCoW)⁸ and other relevant consultees (e.g. THC, SEPA, NatureScot) as required and in consideration of other known constraints. It is anticipated that the agreed micrositing distance is likely to form a planning condition accompanying consent for the Proposed Development.
- 3.7.3 The proposed locations for all infrastructure including wind turbines, tracks, construction compounds, the substation, and borrow pit are shown on **Figure 2.1** (EIA Report, Volume 3a).

3.8 Summary of Preferred Option

- 3.8.1 The preferred option taken forward for assessment is Layout 4: Design Freeze Layout as presented in **Chapter 2** (EIA Report, Volume 2) and shown in **Figure 2.1** (EIA Report, Volume 3a).
- 3.8.2 By following the design guidance described in **Table 3.1**, the number of turbines was reduced from 19 to 11, relocated to reduce potential impacts with respect of landscape considerations, wider views, and heritage features; the infrastructure footprint has been optimised to minimise overall track length, the number of watercourse crossings, and impacts on peat. Likely significant effects have been avoided or minimised as far as reasonably practicable through the iterative EIA design process.

⁸ Definition of this role is contained within the outline Construction Environmental Management Plan (CEMP) (**Technical Appendix 2.1**, EIA Report, Volume 4).

Chapter 4: Landscape and Visual

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4 Landscape and Visual

4.1 Executive Summary

- 4.1.1 This Chapter considers the likely significant effects on landscape and visual receptors associated with the construction, operation, and decommissioning of the Proposed Development.
- 4.1.2 The assessment process has been informed by the latest best practice guidance and consultee responses. The geographical extent of impacts would be localised with variable effects throughout the Study Area. The vast majority of the Study Area would have no landscape or visual effects.
- 4.1.3 An iterative design process has been followed to mitigate landscape and visual effects. This has provided a cohesive and balanced array in views consistent with the emergent pattern of development in the locality, particularly in relation to the consented Meall Buidhe and Strath Oykel wind farms.
- 4.1.4 The Proposed Development would have limited indirect effects on the key characteristics of adjacent landscape character types (LCTs). The change to the underlying landscape character and view composition would be consistent with the baseline context that includes operational wind farms.
- 4.1.5 The Site is located outwith any Landscape Designations or Classifications but has the potential to exert an influence on special landscape qualities (SLQs), mainly in relation to views in and out of the margins of designations. However, the Proposed Development would not affect the integrity of the SLQs of designations such as NSA 36: Assynt Coigach (14 km northwest) and SLA 18: Fannichs, Beinn Dearg and Glen Calvie (3 km southwest) and the Wild Land Qualities (WLQs) of WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis (1.7 km west). The in-addition cumulative effects on landscape designations and classifications attributable to the Proposed Development in respect of existing and consented wind farms would be localised and not significant.
- 4.1.6 The Proposed Development would further develop the existing influence of wind energy developments within the landscape context and in views. The most pronounced effects would be from areas within or adjoining the Site. Significant effects would be predominantly restricted to within 10 km, although views from a few distant summits would experience significant effects when considering in-combination (cumulative) effects.

4.2 Introduction

- 4.2.1 This Chapter considers the likely significant effects on landscape and visual receptors associated with the construction, operation, and decommissioning of the Proposed Development. The Chapter comprises of the following:
- description of the scope and methodology utilised in completing the assessment;
 - description of the landscape and visual baseline context, including cumulative context, and the identification of sensitive receptors;
 - discussion of the impact generators associated with the construction and operation of the type of development proposed, and their potential to result in significant effects on landscape and visual receptors;
 - description of design priorities and any mitigation measures (including embedded mitigation measures) proposed to address likely significant landscape and visual effects; and
 - assessment of residual landscape and visual effects, including cumulative effects considering the influence of design responses and the mitigation proposed.
- 4.2.2 The assessment has been carried out by Jane Hart, an Associate Director at Ramboll UK Limited and Chartered Landscape Architect of the Landscape Institute. Jane has over 18 years of experience working across a wide range of sectors including renewable energy and has extensive experience of managing and undertaking Landscape and Visual Impact Assessment (LVIA), including cumulative assessments, for nationally significant infrastructure projects such as mineral, highway, and waste as well as renewable energy developments including solar, wind and overhead line and cable transmission routes. The assessment has undergone technical review by Robert Bainsfair, Director of landscape services in Ramboll UK Limited. Robert is a chartered landscape architect with over 30 years of consultancy experience and specialises in landscape and visual impact assessment for energy projects and provision of expert witness testimony for wind farm developments throughout Scotland. Robert has authored key technical guides in respect of the repowering and decommissioning of onshore wind farms as well as the assessment of lighting impact, and residential visual amenity.
- 4.2.3 This Chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures:
 - **Figure 4.1: Topography;**
 - **Figure 4.2: Land Use;**
 - **Figure 4.3: Landscape Character Types;**
 - **Figure 4.4: Landscape Character with Zone of Theoretical Visibility (ZTV);**
 - **Figure 4.5: Landscape Designations and Classifications;**
 - **Figure 4.6: Detailed Landscape Designations with ZTV;**
 - **Figure 4.7: Visual Receptors: Settlements, Transport and Recreational Routes and Summits;**
 - **Figure 4.8: Blade Tip ZTV with Viewpoint Locations;**
 - **Figure 4.9: Hub Height ZTV with Viewpoint Locations;**
 - **Figure 4.10: Blade Tip and Hub Height ZTV with Viewpoints;**
 - **Figure 4.11: Cumulative Sites Plan;**
 - **Figure 4.12 (a): Cumulative ZTV: Creag Riabhach and Rosehall Wind Farm;**
 - **Figure 4.12 (b): Cumulative ZTV: Achany and Lairg Wind Farm;**
 - **Figure 4.12 (c): Cumulative ZTV: Kilbraur and Gordonbush Wind Farm;**
 - **Figure 4.12 (d): Cumulative ZTV: Beinn Tharsuin and Beinn Tharsuinn Wind Farm Extension;**
 - **Figure 4.12 (e): Cumulative ZTV: Coire Na Cloiche and Novar Wind Farm;**
 - **Figure 4.12 (f): Cumulative ZTV: Lochluichart Wind Farm Extension II and Kirkan Wind Farm;**
 - **Figure 4.12 (g): Cumulative ZTV: Corriemoillie Wind Farm;**
 - **Figure 4.12 (h): Cumulative ZTV: Lochluichart and Lochluichart Wind Farm Extension I;**
 - **Figure 4.12 (i): Cumulative ZTV: Sallachy and Achany Wind Farm Extension;**
 - **Figure 4.12 (j): Cumulative ZTV: Strath Tirry and Chleansaid Wind Farm;**
 - **Figure 4.12 (k): Cumulative ZTV: Strath Oykel and Meall Buidhe Wind Farm;**
 - **Figure 4.12 (l): Cumulative ZTV: Lairg II Redesign and Garvary Wind Farm;**
 - **Figure 4.12 (m): Cumulative ZTV: Strathrory Wind Farm;**
 - **Figure 4.12 (n): Cumulative ZTV: Invercassley and Alt An Tuir Wind Farm;**
 - **Figure 4.12 (o): Cumulative ZTV: Fiag and Shinness Wind Farm;**
 - **Figure 4.12 (p): Cumulative ZTV: Braelangwell and Inveroykel Wind Farm;**
 - **Figure 4.12 (q): Cumulative ZTV: Acheilidh and Balblair Wind Farm;**
 - **Figure 4.12 (r): Cumulative ZTV: Creachan and Ceislein Wind Farm;**
 - **Figure 4.12 (s): Cumulative ZTV: Abhainn Dubh and Carn Fearna Wind Farm; and**
 - **Figure 4.12 (t): Cumulative ZTV: Tarvie Wind Farm.**
- Volume 3b: Visualisations:
 - **Figure 4.13 (a-f): VP 1: Cul More Summit;**
 - **Figure 4.14 (a-f): VP 2: Canisp Summit;**
 - **Figure 4.15 (a-f): VP 3: Ben More Assynt 998m Summit;**
 - **Figure 4.16 (a-f): VP 4: Glas Mheall Mor Summit;**
 - **Figure 4.17 (a-f): VP 5: Bodach Mor Summit;**
 - **Figure 4.18 (a-f): VP 6: Carn Salaceidh Summit;**

- **Figure 4.19 (a-i): VP 7: Oykel Bridge;**
- **Figure 4.20 (a-i): VP 8: Strath Oykel;**
- **Figure 4.21 (a-i): VP 9: Kyle of Sutherland;**
- **Figure 4.22 (a-f): VP 10: Public Right of Way, Rappach Water;**
- **Figure 4.23 (a-f): VP 11: A949 Approach to Bonar Bridge;**
- **Figure 4.24 (a-f): VP 12: Ben Wyvis Summit;**
- **Figure 4.25 (a-f): VP 13: Diebidale Ridge;**
- **Figure 4.26 (a-f): VP 14: Beinn an Eoin Summit;**
- **Figure 4.27 (a-f): VP 15: Track west of Strath Cuileannach;**
- **Figure 4.28 (a-f): VP 16: Strath Cuileannach;**
- **Figure 4.29 (a-f): VP 17: Seana Bhraigh Summit;**
- **Figure 4.30 (a-f): VP 18: Ben Kilbreck Summit;**
- **Figure 4.31 (a-f): VP 19: Creag Mhor Summit;**
- **Figure 4.32 (a-f): VP 20: Oykel Bridge to Glen Einig Footpath;**
- **Figure 4.33 (a-f): VP 21: A837, Loch Craggie;**
- **Figure 4.34 (a-g): VP 22: A836, south of Lairg;**
- **Figure 4.35 (a-f): VP 23: Carn a Choin Deirg Below Summit; and**
- **Figure 4.36 (a-f): VP 24: Minor Road North of the A837 Near the Crofting Township Area of Altass.**
- **Volume 4: Technical Appendices**
 - **Technical Appendix 4.1: Landscape Character Descriptions;**
 - **Technical Appendix 4.2: Landscape Designations and Classifications Assessment;**
 - **Technical Appendix 4.3: Viewpoint Assessment;**
 - **Technical Appendix 4.4: Residential Visual Amenity Assessment;**
 - **Technical Appendix 4.5: Aviation Lighting Impact Assessment;**
 - **Technical Appendix 4.6: Wild Land Impact Assessment;**
 - **Technical Appendix 4.7: Route Visibility Analysis; and**
 - **Technical Appendix 4.8: Scoped Out LVIA Wirelines.**

4.2.4 Figures and technical appendices are referenced in the text where relevant.

4.3 Legislation, Policy and Guidelines

National Legislation and Policy

4.3.1 The Scottish Government's planning policy on renewable developments is set out in the National Planning Policy Framework (NPF) ⁴¹ and describes spatial principles, regional priorities, national developments, and planning policy.

Relevant NPF4 Policies

4.3.2 NPF4 Policy 4: Natural Places states that development proposals which, by virtue of their type, location, or scale will have an “unacceptable” impact on the natural environment will not be supported. The threshold of being “unacceptable” is not to be equated with “significant”. As NPF4 policy 11e (ii), below, recognises, significant landscape and visual impacts are to be expected for some forms of renewable energy, and localised impacts are generally considered acceptable.

4.3.3 Policy 4, Paragraph c.) requires the following:

⁴¹ Scottish Government 2025, *National Planning Framework 4*, [online] Available at: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 8 May 2025].

“Development proposals that will affect a National Park, National Scenic Area, Site of Special Scientific Interest or National Nature Reserve will only be supported where:

- *The objectives of designation and the overall integrity of the areas will not be compromised; or*
- *Any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by social, environmental or economic benefits of national importance.”*

4.3.4 Paragraph d) deals with local landscape designations and states that:

“Development proposals that affect a site designated as ...a local landscape area in the LDP will only be supported where:

- *Development will not have significant adverse effects on the integrity of the area or the qualities for which it has been identified; or*
- *Any significant adverse effects on the integrity of the area are clearly outweighed by social, environmental or economic benefits of at least local importance.”*

4.3.5 The policy follows a broadly similar approach for local and national level designations such as Nationally Scenic Areas (NSA). The first limb of the policy relates to significant effects on the “*integrity*” of the area of designation or “*the qualities for which it has been identified.*”

4.3.6 The second limb of Policy 4, Part d.) provides that developments that affect a local landscape area (Special Landscape Area (SLA) in the case of the Proposed Development) will only be supported where any significant effects on the integrity of the area are outweighed by social, environmental benefits of at least local importance. This reflects the wider NPF4 policy that adverse effects (including adverse landscape and visual effects) outside of a designation must be balanced against the benefits.

4.3.7 In respect of WLAs, the second half of NPF4, paragraph g.) states that:

“Buffer zones around wild land will not be applied, and effects of development outwith wild land areas (WLAs) will not be a significant consideration.”

4.3.8 This is a clear indication that the weight given to effects arising from developments outside a WLA is not consequential. Notwithstanding this the LVIA contains a Wild Land Assessment for WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis.

4.3.9 NPF4 Policy 11, Section d.) states that “...development proposals that impact on international or national designations will be assessed in relation to Policy 4.” Section e.) goes on to say that:

“...project design and mitigation will demonstrate how the following impacts are addressed:

- *Impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;*
- *Significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and / or appropriate design mitigation has been applied, they will generally be considered acceptable;*
- *Public access, including impact on long-distance walking and cycling routes and scenic routes;*
- *Impacts on trees, woods and forest;*
- *Proposals for the decommissioning of developments, including ancillary infrastructure, and site restoration; and*
- *Cumulative impacts.”*

4.3.10 It is evident from the preceding policy context that key consideration for the LVIA is the extent to which predicted significant effects are localised and whether they can be said to undermine the integrity of landscape designations.

4.3.11 For the purposes of the LVIA ‘localised effects’ are considered to refer to effects that are confined to a limited geographical extent, thereby leaving the remainder of the LCT, designation, settlement, or route either unaffected or affected to a non-significant degree. Such effects are not widespread or extensive.

4.3.12 A definition of what is meant by integrity is provided in **Technical Appendix 4.2** (EIA Report Volume 4).

Local Planning Policy

4.3.13 Local planning policy relevant to the Proposed Development include the Caithness and Sutherland LDP (CasPlan) (adopted 2018) and Highland-wide Local Development Plan (HwLDP) (adopted 2012). HwLDP is currently being reviewed and a new local development plan is being prepared. CasPlan and the HwLDP should be read in conjunction with NPF 4, and the Area Local Development Plans.

- 4.3.14 Other planning guidance of note includes The Highland Council (THC) 'Spatial Planning for Onshore Wind Energy in Highland' (2015), 'Onshore Wind Energy: Supplementary Guidance (2016) including Addendum Supplementary Guidance Part 2b (2017) and Strategic Environmental Assessment' (OSWESG) (2018).
- 4.3.15 Section 4 of the OSWESG contains ten criteria that THC utilise for considering wind farm applications:
- Criteria 1 – Relationship between Settlements / Key Locations and wider landscape respected avoiding encirclement and the prominence of turbines in the majority of views within or from settlements or main access routes;
 - Criteria 2 – Key Gateway locations and routes are respected avoiding detrimental effects on the transitional experience of gateway locations and routes;
 - Criteria 3 – Valued natural and cultural landmarks are respected avoiding diminishment of the prominence of the landmark feature or a disruption of the relationship to its setting;
 - Criteria 4 – The amenity of key recreational routes and ways is respected and overwhelming effects or significant effects on the visual amenity available for users is avoided;
 - Criteria 5 – The amenity of transport routes is respected and overwhelming effects or significant effects on the visual amenity available for users is avoided;
 - Criteria 6 – The existing pattern of wind energy development is respected in respect of turbine height and proportions and density and spacing etc;
 - Criteria 7 – The need for separation between developments and or clusters is respected, and the Proposed Development maintains appropriate and effective separation;
 - Criteria 8 – The perception of landscape scale and distance is respected and maintains perceived appropriate and effective separation between developments and clusters;
 - Criteria 9 – Landscape setting of nearby wind energy developments is respected and relates well to its context avoiding an increase in the perceived prominence of surrounding wind turbines; and
 - Criteria 10 – Distinctiveness of landscape character is respected and the integrity of LCTs is maintained.
- 4.3.16 It should be noted that these criteria are not intended as planning tests but do represent priorities and key considerations that will be considered in THC's response to planning applications for wind energy developments.

4.4 Consultation

- 4.4.1 The scope and approach adopted for the LVIA has also been influenced by consultations with statutory and non-statutory consultees.
- 4.4.2 Table 4.1 summarises the consultation responses received regarding Landscape and Visual and provides information on where and/or how they have been addressed in this assessment.
- 4.4.3 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 4.1 – Consultation

Consultee and Date	Consultation Response	Applicant Response
The Highland Council (THC) Pre Scoping 10/06/2024	On 07/06/2024 THC were consulted regarding suggested LVIA viewpoint locations. THC requested two additional VPs, one to the west on the A837, at Loch Craggie, to illustrate the Proposed Development's effect on road users at a transitional point in landscape, and one on the A836 south of Lairg, to illustrate effects on the visual amenity of the settlement.	The requested additional viewpoints are incorporated within the viewpoint assessment in Technical Appendix 4.3 (EIA Report Volume 4) and presented in Viewpoint 21 and Viewpoint 22 (see Figures 4.33 and 4.34 (EIA Report Volume 3b)).
NatureScot (NS) Pre Scoping 03/07/2024	On 07/06/2024 THC were consulted regarding suggested LVIA viewpoint locations. Despite being located approximately 18 km from an NSA and 3-4 km from a Wild Land Area NS considered the Proposed Development as 'unlikely' to constitute a matter of national importance in landscape and visual terms.	Noted.
Creich Community Council Scoping Response 22/07/2024	Concerns regarding potential cumulative landscape and visual effects.	Potential cumulative effects are assessed in Section 4.12. Figures 4.12 (a-t) (EIA Report Volume 3a) represent the Zone of Theoretical Visibility (ZTV) of paired cumulative sites. A sequential visibility route analysis has also been provided in Technical Appendix 4.7 (EIA Report Volume 4).
Mountaineering Scotland Scoping Response 31/07/2024	Concern as to whether assessment viewpoints included in the scoping report would allow for a comprehensive assessment of the proposed development from a mountaineering/hillwalking perspective, specifically towards the Rhiddoroch-Bein Dearg-Ben Wyvis WLA to the south, also partly designated a Special Landscape Area. Carn a' Choin Deirg lies within 5km of the nearest turbines and multiple other wild hills within c.15km, with Seana Bhragh, one of a handful of Munro summits most remote from roads, just over 15km away. Endorsed the proposed viewpoints (including viewpoints: 1 to 7, 10, 12 to 20 but consider there to be a number of omissions including Carn a' Choin Deirg (which was used in the assessments for the Meall Buidhe and Strath Oykel wind farm applications. However, the views of the Proposed Development from the Carn a' Choin Deirg summit itself may be partially obstructed.	Two additional viewpoints have been taken from Carn a' Deirg. One viewpoint was taken from the cairn (Grid Ref: 39749, 92355) and the second slightly off summit (Grid Ref: 39770, 92515). As thought, there is patchy visibility. Of these two viewpoints the second option was found to provide a clearer view to the Site, and this has been included as an assessment viewpoint, see Viewpoint 23 (Figure 4.35 , EIA Report Volume 3b). The discounted wirelines are included in Technical Appendix 4.8 (EIA Report Volume 4).
	Suggest that VP4 Glas Meall Mor (An Teallach group), VP18 Ben Klibreck and VP19 Creag Mhor (Armine Forest) are unnecessary given that they are all locate over 35 km from the Proposed Development and are very unlikely to be subject to significant landscape or visual effects at that distance.	Noted. These viewpoints have been carried forward as they provide an overview of the surrounding landscape character and existing cumulative baseline.
THC Scoping Response 11/09/2024	Stipulated that visualisations should adhere to both the Highland Council and NatureScot current published standards, with hard copies provided, including possible monochrome representations.	Visualisations have been prepared to current best practice guidance and to NS (EIA Report Volume 3b) and THC (EIA Report Volume 3c) standards.
	Expect that visualisations should illustrate all aspects of the Proposed Development, including any battery energy storage systems (BESS), borrow pits, access roads, and compounds, should be depicted in photomontages.	The visualisations represent viewpoints agreed through consultation. They contain aspects of the infrastructure carried forward to application e.g., borrow pits, keyhole felling, access tracks and compounds.
	Requested that a finalised list of Viewpoints (VPs) be pre-approved by THC and NatureScot, considering existing wind energy developments to maintain consistency. THC anticipated that the finalised detailed location of viewpoints would be directed by site surveys and visibility analysis.	Photomontages are presented in Figures 4.13 - 4.36 (EIA Report Volume 3b) and represent views agreed through consultation. Three additional viewpoints were added following discussions with THC. These include Viewpoint 21 at Loch Craggie, Viewpoint 22 A836 South of Lairg, and Viewpoint 24 Minor Road North of the A837 Near the Crofting

Consultee and Date	Consultation Response	Applicant Response
		Township of Altass see Figures 4.33, 4.34 and 4.36 (EIA Report Volume 3b).
	Requested landscape and visual impact assessment (LVIA) chapter include methodologies, defining magnitudes of change, describing sensitivity levels, and providing a matrix to show conclusions reached. THC expect that the LVIA address both singular and cumulative effect.	Approach and methodologies, the definition of receptor sensitivity and the predicted magnitude of impact in relation to the Proposed Development and cumulative effects are presented in Section 4.12 .
	The LVIA should discuss the impact on recreational paths and assess the development against the criteria in the Council's Onshore Wind Energy Supplementary Guidance. It should also address the impacts on local and nationally designated landscapes and Special Landscape Areas (SLAs), with reference to SLA citations available from the Council's website.	Views from summits, transport and recreational routes are assessed within the viewpoint assessment see Technical Appendix 4.3 (EIA Report Volume 4). Residual effects are assessed in Section 4.11 . Reference has been made to the Council's Onshore Wind Energy Supplementary Guidance and the 10 key criterion in Section 4.3. Technical Appendix 4.2 (EIA Report Volume 4) addresses impacts on designations and classifications.
	Requested that aviation lighting impacts on wild land and special landscape areas be assessed with a preference for the term "Hours of Darkness."	The effects of aviation lighting during the hours of darkness are assessed within Technical Appendix 4.5 (EIA Report Volume 4).
	Requested that effects on residential visual amenity should be evaluated for all nearby properties, particularly focusing on a 2 km radius and advised to extend to 3 km due to the size of the turbines.	A Residential Visual Amenity Assessment (RVAA) is presented in Technical Appendix 4.4 (EIA Report Volume 4). The Study Area extends to just over 2.5 km which is in excess of the Landscape Institute Technical Guidance on RVAA. It was decided following fieldwork that potential for significant effects would be limited beyond this distance.
	The Council's Landscape Officer agrees with the methods, data sources, extent of the Study Area, and scoped-out receptors and impacts. However, they request additional viewpoints, including one north of the A837 to represent the crofting township area of Altass. It was suggested that in the vicinity of the viewpoint previously used for the Strath Oykel Wind Farm application may be suitable. This was located at 250174, 900303.	Two of the three suggested additional viewpoint locations were found to have limited visibility and were discounted with THC agreement. The discounted LVIA wirelines are included at Technical Appendix 4.8 (EIA Report Volume 4). The viewpoint at the minor road in the vicinity of the crofting township of Altass has been included as an assessment viewpoint location, refer to Figure 4.36 (EIA Report Volume 3b).
	THC would also request wireframes from the Struie Viewpoint within the Dornoch Firth SLA and the Crask Inn location on the A836. This location is something of a gateway into the broad strath landscape across which the development would be seen. Visibility is likely to be limited, but it would be useful to consider for cumulative impacts on this route. If certain requested materials are not provided, the Planning Authority reserves its right to withhold a thorough response to the LVIA's proposed scope. Further consultations are expected to finalise these aspects.	Technical Appendix 4.7 (EIA Report Volume 4) contains a route visibility assessment of the cumulative impacts on views available from the A837 and A949. The A836 had very limited visibility and was not included within the assessment. Cumulative impacts in relation to the existing baseline, including in-addition and in-combination effects have been assessed in Technical Appendix 4.3 (EIA Report Volume 4).
Energy Consents Unit (ECU), Scoping Response 01/10/2024	As the maximum blade tip height of turbines exceeds 150m the LVIA must include a robust Night Time Assessment with agreed viewpoints to consider the effects of aviation lighting and how the chosen lighting mitigates the effects.	A night time assessment is presented in Technical Appendix 4.5 (EIA Report Volume 4). Visualisations have been provided to both NatureScot and the Highland Council Standard. The three turbines that are proposed to be lit are represented in the nighttime viewpoints (VP 7 Oykel Bridge with Lighting, VP 8 with Lighting, and VP 9 A837, Kyle of Sutherland with Lighting). These are

Consultee and Date	Consultation Response	Applicant Response
		presented in Figures 4.19(h), 4.20 (h), and 4.21 (h) (EIA Report Volume 3b).
THC Post Scoping Consultation 07/11/2024	Reference recent scoping advice for previously refused Invercassley Wind Farm, now Allt An Tuir for 9 turbines of 200 m which raised concerns regarding contrasting turbine proportions and perception of scale and distance in the landscape. Issues raised here could be similar for this site, and should be assessed as part of application. THC's Landscape Officer notes cumulative impacts will be of significant concern in this area – particularly with Strath Oykel.	Noted. Cumulative effects are assessed in Section 4.12 and Technical Appendix 4.3 (EIA Report Volume 4).
	Landscape impacts may be perceived by receptors travelling westwards on the A837 through Strath Oykel and past Loch Craggie. This area is a significant transition point between landscape types and marks entry to Assynt-Colgach NSA. Sequential route analysis taken at regular intervals along this route should be taken, including cumulative impacts. This stretch of road is particularly sensitive, therefore design solutions of any development expected to demonstrate appropriate design response. All elements of Proposed Development to be incorporated into visualisations (e.g. BESS and substation).	A sequential visibility route analysis has been provided in Technical Appendix 4.7 (EIA Report Volume 4). As noted above infrastructure elements such as areas of keyhole felling, tracks, lighting have been added to visualisations. The BESS have not been carried forward to application. Most aspects of the low-level infrastructure would be screened by intervening vegetation and is not visible within the visualisations. Two options are currently being explored for the substation location, but only one would be carried forward.
	Critical to this proposal will be the decision on Strath Oykel which will be a material consideration when assessing this proposal, and THC therefore reserves judgement on the acceptability of this proposal until the application stage. That said, given the extent and intensity of predicted landscape and visual impacts, further mitigation is likely to be required for Council officers to support for the proposal should it be brought forward as an application.	Noted. Embedded mitigation has been incorporated in terms of an iterative design process to minimise landscape and visual effects.

4.5 Assessment Methodology and Significance Criteria

Scope of Assessment

4.5.1 The LVIA considers effects on the following:

- Landscape fabric, caused by changes to the physical form and elements of the landscape;
- Landscape character, caused by changes in the pattern of key characteristic features and elements of the landscape as a result of the Proposed Development;
- Designations and classifications, caused by changes to the special qualities of such landscape as a result of the Proposed Development and whether effects would affect the integrity of designations; and
- Visual amenity, caused by changes in the composition and scenic qualities of views on visual amenity as a result of the Proposed Development.

4.5.2 The scope of the assessment has been informed by the consultation responses summarised in **Table 4.1**, and the following published technical guidance:

- Landscape Institute and IEMA, Guidelines for Landscape and Visual Impact Assessment, Third Edition (2013)²;
- Landscape Institute, Visual Representation of Development Proposals, Technical Guidance Note 06/19 (September 2019)³;
- Scottish Natural Heritage, Landscape Character Assessment (2019)⁴;

² Landscape Institute and IEMA 2013, *Guidelines for Landscape and Visual Impact Assessment*. 3rd ed. [online] Available at: <https://www.landscapeinstitute.org/technical/glvia3-panel/> [Accessed 8 May 2025].

³ Landscape Institute 2019, *Visual Representation of Development Proposals, Technical Guidance Note 06/19*, [online] Available at: <https://www.landscapeinstitute.org/visualisation/> [Accessed 8 May 2025].

⁴ Scottish Natural Heritage (2019) 'Landscape Character Assessment'. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/landscape-character-assessment-scotland> (Accessed: 8 May 2025).

- Scottish Natural Heritage, Siting and Design Windfarms in the Landscape, Version 3a (August 2017)⁵;
- Scottish Natural Heritage, Visual Representation of Wind Farms: Good Practice Guidance, Version 2.2 (February 2017)⁶;
- The Highland Council, Onshore Wind Energy Supplementary Guidance (November 2016)⁷;
- The Highland Council, Visualisation Standards for Wind Energy Developments (July 2016)⁸;
- Guidance for Assessment of Effects on Special Landscape Qualities (AESLQ)⁹;
- NatureScot, Assessing Impacts on Wild Land Areas – Technical Guidance (2020)¹⁰;
- Scottish Natural Heritage, Guidance for Assessing the Effects on Special Landscape Qualities – Working Draft (November 2018)¹¹;
- Scottish Natural Heritage, Guidance: Assessing the Cumulative Impacts of Onshore Wind Energy Developments (March 2012)¹²;
- Scottish Natural Heritage, Guidance: Assessing the Cumulative Landscape and Visual Impacts of Onshore Wind Energy Developments (March 2021)¹³;
- NatureScot, Technical Guidance: Assessing Impacts on Wild Land Areas (September 2020)¹⁴; and
- NatureScot Guidance on Aviation Lighting Impact Assessment (2024)¹⁵.

Study Areas

- 4.5.3 The Study Area for the LVIA comprises the Site, plus a 45 km radius from the outermost of the Proposed Development's turbines, in accordance with NatureScot's current guidance on the visual representation of wind farms. This wider Study Area is supplemented by receptor specific detailed Study Areas. A Study Area of 2.5 km has been used for the RVAA and 20 km for effects on users of roads, trails, and footpaths. The receptor specific Study Areas are presented in **Figures 4.1 to 4.12** (EIA Report Volume 3a).
- 4.5.4 The extent of the Study Areas were selected after producing a preliminary ZTV based on the Scoping Layout of the Proposed Development, and following guidance and consultation with the ECU, THC, and NS.

Desk Study

- 4.5.5 Initially, a desk study was undertaken to establish the baseline context for the Proposed Development, including the physical components of the landscape (i.e. landscape fabric) as well as the distinctive, and recognisable pattern of features that form the landscape character of the area, and the special qualities of designated and classified landscapes within the Study Area.
- 4.5.6 Potentially sensitive visual receptors and receptor locations were also identified. These include residents of settlements, dispersed residential properties, road users on transportation corridors, recreational receptors at tourist locations and on promoted trails, and hill walkers at summits.
- 4.5.7 The LCTs considered in the baseline and subsequent assessment were derived from the following sources:

⁵ Scottish Natural Heritage (2017) 'Siting and Designing Wind Farms in the Landscape, Version 3a'. Available at: <https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a> (Accessed: 8 May 2025).

⁶ Scottish Natural Heritage (2017) 'Visual Representation of Wind Farms: Good Practice Guidance, Version 2.2'. Available at: <https://www.nature.scot/doc/visual-representation-wind-farms-guidance> (Accessed: 8 May 2025).

⁷ Highland Council (2016) 'Onshore Wind Energy Supplementary Guidance Stiùireadh Leasachail airson Lùth-Gaoithe Air Tìr'. Available at: <https://www.highland.gov.uk/downloads/file/18793/onshore-wind-energy-supplementary-guidance-november-2016> (Accessed: 8 May 2025).

⁸ Highland Council (2016) 'Visualisation Standards for Wind Energy Developments'. Available at: <https://www.highland.gov.uk/downloads/file/12880/visualisation-standards-for-wind-energy-developments> (Accessed: 8 May 2025).

⁹ Scottish Natural Heritage (n.d.) 'Guidance for Assessment of Effects on Special Landscape Qualities (AESLQ)'. Available at: <https://www.nature.scot/doc/special-landscape-qualities-guidance-assessing-effects> (Accessed: 8 May 2025).

¹⁰ NatureScot (2020) 'Assessing Impacts on Wild Land Areas – Technical Guidance'. Available at: <https://www.nature.scot/assessing-impacts-wild-land-areas-technical-guidance> (Accessed: 8 May 2025).

¹¹ Scottish Natural Heritage (2018) 'Guidance for Assessing the Effects on Special Landscape Qualities – Working Draft'. Available at: <https://www.nature.scot/doc/special-landscape-qualities-guidance-assessing-effects> (Accessed: 8 May 2025).

¹² NatureScot (2020) 'Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments'. Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> (Accessed: 8 May 2025).

¹³ Scottish Natural Heritage (2021) 'Guidance: Assessing the Cumulative Landscape and Visual Impacts of Onshore Wind Energy Developments'. Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> (Accessed: 8 May 2025).

¹⁴ NatureScot (2020) 'Technical Guidance: Assessing Impacts on Wild Land Areas'. Available at: <https://www.nature.scot/doc/assessing-impacts-wild-land-areas-technical-guidance> (Accessed: 8 May 2025).

¹⁵ NatureScot (2024) 'Guidance on Aviation Lighting Impact Assessment'. Available at: <https://www.nature.scot/doc/guidance-aviation-lighting-impact-assessment> (Accessed: 8 May 2025).

- Site survey data;
 - Aerial photography; and
 - NatureScot's Scottish Landscape Character Types – Maps and Descriptions, digital mapping published 2019¹⁶.
- 4.5.8 Descriptions of landscape designations and classifications contained within the LVIA were sourced from the following publications and datasets:
- NatureScot's Local Landscape Area (2017) map¹⁷;
 - Scottish Natural Heritage, Description of Wild Land Area 29 (2017)¹⁸; and
 - NatureScot's Natural Scenic Areas (NSAs) map¹⁹.
- 4.5.9 The following datasets have also been used in the preparation of the LVIA:
- Ordnance Survey 1:25,000, 1:50,000 and 1:250,000 mapping;
 - Ordnance Survey 50-5 m Digital Terrain Model; and
 - Gardens and Designed Landscapes – Historic Environment Scotland datasets²⁰.

Field Reconnaissance

- 4.5.10 In order to verify the findings of the desktop study and to capture relevant photography, field reconnaissance was undertaken during the autumn and winter of 2024, and in the spring of 2025. The site visits were used to:
- augment and verify published descriptions of landscape character with fieldwork observations;
 - undertake an assessment of the quality or condition of baseline landscape and visual resources;
 - identify any significant features and elements in the landscape such as vegetation or built form that would screen the Proposed Development and thereby verify or refine the ZTV;
 - visit each viewpoint location to microsite each location in accordance with good practice guidance and obtain accurate coordinates;
 - undertake photography at each viewpoint location. The selected viewpoints were visited and evaluated using draft wirelines, mapping, GIS & GPS data collection systems, and augmented reality tools such as Venture TrueView; and
 - identify landscape features and elements that may be altered or removed as a result of the Proposed Development.
- 4.5.11 The baseline fieldwork also allowed the 45 km wider Study Area to be refined and therefore focus the assessment stage of the LVIA on receptors with the most potential for a significant effect. Fieldwork during the assessment stage included an assessment of effect on the following receptors:
- Landscape receptors including landscape fabric, landscape character, and landscape designations & classifications; and
 - Residential receptors (including settlements), road users, recreational receptors (including hill walkers and users of core paths, other footpaths / cycleways), and recreational areas.

Illustrative Materials

- 4.5.12 The LVIA is informed and illustrated by a range of tools such as ZTV plans, photographs, wireline images, and photomontages. All outputs have been prepared and verified in line with current best practice.
- 4.5.13 ZTVs have been prepared to assist in the identification of areas from where there is potential visibility of the Proposed Development, illustrated in **Figures 4.8-4.10** (EIA Report Volume 3a). They are based on

¹⁶ NatureScot (2019) 'Scottish Landscape Character Types – Maps and Descriptions, digital mapping'. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> (Accessed: 8 May 2025).

¹⁷ NatureScot (2017) 'Local Landscape Area map'. Available at: <https://www.data.gov.uk/dataset/fde695ba-6829-4a29-bf62-972a4536899d/local-landscape-areas-scotland> (Accessed: 8 May 2025).

¹⁸ Scottish Natural Heritage (2017) 'Description of Wild Land Area 29'. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-policy-and-guidance/wild-land/wild-land-area-descriptions-and-assessment-guidance> (Accessed: 8 May 2025).

¹⁹ NatureScot (n.d.) 'Natural Scenic Areas (NSAs) map'. Available at: <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/national-scenic-areas> (Accessed: 8 May 2025).

²⁰ NatureScot (2024) 'Gardens and Designed Landscapes'. Available at: <https://www.data.gov.uk/dataset/bab10bd8-cc8b-4b4e-9eb7-d620a3ee27d9/gardens-and-designed-landscapes2> (Accessed: 8 May 2025).

Ordnance Survey (OS) digital terrain data supplied as gridded height data at 5 m interval resolution. This data does not reflect the screening effect of vegetation or built structures and so the geographical extent of visibility represents a 'worst case scenario' and is more extensive than would be experienced on the ground. Where the ZTV shows no visibility, it is predicted that no wind turbines or associated infrastructure in the model would be seen.

- 4.5.14 It should also be noted that the ZTV identifies 'theoretical' visibility and does not reflect the effect of weather, light conditions, or distance.
- 4.5.15 To establish the theoretical visibility of the cumulative sites, illustrated on **Figure 4.11** (EIA Report Volume 3a), paired ZTVs were prepared for all operational, under construction, consented, and in-planning wind energy developments and in-scoping developments within 45 km of the Proposed Development. Refer to **Figures 4.12(a-t)** (EIA Report Volume 3a).

Assessment of Potential Effect Significance

- 4.5.16 Initially an appraisal of potential impact generators and significant landscape and visual effects was undertaken for both the construction and operational phases of the Proposed Development in order to identify key priorities for both the assessment and for mitigation.

Requirements for Mitigation

- 4.5.17 Based on the initial baseline analysis and assessment of potential effects, embedded design and mitigation measures were generated for both the construction and operational phases of the Proposed Development. This was undertaken in an iterative fashion, as reported in **Chapter 3** (EIA Report Volume 2).

Assessment of Residual Effect Significance

- 4.5.18 Following the finalisation of the Proposed Development an assessment of residual landscape and visual effects was undertaken for the construction and operational phases.
- 4.5.19 The assessment is intended to identify, predict, and evaluate potential significant effects from the Proposed Development. Wherever possible, identified effects are quantified, but the nature of landscape and visual assessment requires a degree of interpretation by professional judgement. To provide consistency to the assessment, receptor susceptibility and sensitivity, the magnitude of impact, and assessment of significance of the residual effects has been based on pre-defined criteria. The level of residual effects has been determined by a combination of the sensitivity of receptors and the magnitude of impact arising from the Proposed Development.
- 4.5.20 The LVIA considers the landscape and visual effects on landscape designations and classifications within the Study Area that have the potential to be affected by the Proposed Development.
- 4.5.21 In total, 24 assessment viewpoints were used to inform the LVIA. These were chosen in consultation with THC, NatureScot, and Mountaineering Scotland, and are representative of the key sensitive receptors in the Study Area. Mountaineering Scotland suggested that viewpoint photography from summits over 35 km from the Proposed Development i.e., Glas Meall Mor (An Teallach group) viewpoint 4 (**Figure 4.16** (EIA Report Volume 3b)), Ben Klibreck viewpoint 18 (**Figure 4.30** (EIA Report Volume 3b)) and Creag Mhor (Armine Forest) viewpoint 19 (**Figure 4.31** (EIA Report Volume 3b)) would be unnecessary given that they are very unlikely to be reported as having significant impact at that distance. However, these viewpoints were carried forward to assessment to aid the assessment of effects on LCTs and landscape designations and classifications. The selected assessment viewpoints are listed and described in **Technical Appendix 4.3** (EIA Report Volume 4) and presented in **Figures 4.8-4.10** (EIA Report Volume 3a).

Criteria for Assessing Sensitivity of Receptors

Landscape Sensitivity

- 4.5.22 The sensitivity of the seascape and landscape is defined as 'high', 'medium', or 'low' based on professional interpretation of a combination of its susceptibility to the type of development proposed, and the value attributed to it.

Susceptibility

- 4.5.23 The following aspects inform the susceptibility of the landscape to change likely to be brought about by the type of development proposed:
- Landscape scale and landcover;
 - Existing land use and context;
 - The pattern and complexity/simplicity of the landscape;
 - The nature of visual enclosure/ openness of views and distribution of visual receptors;

- The scope for mitigation, which would be in character with the existing landscape; and
- The degree to which a particular element or characteristic contribution to landscape character can be replaced or substituted.

Value

4.5.24 The value of a landscape receptor is not simply dependant on formal designation (an area may be valued locally for a range of reasons) but is predicated on the following related factors:

- Landscape quality and condition - the more intact the intrinsic characteristics of the landscape the higher the value;
- Scenic quality – the degree to which the landscape appeals to the senses (primarily but not exclusively visually);
- Rarity – this may be the presence of a rare feature or quality, and/ or the extent to which the character of the landscape is uncommon;
- Representativeness – the extent to which the landscape contains elements that are referred to as exemplary or considered important;
- Conservation interest – including the presence of valued wildlife, earth science, archaeological, historical, or cultural aspects;
- Recreation value – where the landscape is evidently valued for recreational activity for which the experience of the landscape is important;
- Perceptual aspects – in particular, the sense of wildness and/ or tranquillity present within the landscape; and
- Associations with historic people or events.

Visual Sensitivity

4.5.25 Visual receptor sensitivity is defined as High, Medium, or Low based on an interpretation of a combination of parameters, that relates to the susceptibility and value ascribed to specific visual receptors, vantage points (such as formalised viewpoints), or receptor locations. The criteria utilised in determining the susceptibility of visual receptors is in accordance with GLVIA which notes that susceptibility of visual receptors depends on the following:

- The occupation or activity of people experiencing the view at particular locations; and
- The extent to which their attention or interest may therefore be focused on the views and the visual amenity they experience at particular locations.

4.5.26 The value of the visual receptor has been determined by considering the following:

- Recognition of value as in a landscape designation or cultural heritage asset, and as noted in popular tourist guidebooks and references (e.g. views from the A837);
- The land use or main activity at the viewpoint/ receptor location and receptor expectations;
- The frequency and duration of use of receptor location; and
- The landscape character and quality of the intervening landscape.

4.5.27 In relation to land use at the viewpoint location, visual sensitivity is defined by the following criteria set out in **Table 4.2**.

Table 4.2 – Sensitivity to Receptor Type and Activity

Sensitivity	Receptor Type and Activity
High	– Tourists and those engaged in outdoor recreational activities for which the landscape and views form a key part of their experience, including hill walkers and visitors to formal vantage points; – Passengers and Tourists travelling on key routes; – Passengers on trains and ferries where visual amenity and scenic qualities form an integral part of receptors experience and expectations; – Walkers on strategic recreational footpaths or on hills, cycle routes, or rights of way; – Visitors to landscapes/ sites that have a strong physical, cultural, or historic connection with the landscape or a particular view; and – Residential receptors at individual dwellings and within settlements.
Medium	– Local road users/ commuters who are generally travelling alone and/ or are focused on the road rather than the adjoining landscape.
Low	– People engaged in outdoor sports or recreation (other than appreciation of the landscape); and – Receptors located in commercial and retail buildings, industrial complexes, and other locations where people's attention may be focused on their work or activity.

Criteria for Assessing Magnitude of Impact

4.5.28 **Table 4.3** provides a brief description of the different magnitudes of impact used in this assessment. They are described as substantial, moderate, slight, negligible, or none based on the interpretation of a combination of quantifiable factors, as follows:

- The distance of receptors from the Proposed Development;
- The duration of the predicted impacts and whether they are reversible;
- The size and scale of the impact anticipated;
- The geographical extent of the Study Area, landscape character type, designation or classification, or route that would be affected;
- The angle of view in relation to main receptor activity, i.e., channelled or expansive;
- The degree of contrast;
- The baseline landscape context of the Proposed Development; and
- The extent and nature of other similar built development visible.

Table 4.3 – Magnitude of Impact

Magnitude	Definition
Substantial	Total loss or considerable alteration/ interruption of key elements, features or characteristics of the landscape character and/ or composition of views resulting in a substantial change to baseline conditions.
Moderate	Notable partial loss or alteration to one or more key features or characteristics of the baseline, resulting in a prominent, but localised change within a broader unaltered context.
Slight	Discernible loss or alteration to one or more key elements, features or characteristics of the baseline conditions. Change arising from the loss/ alteration would be discernible but underlying landscape character or view composition would be broadly consistent with baseline.
Negligible	Very limited or imperceptible loss or alteration to one or more key elements/ characteristics of the baseline. Change may be barely discernible.
None	No aspect of the Proposed Development would be discernible. The Proposed Development would result in no appreciable change to the landscape resource or view.

Criteria for Assessing Significance

4.5.1 **Table 4.4** represents how significant effects are determined by combining the sensitivity of a receptor with the magnitude of impact. For the purposes of this assessment **Major** and **Major/Moderate** effects are considered significant.

Table 4.4 – Residual Effects

Landscape and Visual Sensitivity	Magnitude of Impact				
	Substantial	Moderate	Slight	Negligible	None
High	Major	Major/Moderate	Moderate	Moderate/ Minor	None
Medium	Major/Moderate	Moderate	Moderate/Minor	Minor	None
Low	Moderate	Moderate/Minor	Minor	Minor/None	None

4.5.2 In line with the recommendations in GLVIA, this matrix is not used as a prescriptive tool or arithmetically, and the methodology and analysis at any viewpoint location must allow for the exercise of professional judgement. Descriptions of effects, especially those considered significant, are described in the narrative text.

4.5.3 Landscape and visual effects can be adverse (i.e. having a detrimental effect on the physical elements, character and visual amenity of the receptor) or beneficial (i.e. having a positive effect on the landscape or visual amenity of the area through the strengthening or augmentation of baseline conditions and / or improvement of the existing landscape condition and quality or views). For the purposes of this assessment, effects are assumed to be adverse, unless stated otherwise.

Cumulative Assessment

4.5.4 In assessing potential cumulative landscape and visual effects consideration has been given to 'In-Addition' effects attributable specifically to the Proposed Development, as well as its 'In-Combination' effects where the combined effect of the Proposed Development and other cumulative schemes are taken into account. The operational baseline and the potential future baseline including consented, in-planning and in-scoping wind farm developments are listed in **Table 4.6**. The cumulative assessment considers the Proposed Development ('En Solo') within the baseline that may include existing operational wind farms and three future cumulative scenarios as follows:

- **Scenario 1:** The Proposed Development in conjunction with Existing and Consented (wind farms);
- **Scenario 2:** The Proposed Development in conjunction with Existing, Consented, and Proposed (wind farms); and
- **Scenario 3:** The Proposed Development in conjunction with Existing, Consented, Proposed and a selection of In-Scoping wind farms within proximity to the Proposed Development (Inveroykel, Invercassley, Creachan, and Braelangwell wind farms). These in-scoping schemes have been included as they have potential to contribute to a significant increase in the influence of wind energy within the Strath and the Kyle of Sutherland and the landscape designations and classifications to the south and southeast of the Site. However, it should be noted that their current scoping layouts are likely to change.

4.5.5 This approach is intended to reflect the differing degrees of certainty in each Scenario. Scenario 1 has the highest degree of certainty and forms the development context in which the Proposed Development would be seen. In contrast, there is a high degree of uncertainty regarding the final design or likely consenting success of in-planning and in-scoping schemes (within Scenarios 2 and 3). Of the two Scenario 3 has the highest degree of uncertainty as scoping schemes are highly likely to undergo changes to layout and a reduction in the number of turbines.

4.5.6 The consideration of potential cumulative landscape and visual effects reflect the 'In-Addition' effects attributable specifically to the Proposed Development, as well as its 'In Combination' effects, where the combined effect of the Proposed Development and all other cumulative schemes are taken into account. A distinction is made, in the assessment, between In-Addition effects (i.e. the additional effect attributable specifically to the Proposed Development in the context of cumulative developments) and In-Combination effects (i.e. the effect arising from the Proposed Development taken together with other wind energy development) as is recommended in guidance.

4.5.7 Cumulative magnitude of impact arising from the Proposed Development when considered in conjunction with other similar developments in the vicinity is determined taking account of the above criteria as well as the following:

- the number of existing, consented and proposed wind farms visible;
- the distance to each of the visible developments from the receptor location;
- the direction of each development in relation to the viewpoint;
- the extent of the view occupied by each development;
- the cumulative effect of development upon the fabric or key landscape components; and

- in the case of landscape character types (LCTs), residential areas and transportation/recreational routes - the proportion of the area or route subject to cumulative views.

4.5.8 **Table 4.5** provides a brief definition for different magnitudes of cumulative impact.

Table 4.5 - Magnitude of Cumulative Impact

Magnitude	Definition
Substantial	– In-Addition: The Proposed Development would represent a considerable or possibly fundamental increase in the influence of wind energy development on the character of the landscape and/ or the composition of views. – In-Combination: The Proposed Development, taken together with cumulative developments would constitute <i>'the'</i> defining characteristic of the landscape or view, equivalent to a <i>'wind farm landscape.'</i>
Moderate	– In-Addition: The Proposed Development would represent a notable and possibly considerable increase in the influence of wind energy development on the character of the landscape and/ or the composition of views. Moderate cumulative impacts may, however, equate to a localised change within an otherwise unaltered context. – In-Combination: The Proposed Development, taken together with cumulative developments would constitute <i>'a'</i> defining characteristic of the landscape or view.
Slight	– In-Addition: The Proposed Development would represent a minor addition to the influence of wind energy development on the character of the landscape and/ or the composition of views. The change would be discernible, but the original baseline conditions would be largely unaltered. – In-Combination: The Proposed Development, taken together with cumulative developments would constitute <i>'a'</i> characteristic element/feature in the landscape or view.
Negligible	– In-Addition: The Proposed Development would represent a barely discernible addition of wind energy development on the character of the landscape or composition of views. The baseline condition of the landscape or view, would, for all intents and purposes, be unaffected. – In-Combination: The Proposed Development, taken together with cumulative developments would constitute a barely discernible feature or element in the landscape or view.
None	– No other cumulative development would be apparent.

4.5.9 In assessing potential cumulative landscape and visual effects, consideration has been given to cumulative effects arising from combined and/ or consecutive (concurrent visibility, where the observer is able to see two or more developments one viewpoint location), and sequential effects (where a number of similar developments would be visible individually or simultaneously over a sequence of connected viewpoints, such as would be found along a road or footpath. This in accordance with current NS guidance.

Limitations

- 4.5.10 In total, 24 assessment viewpoints have been selected to represent the range of landscape and visual receptors at varying distances and directions from the Proposed Development.
- 4.5.11 The ZTV analysis presents a 'worst-case visibility scenario' as it is based on a bare terrain model and does not reflect the screening or filtering effect of built forms or structural vegetation.
- 4.5.12 The commercially available data utilised in the execution of the LVIA have several inherent limitations related to data tolerances and levels of accuracy. These have been considered in the assessment.
- 4.5.13 Where distances to the Proposed Development are given, these relate to the distance to the nearest of the Proposed Development's turbines unless stated otherwise. Where measurements relate to LCTs, designations and classifications, the measurement given are to the nearest boundary of the LCT or designated/classified area rather than the nearest area with potential views of the Proposed Development. This is important because effects experienced within such areas may occur at a considerably greater distance, with corresponding consequences for the level of residual effects.
- 4.5.14 The assessment of effects including the amenity of residential receptors in settlements and for the RVAA was undertaken from the nearest publicly accessible location. See **Technical Appendix 4.4** (EIA Report Volume 4).

4.6 Baseline Conditions

Landscape Baseline

Topography

- 4.6.1 **Figure 4.1** (EIA Report Volume 3a) depicts the topographical levels and form of the landscape within the Site, and the wider Study Area.

- 4.6.2 The immediate surrounding Study Area consists of undulating topography, with open hills rising both to the north and south. Further out, the Study Area consists of a variety of landscape types ranging from enclosed Bays and Inner Firths located along the coastlines, Lone Rugged and Rounded mountains in the west and south, and extensive areas of Sweeping Moorland and Flows to the north.
- 4.6.3 Topographical features include hills, lone mountains, agricultural land, undulating moorland, sheltered bays, and coastal landscapes, interwoven by a network of straths, glens, and lochs. Elevation ranges from mean high-water level at the strath bottoms and coastal outer edges, to over 1100 m AOD. Notable peaks are located to the south and southwest of the Proposed Development and include Ben More Assynt (998 m AOD), Beinn Dearg (1081 m AOD), An Teallach (1062 m AOD), Ben Wyvis (1046 m AOD), and Sgurr Mor (1109 m AOD). These summits and mountain ranges rise sharply from areas of rolling hills and undulating moorland with flows.
- 4.6.4 The Site is located within the Rounded Hills – Caithness and Sutherland Landscape Character Type (LCT), which typically comprises of undulating broad, rounded hills, with some relatively higher and more defined rounded hills in the southeast of the LCT. Specifically, the Site is situated on the southern slopes of the Strath Oykel. Elevations vary within the Site, from 40 m Above Ordnance Datum (AOD) near the Strath bottom, up to 387 m AOD at the highest points. From the north, the Proposed Development is set back from the Strath and ascends southwards to the upper slopes of Coire Buidhe and Beinn Utbhaidh, and the summits of Cnoc nan Caorach (387 AOD) and Carn na Bò Maoile (387 m AOD).

Hydrological Features

- 4.6.5 Hydrological features in the Study Area comprise a series of large Straths that drain the landscape. These comprise of a range of fairly straight deeply incised troughs to more winding valleys through the surrounding undulating topography with a number of minor side glens. A high number of small lochs and lochans also punctuate the landscape, which are present along the valley system and at higher elevations across the sweeping moorland and flows. Notably, Loch Shin (15 km to the northeast/north), Loch Assynt (located 27 km to the northwest), and Loch Fannich, and Loch Glascarnoch (located 37 km and 27.5 km to the southwest), and an expansive network of streams and small rivers which feed into the larger tributaries and lochs.
- 4.6.6 A network of small watercourses and tributaries flow through the Site from the upper southern slopes, down into the River Oykel to the north. In the northwestern section of the Site, small water courses, including Allt an Fhithich and Allt an Beaga, flow northwest and directly feed into the River Oykel Whilst in the relatively more elevated southern section of the Site, small tributaries feed into the Allt a' Bhràigh, a relatively larger stream which bisects the Site and contains several small falls. The Allt a' Bhràigh flows southwest to northeast through the Site, eventually feeding into the River Oykel On the western boundary edge, a small high-elevated lochan exists, Lochan Phàil.

Land use / Land cover

- 4.6.7 **Figure 4.2** (EIA Report Volume 3a) illustrates the general land use/ landcover within the Site and the wider Study Area.
- 4.6.8 Vegetation within the wider Study Area varies considerably, depending on topography, climatic & environmental factors. Inland dense heather ground cover and moorland grasses dominate the Study Area, with areas of extensive Peat Bogs in between. Fragments of broadleaf woodland also exists in steeper areas, with coniferous forestry blocks, similar to that of the Site, occupying Strath valley sides. Pastoral grassland and rough grazing occupy the relatively flatter valley bottoms. The interior is scarcely settled with widely scattered crofts and farms on lower slopes adjoining Straths and farmed landscapes. Wind farms, transmission lines, and a series of major roads are the key modified features within the landscape.
- 4.6.9 Along the coastlines, there is little woodland with a greater proportion of rougher pastures dotted with gorse, grassland, and pockets of heather moorland. Along the eastern coast, coastal settlements, crofts, and small farms occur at the outlet of more sheltered straths or along the Kyle of Sutherland and Loch Eriboll. The western coastline is very sparsely inhabited with settlement and crofting similar to the east, tending to utilise the lower slopes, glens, basins, or the coastal edge where they occur.
- 4.6.10 The Site is within the Meòir Langwell Wood commercial forest, with coniferous species dominating over half of the Site, and areas of ancient woodland also present. Heather moorland and small patches of species rich grassland also exist in areas of the Site.

Landscape Character

- 4.6.11 The Study Area contains 30 distinct landscape character types (LCTs) and one seascape character type (SCT). The following LCT would be subject to theoretical visibility of the Proposed Development:
- LCT 134: Sweeping Moorland and Flows;
 - LCT 135: Rounded Hills – Caithness and Sutherland (the 'host' LCT);

- LCT 136: Rocky Hills and Moorland;
- LCT 137: Cnocan – Caithness & Sutherland;
- LCT 138: Lone Mountains;
- LCT 139: Rugged Mountain Massif – Caithness and Sutherland;
- LCT 142: Strath – Caithness and Sutherland;
- LCT 145: Farmed and Forested Slopes with Crofting;
- LCT 328: Rugged Mountain Massif – Ross and Cromarty;
- LCT 329: Rounded Mountain Massif;
- LCT 330: Rounded Hills and Moorland Slopes – Ross and Cromarty;
- LCT 332: High Rocky Moorland and Plateau – Ross and Cromarty; and
- SCT 11: Less Developed Inner Firths.

4.6.12 The Site is mainly located within LCT 135: Rounded Hills – Caithness and Sutherland. This LCT comprises of valley sides and hills around Strath Oykel and stretches over most of the central highlands. In general, it is a large scale and open landscape, with some sparse settlements. The landcover is dominated by heather moorland with some coniferous forestry and small areas of broadleaf woodland.

4.6.13 The two access options (eastern and western) extend into LCT 142: Strath – Caithness and Sutherland which follows the alignment of the straths and forms a narrow and branching LCT with a distinctive skyline.

4.6.14 The locations of LCTs and SCTs are shown in **Figure 4.3** (EIA Report Volume 3a) and their key characteristics and sensitivities to the type of development proposed is summarised in **Technical Appendix 4.1** (EIA Report Volume 4).

Landscape Designations

4.6.15 **Technical Appendix 4.4** (EIA Report Volume 4) contains details of the designated areas that have been addressed in the LVIA and provides justification for landscape designations that are not assessed. It also provides details of the relevant special landscape qualities for each designation assessed.

4.6.16 **Figure 4.4** (EIA Report Volume 3a) identifies landscape designations within the Study Area that indicate intrinsic value based on specific key qualities or characteristics, and as such, are assumed to have a high sensitivity, unless otherwise stated.

4.6.17 The Site is not subject to any landscape designation. However, there are several designations present within the wider Study Area including the following:

- NSA 36: Assynt – Coigach, 14 km northwest of the Site;
- NSA 39: Wester Ross, 30km southwest of the Site;
- NSA 40: Dornoch Firth, 18 km east of the Site;
- SLA 8: Ben Kilbreck and Loch Choire, 27 km northeast of the Site;
- SLA 9: Loch Fleet, Loch Brora and Glen Loth, 31 km east of the Site;
- SLA 17: Ben Wyvis, 22 km south of the Site; and
- SLA 18: Fannichs, Beinn Dearg and Glencalvie, 3 km to the southwest of the Site.

Wild Land Areas

4.6.18 NatureScot identified Search Areas for Wild Land (SAWL) in 2002. These were considered to be locations where the most significant and valued areas of wild land would be found. This initial mapping was acknowledged as preliminary and incomplete. In 2013 NatureScot published a revised map for consultation which identifies a series of Core Areas of Wild Land (CAWLs). In June 2014 a new map of WLAs was created which replaced the CAWL 2013 map. The new map identifies 42 wild land areas (19.5% of Scotland). This latest iteration of the wild land mapping changed its nomenclature to Wild Land Areas (hereafter referred to as WLAs).

4.6.19 **Technical Appendix 4.4** (EIA Report Volume 4) contains details of the WLAs that have been addressed in the LVIA and provides justification for their omission where appropriate. It also provides details of the relevant special landscape qualities for the WLA assessed.

4.6.20 Within the Study Area the WLAs predicted to have some views of the Proposed Development include:

- WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis, which, at its closest, is situated approximately 1.7 km to the southwest of the Site;
- WLA 32: Inverpolly – Glencanisp, approximately 22 km northwest of the Site;
- WLA 34: Reay – Cassley, approximately 3 km north of the Site;
- WLA 35: Ben Klibreck – Armine Forest, 25 km northeast of the Site; and
- WLA 37: Foinaven – Ben Hee, approximately 22 km north of the Site.

4.6.21 Landscape classifications such as WLAs, have been identified as having value in the context of either the natural environment and/or cultural heritage and are therefore considered to have high sensitivity, refer to **Figure 4.5** (EIA Report Volume 3a).

4.6.22 **Technical Appendix 4.6** (EIA Report Volume 4) considers potential significant effects as a result of the Proposed Development on the Wild Land Qualities (WLQs) of WLA: 29 the closest classified landscape. There is a summary of the key wild land aspects for the WLA, as well as attribution of susceptibility and sensitivity to the type of development proposed and predicted residual effects.

Gardens and Designed Landscapes

4.6.23 Inventory listed GDLs, are classified for their value in the context of either the natural environment and/or cultural heritage and are therefore considered to have high sensitivity, refer to **Figure 4.5** (EIA Report Volume 3a).

4.6.24 None of the Gardens and Designed Landscapes (GDLs) within the Study Area would be subject to views of the Proposed Development and have therefore been omitted from further assessment.

Visual Baseline

4.6.25 **Figure 4.7** (EIA Report Volume 3a) depicts the visual receptors within the Site, and the wider Study Area. **Technical Appendix 4.6** (EIA Report Volume 4) sets out the findings of the detailed viewpoint (VP) assessment of 24 viewpoint locations undertaken to inform the assessment of effects on the visual resource within the Study Area.

Settlements

4.6.26 Settlements in the Study Area are sparse and scattered but are generally located along main roads such as the A836 and A837 and near edges of lochs and glens, in particular the shallow valley, Strath Oykel. Dispersed crofts, farms, and occasional estate/farm buildings within the Study Area are also located on the lower slopes and in narrow glens. Along the coastlines, settlements are typically concentrated along the lower-lying entrances of the straths.

4.6.27 For the purposes of this assessment, residential receptors are assumed to have a high sensitivity. Matters pertaining to the residential visual amenity of the 10 properties within 2.5 km of the closest turbine are dealt with in **Technical Appendix 4.4** (EIA Report Volume 4).

4.6.28 The following settlements are subject to theoretical visibility of the Proposed Development:

Rosehall Settlement

4.6.29 Rosehall Hamlet is situated 4 km northeast of the Site near the confluence of the Strath Oykel and Strath Cassley. It is located on a minor road just off the A837, by the main road bridge over the River Cassley. The northern end of the hamlet primarily consists of two-storey detached, and semi-detached white and brown painted houses, which are set back from the road facing northeast or southwest. Open views to the surrounding hills and peaks are restricted by surrounding built form and vegetation. The southern end of the settlement consists of isolated farmsteads and cottages, also set back from the road, facing the southeast with open views towards Strath Oykel.

Achnahanat Settlement

4.6.30 Achnahanat Settlement is a crofting settlement situated 7.8 km east of the Site, just south of the Kyle of Sutherland. It is located just off an unnamed road. The settlement consists of one-storey and two-storey farmsteads, typically facing north with open views towards Strath Oykel and the surrounding hills.

Settlements between Auchintoul and Altass

4.6.31 The scattered smaller settlements within the Study Area, between Auchintoul and Altass, are located approximately 6.5 km northeast of the Site, just off an unnamed road, north of the Kyle of Sutherland. They consist of one-storey and two-storey farmsteads, generally facing south with relatively elevated, open views towards the valley and surrounding hills.

Scattered Farmsteads and Rural Properties of Oykel Bridge

4.6.32 The scattered farmsteads and rural properties in Oykel Bridge are located approximately 2.9 km, and greater distances, northwest of the Site, both on the north and southern sides of the Strath Oykel. These

properties typically consist of one to two-storey cottages or farmsteads, and typically face towards Strath Oykel.

Oape, Doune, and Brae

- 4.6.33 A small number of residential properties are located 1.8 km to 2.5 km north of the Site, along Scree Road on the southern side of the Oykel Strath. These properties typically consist of one to two-storey cottages, typically facing towards the River Oykel. Views from these properties towards the south are often restricted by intervening landform as they are located on the lower slopes of the ridgeline. The nearby forest plantations also filter views to Site.

Roads

- 4.6.34 The road network within the Study Area is presented on **Figure 4.7** (EIA Report Volume 3a). It is generally confined to the eastern coastline and winds tightly around loch edges or through glens. Several major roads cross inland along large straths. Where landform permits, additional minor routes cross inland along valleys as narrow tracks, passing through farms, small settlements, and towns.

- 4.6.35 For the purposes of this assessment tourists and passengers utilising road and rail routes are considered to have a high sensitivity, whilst general road users are considered to have a medium sensitivity as they are more likely to be travelling alone and therefore concentrating on road conditions rather than the landscape.

- 4.6.36 All or most of the A839, A9, A949, A835, A832, and the A862 would have limited or no views of the Proposed Development. The following roads have potential for visibility:

A837

- 4.6.37 This route runs roughly northwest to southeast through the centre of the Study Area, starting from Lochinver in the east and ending in Inveran to the west. It closely follows the alignment of Strath Oykel, offering scenic views up and down the valley, albeit forestry plantations obstruct the hilltops above. This route, at its closest point, is located less than 1 km north of the Site.

A949, Approach to Bonar Bridge

- 4.6.38 This route extends from Dornoch to Shin Bridge where it joins the B864 and A837. It follows the northern bank of Dornoch Firth and is approximately 19 km east of the Site. The route would have limited visibility of the Site for most of the route.

Minor Road: Altass (C1074)

- 4.6.39 This minor road connects to the A837 approximately 7.7 km west of the Proposed Development. It extends along the ridgeline north of the A837 from the boundary of Linsidemore Wood through the hamlet of Altass to Rosehall. The route provides intermittent elevated views across the Kyle of Sutherland to the ridgeline of Meall Dheiridh and Beinn Ulbiadh.

Recreational Routes and Summits

- 4.6.40 In addition to the key transport routes described above, there are several recreational routes within 10 km of the Study Area that are anticipated to provide theoretical views of the Proposed Development. People walking recreational routes and climbing summits are assessed as having high sensitivity, as they are moving slowly through the landscape and are primarily undertaking recreation to appreciate views of the surrounding countryside.

- 4.6.41 The following recreational routes and summits have potential to have views to the Proposed Development:

Cape Wrath Trail

- 4.6.42 This is a long-range, off-road route traversing from Fort William to Cape Wrath. Within 10 km of the Proposed Development, the route extends approximately northeast from Loch an Daimh to the A837, where it then changes direction to the northwest, leaving the 10 km radius just north of Craggie. Within the 10 km radius, according to the ZTV there is predicted visibility for most of the route, including its closest point to the Site (1 km west). Several sections of the route are enclosed by forestry plantations, restricting potential visibility of the Proposed Development. Where there is potential visibility, particularly the section of the route close to the A837, views are likely to be orientated towards the northeast and southwest, away from the Site.

Croick Glen Einig

- 4.6.43 This 12.3 km route between the A837 and Croick starts by heading southwest from the A837 to just east of Duag Bridge. From there, it changes direction to the southeast, running parallel to Strath Cuileannach and offering scenic views both up and down the Glen. According to the ZTV there is predicted visibility for most of the route, including its closest point to the Proposed Development (2 km southwest). Large

sections of the route are likely to be enclosed by a combination of vegetation and topography, and visibility is likely to be intermittent along the route.

Rosehall Estate Trails

- 4.6.44 These recreational routes are up to approximately 3.2 km long, starting and ending just off the A837 and the A839. According to the ZTV there is predicted visibility for most of these routes, including the closest point to the Proposed Development (6 km northeast), however the route is predominantly enclosed within woodland. Any visibility would be very limited and viewed through gaps and thinner sections of vegetation and extensively filtered by intervening vegetation.

Sika Trail Cycle Route

- 4.6.45 This recreational cycle route is approximately 2 km long, starting and ending just off the A837 and the A839. According to the ZTV there is predicted visibility for most of the route, including the closest point to the Proposed Development (6 km northeast). The route, however, is predominantly enclosed within woodland which would limit and filter available views.
- 4.6.46 Walkers on strategic recreational routes are generally assumed to have a high sensitivity to the type of development proposed due to the nature of their use, the often-scenic quality of their route, and their importance as a regional or national leisure/ tourist resource. Whilst Core Paths are generally shorter length, they are assumed to represent important local recreational routes and receive regular and frequent use. Consequently, walkers on these routes are also considered to have a high sensitivity.
- 4.6.47 Assessment of visual effects from summits is available in **Technical Appendix 4.3** (EIA Report Volume 4).

Cumulative Context

- 4.6.48 **Table 4.6**, summarises the cumulative context within 45 km of the Site at the time of commencement of the LVIA in March 2025 and has been agreed with NS and THC. The location of these developments is indicated in **Figure 4.11** (EIA Report Volume 3a). No consideration has been given to single turbines or turbines less than 50 m to maximum blade tip height above ground level
- 4.6.49 The established and emergent pattern of development is concentrated within the Rounded Hills - Caithness and Sutherland (LC:135) in the east, and the Rounded Rocky Hills - Ross and Cromarty (LCT: 331) further to the south.

Table 4.6 – Cumulative Wind Farm Context

Wind Farm	Approx.Distance/ Direction from Proposed Development	Status	No Turbines and Maximum Tip Height	LCT(s) Wind Farm is located within
Rosehall Wind Farm	5.2 km northeast	Operational	19 turbines 90 m	135 Rounded Hills – Caithness & Sutherland
Achany	10.6 km northeast	Operational	19 turbines 100 m	135 Rounded Hills – Caithness & Sutherland
Lairg Wind Farm	14.2 km northeast	Operational	3 turbines 100 m	135 Rounded Hills – Caithness & Sutherland
Coire Na Cloiche Wind Farm	22.5 km southeast	Operational	13 turbines 85 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Beinn Tharsuinn	25.4 km southeast	Operational	17 turbines 80 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Beinn Tharsuinn Wind Farm Extension	25 km southeast	Operational	2 turbines 99.5 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Novar Wind Farm (formally Bendealt)	25.8 km southeast	Operational	18 turbines 60 m	329 Rounded Mountain Massif
Creag Riabhach Wind Farm	27.0 km northeast	Operational	22 turbines 125 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Novar Wind Farm 2 (Extension)	27.4 km southeast	Operational	16 turbines 106 m	329 Rounded Mountain Massif
Lochluichart Wind Farm	29.0 km south	Operational	17 turbines 125 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 329 Rounded Mountain Massif
Lochluichart Wind Farm Extension ("Paula")	29.0 km south	Operational	6 turbines 125 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 329 Rounded Mountain Massif
Corriemoillie Wind Farm (Resubmission)	29 km south	Operational	17 turbines 125 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 329 Rounded Mountain Massif
Kilbraur Wind Farm	32.5 km northeast	Operational	19 turbines 115 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows

Wind Farm	Approx.Distance/Direction from Proposed Development	Status	No Turbines and Maximum Tip Height	LCT(s) Wind Farm is located within
Kilbraur Wind Farm Extension	32.5 km northeast	Operational	8 turbines 125 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Gordonbush Wind Farm Extension	39.4 km northeast	Operational	11 turbines 149.9 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows and 142 Strath – Caithness & Sutherland
Gordonbush Wind Farm	41.4 km northeast	Operational	35 turbines 121 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Fairburn Wind Farm	43.4 km south	Operational	20 turbines 100 m	331 Rounded Rocky Hills – Ross & Cromarty
Meall Buidhe Wind Farm	Immediately South of Site	Consented	8 turbines 149.9 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Strath Oykel Wind Farm	Immediately East of Site	Consented	11 turbines 200 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Achany Wind Farm Extension	10.4 km North to northeast	Consented	18 turbines 149.9 m	135 Rounded Hills – Caithness & Sutherland
Garvary Wind Farm	14.8 km east	Consented	25 turbines 179.75 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Sallachy Wind Farm	18.2 km north	Consented	9 turbines 149.9 m	135 Rounded Hills – Caithness & Sutherland
Strath Tirry Wind Farm	18.5 km northeast	Consented	4 turbines 135 m	142 Strath – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Lairg II Redesign	19.4 km northeast	Consented	10 turbines 68 m	135 Rounded Hills – Caithness & Sutherland
Chleansaid Wind Farm	22.8 km northeast	Consented	16 turbines 179.5 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Kirkan Wind Farm	25.9 km south	Consented	17 turbines 175 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Strathroy Wind Farm	26.1 km southeast	Consented	7 turbines 180 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Lochluichart Wind Farm Extension II Redesign	26.8 km south	Consented	5 turbines 149.9 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 329 Rounded Mountain Massif
Creag Riabhach Wind Farm Extension	27.6 km northeast	Consented	2 turbines 149.9 m	135 Rounded Hills – Caithness & Sutherland and 134 Sweeping Moorland and Flows
Allt An Tuir Wind Farm	2.7 km north	Application	9 turbines 200 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Balblair Wind Farm	14.6 km	Application	8 turbines 180 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Shinness Wind Farm	17 km northeast	Application	16 turbines 200 m	134 Sweeping Moorland and Flows
Acheilidh Wind Farm (Lairg III Wind Farm)	18 km east	Application	12 turbines 230 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Carn Fearna Wind Farm	30.7 km south	Application	9 turbines 200 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 341 Forest Edge Farming and 329 Rounded Mountain Massif and 331 rounded Rocky Hills – Ross & Cromarty
Abhainn Dubh Wind Farm	31.5 km southeast	Application	9 turbines 149.75 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty
Inveroykel Wind Farm	1.9 km east	Scoping	29 turbines 230 m	135 Rounded Hills – Caithness & Sutherland and 142 Strath – Caithness & Sutherland
Invercassley Wind Farm	2.4 km north	Scoping	22 turbines 230 m	135 Rounded Hills – Caithness & Sutherland
Braelangwell Wind Farm	6.6 km southeast	Scoping	18 turbines 145 m	135 Rounded Hills – Caithness & Sutherland
Creachan Wind Farm	15.3 km southeast	Scoping	21 turbines 220 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 329 Rounded Mountain Massif

Wind Farm	Approx.Distance/Direction from Proposed Development	Status	No Turbines and Maximum Tip Height	LCT(s) Wind Farm is located within
Fiag Wind Farm	19.8 km south	Scoping	22 turbines 230 m	134 Sweeping Moorland and Flows
Ceislein Wind Farm	28.3 km southeast	Scoping	20 turbines 250 m	330 Rounded Hills and Moorland Slopes – Ross & Cromarty and 341 Forest Edge Farming
Tarvie Wind Farm	37.9 km south	Scoping	5 turbines 201 m	335 Wooded Glens and Rocky Moorland and 331 Rounded Rocky Hills – Ross & Cromarty

Future Baseline

- 4.6.50 The principal changes anticipated in the area relate to the following key considerations:
- Continued promotion and use of the A836 as a tourist route; and
 - Continued interest in the development of wind energy development, including repowering and extension of existing/consented developments as well as new green field proposals;
- 4.6.51 There is some uncertainty regarding the timescales and nature of the key considerations above, that could be sources of change in the landscape. Proposals for renewable energy projects are considered highly probable, notwithstanding any constraints represented in THC's spatial framework.
- 4.6.52 In order to make a sensible assessment of the likely trajectory of the landscape and visual context the cumulative assessment addresses the known cumulative context.

4.7 Embedded Mitigation

- 4.7.1 A number of embedded mitigation/design measures have been identified through the iterative EIA process, an analysis of the baseline context, and identification of key impact generators.
- 4.7.2 As described in **Section 4.3** the OSWESG contains ten criteria that THC utilise for considering wind farm applications. **Table 4.7** provides a summary of the embedded mitigation/design priorities identified during the preparation of the LVIA, in response to these key criteria.

Table 4.7 – Summary of Response to OSWESG Key Criteria

OSWESG Criteria	Response
Criteria 1 – Relationship between Settlements / Key Locations and wider landscape respected avoiding encirclement and the prominence of turbines in the majority of views within or from settlements or main access routes	Increased buffers in excess of 2.5 km from the closest turbine to the closest settlements of Oape, Doune, and Brae.
Criteria 2 – Key Gateway locations and routes are respected avoiding detrimental effects on the transitional experience of gateway locations and routes	Turbines are set back from prominent summits and the edge of Glen Oykel to provide some partial screening from intervening landform and vegetation, and to minimise visibility and industrial influences on landscape character in views along and across Strath Oykel and the Kyle of Sutherland.
Criteria 3 – Valued natural and cultural landmarks are respected avoiding diminishment of the prominence of the landmark feature or a disruption of the relationship to its setting;	- The avoidance of more visually prominent slopes above Strath Oykel to minimise influences on Dornoch NSA; and - Positioning of the turbines on the northern slope of a ridgeline between Glen Oykel and Strath Cuilleanach, and within a slight bowl provides a degree of enclosure and screening from views within WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis, which, at its closest, is situated approximately 1.7 km to the west of the Site.
Criteria 4 – The amenity of key recreational routes and ways is respected and overwhelming effects or significant effects on the visual amenity available for users is avoided	The visual amenity of key recreational routes has been considered in the iterative design evolution of the Proposed Development to minimise and avoid overwhelming effects. Views from Core Paths, Munros and Long-Distance Routes have been assessed. See Technical Appendix 4.3 (EIA Report Volume 4).
Criteria 5 – The amenity of transport routes is respected and overwhelming effects or significant effects on the visual amenity available for users is avoided	The wind turbines or other associated infrastructure within the Proposed Development does not overwhelm the visual amenity of transport routes. The visual amenity of transport users of the A837, and A949 is assessed in Technical Appendix 4.7 (EIA Report Volume 4).
Criteria 6 – The existing pattern of wind energy development is respected in respect of turbine height and proportions and density and spacing	The Proposed Development has the same number and height of turbines as the adjacent consented Strath Oykel wind farm.
Criteria 7 - The need for separation between developments and or clusters is respected, and the Proposed Development maintains appropriate and effective separation;	- Creation (wherever possible) of a cohesive and balanced array in views consistent with the emergent pattern of development in the locality, particularly in relation to consented Meall Buidhe and Strath Oykel wind farms; and - The Strath Oykel and Meall Buidhe wind farms are located on a series of ridgelines above and along the Strath Oykel and appear as a cluster or continuation of wind energy development that would be viewed together from a variety of locations.
Criteria 8 – The perception of landscape scale and distance is respected and maintains perceived appropriate and effective separation between developments and clusters;	- The Proposed Development is located adjacent and would be located behind the consented Strath Oykel wind farm array in views from the A837, Altass and Rosehall; and - The turbines within the Proposed Development have a balanced array that avoids stacking when viewed as a cluster with Strath Oykel wind farm.
Criteria 9 – Landscape setting of nearby wind energy developments is respected and relates well to its context avoiding an increase in the perceived prominence of surrounding wind turbines; and	The change to the underlying landscape character and view composition would be consistent with the baseline cumulative context that includes operational and consented wind farms.
Criteria 10 – Distinctiveness of landscape character is respected and the integrity of LCTs is maintained.	- Concentration of turbine locations and infrastructure in commercial forest locations where the vegetation cover provides screening opportunities. Some keyhole felling would be required to facilitate construction and prevent wind blow, but this would be minimised and replacement planting and ‘in character’ habitat creation and enhancement activities would be undertaken; and - Wind farms are an established feature within the host LCTs.

4.8 Receptors Brought Forward for Assessment

4.8.1 **Table 4.8** provides a summary of receptors carried forward to detailed assessment in the LVIA.

Table 4.8 - Summary of Sensitive Receptors

Receptor	Sensitivity	Justification
Landscape Character Types		
LCT135: Rounded Hills – Caithness and Sutherland	High to Medium	This LCT is partially overlapped by the WLA 34: Reay-Cassley classification.
LCT 139: Rugged Mountain Massif – Caithness and Sutherland	High	This LCT is located within WLA: 29 Rhiddoroch – Beinn Dearg- Ben Wyvis classification and SLA:18 Fannichs, Beinn Dearg and Glen Calvie designations and recognised for its scenic, and undeveloped qualities.
LCT 142: Strath – Caithness and Sutherland	High to Medium	A small-scale landscape and the distinctive skyline that encloses the strath and the focus on views from roads such as the A837 mean the LCT is susceptible to the type of development proposed. This LCT is not overlapped by any classification or designations but is valued locally and has scenic value.
LCT 328: Rugged Mountain Massif – Ross and Cromarty	High	A scenic, undeveloped and diverse character partially overlapped by NSA 36: Assynt – Coigach and partially overlapped by WLA 32: Inverpolly-Glen Canisp.
LCT 329: Rounded Mountain Massif	High	This LCT is overlapped by the SLA17: Ben Wyvis and WLA29: Rhiddoroch-Beinn Dearg-Ben Wyvis designations.
LCT 330: Rounded Hills and Moorland Slopes – Ross and Cromarty	High	Located within WLA: 29 Rhiddoroch – Beinn Dearg- Ben Wyvis classification and SLA:18 Fannichs, Beinn Dearg and Glen Calvie designation and recognised for its wild and scenic qualities. Additionally, one of the units of this LCT extends within the Dornoch Firth NSA.
LCT 332: High Rocky Moorland and Plateau – Ross and Cromarty	High	This LCT is overlapped by the WLA: 29 Rhiddoroch – Beinn Dearg- Ben Wyvis classification and there are open and expansive views from the edges.
Landscape Designations and Classifications		
NSA 36: Assynt - Coigach	High	Nationally important resource recognised for its scenic qualities.
SLA 18: Fannichs, Beinn Dearg and Glen calvie	High	Scenic quality and designation status.
WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis	High	Wild and remote nature recognised by classification.
Settlements		
Rosehall	High	Residential receptors.
Oykel Bridge	High	Residential receptors.
Achnahanat	High	Residential receptors.
Between Achentoul and Altass	High	Residential receptors.
Oape, Doune and Brae (Scree Road)	High	Residential receptors.
Roads		
A837	High to Medium	Tourist users focused on the adjoining landscape and local road users/commuters generally travelling alone and/or focused on road rather than adjoining landscape.
A836	High to Medium	Tourist users focused on the adjoining landscape and local road users/commuters generally travelling alone and/or focused on road rather than adjoining landscape.
A949, Approach to Bonar Bridge	High to Medium	Tourist users focused on the adjoining landscape and local road users/commuters generally travelling alone and/or focused on road rather than adjoining landscape.
Minor road between Altass and Rosehall (C1074)	High to Medium	Tourist users focused on the adjoining landscape and local road users/commuters generally travelling alone and/or focused on road rather than adjoining landscape.
Recreational Routes		
Cape Wrath Trail	High	Recreational footpath.
Croick Glen Einig	High	Recreational footpath.
Rosehall Estate Trails	High	Recreational footpath.

4.9 Potential Effects

Construction

- 4.9.1 The construction phase of the Proposed Development would last approximately 18 months. The methods that would be utilised during the construction phase are described in detail in **Chapter 2** (EIA Report Volume 2).
- 4.9.2 The elements and activities associated with the construction phase of the Proposed Development that have potential to be impact generators and result in effects on the landscape and visual amenity within the Study Area, include the following:
- Construction of Site access tracks (9.54 km including 4.1 km of existing tracks);
 - Construction of temporary construction compound. Two options are currently being explored but only one would be carried forward;
 - Removal of areas of coniferous forestry, moorland, and rough grassland including permanent keyhole felling to facilitate construction of hard standing and erection of wind turbines;
 - Construction of site infrastructure, including a mixture of upgraded forestry tracks, and new tracks between turbine locations;
 - Construction of laydown areas and crane pads;
 - Construction of a substation and compound, incorporating a control building. Two options are currently being explored but only one would be carried forward;
 - Excavation of temporary mineral extraction site (e.g. borrow pit);
 - Excavation and construction of wind turbine foundations;
 - Erection of 11 wind turbines with internal transformers;
 - Excavation of trenches, beside access tracks, for underground cables;
 - Establishment of a temporary concrete batching plant (if required);
 - Heavy goods vehicle (HGV) and abnormal load indivisible load (AIL) deliveries to the Site and movement of vehicles on-site;
 - Construction lighting during the autumn / winter months; and
 - Reinstatement work, including the removal of temporary compounds and any works associated with replacement planting and peatland restoration and habitat creation.

Construction Landscape Effects

- 4.9.3 The majority of the landscape effects during the construction phase concern the disturbance of existing landcover within the Site and potential long-term change to the landscape fabric through the loss of vegetation with consequences for the baseline character and amenity of the Site. It is noted that the current land use of coniferous forestry in itself is not characteristic of the natural landscape and is a resource that is subject to ongoing restructuring through felling operations and is therefore of low sensitivity to change. Further detail is provided in **Technical Appendix 2.3** (EIA Report Volume 4).
- 4.9.4 The current land use of commercial forestry is a dynamic and constantly changing land cover that is managed and felled, and the construction effects in relation to keyhole felling and track creation is not uncharacteristic of normal forestry operations. Most construction effects would be controlled by the adoption of good practice and careful construction management and monitoring regimes (such as those outlined in the Construction and Environmental Management Plan (CEMP), refer to **Technical Appendix 2.1** (EIA Report Volume 4). Given the localised, short, and temporary duration and reversible nature of construction impacts, and the low sensitivity of the commercial forestry they are not considered to constitute conspicuous effects on the physical elements of the landscape fabric.
- 4.9.5 There would be some potential for localised effects on landscape character within the Study Area particularly within the 'host' and adjoining LCT, but the relatively short duration, limited extent, and largely reversible nature of construction impacts would mean that pronounced effects would be limited.
- 4.9.6 Indirect effects on the closest WLA, or the Assynt Coigach NSA and Dornoch Firth NSA or the Fannichs Beinn Dearg and Glencalvie SLA are unlikely to be notable, especially considering the distances involved and the short-term and temporary nature of the construction phase.

Visual Construction Effects

- 4.9.7 There is potential for pronounced effects on the visual amenity of a number of residential receptors, and for users of the A837, recreational routes and summits at certain stages of the construction phase. These

effects would be highly localised, of short duration and reversible; effects would be similar in geographical extent to landscape effects.

Operation

4.9.8 The operational life of the Proposed Development is expected to be up to 50 years and any corresponding landscape and visual effects would be considered temporary but long-term. The operational elements of the Proposed Development to affect the landscape and visual amenity of the Study Area include the following:

- Wind turbine generators;
- On-site access tracks and hardstanding areas;
- Temporary mineral extraction area (the borrow pit);
- Substation and control building; and
- Associate Civil Aviation Authority (CAA) compliant lighting.

Operational Landscape Effects

4.9.9 The landscape fabric and character within the Site has the potential to be impacted by the tracks, borrow pit, and hardstanding that would be established during construction and retained throughout the operational phase of the Proposed Development. These effects would be wholly contained within the 'host' LCTs. The most pronounced effects would be within the Rounded Hills – Caithness and Sutherland (LCT:135) but there would be potential for some limited effects on the character of the adjoining Strath – Caithness and Sutherland (LCT:142) as the main access tracks extend from within this LCT.

4.9.10 The character of the LCTs, designated, and classified landscapes within the wider Study Area would have the potential to be influenced by views of the Proposed Development. However, any visibility would be filtered by intervening landform and vegetation and would be recessive in nature. Views of the Proposed Development would be seen in the context of the existing baseline that includes similar wind energy development of equivalent or similar scale and height, reducing the degree of contrast and magnitude of impacts. Wind energy is an established feature of the landscape within the area; the operational Rosehall and Achany wind farms are visible from sections along the A837 on the approach to and from Lairg.

4.9.11 The detailed assessment of residual effects is described in **Section 4.11**.

Operational Visual Effects

4.9.12 The turbines and associated infrastructure have been located within an area of commercial forestry and set back from the edge of a ridgeline to limit the effects on the closest visual receptors within and to the south of Strath Oykel. This is demonstrated by the blade tip ZTV refer to **Figure 4.9** (EIA Report Volume 3a). Visibility is restricted by intervening landform by visual receptors at the bottom of the slope.

4.9.13 The detailed assessment of residual effects is described in **Section 4.11**.

Decommissioning

4.9.14 The effects of decommissioning are not addressed in this Chapter and are scoped out of further assessment.

4.9.15 Effects associated with decommissioning would be similar in scale and extent to the landscape and visual effects during construction. The Proposed Development may be viewed as reversible as the Site could be returned to a similar land use and state as before construction and would benefit from the habitat creation and peatland and bog restoration associated with the Proposed Development.

4.10 Additional Mitigation

Mitigation during Construction

4.10.1 The following precautionary mitigation measures would be adopted during construction:

- All working areas would be restricted as far as practicable to specified areas to prevent incursion of site plant into non-construction areas;
- Material storage and temporary stockpiles would be retained for the shortest possible duration and would be sited in accordance with the latest best practice guidance and to avoid visual intrusion to neighbouring visual receptors in accordance with the Outline Construction Environmental Management Plan (OCEMP) see **Technical Appendix 2.1** (EIA Report Volume 4); and
- The turbine array and access paths have been designed to limit effects on deep peat. Where peatland materials do need to be excavated or moved, they will be placed wherever practicable to

avoid double handling, reduce the number of vehicle movements and to reduce the potential drying out and oxidation of the material. See the Outline Peatland Management Plan (OPMP) **Technical Appendix 8.3** (EIA Report Volume 4).

- 4.10.2 The location of temporary excavations construction compounds and laydown areas are shown on **Figure 2.1** (EIA Report Volume 3a). Note: there are two options for the two construction compound locations, only one option (two compounds in total) would be taken forward. These have been located to avoid environmental impacts such as the disturbance of deep peat or existing vegetation to be retained. These elements of the construction phase would be required for a short duration and their locations reinstated to a condition consistent with adjoining areas that are undisturbed by the Proposed Development.

Mitigation during Operation

- 4.10.3 No additional landscape or visual related mitigation is proposed during operation.

4.11 Residual Effects

- 4.11.1 The assessment of residual effects are identified by establishing and describing the changes to the landscape and visual baseline, which includes operational wind farms, after embedded and additional mitigation.

Construction

Landscape Fabric

- 4.11.2 The key changes to the fabric of the landscape within the Site due to the construction of the Proposed Development would relate to minor and localised changes to landform, and landcover through keyhole felling (noting that this change is consistent with the baseline of commercial forestry). This is considered to be a localised effect that would be largely reversible upon decommissioning. It would result in a Slight magnitude of impact within the Site which has High sensitivity. This would result in direct, temporary and short-term **Moderate** (not significant) residual effects.

Landscape Character Types

- 4.11.3 The construction phase would have the most potential to influence the 'host' LCTs such as 135: Rounded Hills -Caithness and Sutherland and 142: Strath - Caithness and Sutherland with limited potential to influence LCTs within the wider landscape. Impacts would be localised to construction locations and would be temporary and short-term. Most of the causes of disturbance would be removed during reinstatement or ameliorated by activities such as compensatory/new forestry planting or habitat creation. The magnitude of impact on the host landscape character types would be Slight, reducing to None. Both LCT 135 and 142 have High-Medium sensitivity and the residual effect would be direct, temporary and short-term **Moderate** (not significant) reducing to **None**.

Landscape Designations and Classifications

- 4.11.4 The Proposed Development is located wholly outwith areas of landscape designation or classification, as shown on **Figure 4.5** (EIA Report Volume 3a). It would have no potential for direct effects on any landscape designations or classifications. Some indirect effects may be possible during stages of construction, such as the use of operational cranes during the erection of wind turbines, but such effects would be highly localised and would be of a short duration. This would result in a Negligible magnitude of impact within localised areas of the margins of WLA 29 or SLA 18 which have High sensitivity due to their status resulting in an indirect, temporary and short-term **Moderate/Minor** (not significant) residual effect. The residual effect within the interiors of the designation and classification would be **None**.

Visual Amenity

- 4.11.5 Most construction activities associated with the Proposed Development would be of a low height and visually constrained by the surrounding commercial forestry. Only the taller vertical elements such as the wind turbines, and cranes would have the potential to be viewed by visual receptors within the wider landscape. The receptors affected would vary with the area under construction but construction works would have the most potential to exert an influence on views from a short section of the A837, Scree Road, Oykel Bridge to Glen Einig footpath and the minor road through Altass.
- 4.11.6 These effects would be limited to the final stages of the construction phase and would extend over a short period of time. This would result overall in a localised Slight magnitude of impact, reducing to None within the wider landscape due to intervening screening by topography or vegetation. The visual receptors in the locality are mostly residents, people undertaking recreation such as fishing or walking, or tourists and accordingly are of High sensitivity. The residual effect would be temporary, and short-term **Moderate** (not significant) and would reduce in line with the reducing magnitude of impact to **None**.

Operation

Landscape Fabric

- 4.11.7 No additional adverse effects are anticipated on the landscape fabric following completion of the construction phase. Replacement and compensatory planting, and habitat creation and peatland restoration / enhancement would gradually mature, with some localised benefits on landscape condition and biodiversity potential.

Landscape Character Types

- 4.11.8 Seven LCTs have been assessed in the LVIA. These are listed and described in **Technical Appendix 4.1** (EIA Report Volume 4). A summary of the assessment is detailed below. The baseline context (operational wind farms) is included and the cumulative effects (Scenarios 1 to 3) are assessed at **Section 4.12**.
- 4.11.9 The distinctiveness of landscape character has been respected within the design evolution and the integrity of LCTs is maintained. The effects on the key characteristics of the LCTs, within the Study Area are assessed as follows:
- LCT 135: Rounded Hills – Caithness and Sutherland: Significant effects during operation would be localised to the Site and areas within proximity, including the area to the west of Strath Cuileannach, and the summit of Beinn an Eoin and would primarily relate to the introduction of a new prominent development within a small-scale landscape. See assessment viewpoints 10, 14, 15 and 19 (**Figures 4.22, 4.26, 4.27, and 4.31** (EIA Report Volume 3b)). Wind energy is an established land use within certain areas of the LCT which lowers the susceptibility of the receptor to this type of development. There would be higher susceptibility within the more remote and upland areas, that are relatively undeveloped. The convex character of the rounded hillside topography limits longer-distance views. The Proposed Development is therefore unlikely to influence the overall key characteristics of this LCT to a significant extent especially considering its geographic extent. LCT 139: Rugged Mountain Massif – Caithness: Significant effects would be localised and relate to panoramic views from specific locations on the under summit of Carn a Choin Deirg where the Proposed Development is prominent in views. The key characteristics of this LCT which relate to its undeveloped and remote nature would be susceptible to urbanising influences from the type of development proposed, which could be seen to be anomalous. These effects would be highly localised and relate to specific locations within the LCT. Overall, the Proposed Development is therefore unlikely to influence the key characteristics of this LCT to a significant extent.
 - LCT 142: Strath – Caithness and Sutherland: Significant effects would be localised to areas located within the Site or areas adjacent and along Strath Oykel. They would relate primarily to proximity and the introduction of a new and prominent development on the sensitive skyline of the strath and from Oykel Bridge, Strath Oykel and Strath Cuileannach and from where the eastern access option extends into the LCT. Given the geographical extent of the LCT this is unlikely to influence the key characteristics overall to a significant extent, although the concentration of effects along the length of a narrow extension of this LCT would emphasise the effects within the immediate context of the Strath. See viewpoints 7, 8, 9, 16, 20 and 24 (**Figures 4.19, 4.20, 4.21, 4.28, 4.32 and 4.36** (EIA Report Volume 3b)).
 - LCT 328: Rugged Mountain Massif – Ross and Cromarty: No significant effects have been identified for this LCT. See viewpoints 1 and 4 (**Figures 4.13, and 4.16** (EIA Report Volume 3b)). The key characteristics of this LCT, which relate to its undeveloped and remote nature, would be susceptible to urbanising influences from the type of development proposed, which could be seen to be anomalous. These effects would be highly localised and relate to views from summits such as Glas Mheall Mor and Cul More which are located over 27 km from the Site and have a developed context that includes operational wind farms such as Achany, Rosehall and Gordonbush. The Proposed Development does not influence the key characteristics of this LCT to a significant extent.
 - LCT 329: Rounded Mountain Massif: No significant effects have been identified for this LCT. See viewpoint 12 (**Figure 4.24** (EIA Report Volume 3b)). Effects would be localised to Ben Wyvis and would relate to influences on the perceptual experience of the wild and undisturbed nature of the landscape on panoramic and long-distance views. The Proposed Development would intensify indirect effects on the degree of remoteness; however, views already have a developed context and the Proposed Development would not introduce a wholly new feature to views. The Proposed Development does not influence the key characteristics of this LCT to a significant extent.
 - LCT 330: Rounded Hills and Moorland Slopes – Ross and Cromarty: No significant effects have been identified for this LCT. There is limited visibility from this LCT. Low level visual effects would be localised and relate to intermittent views from higher ground to the west near Cnoc Damh and summits south of the Dornoch Firth near Cnoc Muigh-bhlairaidh and Beinn Tharsuinn. The key characteristics of this LCT relate to its topography, large-scale and the physical elements that make up the landscape. These features would be unaffected by the Proposed Development. There is

some potential for an influence on the perceptual qualities in relation to wildness, but wind energy and transmission is an established land use within certain areas of the LCT, particularly in views to the Site from the southeast and the Proposed Development is therefore unlikely to influence the characteristics of this LCT to a significant extent.

- LCT 332: High Rocky Moorland and Plateau – Ross and Cromarty: No significant effects have been identified for this LCT. There is limited visibility from this LCT. The key characteristics of this LCT relate to its rugged and remote nature with limited contemporary influences. These qualities would be susceptible to urbanising influences. These effects would be highly localised from the edges of the LCT with open and expansive views to the east from near Rhiddoroch Forest and from the east facing slopes of Beinn Eilideach. Views to Loch Broom and the coastline would be unaffected.

4.11.10 Significant effects were restricted to the following LCTs:

- LCT 135: Rounded Hills – Caithness and Sutherland - Ranging from **None** (not significant) to **Major** (significant) adverse residual effect on-site and the area immediately adjacent.
- LCT 139: Rugged Mountain Massif – Caithness and Sutherland – Ranging from **None** (not significant) to up to **Major/Moderate** (significant) adverse residual effect with localised Major adverse at Carn an Choin Deirg under summit; and
- LCT 142: Strath – Caithness and Sutherland – Ranging from **None** (not significant) up to **Major** (significant) adverse residual effect at locations within Oykel Bridge, Strath Oykel, and Strath Cuilennach.

Landscape Designations and Classifications

4.11.11 A thorough assessment of effects on landscape designations and classifications is provided in **Technical Appendix 4.2** (EIA Report Volume 4) and a WLIA is set out in **Technical Appendix 4.6** (EIA Report Volume 4) for WLA 29: Rhiddoroch - Beinn Dearg – Ben Wyvis. The following is a summary of the residual landscape and visual effects. The baseline context (operational wind farms) is included and the cumulative effects (Scenarios 1 to 3) are assessed at **Section 4.12**.

NSA 36

- 4.11.12 The Proposed Development is located outwith of the designation and would have no potential for direct effects on the physical aspects of the NSA. There would be some potential for effects on views from mountain summits Cul More Summit, Canisp Summit, and Ben More Assynt Summit. The effects considering the existing developed context of the views to the southeast would not be significant.
- 4.11.13 The expansive and panoramic nature of the views available from the mountain summits would remain, but there would be a discernible change and an increase in the influence of wind energy development on distant views to the southeast. Views to the coastline would be unaffected.
- 4.11.14 The underlying view composition would be consistent with the baseline context. The in-addition effects attributable to the Proposed Development in respect of existing wind farms would be localised and not significant.
- 4.11.15 Visibility would be restricted to southeast facing summits within the margins and most of the designation would have no visual effects. Views would occur in the vicinity of Cul Mor, Canisp, and Ben More summits. The Proposed Development would not affect the special qualities of the designation or views to the coastline and any effects would be highly localised and would be in context with the existing baseline. Consequently, the Proposed Development would not compromise the integrity of NSA 36.
- 4.11.16 The Proposed Development would represent a minor addition to the influence of wind energy development. There would be minimal impacts on the baseline condition of the landscape character or view composition. There would be a negligible magnitude of impact on NSA 36 which as it has High sensitivity would result in up to **Moderate/ Minor** (not significant) adverse residual effect.

SLA: 18

- 4.11.17 The Proposed Development is located outwith the SLA designation and would have no direct physical effect on this designation.
- 4.11.18 The SLQs with the most potential to be affected include *'The wide extent of the mountain ranges, limited access routes, rough ground and uninhabited character combine to create a great sense of wildness within an expansive, mountain vastness'* and *'Small areas of clear human habitation, vast areas where there is none. The majority of human interaction within the landscape is centred around the River Broom in Strath More.'* There would be potential for an influence on the perceptual qualities of views and a diminishment of the sense of wildness. These effects would be highly localised and would relate to views that have a developed context.
- 4.11.19 Visibility would vary across the designation, with areas with no visibility, and areas of greater visibility such as from summits and elevated areas of land associated with Bodach Mor. Only a small proportion

of the designation would be subject to views, and the Proposed Development would contribute to the influence of the operational wind energy development in some views, but visibility would be variable. The Proposed Development would have potential to influence but not compromise the integrity of this SLA.

- 4.11.20 The magnitude of impact on the SLA would range from None in areas of no visibility of the Proposed Development to Slight along the northern margins which as the SLA has a High sensitivity would result in a **Moderate** (not significant) adverse residual effect.

WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis

- 4.11.21 The detailed assessment of the effect of the Proposed Development on this WLA is provided in **Technical Appendix 4.6** (EIA Report Volume 4).
- 4.11.22 The Proposed Development is not located within, WLA 29: Rhiddoroch – Beinn Dearg – Ben Wyvis and therefore there can be no physical or direct landscape impacts on the WLA. There is potential for indirect effects on views to and from the WLA and influences on perceptual qualities particularly WLQs 1 and 3 for which it has been classified.
- 4.11.23 The Proposed Development would be visible in some views to the WLA from the A837 to the north of the classification where “...the outward slopes form a fairly simple visual backdrop” but the “...interior mountains and plateaus are less easy to see due to screening by the intervening landform.” Visibility to the Proposed Development from the inner core and the south of the WLA where WLQs are most pronounced is limited.
- 4.11.24 Visibility is shown to be limited and, in most cases, restricted to north or northeast facing summits and elevations with views directed over the outer margins of the classification to the wider landscape beyond. Such visibility is relatively localised and does not affect the majority of the WLA. Moreover, visibility is not in itself an indicator of the level of effects on the specific wild land qualities of the WLA.
- 4.11.25 The Proposed Development would be backclothed by landform in most elevated views from the summits of Bodach Mor, Carn Salachaidh, Ben Wyvis, Diebidale Ridge, and Seana Bhragh would appear as a small component of a panoramic view that already contains operational wind energy development, such as Rosehall, Achany, Kilbraur, and Gordonbush wind farms.
- 4.11.26 The Proposed Development would not affect views from the WLA to the Assynt Coigach coastline in the northwest or the largely uninhabited, and wild inner-core areas of the WLA to the south. The WLIA indicates that no significant effects are predicted on the WLA key attributes or characteristics.
- 4.11.27 Visibility would vary across the WLA with areas with no visibility and greater visibility from summits and elevated areas of land associated with Bodach Mor. Only a small proportion of the WLA would be subject to views. The Proposed Development would have the potential to influence views on the margins but not compromise the integrity of the WLA classification. A large proportion of the classification particularly the more remote inner core would have limited intervisibility with the Proposed Development. There would be minimal impacts on the baseline condition of the landscape character or view composition.
- 4.11.28 The magnitude of impact on the WLA qualities would vary from negligible to slight. The sensitivity of the WLQs is High to Medium resulting in up to a **Moderate** (not significant) adverse residual effect.

Visual Amenity

- 4.11.29 The location of settlements, roads, recreational routes, trails, and summits are shown in **Figure 4.7** (EIA Report Volume 3a). The baseline views and predicted magnitude of impact of the Proposed Development on the visual amenity of visual receptors is described in **Technical Appendix 4.3** (EIA Report Volume 4).

Settlements

- 4.11.30 The following settlements and hamlets have been carried forward to assessment.
- Rosehall: Visual effects would be most pronounced from the edge of the settlement along the A837 on the section of road between Rosehall and Oykel Bridge. Several dispersed properties are located on the A837 roadside with an open aspect that faces the River Cassley and oblique views to the Strath Oykel. Views would be from the curtilage of the properties and predominantly filtered. Views would be partially limited by the localised landform variation, woodland, roadside vegetation, and the built environment; although, upper storeys and the approach to properties would have clearer views. The Proposed Development would be seen in the developed context of the operational Rosehall and Achany wind farms. The magnitude of impact would be negligible which as residents have High sensitivity would result in up to a **Moderate** (not significant) adverse residual effect.
 - Oykel Bridge: The Proposed Development would be prominent in the view, where views are not filtered by intervening built form or trees and woodland. Up to five turbines would be viewed emerging above landform (T3, T1, T4, T5, and T2). The blade tips of four other turbines would be visible intermittently (T11, T10, T9 and T6). Two turbines would be completely screened from view (T7 and T8). See **Figure 4.19** (EIA Report Volume 3b) and **Figure 4.32** (EIA Report Volume 3b)

which illustrate the range of visual effects from two locations in the proximity of Oykel Bridge. The magnitude of impact would be up to substantial which, as residents have High sensitivity, would result in up to a **Major** (significant) adverse residual effect.

- Achnahanat: Views to the Proposed Development would be intermittent and filtered by intervening built form, landform, and vegetation. Any visibility to the Proposed Development would be glimpsed. The magnitude of impact would be negligible which as residents have High sensitivity would result in up to a **Moderate/Minor** (not significant) adverse residual effect.
- Between Achintoul and Altass: Views to the Proposed Development would be intermittent and glimpsed between gaps in roadside tree and woodland planting. See **Figure 4.36** (EIA Report Volume 4). The magnitude of impact would be slight which as residents have High sensitivity would result in up to a **Moderate** (not significant) adverse residual effect.
- Oape, Doune and Brae: Field reconnaissance suggests that views would be restricted by the intervening landform, roadside and woodland vegetation, and the built environment that would act to screen/ filter views towards the Proposed Development. Most properties located along Scree Road are situated within vegetated settings and the primary aspect from the properties would be predominantly orientated to face the River Oykel and the Strath which provides an open and panoramic view. Individual properties on elevated positions would have greater effects with most properties on the lower slopes with limited visibility. The magnitude of impact would be negligible which as residents have High sensitivity would result in up to a **Moderate/Minor** (not significant) adverse residual effect.

Individual Properties – Residential Visual Amenity

- 4.11.31 Individual properties are not generally included within an LVIA because the purpose of the planning system is not to protect private views and the general outlook from individual properties. A RVAA has been completed for residential properties within 2.5 km of the nearest turbines which have the most potential for an overbearing effect, see **Technical Appendix 4.4** (EIA Report Volume 4). The Residential Visual Amenity Threshold (RVAT) has not been breached and effects are assessed as ranging from **Low** (not significant) to **High/Moderate** (significant) adverse residual effects.

Transport Routes

- 4.11.32 Effects on transport routes would be variable throughout the Study Area. The following transport routes have been carried forward to assessment:
- A837: The A837 has the most potential for significant visual effects from where it branches off the A836 until it extends past Loch Craggie. For long sections of the route there would be limited visibility because of extensive roadside vegetation. A route visibility analysis with cumulative wirelines has been prepared for a section of this route, see **Technical Appendix 4.7** (EIA Report Volume 4). The magnitude of impact would be up to substantial in proximity to the Proposed Development (approximately 3 to 5 km) from the approach to Oykel Bridge and a short section along Strath Oykel, which as residents and tourists have High sensitivity and general road users in this context would have Medium sensitivity would result in up to a **Major** (significant) adverse residual effect.
 - Minor Road between Altass and Rosehall: This route has an elevated view across the Strath Oykel. Views are filtered by landform and roadside trees and woodland belts. Open views are available to the Proposed Development from gaps or through thinner sections of vegetation. See **Figure 4.36** (EIA Report Volume 3b) and accompanying viewpoint description in **Technical Appendix 4.3** (EIA Report Volume 4). The magnitude of impact would be up to negligible which as residents and tourists have High sensitivity and general road users in this context would have Medium sensitivity would result in up to a **Moderate/Minor** (not significant) adverse residual effect.
 - A949: A distant view (22.6 km, west) to the Proposed Development from a short section of the route on the approach to Bonar Bridge would be extensively screened by intervening landform. See **Figure 4.23** (EIA Report Volume 3b) and accompanying viewpoint description in **Technical Appendix 4.3** (EIA Report Volume 4).
 - Two blade tips would be intermittently visible (T6 and T7) emerging above the landform. The magnitude of impact would be up to negligible which as residents and tourists have High sensitivity and general road users in this context would have Medium sensitivity would result in up to a **Moderate/Minor** (not significant) adverse residual effect.

Recreational Routes, Trails and Summits

- 4.11.33 Effects on the Cape Wrath Trail, Croick Glen Einig, Rosehall Estate Trails, and the Sika Trail Cycle Route were assessed as not significant, see **Section 4.6** and **Figure 4.7** (EIA Report Volume 4). Views were oblique and intermittent in nature and largely filtered by intervening vegetation due to the extensive woodland within the Study Area which is not accounted for within the ZTV analysis.

- 4.11.34 Views from summits, trails and core paths within the wider Study Area are assessed within **Technical Appendix 4.3** (EIA Report Volume 4).

Viewpoint Assessment

- 4.11.35 In total, 24 assessment viewpoints captured in daylight have been selected to assess the effect of the Proposed Development on the visual amenity within the Study Area. The viewpoint assessment within **Technical Appendix 4.3** (EIA Report Volume 4) assesses the viewpoints in respect of their baseline context and the residual effects arising from the operational phase of the Proposed Development. The viewpoint assessment is accompanied by a series of visualisations in **Figures 4.13 to 4.36** (EIA Report Volume 3b). Three viewpoints have been provided to illustrate the effects of lighting during the hours of darkness, see **Figures 4.19, 4.20, and 4.21** (EIA Report Volume 3b).

- 4.11.36 The assessment concluded there would be significant 'En Solo' residual effects on the landscape character and visual receptors at the following viewpoint locations:

- VP 5: Bodach Mor Summit (9.2 km, view direction northeast) - **Major** (significant) adverse residual effect;
- VP 7: Oykel Bridge (2.7 km, view direction southeast) - **Major** (significant) adverse residual effect;
- VP 8: Strath Oykel (3.9 km, view direction Southwest) – **Major** (significant) adverse residual effect;
- VP 9: A837, Kyle of Sutherland (6.8 km, view direction southwest) – **Major/Moderate** (significant) adverse residual effect;
- VP 14: Beinn an Eoin Summit (9.5 km, view direction south) - **Major/ Moderate** (significant) adverse residual effect;
- VP 15: Track West of Strath Cuileannach (2.4 km, view direction east) - **Major/ Moderate** (significant) adverse residual effect;
- VP 16: Strath Cuileannach (2.3 km, view direction north) - **Major/Moderate** (significant) adverse residual effect;
- VP 20: Oykel Bridge to Glen Einig Footpath (2.1 km, view direction southeast) - **Major** (significant) adverse residual effect;
- VP 21: A837, Loch Craggie (9.6 km, view direction southeast) - **Major/ Moderate** (significant) adverse residual effect; and
- VP 23: Carn a Choin Deirg, Below Summit (4.9 km, view direction north) - **Major** (significant) adverse residual effect.

Decommissioning

- 4.11.37 The landscape and visual effects would be equivalent to those assessed during the construction phase and is not assessed further.

4.12 Cumulative Assessment

Emergent Pattern of Wind Farm Development

- 4.12.1 The Proposed Development, although designed as a standalone scheme, has many facets of the consented neighbouring Strath Oykel wind farm immediately to the east. Both wind farms have turbines of up to 200 m tip arranged in an irregular cluster along a ridgeline to the south of the River Oykel. The Proposed Development is therefore consistent with the emergent pattern of development within the immediate context. It is set back behind and forms a continuation of the consented Strath Oykel and Meall Buidhe arrays. This arrangement concentrates the geographical distribution of wind energy within a defined cluster alignment and prevents the dispersal of wind energy into areas that are more sensitive.
- 4.12.2 ZTV pairings have been provided for operational, consented, proposed (in-planning) and scoping wind farms within the 45 km Study Area in **Figures 4.12(a-t)** (EIA Report Volume 3a). These pairings illustrate the viewshed of the combined wind farms. Of these pairings the most relevant is **Figure 4.12 (k)** (EIA Report Volume 3a) which presents the viewshed of the consented Meall Buidhe and Strath Oykel wind farms in-combination with the Proposed Development. These three wind farms would form a cluster along the same ridgeline. Notably the additional geographical spread of the Proposed Development is fairly limited, with a visual influence on the land immediately to the west and south but with less individual influence to the southeast and the northeast.

Potential Cumulative Construction Effects

- 4.12.3 There is potential for cumulative construction effects in the Study Area, particularly in relation to the construction of the consented Meall Buidhe and Strath Oykel wind farms should they overlap. There is

currently no certainty on the timescale for the delivery of the cumulative developments identified in **Table 4.6**. There would be some landscape and visual benefits from these developments having concurrent construction periods as this would limit the period of time that construction activities would be taking place within the area.

- 4.12.4 The magnitude of impact would be up to moderate which as the host LCTs and residents and tourists have High sensitivity would result in up to a **Major/Moderate** (significant) adverse residual effect.

Potential Cumulative Operational Effects

- 4.12.5 Potential cumulative effects would arise in relation to the operation of the Proposed Development with other existing, consented, in-planning, and in-scoping (should they progress into operational assets) wind energy developments within the Study Area. Three scenarios are assessed in addition to the Site 'En Solo' in its baseline context (that includes existing, operational wind farms) as follows:

- **Scenario 1** – The Proposed Development in conjunction with Existing and Consented (wind farms);
- **Scenario 2** – The Proposed Development in conjunction with Existing, Consented, and Proposed (wind farms); and
- **Scenario 3** - The Proposed Development in conjunction with Existing, Consented, Proposed and a selection of In-Scoping (wind farms) within proximity to the Proposed Development. Other in-scoping schemes are not assessed as their influence would be more limited due to distance.

- 4.12.6 The operational baseline and the potential future baseline including consented, in-planning and in-scoping wind farm developments are listed in **Table 4.6**.

- 4.12.7 The following assessment describes the In-Addition and In-Combination residual cumulative effects on LCTs, Landscape Designations and Classifications, and visual amenity. The cumulative (En Solo in baseline, and Scenarios 1 to 3) residual effects on landscape character and visual amenity at the 24 viewpoint locations are assessed within **Technical Appendix 4.3** (EIA Report Volume 4).

LCTs

- 4.12.8 There would be predominantly in-combination but also some in-addition significant cumulative effects from summits and in proximity. Significant effects are highly localised to specific locations within the LCTs and relate to views where the Proposed Development has relative prominence in the view. There would be more potential for in-combination cumulative effects to influence key characteristics in relation to perceptual qualities i.e., wildness or remote and undeveloped character in Scenario 2 and 3. The relative prominence of the Proposed Development and the In-Addition contribution to cumulative effects would reduce in Scenario 3.

- LCT 135: Rounded Hills – Caithness and Sutherland. The cumulative magnitude of impact would vary between none and substantial. This LCT is assessed as High-Medium sensitivity the resulting residual cumulative effect would be up to **Major** (significant) for Scenarios 1, 2 and 3.
 - Scenario 1:
 - In-Addition: Ranging from **None** (not significant) to **Major** (significant) adverse residual cumulative effects.
 - In-Combination: As above.
 - Scenario 2:
 - In-Addition: Ranging from **None** (not significant) to **Major** (significant) adverse residual cumulative effects.
 - In-Combination: As above.
 - Scenario 3:
 - In-Addition: Effects range from **None** (not significant) to **Major** (significant) adverse residual cumulative effects.
 - In-Combination: As above.
- LCT 139: Rugged Mountain Massif – Caithness and Sutherland: The cumulative magnitude of impact would vary between none and moderate, with some localised substantial impacts at the below summit at Carn an Choin Deirg. This LCT is assessed as High sensitivity the resulting In-Combination residual cumulative effect overall would be up to **Major/Moderate** (significant) for Scenarios 1, and 2 and **Major** for Scenario 3.
 - Scenario 1:
 - In-Addition: Ranging from **None** (not significant) to **Moderate** (not significant) adverse.

- In-Combination: Ranging from **None** (not significant) to **Major/Moderate** (significant) adverse.
- Scenario 2:
 - In-Addition: Ranging from **None** (not significant) to **Moderate** (not significant).
 - In-Combination: Ranging from **None** (not significant) to **Major/Moderate** (significant) adverse.
- Scenario 3:
 - In-Addition: Effects range from **None** (not significant) to **Moderate** (not significant).
 - In-Combination: Ranging from **None** (not significant) to **Major** (significant) adverse.
- LCT 142: Strath – Caithness and Sutherland: The cumulative magnitude of impact would vary between none and substantial. This LCT is assessed as High-Medium sensitivity the resulting residual in-addition and in-combination cumulative effect would be up to **Major** (significant) for Scenarios 1, 2 and 3.
 - Scenario 1:
 - In-Addition: Ranging from **None** (not significant) to **Major** (significant) adverse residual cumulative effects at.
 - In-Combination: As above.
 - Scenario 2:
 - In-Addition: Ranging from **None** (not significant) to **Major** (significant).
 - In-Combination: As above.
 - Scenario 3:
 - In-Addition: Effects range from **None** (not significant) to **Major** (significant).
 - In-Combination: As above.
- LCT 328: Rugged Mountain Massif: The cumulative magnitude of impact would vary between none and moderate. This LCT is assessed as High sensitivity the resulting residual cumulative in-combination effect would be up to **Major/Moderate** (significant) for Scenarios 2 and 3 with no significant effects during Scenario 1.
 - Scenario 1:
 - In-Addition: No significant effects.
 - In-Combination: As above.
 - Scenario 2
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) from specific locations on the summits at Cul Mor and Glas Meall.
 - Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) from specific locations on the summits at Cul Mor and Glas Meall.
- LCT: 329: Rounded Mountain Massif: The cumulative magnitude of impact would vary between none and substantial. This LCT is assessed as high sensitivity and the resulting residual in-combination cumulative effect would be up to **Major** (significant) for Scenario 3 with no significant in-addition or in-combination effects during Scenarios 1 and 2.
 - Scenario 1:
 - In-Addition: No significant effects.
 - In-Combination: As above.
 - Scenario 2:
 - In-Addition: No significant effects.

- In-Combination: As above.
- Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Ranging from **None** (not significant) to **Major** (significant) at the summit of Ben Wyvis.

4.12.9 As might be expected the most pronounced effects relate to in-combination cumulative effects during Scenario 2 and 3. It should be noted that these scenarios have a degree of uncertainty and may not proceed. Effects on other LCTs or SCTs within the Study Area would not be significant. Assessment viewpoints have identified areas with the greatest extent of visibility and therefore the greatest potential to influence views and landscape character at the viewpoint location. The assessment of effects relates to specific locations chosen to represent heightened visibility with lower effects predicted within the wider LCT areas.

Landscape Designations and Classifications

4.12.10 The following is a summary of the In-Addition and In-Combination cumulative residual landscape and visual effects.

NSA 36

4.12.11 The cumulative magnitude of impact would range from none to up to moderate (In-Combination). NSA 36 is of High sensitivity and the resulting In-Combination cumulative residual effect would be up to **Major/Moderate** to **Major** (significant) in Scenarios 1, 2 and 3 with no significant In-Addition effects.

- Scenario 1:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect
- Scenario 2:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect
- Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

SLA18

4.12.12 The cumulative magnitude of impact would range from none to up to substantial (In-Combination) in localised areas within the margin of the designation. SLA 18 is of High sensitivity and the resulting cumulative residual In-Combination effects would be up to **Major** (significant) for Scenarios 1, 2 and 3.

- Scenario 1:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.
- Scenario 2:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

WLA 29

4.12.13 The cumulative magnitude of impact would range from none to up to substantial (In-Combination). WLA 29 is of High sensitivity and the resulting in-combination cumulative residual effect would be up to **Major** (significant) in Scenarios 1, 2 and 3, with no significant In-Addition effects.

- Scenario 1:
 - In-addition: No significant effects.

- In-combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 2:
 - In-addition: No significant effects.
 - In-combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-addition: No significant effects.
 - In-combination: Up to **Major** (significant) adverse cumulative residual effect.

Settlements

Rosehall

- 4.12.14 The cumulative magnitude of impact would range from none to up to substantial (in-combination). Residential receptors are of High sensitivity and the resulting In-Combination cumulative residual effect would be up to **Major** (significant) in Scenarios 1, 2 and 3, with no significant In-Addition effects.
- Scenario 1
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
 - Scenario 2:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
 - Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

Oykel Bridge

- 4.12.15 The cumulative magnitude of impact would range from none to up to substantial (in-combination). Residential receptors are of High sensitivity and the resulting in-combination and in-addition cumulative residual effects would be up to **Major** (significant) in Scenario 1.
- Scenario 1
 - In-Addition: Up to **Major** (significant) adverse cumulative residual effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.
 - Scenario 2:
 - In-Addition: No proposed wind farms visible
 - In-Combination: As above.
 - Scenario 3:
 - In-Addition: No proposed wind farms visible
 - In-Combination: As above.

Achnahanat

- 4.12.16 The cumulative magnitude of impact would range from none to up to substantial (in-combination). Residential receptors are of High sensitivity and the resulting In-Combination cumulative residual effect would be up to **Major** (significant) in Scenarios 2 and 3 with no significant In-Addition effects.
- Scenario 1
 - In-Addition: No significant effect.
 - In-Combination: Up to **Moderate** (not significant) adverse cumulative residual effect.
 - Scenario 2:
 - In-Addition: No significant effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

- Scenario 3:
 - In-Addition: No significant effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

Between Auchintoul and Altass

4.12.17 The cumulative magnitude of impact would range from none to up to substantial (In-Combination). Residential receptors are of High sensitivity and the resulting In-Combination cumulative residual effect would be up to **Major** (significant) in Scenarios 2 and 3 with no significant In-Addition effects.

- Scenario 1
 - In-Addition: No significant effects.
 - In-Combination: Up to **Moderate** (not significant) adverse cumulative residual effect.
- Scenario 2:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

Oape, Doune and Brae

4.12.18 The cumulative magnitude of impact would range from none to up to substantial (In-Combination). Residential receptors are of High sensitivity and the resulting In-Combination cumulative residual effect would be up to **Major** (significant) in Scenarios 3 with no significant In-Addition effects.

- Scenario 1
 - In-Addition: No significant effects.
 - In-Combination:
- Scenario 2:
 - In-Addition: No significant effects.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-Addition: Up to **Moderate** (not significant) adverse cumulative residual effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

Transport Routes

A837

4.12.19 The cumulative magnitude of impact would range from none (no cumulative effects) to up to substantial (In-addition and In-combination). Transport receptors in this context are of Medium sensitivity and the resulting cumulative residual effect would be up to **Major** (significant) in Scenarios 1, 2 and 3.

- Scenario 1
 - In-Addition: Up to **Major** (significant) adverse cumulative residual effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.
- Scenario 2:
 - In-Addition: Up to **Major** (significant) adverse cumulative residual effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-Addition: Up to **Major** (significant) adverse cumulative residual effect.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

Minor Road between Altass and Rosehall

- 4.12.20 The cumulative magnitude of impact would range from none to up to substantial (In-Combination). Transport receptors are of Medium sensitivity in this context and the resulting In-Combination cumulative residual effect would be up to **Major** (significant) in Scenarios 1, 2 and 3.

- Scenario 1
 - In-Addition: Not significant.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 2:
 - In-Addition: Not significant.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.
- Scenario 3:
 - In-Addition: Not significant.
 - In-Combination: Up to **Major** (significant) adverse cumulative residual effect.

A949

- 4.12.21 The cumulative magnitude of impact would be up to moderate (In-Combination). Transport receptors in this context are of Medium sensitivity and the resulting cumulative residual In-Combination effects would be **Major** (significant) in Scenario 3.

- Scenario 1
 - In-Addition: Not significant.
 - In-Combination: Not significant.
- Scenario 2: No proposed wind farms visible
- Scenario 3:
 - In-Addition: Not significant.
 - In-Combination: Up to **Major/Moderate** (significant) adverse cumulative residual effect.

4.13 Summary and Conclusions

- 4.13.1 The LVIA assessment has been undertaken in accordance with current best practice professional standards and guidance and takes cognisance of statutory and non-statutory stakeholder engagement.

- 4.13.2 The LVIA considers effects on:

- Landscape fabric, caused by changes to the physical form and constituents of the landscape;
- Landscape character, caused by changes to key characteristics and qualities of the seascape/landscape; and
- Visual amenity caused by changes to the visual composition of views and the wider visual resource.

- 4.13.3 The scope of the assessment has been informed by a combination of:

- Consultation outcomes;
- Planning policy and formal published guidance; and
- Preliminary and revised visual analysis.

- 4.13.4 **Section 4.6** provides a description of the existing landscape and visual context and identifies receptors liable to potential direct or indirect effects within the Study Area. This analysis has informed the design iteration to avoid and minimise landscape and visual effects.

- 4.13.5 **Section 0** identifies the potential impact generators associated with the construction and operation phases of the Proposed Development. The Proposed Development may be viewed as reversible as the landscape may be returned to a similar state following decommissioning. Although this is a temporary development it has been assessed as long-term or permanent as the operational phase is anticipated to extend up to 50 years.

- 4.13.6 **Section 4.7 and 4.10** describe the embedded and additional mitigation provided to mitigate potential effects. An iterative approach has been taken to the design and layout of the Proposed Development to

mitigate landscape and visual effects. This process has also considered the emergent pattern of wind energy development within the locality and how these adjoining cumulative developments would interact.

- 4.13.7 **Section 4.11** describes the residual landscape and visual effects following embedded and additional mitigation. Landscape effects are associated with the host LCTs and within the Site. There would be considerable influences on views from summits in proximity, where the Proposed Development is situated in relative prominence to other wind energy development such as from Carn an Choin Deirg (see **Figure 4.35** (EIA Report Volume 3b)). However, most views from summits are long-distance and recessive and the Proposed Development backdropped by existing or consented wind energy development.
- 4.13.8 **Section 4.12** outlines the residual cumulative in-addition and in-combination effects associated with the Proposed Development on visual amenity, landscape character, and the special landscape qualities of NSA 36, SLA 18, and the WLA 29. In Scenario 2 and 3 the Proposed Development's in-addition landscape and visual effects would become less prominent and, in some cases, reduce. Significant effects would largely relate to in-combination effects as the cumulative context becomes more complex, and the quantum of wind energy development becomes greater in Scenarios 2 and 3. These scenarios have a degree of uncertainty.
- 4.13.9 As the Proposed Development is located outwith any landscape designation or classification there is limited potential for significant effects on SLQs. Any effects would be limited to influences on the perceptual qualities of remoteness and the undeveloped nature of the landscape from specific viewpoint locations to and from these valued landscapes. These effects relate largely to indirect effects which may exert an influence especially in relation to in-combination effects in scenario 2 and 3, but the in-addition effects of the Proposed Development would be limited. These effects would be limited to views from summits within the margins of designations and classifications already subject to existing views of wind energy. Refer to **Technical Appendices 4.1, 4.2, and 4.6** (EIA Report Volume 4).
- 4.13.10 **Section 4.12** includes details of the cumulative developments considered in the assessment and emergent pattern of development. The LVIA assesses in-addition and in-combination cumulative effects attributable to the Proposed Development when considered in conjunction with operational, consented and proposed wind farms within the 45 km Study Area. This equates to a 'worst case' as it is unlikely that all of the developments in-planning and/or in-scoping would be brought forward.
- 4.13.11 In the event the Proposed Development is not consented or progressed, the future baseline landscape and visual context is expected to continue to contain a high degree of wind energy development, including schemes that use turbines of a size exceeding that of the Proposed Development. The Proposed Development although designed as a standalone scheme, has been designed to consider its siting in relation to the adjoining consented Strath Oykel and Meall Buidhe wind farms. Both wind farms have turbines of up to 200 m tip (149.9 m in the case of Meall Buidhe) arranged in an irregular cluster along a ridgeline south of the River Oykel and Strath Oykel.
- 4.13.12 The Proposed Development is set back behind the consented Strath Oykel wind farm and forms a continuation of the array in most views. This concentration of wind energy prevents the dispersal of wind energy into areas that are more sensitive. As wind energy development is an established feature of the landscape and views,
- 4.13.13 In-addition or en solo effects on other LCTs or SCTs within the Study Area would not be significant. Assessment viewpoints have identified areas with the greatest extent of visibility and therefore the greatest potential to influence views and landscape character at the viewpoint location. The assessment of effects relates to specific locations chosen to represent heightened visibility with lower effects predicted within the wider landscape. Significant effects on views and the landscape are predominantly within 10 km or relate to distant views from summits where the in-combination effects of cumulative Scenarios 1 to 3 are apparent. The in-addition contribution of the Proposed Development is relatively small in this context.

Table 4.9 - Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Construction			
Landscape Fabric effects	In accordance with Section 4.10 , and the OCEMP.	Implementation and monitoring of mitigation measures and OCEMP.	Not significant.
Landscape effects on 'host' LCT 135: Rounded Hills - Caithness and Sutherland and adjacent LCT 142: Strath - Caithness and Sutherland	In accordance with Section 4.10 , and the OCEMP.	Implementation and monitoring of mitigation measures and OCEMP.	Not significant.

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Landscape effects on: - NSA: 36 - SLA:18; and - WLA: 29	In accordance with Section 4.10 , and the OCEMP.	Implementation and monitoring of mitigation measures and OCEMP.	Not significant.
Visual Amenity effects on: - Settlements (Rosehall; Oykel Bridge; Achnahanat; Between Auchintoul and Altass; and Oape, Doune and Brae); - Roads (A837; Minor road between Altass and Rosehall; and A949); - Recreational Routes, Trails and Summits (Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails; and Carn a Choin Deirg); and - VPs 1-24 (see Technical Appendix 4.3 (EIA Report, Volume 4).	In accordance with Section 4.10 , and the OCEMP.	Implementation and monitoring of mitigation measures and OCEMP.	Not significant overall, but there is potential for temporary, localised significant effects according to the stage of construction and the area of focus.
Operation			
Landscape Fabric	Not applicable	Ongoing monitoring of mitigation measures such as compensatory tree planting, habitat creation and or peat restoration	Not significant.
Landscape effects on: - LCT:135; - LCT:139; - LCT:142; - LCT: 328; - LCT: 329; - LCT: 330; and - LCT 332.	Not applicable	Not applicable	- Localised significant. - Localised significant. - Localised significant. - Not significant. - Not significant. - Not significant - Not significant
Landscape effects on: - NSA:36; - SLA:18; and - WLA: 29	Not applicable	Not applicable	- Not significant. - Not significant. - Not significant.
Visual Amenity effects on: Settlements: - Rosehall; - Oykel Bridge; - Achnahanat; - Between Auchintoul and Altass; and - Oape, Doune and Brae. Roads - A837; - Minor road between Altass and Rosehall; and - A949.	Not applicable	Not applicable	- Not significant. - Significant. - Not significant. - Not significant. - Not significant. - Significant (for short section). - Not significant. - Significant.

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Recreational Routes, Trails and Summits - Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails. Viewpoints: - VPs 1-24 (see Technical Appendix 4.3 (EIA Report, Volume 4)			- Not significant. - Not significant. Some temporary, and highly localised significant effects. The locations of these effects would vary according to the stage of construction and the area of focus.
Decommissioning			
Equivalent to Construction	Not applicable	Similar control measures to CEMP	Not applicable
Cumulative Construction			
Landscape Fabric	Not applicable	Similar control measures to CEMP	Not significant.
Landscape effects on: - LCT:135; - LCT:139; - LCT:142; - LCT: 328; - LCT: 329; - LCT: 330; and - LCT 332.		Similar control measures to CEMP	- Localised significant. - Localised significant (In-Combination). - Localised significant. - Not significant. - Not significant. - Not significant. - Not significant.
Landscape effects on: - NSA:36; - SLA:18; and - WLA: 29	Not applicable	Similar control measures to CEMP	- Not significant. - Localised significant. - Localised significant.
Visual Amenity effects on: Settlements: - Rosehall; - Oykel Bridge; - Achnahanat; - Between Auchintoul and Altass; and - Oape, Doune and Brae. Roads - A837; - A836; - Minor road between Altass and Rosehall; and - A949. Recreational Routes, Trails and Summits - Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails.	Not applicable	Similar control measures to CEMP	- Localised significant (In-Combination). - Not significant. - Localised significant (In-combination). - Significant (In-combination). - Significant (In-combination). - Localised significant (In-Addition and In-Combination). - Not significant. - Significant (In-Combination). - Not significant. - Not significant.
Cumulative Operation			
Landscape Fabric	Not applicable	Ongoing monitoring	Not significant

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Landscape effects on: - LCT:135; - LCT:139; - LCT:142; - LCT: 328; - LCT: 329; - LCT: 330; and - LCT 332.	Not applicable	Not applicable	- Significant (In-Addition and In-Combination). - Localised significant (In-Combination). - Localised significant (In-Addition and In-Combination). - Localised significant (In-Combination). - Localised significant (In-Combination). - Not significant. - Not significant.
Landscape effects on: - NSA:36; - SLA:18; - WLA: 29	Not applicable	Not applicable	- Localised significant (In-Combination). - Localised significant (In-Combination). - Localised significant (In-Combination).
Visual Amenity effects on: Settlements: - Rosehall; - Oykel Bridge; - Achnahanat; - Between Auchintoul and Altass; and - Oape, Doune and Brae. Roads - A837; - Minor road between Altass and Rosehall; and - A949. Recreational Routes, Trails and Summits - Cape Wrath Trail, Croick Glen Einig, and Rosehall Estate Trails Viewpoints: - VPs 1-24 (see Technical Appendix 4.3 (EIA Report, Volume 4)	Not applicable	Not applicable	- Significant (In-Combination) - Significant (In-Addition and In-Combination) - Significant (In-Combination). - Significant (In-Combination). - Significant (In-Combination). - Significant (In-Addition and In-Combination). - Localised significant (In-Combination). - Significant (In-Combination). - Not significant - Significant effects are identified for VPs 5, 7, 8, 9, 14, 15, 16, 20, 21 and 23 (In-Addition). In-Combination significant effects have been identified for all other viewpoints excepting viewpoints 10, and 22.

4.14 Glossary and Abbreviations

Term	Definition
Analysis (Landscape)	The process of breaking the landscape down into its component parts to understand how it is made up.
Analysis (Visual)	The process of identifying the nature of visibility in an area, which is determined through topographic analysis.
Assessment (Landscape or Visual)	An umbrella term for description, classification and analysis of landscape or nature of views.
Baseline	The landscape and visual character of the Study Area as it exists at the commencement of the assessment process – i.e. prior to the development proposal under consideration.

Term	Definition
Cumulative Effects	Effects arising from the additional changes to the landscape or visual character caused by a development when seen in conjunction with other developments (associated with it or separate to it). See in-addition and in-combination cumulative effects entries, below.
Effect	The result of an impact (change) on a landscape or visual receptor.
Element	A component part of the landscape (e.g. roads, hedgerows, woods).
Horizontal Angle Subtended	The angle measured in degrees from the left most visible part to the right most visible part of any development.
Key characteristics	The elements of the landscape and/or their inter relationship which form the defining components of the landscape.
Impact	The change arising for a landscape or visual receptor as a result of some form of alteration to the baseline.
In-addition cumulative effects	The In-addition cumulative effects - amounting to what extra effects there would be on the seascape, landscape and visual resource that would be attributable to the Proposed Development of the Proposed Development taken together with other existing, consented or proposed wind farms.
In-combination cumulative effects	The In-combination cumulative effects - amounting to the effects of the Proposed Development taken together with other existing, consented or proposed wind farms.
Indirect Impacts	Impacts on the environment, which are not a direct result of the development but are often produced away from it or as a result of a complex pathway. Sometimes referred to as secondary impacts.
Landcover	Combination of land use and vegetation that covers the land surface.
Landform	See Topography.
Landscape	Human perception of the land conditioned by knowledge and identity with a place.
Landscape Capacity	An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. The degree to which a particular landscape character type or area is able to accommodate change without unacceptable adverse effects on its character. Capacity is likely to vary according to the type and nature of the changes being proposed. The capacity of the landscape is derived from a combination of Landscape Character Sensitivity, Visual Sensitivity and Landscape Value.
Landscape Character	The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place in different areas of the landscape.
Landscape Character Type	A landscape type will have broadly similar patterns of geology, landform, soils, vegetation land use, settlement and field pattern discernible in maps and field survey records.
Landscape Fabric	Physical elements of the landscape or development site.
Landscape Factor	A circumstance or influence contributing to the impression of the landscape (e.g. scale, enclosure, elevation).
Landscape Feature	A prominent eye-catching element or landmark (e.g. church spire, wooded hilltop).
Landscape Impact	The change in the elements, characteristics, qualities and overall character of the landscape as a result of development.
Landscape Evaluation	The process of attaching value (non-monetary) to a particular landscape, usually by the application of previously agreed criteria, including consultation and third-party documents, for a particular purpose (for example, designation or in the context of an assessment).
Landscape Quality (or Condition)	Based on judgments about the physical state of the landscape and about its intactness. Also relates to the state of repair of individual features and elements which make up character in any one place.
Landscape Resource	The combination of elements that contribute to landscape context, character and value.
Landscape Sensitivity (to a specific type of change)	The extent to which a landscape can accept change of a particular type and scale and is assessed in relation a particular type of development. Based on a combination of susceptibility and value.
Landuse	The primary use of land, including both rural and urban activities.
Landscape Value	The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses commonly held national or local perception of its quality, special qualities and/or scenic beauty, tranquillity or wildness and cultural associations.
Magnitude of landscape Impact	A measure of the amount of change to the landscape that would occur as a result of proposed development, generally based on the scale or degree of change to the landscape resource, the nature of the effect and its duration. This is based on a combination of largely quantifiable parameters, such as the distance to the proposed development, visible extent, degree of contrast with context, extent to which the development would be visible, and the duration of an impact.

Term	Definition
Magnitude of visual Impact	A measure of the amount of change to the visual context that would occur as a result of a proposed development. This is generally based on the scale of change to the view with respect to the loss or addition of features in the view and changes in its composition, including the proportion of the view that would be occupied by the proposed development; the degree of contrast or integration of any new features of changes in the landscape with the existing or remaining landscape elements and characteristics in terms of form, scale, mass, line, height, colour and texture; duration and nature of the change, whether temporary or permanent, transient or persistent, etc.; the angle of view in relation to the main activity of the receptor(s); distance of the viewpoint from the proposed development; and extent of the area over which the changes would be visible.
Methodology	The specific approach and techniques used for a given study.
Mitigation Measures	Measures including any process, activity or design process to avoid, reduce, remedy or compensate for adverse landscape and visual impacts of a development. Mitigation can also apply to the amelioration of existing adverse effects associated with existing developments/features in the landscape.
Perception (of Landscape)	The psychology of seeing and possibly attaching value or meaning to the landscape.
Perceptual Aspect	Elements of the landscape which evoke a response to the senses, such as: – Wildness; – Remoteness; – Sense of security or risk; and – Tranquillity.
Receptor	Physical landscape resource, special interest or individual or group experiencing view liable to change as a result of the proposed development.
Receptor Location	Location occupied by identified landscape or visual receptors.
Residual Effects	Effect of development after mitigation proposals are taken into account.
Scoping	The process of identifying likely significant effects of a development on the environment – which may be carried out in a formal or informal way.
Visual Amenity	Particular composition of landscape elements that contribute to a view, or views.
Visibility Analysis	The process of identifying theoretical (based on digital modelling) and/or actual predicted areas from where any given development may be seen.
Visual Effect	The consequence of change in the appearance of the landscape as a result of development, which may be positive or negative.
Visual Impact	The change in the appearance of the landscape and nature of views which may be adverse or beneficial.
Viewpoint Sensitivity	The extent to which a view would be altered by change of a particular type and scale, assessed in relation to the following: – Location and land use (receptor activity) at the viewpoint or context of the view. – Landscape character and quality at the viewpoint. – Landscape character and quality of the intervening landscape. – Importance of the view (which may be determined with respect to its popularity or number of affected people, its appearance in guidebooks, on tourist maps and the facilities provided for its enjoyment and references to it in literature and/or art).
Visualisation	Computer generated simulation or photomontage or other technique to illustrate how the proposed development would appear.
Zone of Theoretical Visibility (ZTV)	The area predicted to have views of a proposed development on the basis of a digital terrain model or digital surface model, which may/may not take account of landcover features such as built form or vegetation.
Zone of Visual Influence or Viewshed	The area within which a proposed development will be visible.

Abbreviation	Expanded Term
ECU	Energy Consents Unit
EIAR	Environmental Impact Assessment Report
GDL	Garden and Designed Landscape
LCT	Landscape Character Type
LDP	Local Development Plan
LVIA	Landscape and Visual Impact Assessment
NPF4	National Planning Framework (4) for Scotland

Chapter 5: Cultural Heritage

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5 Cultural Heritage

5.1 Executive Summary

- 5.1.1 This Chapter assesses the potential for direct and settings effects on the cultural heritage resource within the Site and surrounding Study Areas during construction, operation, and decommissioning of the Proposed Development.
- 5.1.2 Fourteen non-designated heritage assets of post-medieval and modern date, generally comprising agricultural remains and considered to be of low to negligible importance, have been identified on the Site. Twelve of these assets, comprising shielings, tracks, drains, a field boundary, a pond, and a culvert, have been identified as having the potential to be directly impacted upon during the construction phase of works for the western access track. Mitigation measures to avoid and minimise adverse effects, including demarcation, micro-siting of infrastructure, and archaeological monitoring have been proposed in order to minimise and/or offset direct effects.
- 5.1.3 The potential for as-yet unknown archaeological remains is considered medium for post-medieval remains across the western access area, and for the remainder of the Site is considered low for remains from the prehistoric period through to the modern period but cannot be wholly discounted. Much of the Proposed Development footprint lies within existing commercial forestry plantation where extensive ground disturbance through planting and felling operations is likely, and where preservation of sub-surface remains is considered poor. Archaeological evaluation and/or monitoring is recommended for heritage assets which will be impacted upon by groundworks, and across areas where there has been less ground disturbance in order to identify heritage assets and mitigate any direct impacts. It is considered that through mitigation, any direct effects on both the known and the unknown heritage resource within the Site would be, at worst, minor adverse and not significant.
- 5.1.4 Potential operation effects on the settings of all designated heritage assets within 10 km of the Site, and a selection of designated heritage assets beyond 10 km from the Site, has been undertaken. It is considered that the setting effects would not exceed minor adverse and are therefore not significant.
- 5.1.5 Potential cumulative effects have also been considered and assessed, with at worst minor adverse effects predicted, which are not significant.
- 5.1.6 In line with the National Planning Framework (NPF), opportunities to deliver on public benefit items with regard to cultural heritage have been proposed. The exact scope of this would likely be contingent on the results of any archaeological fieldwork undertaken, and in agreement with Historic Environment Scotland (HES), the Highland Council Historic Environment Team (HET), and the Applicant.

5.2 Introduction

- 5.2.1 This Chapter considers the likely significant effects on the cultural heritage resource within the Site and in the surrounding Study Areas associated with the construction, operation and decommissioning of the Proposed Development. The specific objectives of the Chapter are to:
- describe the cultural heritage and archaeology baseline;
 - describe the assessment methodology and significance criteria used in completing the impact assessment;
 - describe the potential effects, including direct, indirect, and cumulative effects;
 - describe the mitigation measures proposed to address likely significant effects; and
 - assess the residual effects remaining following the implementation of mitigation.
- 5.2.2 The assessment has been carried out by Gary Millward and Sam Williamson of AOC Archaeology Group¹. Overall quality assurance for the assessment has been provided by Victoria Oleksy who has extensive experience of environmental impact assessments across Britain. Victoria is an Associate Director of AOC, a Member of the Chartered Institute for Archaeologists, and acts as an assessor for the Institute's Registered Organisation scheme. Gary is a Project Manager at AOC Archaeology Group and a Member of ClfA, with over 15 years of experience working in the commercial archaeology sector in the UK as a field archaeologist and latterly as a consultant. This experience includes working on a range of EIAs, desk-based assessments, and large walkover survey projects. Sam Williamson is a Senior Project Officer and Member of ClfA, having worked within the fieldwork sector for nine years before moving into a consultant role for the last three. She has prepared numerous desk-based assessments, heritage

¹ AOC is a Registered Organisation of the Chartered Institute for Archaeologists (ClfA). AOC Archaeology Group conforms to the standards of professional conduct outlined in the Chartered Institute for Archaeologists' (ClfA) Code of conduct: professional ethics in archaeology and Regulations for Professional Conduct.

impact assessments and environmental impact assessments for proposed wind farms, solar farms, and other large infrastructure projects across Scotland and England.

5.2.3 This Chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
 - **Figure 5.1: Heritage Assets, Events and Proposed Infrastructure within Site and 1 km Study Area;**
 - **Figure 5.2: Designated Heritage Assets within 10 km Study Area and Selected Assets outwith 10 km;**
 - **Figure 5.3: Extract from a Map by Gordon, 1636-1652;**
 - **Figure 5.4: Extract from a Map by Roy, 1747-1752;**
 - **Figure 5.5: Composite of Extracts from Ordnance Survey maps, 1881; and**
 - **Figure 5.6: Designated Heritage Assets within 10 km Study Area with Selected Assets outwith 10 km with ZTV.**
- Volume 3b: Visualisations
 - **Figures 5.9a-k: Cultural Heritage Viewpoint 1a: A837 Overlooking Langwell Dun Scheduled Monument SM5302;**
 - **Figures 5.10a-k: Cultural Heritage Viewpoint 1b: Langwell Dun Scheduled Monument SM5302**
 - **Figures: 5.11a-e Cultural Heritage Viewpoint 2: Druim Baile Fuir, Stone Circle, Cairns, Hut Circles and Enclosure (SM1784); and**
 - **Figures 5.12a-e: Cultural Heritage Viewpoint 3: Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh (SM4046).**
- Volume 4: Technical Appendices
 - **Technical Appendix 5.1: Gazetteer of Heritage Assets and Events ;**
 - **Technical Appendix 5.2: Plates; and**
 - **Technical Appendix 5.3: Setting Assessment.**

5.2.4 Figures and technical appendices are referenced in the text where relevant.

5.3 Legislation, Policy and Guidelines

Legislation

5.3.1 Relevant legislation regarding cultural heritage has been reviewed and considered as part of this assessment. Of particular relevance are:

- The Ancient Monuments and Archaeological Areas Act (1979 as amended)²;
- The Historic Environment (Amendment) (Scotland) Act 2011³;
- Historic Environment (Scotland) Act 2014⁴;
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997⁵, as modified by the Historic Environment (Amendment) (Scotland) Act 2011⁶;
- Planning etc. (Scotland) Act 2006⁷: 2006 asp 17; and
- Town and Country Planning (Environmental Impact Assessment) Regulations⁸.

Policy

5.3.2 Relevant planning policy regarding cultural heritage include:

² UK Government, 1979, The Ancient Monuments and Archaeological Areas Act 1979.

http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf [Accessed 14 April 2025].

³ Scottish Government, 2011, Historic Environment (Amendment) (Scotland) Act 2011. <https://www.legislation.gov.uk/asp/2011/3/contents/enacted>. [Accessed 14 April 2025].

⁴ Scottish Government, 2014, Historic Environment Scotland Act 2014. <https://www.legislation.gov.uk/asp/2014/19/contents/enacted> [Accessed 14 April 2025.]

⁵ UK Government, 1997, Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. https://www.legislation.gov.uk/ukpga/1997/9/pdfs/ukpga_19970009_en.pdf. [Accessed 14 April 2025].

⁶ Scottish Government, 2011, (n 3).

⁷ United Kingdom Government, 2006, Planning etc. (Scotland) Act 2006: 2006 asp 17: Elizabeth II. London: Her Majesty's Stationary Office.

⁸ UK Government, 2017, The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 <https://www.legislation.gov.uk/uksi/2017/571/contents> [Accessed 28 May 2025].

- The National Planning Framework for Scotland (NPF4)⁹;
- Planning Advice Note (PAN) 2/2011: Planning and archaeology¹⁰;
- Historic Environment Policy for Scotland (HEPS)¹¹ and its supporting Designation Policy and Selection Guidance¹²;
- the Highland-wide Local Development Plan (HwLDP)¹³; and
- the Caithness and Sutherland CaSPlan¹⁴.

5.3.3 NPF4¹⁵, HEPS¹⁶, PAN 2/2011 Archaeology and Planning¹⁷ and the Highland Council's (THC) local development plans^{18 19} deal specifically with planning policy and guidance in relation to heritage, which collectively expresses a general presumption in favour of preserving heritage remains in situ where feasible. Their "*preservation by record*" (i.e. through excavation and recording, followed by analysis and publication, by qualified archaeologists) is a less desirable alternative.

National Planning Policy

5.3.4 NPF4 describes the policy principles for historic assets and places (Policy 7) as follows:

"Policy Intent: To protect and enhance historic environment assets and places, and to enable positive change as a catalyst for the regeneration of places.

Policy Outcomes:

- *The historic environment is valued, protected, and enhanced, supporting the transition to net zero and ensuring assets are resilient to current and future impacts of climate change.*
- *Redundant or neglected historic buildings are brought back into sustainable and productive uses.*
- *Recognise the social, environmental and economic value of the historic environment, to our economy and cultural identity.*"²⁰

5.3.5 The following policies of NPF4 Policy 7 are relevant to this assessment:

*"a) Development proposals with a potentially significant impact on historic assets or places will be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset and/or place. The assessment should identify the likely visual or physical impact of any proposals for change, including cumulative effects and provide a sound basis for managing the impacts of change. Proposals should also be informed by national policy and guidance on managing change in the historic environment, and information held within Historic Environment Records."*²¹

*"c) Development proposals for the reuse, alteration or extension of a listed building will only be supported where they will preserve its character, special architectural or historic interest and setting. Development proposals affecting the setting of a listed building should preserve its character, and its special architectural or historic interest."*²²

⁹ Scottish Government, 2023, National Planning Framework 4 (NPF4). <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

¹⁰ Scottish Government, 2011, Planning Advice Note 2/2011: Planning and archaeology. <https://www.gov.scot/publications/pan-2-2011-planning-archaeology/> [Accessed 28 May 2025].

¹¹ HES, 2019, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

¹² HES, 2020, Designation Policy and Selection Guidance. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b> [Accessed 14 April 2025].

¹³ THC, 2012, Highland-wide Local Development Plan. https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland_wide_local_development_plan [Accessed 14 April 2025].

¹⁴ THC, 2018, The Caithness and Sutherland Local Development Plan (CasPlan). https://www.highland.gov.uk/info/178/development_plans/283/caithness_and_sutherland_local_development_plan [Accessed 14 April 2025].

¹⁵ Scottish Government, 2023, National Planning Framework 4 (NPF4). <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

¹⁶ HES, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Scottish Government, 2011, Historic Environment (Amendment) (Scotland) Act 2011. <https://www.legislation.gov.uk/asp/2011/3/contents/enacted> [Accessed 14 April 2025].

²⁰ THC, 2012, Highland-wide Local Development Plan. https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland_wide_local_development_plan [Accessed 14 April 2025].

²¹ THC, 2018, The Caithness and Sutherland Local Development Plan (CasPlan).

https://www.highland.gov.uk/info/178/development_plans/283/caithness_and_sutherland_local_development_plan [Accessed 14 April 2025].

²² Scottish Government, 2023, National Planning Framework 4 (NPF4). <https://www.gov.scot/publications/national-planning-framework-4> p.45. [Accessed 14 April 2025].

²³ Ibid. p.46.

²⁴ Ibid.

"h) Development proposals affecting scheduled monuments will only be supported where:

- *direct impacts on the scheduled monument are avoided;*
- *significant adverse impacts on the integrity of the setting of a scheduled monument are avoided; or*
- *exceptional circumstances have been demonstrated to justify the impact on a scheduled monument and its setting and impacts on the monument or its setting have been minimised.*"²³

*"o) Non-designated historic environment assets, places and their setting should be protected and preserved in situ wherever feasible. Where there is potential for non-designated buried archaeological remains to exist below a site, developers will provide an evaluation of the archaeological resource at an early stage so that planning authorities can assess impacts. Historic buildings may also have archaeological significance which is not understood and may require assessment. Where impacts cannot be avoided they should be minimised. Where it has been demonstrated that avoidance or retention is not possible, excavation, recording, analysis, archiving, publication and activities to provide public benefit may be required through the use of conditions or legal/planning obligations. When new archaeological discoveries are made during the course of development works, they must be reported to the planning authority to enable agreement on appropriate inspection, recording and mitigation measures."*²⁴

Historic Environment Policy for Scotland (HEPS)

5.3.6 HEPS²⁵ sets out the Scottish Government's policy for decision making that affects the historic environment. It contains six policies for managing the historic environment, all of which favour protection, understanding and promotion of the historic environment as well as the preservation of the benefits of the historic environment for future generations. Historic Environment Policies (HEP) 3 and 4 both state that; *"if detrimental impact on the historic environment is unavoidable, it should be minimised. Steps should be taken to demonstrate that alternatives have been explored, and mitigation measures should be in place"*²⁶. The six policies, all of which are relevant to this assessment, are as follows:

- *"HEP 1: Decisions affecting any part of the historic environment should be informed by an inclusive understanding of its breadth and cultural significance.*
- *HEP 2: Decisions affecting the historic environment should ensure that its understanding and enjoyment as well as its benefits are secured for present and future generations.*
- *HEP 3: Plans, programmes, policies and strategies, and the allocation of resources should be approached in a way that protects and promotes the historic environment. If detrimental impact on the historic environment is unavoidable, it should be minimised. Steps should be taken to demonstrate that alternatives have been explored and mitigation measures should be put in place.*
- *HEP 4: Changes to specific assets and their context should be managed in a way that protects the historic environment. Opportunities for enhancement should be identified where appropriate.*
- *HEP 5: Decisions affecting the historic environment should contribute to the sustainable development of communities and places.*
- *HEP 6: Decisions affecting the historic environment should be informed by an inclusive understanding of the potential consequences for people and communities. Decision-making processes should be collaborative, open, transparent and easy to understand."*²⁷

5.3.7 Local Planning Policy

5.3.8 THC's approach to proposals which affect the historic environment are set out in the HwLDP²⁸ and CaSPlan²⁹.

5.3.9 Policy 57 Natural, Built and Cultural Heritage of the HwLDP states:

"All development proposals will be assessed taking into account the level of importance and type of heritage features, the form and scale of the development and any impact on the feature and its setting... The following criteria will also apply:

1. *For features of local/regional importance we will allow developments if it can be satisfactorily demonstrated that they will not have an unacceptable impact on the natural environment, amenity and heritage resource.*

²³ Ibid.

²⁴ Ibid, p. 46-7.

²⁵ HES, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

²⁶ Ibid, p. 9.

²⁷ Ibid.

²⁸ THC, 2012, Highland-wide Local Development Plan.

https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland_wide_local_development_plan [Accessed 14 April 2025].

²⁹ THC, 2018, The Caithness and Sutherland Local Development Plan (CaSPlan).

https://www.highland.gov.uk/info/178/development_plans/283/caithness_and_sutherland_local_development_plan [Accessed 14 April 2025].

2. For features of national importance we will allow developments that can be shown not to compromise the natural environment, amenity and heritage resource. Where there may be any significant adverse effects, these must be clearly outweighed by social or economic benefits of national importance. It must also be shown that the development will support communities in fragile areas who are having difficulties in keeping their population and services.

3. For features of international importance developments likely to have a significant effect on a site, either alone or in combination with other plans or projects, and which are not directly connected with or necessary to the management of the site for nature conservation will be subject to an appropriate assessment. Where we are unable to ascertain that a proposal will not adversely affect the integrity of a site, we will only allow development if there is no alternative solution and there are imperative reasons of overriding public interest, including those of a social or economic nature.”³⁰

5.3.10 The following policies from the CaSPlan also relevant to this assessment:

5.3.11 “Environment and Heritage

Outcome: High quality places where the outstanding environment and natural, built and cultural heritage is celebrated and valued assets are safeguarded.

71 CaSPlan is home to a diverse range of renowned and celebrated built and cultural assets. The Plan balances the need to capitalise on these assets for social, economic, environmental and other needs, whilst safeguarding their unique character and qualities.

72 The natural and historic environment is rich, containing: internationally and nationally recognised sites, species and habitats; locally valued sites and landscapes; dramatic landforms, and a diverse cultural heritage. HwLDP policies provide safeguards for these features...”

Guidance

5.3.12 The following best practice guidelines and guidance have been used in preparing this assessment:

- ClfA Standard and guidance for commissioning work or providing consultancy advice on the historic environment³¹, standard, and guidance for historic environment desk-based assessment³², Code of Conduct: Professional Ethics in Archaeology³³, and Regulations for Professional Conduct³⁴;
- THC’s Standards for Archaeological Work³⁵;
- THC’s Highland Historic Environment Strategy Supplementary Planning Guidance³⁶;
- Managing Change in the Historic Environment guidance note series, particularly HES’s Managing Change in the Historic Environment: Setting³⁷;
- Our Past, Our Future: The Strategy for Scotland’s Historic Environment³⁸;
- Scottish Natural Heritage (SNH) (now NatureScot) published guidance for Assessing the Cumulative Impact of Onshore Wind Energy Developments³⁹; and
- NatureScot & HES’s Environmental Impact Assessment Handbook v5⁴⁰.

5.4 Consultation

5.4.1 **Table 5.1** summarises the consultation responses received regarding Cultural Heritage and provides information on where and/or how they have been addressed in this assessment.

³⁰ THC, 2012, Highland-wide Local Development Plan. p. 110.

https://www.highland.gov.uk/info/178/local_and_statutory_development_plans/199/highland_wide_local_development_plan [Accessed 14 April 2025].

³¹ ClfA, 2014 (updated 2020), Standard and guidance for commissioning work or providing consultancy advice on the historic environment.

<https://www.archaeologists.net/sites/default/files/2023-11/ClfA-SandG-Archaeological-Consultancy-2020.pdf> [Accessed 14 April 2025].

³² ClfA, 2014 (updated 2020), Standard and guidance for historic environment desk-based assessment.

<https://www.archaeologists.net/sites/default/files/2023-11/ClfA-SandG-DBA-2020.pdf> [Accessed 14 April 2025].

³³ ClfA, 2014 (updated 2022), Code of conduct: professional ethics in archaeology. <https://www.archaeologists.net/sites/default/files/2023-11/ClfA-Code-of-Conduct-2022.pdf> [Accessed 14 April 2025].

³⁴ ClfA, 2019 (updated 2024), Regulations for professional conduct. <https://www.archaeologists.net/sites/default/files/2024-11/ClfA-Regulations-for-Professional-Conduct-2024.pdf> [Accessed 14 April 2025].

³⁵ THC, 2012b, Standards for Archaeological Work.

³⁶ THC, 2013, Highland Historic Environment Strategy Supplementary Planning Guidance.

https://www.highland.gov.uk/downloads/file/11047/highland_historic_environment_strategy [Accessed 14 April 2025].

³⁷ HES, 2020, Managing Change in the Historic Environment: Setting. p. 11. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> [Accessed 14 April 2025].

³⁸ HES, 2023, Our Past, Our Future: The Strategy for Scotland’s Historic Environment. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=79204155-9eb2-4d29-ab14-aff200ec2801> [Accessed 14 April 2025].

³⁹ SNH, 2021, Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments.

<https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments> [Accessed 14 April 2025].

⁴⁰ SNH and HES, 2018, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

5.4.2 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 5.1 - Consultation

Consultee and Date	Consultation Response	Applicant Response
THC HET Response to Scoping 11 September 2024	- Confirmed generally content with proposed EIA methodology. - Stated ZTV analysis should be undertaken to scope in, where necessary, assets for assessment of setting effects beyond 10 km. - Confirmed the following from the Scoping Report could be scoped out of further assessment: physical effects to assets outside the Site; impacts on settings of non-designated cultural heritage assets and features; designated heritage assets outwith the ZTV.	- Noted. - Designated assets beyond 10 km (Assets 2, 33 and 34) initially included for assessment (see Section 5.9 and Figure 5.11 and Figure 5.12, EIA Report Volume 3b); Asset 2 scoped out through further consultation with HES below. - Noted.
HES Response to Scoping 21 August 2024	- Stated ZTV analysis should be undertaken to scope in, where necessary, designated assets for assessment of setting effects beyond 10 km, requesting that both Druim Baile Fuir, Stone Circle, Cairns, Hut Circles and Enclosure (SM1784) (Asset 33; beyond 10 km) and Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh (SM4046) (Asset 34; beyond 10 km) be included even though both are predominantly within commercial forestry plantations. Stated that if these assets are subsequently scoped out of detailed assessment then justification must be given. - Stated ZTV analysis should be undertaken to also scope in designated assets for setting effects where the Proposed Development may be in visible in views towards assets (even if not within the ZTV themselves). - Requested assessment of cumulative effects. - Agreed that Dail Langwell, broch 1675m NW of Croich (SM1852) (Asset 2) could be scoped out of detailed assessment. - Noted potential for significant setting effects upon Langwell, fort and dun (SM5302) (Asset 1), requested photomontages from asset and looking over the asset, and welcomed the intention of an iterative design process and potential enhancement measures to reduce impacts upon Asset 1. - Bare earth wirelines requested for Asset 33 (from central group thereof) and Asset 34.	- ZTV analysis undertaken and assets accordingly scoped in, including Assets 33 and 34 (see Section 5.9 and Figure 5.11 and Figure 5.12, EIA Report, Volume 3b) as described, no additional assets beyond 10 km identified for inclusion. - ZTV analysis undertaken for potentially important views towards assets outwith ZTV featuring both the asset and Proposed Development undertaken; Category A Listed Croick Church (LB7181) (Asset 3) included for setting assessment (see Technical Appendix 5.3, EIA Report Volume 4). - Cumulative assessment undertaken (see Section 5.12). - Asset 2 accordingly scoped out of detailed assessment. - Photomontages for the two proposed viewpoints for Asset 1 produced (see Figure 5.9 and Figure 5.10, EIA Report Volume 3b), with cumulative developments included, and iterative design process undertaken to reduce setting impacts upon Asset 1; turbine numbers reduced and distances increased to the southwest (see Chapter 3). - Wirelines produced for Assets 33 and 34 (see Figure 5.11 and Figure 5.12, EIA Report Volume 3b), also showing cumulative developments.
HES Post Scoping Consultation 11 November 2024	- Re-iterated request for ZTV analysis to be undertaken to inform the assessment and identify potentially important views towards assets outwith the ZTV which may feature the Proposed Development, and if designated assets were scoped out of further assessment (if not within ZTV), this should be justified. - Stated that wirelines should be used if necessary for the assessment, and where potential significant impacts are predicted photomontages should be produced. - Confirmed the locations of the proposed photomontage visualisations for Langwell, fort and dun (SM5302) (Asset 1) were appropriate. - Reviewed reference photographs and a wireline of Asset 1, and noted potential for significant adverse impacts upon the setting of Asset 1, with three turbines in particular posing the most significant impacts. - Welcomed the intention for inclusion of wireline visualisations for Druim Baile Fuir, Stone Circle, Cairns, Hut Circles, and Enclosure (SM1784) (Asset	- ZTV analysis undertaken for potentially important views towards assets outwith ZTV featuring both the asset and Proposed Development undertaken; Category A Listed Croick Church (LB7181) (Asset 3) included for setting assessment (see Technical Appendix 5.3, EIA Report Volume 4). - Visualisations prepared accordingly (see Figures 5.9 to Figure 5.12, EIA Report Volume 3b). - Noted. - Noted and design refinements undertaken to reduce impacts: Turbine numbers reduced from 19 to 11; distances to turbines increased (see Chapter 3). - Noted (see Figures 5.9 to Figure 5.12, EIA Report Volume 3b).

	33) and Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh (SM4046) (Asset 34).	

5.5 Assessment Methodology and Significance Criteria

Study Area

5.5.1 Four Study Areas were identified for this assessment:

- A Core Study Area (the Site), which includes all land within the Site boundary, which was subject to assessment for potential direct effects (see **Figure 5.1**, EIA Report Volume 3a). This Study Area was subject to a walkover survey focused on the infrastructure layout and was used to identify cultural heritage assets which have the potential to be directly affected by the Proposed Development;
- A 1 km Study Area for the identification of all known heritage assets and previous archaeological interventions (events) in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the Site and thus be directly impacted by the Proposed Development (see **Figure 5.1**, EIA Report Volume 3a);
- A 5 km Study Area for the assessment of potential effects on the settings of all designated and non-designated heritage assets, including: Scheduled Monuments, Listed Buildings, Inventoried Gardens and Designed Landscapes, Battlefields, Conservation Areas, and non-designated heritage assets (see **Figure 5.2**, EIA Report Volume 3a); and
- A 10 km Study Area for the assessment of potential effects on the setting of all nationally important designated heritage assets including Scheduled Monuments, Category A Listed Buildings, Inventoried Gardens and Designed Landscapes, and Battlefields (see **Figure 5.2**, EIA Report Volume 3a).

5.5.2 Each heritage asset and event referred to in the text is listed in the Gazetteer in **Technical Appendix 5.1** (EIA Report Volume 4). Each has been assigned an “Asset Number” or “Event Number” unique to this assessment, and the Gazetteer includes information regarding the type, period, grid reference, NRHE number, protective designation, and other descriptive information, as derived from the consulted sources. Photographic plates are available in **Technical Appendix 5.2** (EIA Report Volume 4) and the detailed setting assessment is available in **Technical Appendix 5.3** (EIA Report Volume 4).

Desk Study

5.5.3 The following sources were consulted for the collation of the cultural heritage baseline data:

- NRHE as held by HES⁴¹ for designated and non-designated heritage asset data;
- Spatial data and descriptive information for designated assets as held by HES⁴²;
- The National Map Library (National Library of Scotland (NLS))⁴³ for old Ordnance Survey (OS) maps (1st and 2nd edition, small and large scale) and pre-Ordnance Survey historical maps;
- The National Collection of Aerial Photography (NCAP)⁴⁴ for historical aerial photography as detailed in **Section 5.5**;
- Google Earth⁴⁵ and Esri⁴⁶ for historical and current aerial satellite imagery as detailed in **Section 5.6**.
- The Historic Land-Use Assessment Data for Scotland (HLAMap)⁴⁷ for information on the historic land use character of the site and the surrounding area;
- The Scottish Remote Sensing Portal⁴⁸ for any LiDAR data covering the Site;
- The Scottish Palaeoecological Archive Database (SPAD)⁴⁹ for information on-sites with palaeoenvironmental and palaeoecological potential; and

⁴¹ HES, 2025, Downloads. <https://portal.historicenvironment.scot/apex/f?p=PORTAL:downloads::::DATASET:ALL> [Downloaded: 28 October 2024; checked 10 April 2025].

⁴² Ibid.

⁴³ NLS, 2025, Maps. <https://maps.nls.uk> [Accessed: 10 April 2025].

⁴⁴ NCAP, 2025, NCAP. <https://ncap.org.uk/> [Accessed: 10 April 2025].

⁴⁵ Google Earth, 2025, Google Earth Pro: Desktop Application. V 7.1.8. [Software] [Accessed: 10 April 2025].

⁴⁶ Esri, 2025, World Imagery Wayback. <https://livingatlas.arcgis.com/wayback/> [Accessed: 10 April 2025].

⁴⁷ HES, 2025, Downloads. <https://portal.historicenvironment.scot/apex/f?p=PORTAL:downloads::::DATASET:ALL> [Downloaded: 28 October 2024; checked 10 April 2025].

⁴⁸ Scottish Government, 2025, Scottish Remote Sensing Portal. <https://remotesensingdata.gov.scot/> [Downloaded: 28 October 2024]

⁴⁹ SPAD, 2025, GIS Download Help Pages. <https://www.geos.ed.ac.uk/~ajin/swad/arcdetails.html> [Downloaded: 28 October 2024]

- Various published bibliographic sources including historical descriptions of the area (such as Statistical Accounts), as detailed throughout.

Walkover Survey and Setting Assessment

- 5.5.4 Archaeological walkover surveys of the Site targeting the Proposed Development infrastructure layout (where access through firebreaks and open moorland was possible) were undertaken on the 24th & 25th of September 2024, as well as the 12th May 2025, with the aim of identifying any previously unknown archaeological remains within the Site. All known and accessible heritage assets were assessed in the field to establish their survival, extent, significance, and relationship to other assets. All heritage assets encountered were recorded and photographed. The location of heritage assets noted in the field was recorded on a US GPS Navstar enabled iPad using ESRI's ArcGIS Fieldmaps software. All features were recorded directly through Fieldmaps in full British National Grid coordinates. Weather and any other conditions affecting the visibility during the survey were also recorded. Plates accompanying this section are presented in **Technical Appendix 5.2** (EIA Report Volume 4).
- 5.5.5 Visits were made to accessible designated heritage assets to inform the setting assessment on the 25th of September 2024 and between the 4th and the 6th of March 2025. Weather conditions were generally overcast and damp, but visibility was fair to good, enabling full understanding of the settings of key heritage assets and how that contributed to their significance.
- 5.5.6 Site visits to accessible designated assets within 10 km of the Site and adjacent to the 10 km Study Area (as specified by HES in **Table 5.1**) were undertaken on 25th of September 2024 and between the 4th and the 6th of March 2025. The detailed setting assessment is presented in **Technical Appendix 5.3** (EIA Report Volume 4).

Assessment of Potential Effect Significance

- 5.5.7 The assessment distinguishes between the term 'impact' and 'effect'. An impact is defined as a physical change to a heritage asset or its setting, whereas an effect refers to the significance of this impact. The first stage of the assessment involves establishing the importance of the heritage asset and assessing the sensitivity of the asset to change (impact). An assessment of the impact magnitude is then made and a judgement regarding the level and significance of effect is arrived at.

Criteria for Assessing Sensitivity of Heritage Assets

- 5.5.8 The definition of cultural significance is readily accepted by heritage professionals both in the UK and internationally and was first fully outlined in the Burra Charter, which states in Article One that 'cultural significance' or 'cultural heritage value' means aesthetic, historic, scientific, social, or spiritual value for past, present, or future generations⁵⁰. This definition has since been adopted by heritage organisations around the world, including HES. HEPS notes that to have cultural significance an asset must have a particular "*aesthetic, historic, scientific or social value for past, present and future generations*"⁵¹. Heritage assets also have value in the sense that they "*...create spaces for recreation, leisure, tourism, and education, or places for nature to thrive*" and "*can be a source of identity, a resource for learning, or a spark for creativity*"⁵².
- 5.5.9 All heritage assets have significance; however, some heritage assets are judged to be more important than others. The level of that importance is, from a cultural resource management perspective, determined by establishing the asset's capacity to contribute to our understanding or appreciation of the past.⁵³ In the case of many heritage assets their importance has already been established through the designation (i.e. Scheduling, Listing, and Inventory) processes applied by HES.
- 5.5.10 The rating of importance of heritage assets is first and foremost made in reference to their designation. For non-designated assets importance is assigned based on professional judgement and guided by the criteria presented in **Table 5.2**; which itself relates to the criteria for designations as set out in Designation Policy and Selection Guidance⁵⁴) and Scotland's Listed Buildings⁵⁵.

⁵⁰ International Council on Monuments and Sites (ICOMOS), 2013, The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance. Australia: Australia ICOMOS. Article 1.2. <http://openarchive.icomos.org/id/eprint/2145/> [Accessed 14 April 2025].

⁵¹ HES, 2019, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

⁵² HES, 2023, National Planning Framework 4 (NPF4). p.42. <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

⁵³ HES, 2019, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

⁵⁴ Ibid.

⁵⁵ UK Government, 1997, Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997. https://www.legislation.gov.uk/ukpga/1997/9/pdfs/ukpga_19970009_en.pdf [Accessed 14 April 2025]

Table 5.2 - Criteria for Establishing Importance of Heritage Assets

Importance	Receptors
Very High	World Heritage Sites (as protected by NPF4) ⁵⁶ ; Other designated or non-designated heritage assets with demonstrable Outstanding Universal Value.
High	Scheduled Monuments (as protected by the Ancient Monuments and Archaeological Areas Act 1979) ⁵⁷ ; Category A Listed Buildings (as protected by the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997) (the '1997 Act') ⁵⁸ ; Inventory Gardens and Designed Landscapes (as protected by the 1979 Act, as amended by the Historic Environment (Amendment) (Scotland) Act 2011 (the '2011 Act') ⁵⁹ ; Inventory Battlefields (as protected by the 1979 Act, as amended by the 2011 Act); Outstanding asset examples of some period, style or type; Non-designated assets and/or Locally Listed assets considered to meet the criteria for the designations as set out above (as protected by NPF4).
Medium	Category B and C Listed Buildings (as protected by the 1997 Act); Conservation Areas (as protected by the 1997 Act); Major or representative asset examples of some period, style or type; or Non-designated assets and/or Locally Listed assets considered to meet the criteria for the designations as set out above (as protected by NPF4).
Low	Locally Listed assets; Examples of assets of any period, style or type which contribute to our understanding of the historic environment at the local level.
Negligible	Relatively numerous types of assets/features; Findspots of artefacts that have no definite archaeological remains known in their context; The above non-designated features are protected by Policy 7o of NPF4.

5.5.11 Determining cultural heritage significance can be made with reference to the intrinsic, contextual, and associative characteristics of an asset as set out in HEPS⁶⁰ and its accompanying Designation Policy and Selection Guidance⁶¹. The Designation Policy and Selection Guidance indicates that the relationship of an asset to its setting or the landscape makes up part of its contextual characteristics. HES's Managing Change Guidance, in defining what factors need to be considered in assessing the impact of a change on the setting of a historic asset or place, states that the magnitude of the proposed change should be considered "*relative to the sensitivity of the setting of an asset*"⁶²), thereby making clear that assets vary in their sensitivity to changes in setting and thus have a relative sensitivity. The EIA Handbook suggests that cultural significance aligns with sensitivity but also states that "*the relationship between value and sensitivity should be clearly articulated in the assessment*"⁶³. It is therefore recognised (ibid) that the importance of an asset is not the same as its sensitivity to changes to its setting. Elements of setting may make a positive, neutral, or negative contribution to the significance of an asset. Thus, in determining the nature and level of effects upon assets and their settings by the development, the contribution that setting makes to an asset's significance and thus its sensitivity to changes to setting need to be considered.

5.5.12 This approach recognises the importance of avoiding significant adverse impacts on the integrity of the setting of an asset in the context of the contribution that setting makes to the experience, understanding, and appreciation of a given asset. It recognises that setting is a key characteristic in understanding and appreciating some, but by no means all, assets. Indeed, assets of High or Very High importance do not necessarily have high sensitivity to changes to their settings (e.g. do not necessarily have a high relative sensitivity). An asset's relative sensitivity to alterations to its setting refers to its capacity to retain its ability to contribute to an understanding and appreciation of the past in the face of changes to its setting. The ability of an asset's setting to contribute to an understanding, appreciation and experience of it and its significance also has a bearing on the sensitivity of that asset to changes to its setting. While heritage assets of High or Very High importance are likely to be sensitive to direct impacts, not all will have a similar sensitivity to impacts on their setting; this would be true where setting does not appreciably contribute to their significance. HES's guidance on setting makes clear that the level of effect may relate to "*the ability of the setting [of an asset] to absorb new development without eroding its key characteristics*"⁶⁴. Assets with Very High or High relative sensitivity to settings impacts may be vulnerable

⁵⁶ Scottish Government, 2023, National Planning Framework 4 (NPF4). <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

⁵⁷ UK Government, 1979, The Ancient Monuments and Archaeological Areas Act 1979. http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf [Accessed 14 April 2025].

⁵⁸ UK Government, 1997, Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

⁵⁹ Scottish Government, 1997, Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997.

⁶⁰ HES, 2019, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

⁶¹ HES, 2020, Designation Policy and Selection Guidance. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b> [Accessed 14 April 2025].

⁶² HES, 2016 updated 2020, Managing Change in the Historic Environment: Setting. p. 11. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> [Accessed 14 April 2025].

⁶³ SNH and HES, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

⁶⁴ HES, 2016 Managing Change in the Historic Environment: Setting. p. 11. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> [Accessed 14 April 2025].

to any changes that affect their settings, and even slight changes may erode their key characteristics or the ability of their settings to contribute to the understanding, appreciation, and experience of them. Assets whose relative sensitivity to changes to their setting is lower may be able to accommodate greater changes to their settings without having key characteristics eroded.

- 5.5.13 The criteria used for establishing an asset's relative sensitivity to changes to its setting is detailed in **Table 5.3**. This table has been developed based on AOC's professional judgement and experience in assessing setting effects. It has been developed with reference to the policy and guidance noted above including NPF4⁶⁵, HEPS⁶⁶ and its Designation Policy and Selection Guidance⁶⁷, the Xi'an Declaration⁶⁸, the EIA Handbook⁶⁹, and HES's guidance on the setting of heritage assets⁷⁰.

Table 5.3 - Criteria for Establishing Relative Sensitivity of a Heritage Asset to Changes to its Setting

Relative Sensitivity	Criteria
Very High	An asset, the setting of which is critical to an understanding, appreciation, and experience of it, should be thought of as having Very High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, make an essential direct contribution to their cultural significance.
High	An asset, the setting of which makes a major contribution to an understanding, appreciation, and experience of it, should be thought of as having High Sensitivity to changes to its setting. This is particularly relevant for assets whose settings, or elements thereof, contribute substantially to their cultural significance.
Medium	An asset, the setting of which makes a moderate contribution to an understanding, appreciation, and experience of it, should be thought of as having Medium Sensitivity to changes to its setting. This could be an asset for which setting makes a contribution to significance but whereby its value is derived mainly from its other characteristics (see HES's Managing Change document ⁷¹ for discussion of intrinsic, contextual and associative characteristics which may contribute to overall cultural significance).
Low	An asset, the setting of which makes some contribution to an understanding, appreciation, and experience of it, should generally be thought of as having Low Sensitivity to changes to its setting. This may be an asset whose value is predominantly derived from its other characteristics (see HES's Managing Change document for discussion of intrinsic, contextual and associative characteristics which may contribute to overall cultural significance).
Negligible	An asset whose setting makes minimal contribution to an understanding, appreciation, and experience of it should generally be thought of as having Negligible Sensitivity to changes to its setting.

- 5.5.14 The determination of a heritage asset's relative sensitivity to changes to its setting is first and foremost reliant upon the determination of its setting and the key characteristics of setting which contribute to its cultural significance and an understanding and appreciation of that cultural significance. This aligns with Stage 2 of the HES guidance on setting⁷². The criteria set out in Table 5.2 are intended as a guide. Assessment of individual heritage assets is informed by knowledge of the asset itself; of the asset type if applicable; and by site visits to establish the current setting of the assets. This allows for the use of professional judgement and each asset is assessed on an individual basis.

Criteria for Assessing Magnitude of Impact

- 5.5.15 Potential impacts, that is the physical change to known heritage assets, and unknown buried archaeological remains, or changes to their settings, in the case of the Proposed Development relate to the possibility of disturbing, removing, or destroying in situ remains and artefacts during the construction phase or the placement of new features (wind farm infrastructure) within their setting during the operational phase.
- 5.5.16 The EIA Handbook notes that *"In the context of cultural heritage impact assessment, the receptors are the heritage assets and impacts will be considered in terms of the change in their cultural significance"*⁷³. Direct changes to assets during the construction phase will relate to the physical removal or damage (in part or whole) to a heritage asset and will therefore likely be adverse. However, the EIA Handbook states that *"When considering setting impacts, visual change should not be equated directly with adverse impact. Rather the impact should be assessed with reference to the degree that the proposal affects those aspects of setting that contribute to the asset's cultural significance"*⁷⁴. It further indicates that magnitude of impact should largely be regarded in the context of impacts to *"elements of the fabric or*

⁶⁵ Scottish Government, 2023, National Planning Framework 4 (NPF4). p.42. <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

⁶⁶ HES, Historic Environment Policy for Scotland. <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps> [Accessed 14 April 2025].

⁶⁷ HES, Designation Policy and Selection Guidance. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b> [Accessed 14 April 2025].

⁶⁸ ICOMOS, 2005, Xi'an Declaration on the Conservation of the Setting of Heritage Structures, Sites and Areas. Available at: <https://publ.icomos.org/publications/ilbSai?html=Pag&page=Tek/SchNot&rang=9&max=30> [Accessed 14 April 2025].

⁶⁹ SNH and HES, 2018, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

⁷⁰ HES, 2016 (updated 2020), Managing Change in the Historic Environment: Setting. p. 11. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> [Accessed 14 April 2025].

⁷¹ Ibid.

⁷² Ibid.

⁷³ SNH and HES, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

⁷⁴ Ibid.

*setting of the heritage asset that contribute to its cultural significance*⁷⁵. It is further of note that the EIA handbook states that *“Change in the setting of an asset may be entirely neutral in terms of the resultant change in the asset’s cultural significance, but this will rarely be the case where the actual fabric is affected”*⁷⁶.

- 5.5.17 On this basis, the magnitude of the impacts upon heritage assets caused by the Proposed Development is rated using the classifications and criteria outlined in **Table 5.4**. These criteria consider the extent of change which could be anticipated as a result of the Proposed Development in the context of the significance of the asset, including any contribution made by setting.

Table 5.4 - Criteria for Classifying Magnitude of Impact

Magnitude of Impact	Criteria
High	Substantial loss of information content resulting from total or large-scale removal of deposits from an asset to the extent that it would result in a substantial loss of cultural significance; Major alteration of an asset’s baseline setting, which materially compromises the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset and erodes the key characteristics of the setting ⁷⁷ to the extent that it would result in substantial loss of cultural significance.
Medium	Loss of information content resulting from material alteration of the baseline conditions by removal of part of an asset that would lead to some loss of cultural significance; Alteration of an asset’s baseline setting that affects the ability to understand, appreciate and experience the contribution that setting makes to the significance of the asset to a degree but whereby the cultural significance of the monument in its current setting remains legible. The key characteristics of the setting ⁷⁸ may be partially eroded; there would be some loss of cultural significance.
Low	Detectable impacts leading to minor alteration to baseline conditions by removal of a small proportion of the asset, that would lead to slight loss of cultural significance; Alterations to the asset’s baseline setting, which do not affect the ability to understand, appreciate and experience the contribution that setting makes to the asset’s overall significance and would only lead to slight loss of cultural significance. Key characteristics would not be eroded.
Negligible	Loss of a small percentage of the area of an asset’s peripheral deposits/fabric that would leave cultural significance unchanged; A reversible alteration to the fabric of the asset; A marginal alteration to the asset’s baseline setting that would leave cultural significance of the asset unchanged.
None	No impact predicted.

- 5.5.18 In line with HES guidance on setting, factors considered in coming to a judgement regarding magnitude of impact include, but not be limited to:

- *“whether key views to or from the historic asset or place are interrupted; or whether the proposed change would dominate or detract in a way that affects our ability to understand and appreciate the historic asset;*
- *the visual impact of the proposed change relative to the scale of the historic asset or place and its setting;*
- *the visual impact of the proposed change relative to the current place of the historic asset in the landscape;*
- *the presence, extent, character, and scale of the existing built environment within the surroundings of the historic asset or place and how the proposed development compares to this;*
- *the magnitude of the proposed change relative to the sensitivity of the setting of an asset;*
- *sometimes relatively small changes, or a series of small changes, can have a major impact on our ability to appreciate and understand a historic asset or place. Points to consider include:*
 - *the ability of the setting to absorb new development without eroding its key characteristics;*
 - *the effect of the proposed change on qualities of the existing setting such as sense of remoteness, current noise levels, evocation of the historical past, sense of place, cultural identity, associated spiritual responses; and*
 - *cumulative impacts: individual developments may not cause significant impacts on their own, but may do so when they are combined”*⁷⁹.

⁷⁵ Ibid, p.184

⁷⁶ Ibid.

⁷⁷ HES, 2016 (updated 2020), Managing Change in the Historic Environment: Setting. p. 11. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549> [Accessed 14 April 2025].

⁷⁸ Ibid.

⁷⁹ Ibid, 10-11.

Criteria for Assessing Significance

- 5.5.19 The level of effect is judged to be the interaction of the asset's importance or relative sensitivity (**Table 5.2** and **Table 5.3**) and the magnitude of the impact (**Table 5.4**). In order to provide a level of consistency, the assessment of importance and relative sensitivity, the prediction of magnitude of impact and the assessment of level of effect are guided by pre-defined criteria.
- 5.5.20 The predicted level of effect on each heritage asset is then determined by considering the asset's importance and/or relative sensitivity in conjunction with the predicted magnitude of the impact. The method of deriving the significance of effect is provided in **Table 5.5**.

Table 5.5 - Significance of Effect

Magnitude of Impact	Importance and/or Relative Sensitivity to Changes to Setting				
	Negligible	Low	Medium	High	Very High
High	Minor	Moderate	Moderate	Major	Major
Medium	Negligible/ Neutral	Minor	Moderate	Moderate	Major
Low	Negligible/ Neutral	Negligible/ Neutral	Minor	Minor	Moderate
Negligible	Negligible/ Neutral	Negligible/ Neutral	Negligible/ Neutral	Minor	Minor

- 5.5.21 Whilst the tables above are used to ensure a consistent approach, it is noted that the EIA Handbook states that where matrices “are used, care must be taken to ensure that they are not applied in a mechanistic fashion or in a way that obscures the reasoning behind the assessment”⁸⁰. The EIA Handbook further states that “Generally, a narrative approach will allow the assessor to set out their reasoning more clearly than a tabulated approach”⁸¹. As such a qualitative descriptive narrative is provided for each asset to summarise and explain each of the professional value judgements that have been made in establishing sensitivity and magnitude of impact for each individual asset.
- 5.5.22 Where a neutral level of effect is indicated (see **Table 5.5**) this primarily relates to potential setting effects where the Proposed Development would be perceptible, and thus result in a change to the baseline setting, but whereby the Proposed Development would not result in an adverse effect on the setting of the asset. This is in line with the EIA Handbook, which indicates that visual changes should not necessarily be considered to have an adverse impact upon setting⁸².
- 5.5.23 Using professional judgment and with reference to the Guidelines for Environmental Impact Assessment (IEMA)⁸³ and the EIA Handbook⁸⁴ the assessment considers moderate and greater effects to be significant (bold in **Table 5.5**), while minor and lesser effects are considered not significant.

Integrity of Setting

- 5.5.24 NPF4 indicates that development proposals affecting Scheduled Monuments will only be supported where “significant adverse impacts on the integrity of setting of a scheduled monument are avoided”.⁸⁵ Significant adverse impacts on integrity of setting are judged here to relate to whether a change would adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance to the extent that the setting of the asset can no longer be understood or appreciated. It is considered that a significant impact upon the integrity of the setting of an asset will only occur where the degree of change that will be represented by the Proposed Development would adversely alter those factors of the monument's setting that contribute to cultural significance such that the understanding, appreciation, and experience of an asset are not adequately retained. In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as ‘significant’ in EIA terms will have the potential to significantly adversely impact upon integrity of setting. Where no EIA significant effect is found it is considered that there would be no significant impact upon the integrity of an asset's setting. This is because for many assets, setting may make a limited contribution to their significance and as such changes would not significantly impact the integrity of their settings. Additionally, as set out in **Table 5.4**, lower ratings of magnitude of change relate to changes that would not obscure or erode key characteristics of setting.
- 5.5.25 Where EIA significant effects are found, a detailed assessment of adverse impacts upon integrity of setting is made. Whilst non-significant effects are unlikely to significantly impact integrity of setting, the reverse is not always true. That is, the assessment of an effect as being ‘significant’ in EIA terms does not necessarily mean that the adverse effect to the asset's setting will significantly impact its integrity.

⁸⁰ SNH and HES, 2018, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

⁸¹ Ibid, p.184.

⁸² Ibid, p.181.

⁸³ IEMA, 2017, Guidelines for Environmental Impact Assessment. Lincoln: IEMA. <https://s3.eu-west-2.amazonaws.com/iema.net/documents/knowledge/policy/impact-assessment/Delivering-Quality-Development.pdf> [Accessed 14 April 2025].

⁸⁴ SNH and HES, 2018, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

⁸⁵ Scottish Government (2023). National Planning Framework 4 (NPF4). Policy 7h (ii), 46. <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed 14 April 2025].

The assessment of adverse impact upon the integrity of an asset's setting, where required, is a qualitative one, and largely depends upon whether the impact predicted would result in a major impediment to the ability to understand or appreciate the heritage asset.

Requirements for Mitigation

- 5.5.26 National and local planning policies and planning guidance outlined in **Section 5.3** require a mitigation response that is designed to take cognisance of the possible impacts upon heritage assets by a proposed development and avoid, minimise, or offset any such impacts as appropriate. The planning policies and guidance express a general presumption in favour of preserving heritage remains in situ wherever possible. Their "*preservation by record*" (i.e. through excavation and recording, followed by analysis and publication by qualified archaeologists) is a less desirable alternative. NPF4 notes that the policy intent is for the protection and enhancement of historic environment assets⁸⁶. Policies related to designated assets (Policies 7a to 7j and 7l) prefer avoidance of impact and where this is not possible require that any impacts are minimised. Policy 7o, relating to non-designated assets, states that these assets and their settings '*should be protected and preserved in situ wherever feasible [. . .] Where impacts cannot be avoided they should be minimised. Where it has been demonstrated that avoidance or retention is not possible, excavation, recording, analysis, archiving, publication and activities to provide public benefit may be required through the use of conditions or legal/planning obligations.*'⁸⁷

Assessment of Residual Effect Significance

- 5.5.27 The residual effect is what remains following the application of mitigation and management measures. The level of residual effect is defined using criteria outlined in **Table 5.2** to **Table 5.5**. No direct mitigation is possible for setting effects (beyond embedded mitigation by design) and therefore residual operational phase effects on the setting of heritage assets would be the same as potential (pre-mitigation) effects.

Cumulative Assessment

- 5.5.28 It is necessary to consider the effects arising from the addition of the Proposed Development with other cumulative developments. Consideration has been given to whether this would result in an additional cumulative change upon heritage assets, beyond the levels predicted for the Proposed Development alone. These have been included to allow for consideration of a 'worst case scenario'.
- 5.5.29 The cumulative assessment has regard to the guidance on cumulative effects upon heritage assets as set out in Environmental Impact Assessment Handbook V5⁸⁸ and utilises the criteria used in determining effects from the Proposed Development as outlined in **Table 5.2** to **Table 5.5**. The assessment of cumulative effects considers whether there would be an increased impact, either additive or synergistic, upon the setting of heritage assets as a result of adding the Proposed Development to a baseline, which may include operational, under construction, consented, or proposed developments. It is necessary to consider whether the effects of other schemes in conjunction with the Proposed Development would result in an additional cumulative change upon heritage assets, beyond the levels predicted for the Proposed Development alone.
- 5.5.30 In determining the degree to which a cumulative effect may occur as a result of the addition of the Proposed Development into the cumulative baseline, a number of factors are taken into consideration including:
- the distance between cumulative developments;
 - the interrelationship between their ZTVs (i.e. theoretical visibility);
 - the overall character of the asset and its sensitivity;
 - the siting, scale and design of the cumulative developments themselves;
 - the way in which the asset is experienced;
 - the placing of the cumulative development(s) in relation to both the Proposed Development being assessed and the heritage asset under consideration; and
 - the contribution of the cumulative baseline schemes to the significance of the effect, excluding the individual proposal being assessed, upon the setting of the heritage asset under consideration.

⁸⁶ Ibid. p45.

⁸⁷ Ibid. p45-6.

⁸⁸ SNH and HES, 2018, Environmental Impact Assessment Handbook. Version 5. <https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0> [Accessed 14 April 2025].

- 5.5.31 The cumulative assessment is based upon a list of operational, under construction, or consented developments, developments where planning permission has been applied for, and developments for which scoping has taken place. It should be understood that in-planning and in-scoping arrays could alter in design and/or not be consented to and so there is a degree of uncertainty as to how these would ultimately appear in the landscape. Cumulative developments are listed in **Table 4.6, Chapter 4 Landscape and Visual**. While all have been considered, only those which contribute to, or have the possibility to contribute to, cumulative effects on specific heritage assets are discussed in detail in this assessment and are presented in **Section 5.12. Table 5.7** therein details the cumulative developments relevant for the cultural heritage assessment. Additionally, given the emphasis NatureScot places on significant effects, and the requirements of the EIA Regulations, cumulative effects have been considered in detail for those assets where the Proposed Development has been judged to have an impact on their setting. Where No Impact has been predicted for the Proposed Development, there would be no cumulative effect.

Limitations to Assessment

- 5.5.32 This assessment is based upon data obtained from publicly accessible archives. NRHE data and HES Designation data was downloaded on the 28th of October 2024 and checked on the 10th of April 2025 and is current to this date. NRHE links to the Canmore website were updated to the corresponding Trove.scot website on 12th June 2025 in anticipation of the Canmore website shut off date of 24th June 2025. This assessment does not include any records added or altered after these dates.
- 5.5.33 No further archaeological investigation beyond the walkover surveys, either non-intrusive or intrusive, has been undertaken to inform this assessment, and as such there is the potential for hitherto unknown archaeological remains to survive within the Site. Such remains would have the potential to be impacted by any ground-breaking works associated with the construction of the Proposed Development. Limitations are taken into account in **Section 5.10** and **Section 5.11**, where measures to avoid or minimise any such effects on hitherto unknown remains are provided for.

5.6 Baseline Conditions

Current Baseline

Designations

The Site

- 5.6.1 There are no designated heritage assets within the Site.

1 km Study Area

- 5.6.2 There is one Scheduled Monument within the 1 km Study Area: Langwell, fort and dun 500m WSW of (Asset 1) (see **Figure 5.1**, EIA Report Volume 3a), and one Category B Listed bridge (Asset 4).

5 km Study Area

- 5.6.3 Between 1 km and 5 km of the Site, there are four Category B Listed buildings (Assets 5, 6, 8, and 10) and two Category C Listed buildings (Assets 7 and 9) (see **Figure 5.2**, EIA Report Volume 3a). The Category B buildings include Rosehall House (Asset 5) and its associated walled garden (Asset 6) and three bridges (Assets 4, 8 and 10). The Category C Listed buildings include the North Lodge (Asset 7) associated with Rosehall House (Asset 5) and a church (Asset 9) (see **Figure 5.2**, EIA Report, Volume 3a).

10 km Study Area

- 5.6.4 Between 5 km and 10 km of the Site there is one Category A Listed building, Croich Parish Church (Asset 3) (see **Figure 5.2**, EIA Report Volume 3a).

Beyond 10 km

- 5.6.5 Three additional Scheduled Monuments (Assets 2, 33, and 34), located beyond the 10 km Study Area, were initially included within the assessment, with Assets 33 and 34 per HES's request (see **Table 5.1**) (see **Figure 5.2**, EIA Report Volume 3a). These Scheduled Monuments include Dail Langwell, broch 1675m NW of Croich (Asset 2), Druim Baile Fuir, stone circle, cairns, hut circles and enclosure (Asset 33), and Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh (Asset 34). Asset 2 was ultimately scoped out of detailed assessment following further consultation with HES (**Table 5.1**).

Archaeological and Historical Background

Unknown/Undated

- 5.6.6 There is an asset of unknown date recorded within the Site, comprising a stray findspot (Asset 18) of a pecked-out stone bowl. This asset is not readily dated out of context and could date from the prehistoric

to the post-medieval period. This asset is also only generally recorded under a 6-figure grid reference and the exact find location is not known.

- 5.6.7 Within 1 km of the Site there are several assets recorded as of unknown date (Assets 11-13, 20, 23-25, 61, and 62). These generally comprise settlement remains of farmsteads, townships, and buildings, and are likely of post-medieval date – though medieval provenances cannot be discounted. These are discussed in greater detail in the post-medieval section below. Iron slag (Asset 62) has been recorded near the Oykel Hotel, but later inspections were unable to trace this, and the date is unknown. A possible enclosure (Asset 61) north of the east access track could not be verified in later accounts on the NRHE and is of unknown date.

Prehistoric and Roman (c12000 BC-AD400)

- 5.6.8 There are no prehistoric or Roman assets recorded within the Site.
- 5.6.9 The Scheduled Langwell asset (Asset 1) lies c. 750 m to the north of the Site (c. 2.1 km from the nearest turbine, T1) and comprises of a prehistoric fort occupying a prominent knoll, overlooking the River Oykel to the north, with a later dun comprising a timber-laced stone wall and internal wooden roundhouse situated atop the western edge of the fort. Excavations of the site were undertaken in the 1970s (Event 21), which indicated a complex history of multiple phases of occupation, with the dun showing evidence for vitrification within the wall. At least one further occupation phase was recorded after the burning event before the site appears to have been abandoned. Radiocarbon dating suggests the site was occupied broadly within the first three centuries BC, dating the occupation of the site to the Iron Age.
- 5.6.10 There are a further nine prehistoric assets (Assets 15-17, 22, 26, 31, 36, 38, and 39) within 1 km of the Site. With the exception of Asset 22, these assets are located to the north of the Site, situated on the south-facing slope of Strath Oykel and on the lower flat ground along the river. There are no Roman heritage assets recorded within any of the surrounding Study Areas.
- 5.6.11 Asset 26, situated near Langwell, comprises a Bronze Age cist burial with a single inhumation, that of a young woman wrapped in a cattle skin and accompanied by other rare organic artefacts. The burial was radiocarbon dated to 2200-1960 cal BC, with older evidence at the site of a fire dating to the Neolithic also recorded.⁸⁹ A stone feature (Asset 36) was identified nearby and may have been associated with the cist. These were excavated as part of a rescue excavation (Event 40) with a subsequent programme of augering and test pitting (Event 42) undertaken in the wider area to investigate the potential for further burials. The remains of a possible robbed-out cairn were observed, but no further burials were identified. The natural thoroughfare that the River Oykel, and its associated strath and glen, afford from east to west has likely been an important routeway since the prehistoric period, and the burial may have been deliberately sited in a liminal place beside the river along this routeway⁹⁰. Another possible burial cairn (Asset 17) is recorded on the north side of the river, also in a relatively low position in the strath.
- 5.6.12 There are prehistoric hut circles and clearance cairns (Assets 15, 16, 31, 38, and 39) also recorded within Strath Oykel. These are all situated on the south-facing slope of Strath Oykel, overlooking the river to the south. South-facing locales are a common preference for prehistoric settlement and agricultural activity as these offer a more habitable environment.
- 5.6.13 Asset 22 comprises a stray findspot of a Bronze Age bracelet fragment, found on the south-facing slope of Strath Cuileannach.
- 5.6.14 Beyond 10 km of the Site there are further prehistoric assets. The Scheduled Monuments selected for additional consideration in this assessment comprise a Neolithic chambered cairn (Asset 34) to the far northwest, a collection of sites (Asset 33) to the northeast that includes hut circles and an enclosure, a stone circle, and burial cairns, and an Iron Age broch (Asset 2) to the north.
- 5.6.15 Both the Old⁹¹ (OSA) and New⁹² Statistical Accounts (NSA) for the parish of Kincardine note that there are numerous fortified sites (identified therein as 'dounes' and 'duns' but likely referring to brochs as well) and stone circles present within the parish.
- 5.6.16 While there is fair evidence for prehistoric activity within the immediate surrounds of the Site, these are relatively confined to the lower and sheltered straths, situated predominantly on the south-facing slope and occupying elevations of between 10 m above ordnance datum (AOD) and 100 m AOD. The upland and generally north-facing location that the Site occupies suggests it is much less likely to have been

⁸⁹ Lelong, O, et al, 2014, Wrappings of power: a woman's burial in cattle hide at Langwell Farm, Strath Oykel. PSAS, Vol. 144, pp. 65-131.

⁹⁰ Ibid. p. 123.

⁹¹ Gallie, Rev. A, 1792, Parish of Kincardine. In: Sinclair, Sir John (ed.) The Statistical Account of Scotland, Kincardine, County of Ross and Cromarty, Vol. III. Edinburgh: William Creech. Pp. 505-516, Vol. 8. Edinburgh: William Creech. University of Edinburgh, University of Glasgow. (1999) [https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/osa-vol3-Parish record for Kincardine in the county of Ross and Cromarty in volume 3 of account 1/](https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/osa-vol3-Parish%20record%20for%20Kincardine%20in%20the%20county%20of%20Ross%20and%20Cromarty%20in%20volume%203%20of%20account%201/) [Accessed 14 April 2025].

⁹² Allen, Rev. H, 1845, Parish of Kincardine. In: Gordon, J. (ed.). (1845) The New Statistical Account of Scotland / by the ministers of the respective parishes, under the superintendence of a committee of the Society for the Benefit of the Sons and Daughters of the Clergy. Kincardine, County of Ross and Cromarty, Vol. XIV, Edinburgh: Blackwoods and Sons. Pp 403-433. University of Edinburgh, University of Glasgow. (1999). [https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/nsa-vol14-Parish record for Kincardine in the county of Ross and Cromarty in volume 14 of account 2/](https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/nsa-vol14-Parish%20record%20for%20Kincardine%20in%20the%20county%20of%20Ross%20and%20Cromarty%20in%20volume%2014%20of%20account%202/) [Accessed 14 April 2025].

used for prehistoric settlement and agricultural activity, particularly the southern area where the Proposed Development is mainly situated, over elevations between 200 m-360 m AOD. On this basis, it is judged that there is a low potential for prehistoric remains to be present and likely no potential for Roman remains.

Early Historic and Medieval (AD400-AD1600)

- 5.6.17 There are no early historic or medieval assets recorded within the Site.
- 5.6.18 There are no early historic assets recorded within the surrounding Study Areas. The sole medieval asset recorded comprises a battlefield (Asset 14) to the north of the Site, the site of a skirmish between the Mackays and Rosses towards the end of the 15th century, of which the Mackays were the victors. The grid-reference for this is 4-figure and so not necessarily accurate.

Fraser states that the river Oykel is mentioned in the Norse 12th century Orkneyinga Saga and is later depicted in written place-name evidence in the late 15th and 16th centuries⁹³. The river itself is considered a 'frontier' between the Norse-inhabited northeast and the rest of the Northern Highlands⁹⁴, and this natural border is seen to continue with the separation of the Kincardine parish (south side of the river, within which the Site sits) and Creich parish (north side of the river), as well as the county border of Ross and Cromarty and Sutherland, again respectively south and north of the river. While Canmore notes the presence of a Norse 'rune inscribed stone' (Asset 64) near the Oykel Bridge Hotel to the northwest, this is a post-medieval forgery⁹⁵.

- 5.6.19 In the late 16th to early 17th centuries, Pont records several local placenames of settlements that stand to the northwest and north of the Site, including 'Amad' (Amat), 'Turnaeg-ocrach' (West Turnaig), 'Turnaeg lcrach' (East Turnaig) and 'Langol' (Langwell)⁹⁶. While Pont's maps of Strath Oykel have been lost, the surviving later mid-17th century maps produced by Gordon were based on these and likely include most of the settlements identified by Pont⁹⁷ ⁹⁸. It is therefore likely that some if not all of these settlements have later medieval origins, although the upstanding remains visible in the landscape today are likely post-medieval in date.
- 5.6.20 Considering the paucity of early historic and medieval assets recorded, and for similar environmental reasons as laid out for the prehistoric remains, it is considered that there is a low potential for assets of these dates to survive within the Site.

Post-medieval (AD1600-AD1900)

- 5.6.21 There are no previously recorded post-medieval assets recorded within the Site. However, the assessment has identified nine assets (Assets 47, 49-51, 53, and 55-58) within the Site's western access area. This assessment has identified several post-medieval heritage assets within the Site, concentrated in the area around the western access track (see **Figure 5.1**, EIA Report Volume 3a). These include a shieling settlement (Asset 47), two tracks (Assets 49 and 55), revetted walls (Asset 50), peat grips (drainage ditches) (Asset 53), a borrow pit (Asset 51), a field boundary (Asset 58), and several enclosures (Assets 56 and 57). The tracks, enclosures and one field boundary (Asset 58) are depicted on the 1879 OS map (see **Figure 5.5**, EIA Report Volume 3a).
- 5.6.22 Numerous non-designated post-medieval assets are recorded within the 1 km Study Area to the north of the Site, comprising farmsteads and settlement remains (Assets 11-13, 20, 23, 29, 32, 37, 4, 61, 65-69), tracks (Asset 28), and a head-dyke (Asset 19).
- 5.6.23 Gordon's maps, produced between 1636-1652 and based on earlier and now lost maps by Pont, identify the placenames of both 'Strath Okel' and 'Avon Okel', Strath Oykel and the River Oykel respectively (see **Figure 5.3**, EIA Report Volume 3a). Several settlements are identified along the river that can be correlated with modern settlement to the immediate northwest, north and northeast of the Site today, including 'Turnaeg Ocra' and 'Turnaeg lera', West Turnaig (Asset 20) and East Turnaig (Asset 11) respectively, 'Amad' (Amat) (Asset 25), 'Langol' (Langwell) (Asset 23) and Brae (Asset 24). Kragy and Keurny, settlements on the south side of the River Oykel are also named but are not depicted on subsequent maps. As stated previously, these settlements may have earlier medieval origins, but the surviving upstanding settlement remains visible in the landscape today are likely post-medieval. The site is not shown in any detail on the map.

⁹³ Fraser, I, 1986, Norse and Celtic Place-Names around the Dornoch Firth. In: J, Baldwin (ed) Firthlands of Ross and Sutherland. Leeds: W. S. Maney and Son Ltd. p. 26.

⁹⁴ Ibid.

⁹⁵ Mackenzie, W. M. 1927, Some Stray Inscriptions - (1) Runes on Standing Stone at Oykel Bridge; (2) on Bracket at Gleneagles; (3) on the Kindrochit Brooch; (4) the Atholl Motto; (5) Two Carved Stones of the Urquharts of Cromarty. Proceedings of the Society of Antiquaries of Scotland, 61, p. 173-191.

⁹⁶ Pont, T, ca. 1583-1614, Pont Texts. <https://maps.nls.uk/pont/texts/transcripts/ponttext122v-123r.html> [Accessed 14 April 2025].

⁹⁷ Gordon, R, ca. 1636-1652, Sutherland, Strath Okel & Strath Charron. <https://maps.nls.uk/view/00000280> [Accessed 14 April 2025].

⁹⁸ Gordon, R, ca. 1636-1652, A map of Scotland, north of Loch Linnhe and the River Dee and west of the River Deveron. <https://maps.nls.uk/view/00000185> [Accessed 14 April 2025].

- 5.6.24 Roy's Highland map of 1747-1752 shows the area in somewhat more detail (see **Figure 5.4**, EIA Report Volume 3a).⁹⁹ It depicts 'Langelmenoch' (Langwell), 'Down' (Doune), 'Tounig' (Tunaig) and 'Aldmatt' (Amat), the latter two of which have been incorrectly transposed on the map to opposite banks of the river. The site is shown as unimproved hilly upland, with some woodland along the northern reaches and potentially some arable land surrounding 'Langelmenoch' (Langwell) also in the northern reaches of the site. Notably, no roads are depicted on either the south or north side of the river. A map produced in 1793 (not illustrated) shows a proposed road along the south side of the river, and names many of the same settlements¹⁰⁰. This road evidently was constructed as it appears on the 1822 map (not illustrated) by Craig¹⁰¹, and the precursor of the A837 on the north side of the river is depicted on the 1st edition 6-inch OS maps of 1879 and 1881, appearing as Asset 28 (see **Figure 5.5**, EIA Report Volume 3a)^{102 103}.
- 5.6.25 The 1st edition OS maps are the first to depict the Site in accurate detail (see **Figure 5.5**, EIA Report Volume 3a). The Site is shown as occupying unimproved hilly upland, an extensive network of streams named the 'Meòir Leathan' (lit. 'broad branches'¹⁰⁴, likely in reference to the numerous tributaries flowing northeast into the Allt a' Bhràigh. Many of the place-names depicted relate to the various watercourses and suggest the Site is a fairly wet and boggy area. The eastern access extends to the Site from near the township of Oape (Asset 68), and the western access extends south of the River Oykel, past several enclosures (Assets 56 and 57) and a field boundary (Asset 58) near to the hill Cnoc na h-Àtha (hill of the kiln), and over a bridge (Asset 59) that spans the River Einig. It then proceeds past the farmstead of Amat (outwith the Site to the east; not recorded by the NRHE). The proposed western access partly follows a historic track (Asset 49) before winding up the northwest-facing slope of the hill Cnoc nan Con towards Loch Phail, crossing over another track (Asset 55). Both tracks lead to Strath Cuileannach to the south, but the latter (Asset 55) takes a steeper route, and may have been a secondary routeway considering the difficult terrain and lack of upstanding remains noted during the walkover survey.
- 5.6.26 In the wider surrounds, the map depicts the farmstead at Langwell (Asset 23) as a complex of several buildings including kennels and sheepfolds, as well as enclosures and probable gardens situated at the northwest end of an area of improved ground along the river. Another farmstead (Asset 67) is shown to the north of the east access, and enclosures (Assets 65 and 66) are shown to the north and west of the Site. Inveroykel Lodge (Asset 69) is depicted to the east of the Site.
- 5.6.27 The Category B Listed Rosehall House (Asset 5) and its walled garden (Asset 6) are depicted on the 1st edition OS map. Constructed in the early part of the 19th century, but possibly incorporating elements of an earlier house that burned down towards the end of the 18th century (and depicted on the 1793 map described above), the house was notably decorated by Coco Chanel in the early part of the 20th century. The associated Category C Listed North Lodge (Asset 7) lies to the northwest.
- 5.6.28 The OSA notes the presence of "...two preaching stations besides the church, viz. Amat in Strath Carron, and Down in Strath Oigal [Oykel]."¹⁰⁵, indicating the locale was part of a circuit the minister would travel in the parish while preaching, heading southwest at Amat along an established track to the southern Strath Cuileannach, meeting Strathcarron and thence to Ardgay to the east, or vice versa. A Category C Listed church (Asset 9), constructed as a Free church in 1844, lies c. 5 km to the northeast of the Site. The NSA states that although sheep farming had increased substantially in the parish by the time of the mid-19th century, the clearance of people to facilitate this was not undertaken to the severe levels seen in adjacent parishes.¹⁰⁶ The minister, Reverend Allen, wrote this in 1840, but in 1845 one of the most infamous clearances would take place in his parish at the Category A Listed Croick church (Asset 3; c. 7 km to the southeast of the Site), where 18 families from Glen Calvie would take refuge in the grounds of the church as a result of clearances, carving their lamentations into the east windows which are still legible today. The church itself was constructed by Telford in 1827.

⁹⁹ Roy, W, 1747-1752, Roy Military Survey of Scotland – Highlands. <https://maps.nls.uk/geo/explore/#zoom=7&lat=56.711&lon=-4.9&layers=3> [Accessed 14 April 2025].

¹⁰⁰ Brown, G, 1793, Plan of intended road from Loch Inver by the Portenleick Ferry. Surveyed by George Brown. With estimate of cost (separate), 1793. <https://maps.nls.uk/view/216589657> [Accessed 14 April 2025].

¹⁰¹ Craig, J, 1822, Ross and Cromarty Shires / compiled from actual surveys by John Craig. Publication date: 1822.

<https://maps.nls.uk/view/216442902> [Accessed 14 April 2025].

¹⁰² OS, 1879, Sutherland, Sheet CI, Survey date: 1873, Publication date: 1879. <https://maps.nls.uk/view/228781330> [Accessed 14 April 2025].

¹⁰³ OS, 1881, Ross-shire & Cromartyshire (Mainland), Sheet XI, Survey date: 1875, Publication date: 1881. <https://maps.nls.uk/view/228779989> [Accessed 14 April 2025].

¹⁰⁴ OS, 1848-1876, Ross and Cromarty OS Name Books, Ross and Cromarty Mainland, Vol. 34, p.21. <https://scotlandspplaces.gov.uk/digital-volumes/ordnance-survey-name-books/ross-and-cromarty-os-name-books-1848-1876/ross-and-cromarty-mainland-volume-34/21> [Accessed 14 April 2025].

¹⁰⁵ Gallie, Rev. A, 1792, Parish of Kincardine. In: Sinclair, Sir John (ed.) The Statistical Account of Scotland, Kincardine, County of Ross and Cromarty, Vol. III. Edinburgh: William Creech. Pp. 505-516, Vol. 8. Edinburgh: William Creech. University of Edinburgh, University of Glasgow. (1999) [https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/osa-vol3-Parish record for Kincardine in the county of Ross and Cromarty in volume 3 of account 1/](https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/osa-vol3-Parish%20record%20for%20Kincardine%20in%20the%20county%20of%20Ross%20and%20Cromarty%20in%20volume%203%20of%20account%201/) [Accessed 14 April 2025].

¹⁰⁶ Allen, Rev. H, 1845, Parish of Kincardine. In: Gordon, J. (ed.). (1845) The New Statistical Account of Scotland / by the ministers of the respective parishes, under the superintendence of a committee of the Society for the Benefit of the Sons and Daughters of the Clergy. Kincardine, County of Ross and Cromarty, Vol. XIV, Edinburgh: Blackwoods and Sons. Pp 403-433. University of Edinburgh, University of Glasgow. (1999). [https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/nsa-vol14-Parish record for Kincardine in the county of Ross and Cromarty in volume 14 of account 2/](https://stataccscot.ed.ac.uk/static/statacc/dist/viewer/nsa-vol14-Parish%20record%20for%20Kincardine%20in%20the%20county%20of%20Ross%20and%20Cromarty%20in%20volume%2014%20of%20account%202/) [Accessed 14 April 2025].

- 5.6.29 The remaining post-medieval designated assets comprise two early 19th century Category B Listed bridges, the Oykel bridge (Asset 4) spanning the River Oykel to the northwest of the Site, and the Cassley bridge (Asset 8) spanning the River Cassley to the northeast of the Site.
- 5.6.30 The Site appears to have been undeveloped throughout the post-medieval period, likely owing to its upland and principally north-facing locale, with slightly more favourable conditions evident in the northwest portion of the Site along the western access, where post-medieval settlement and agricultural remains are present. It is judged that there is a Low potential for remains of post-medieval date to be present on the Site except for within the area surrounding the western access, where there is judged to be a Medium potential for further post-medieval remains to survive. The importance of the post-medieval remains within the Site and 1 km Study Area ranges from Negligible to Low, per the criteria set out in **Table 5.2**.

Modern (AD1900-present)

- 5.6.31 No modern assets have previously been recorded within the Site. This assessment has identified four modern non-designated assets (Assets 35, 48, 52, and 54) recorded on the Site, comprising a linear bank under mixed vegetation adjacent to modern forestry tracks within the main Site area, and a pond (Asset 48), culvert (Asset 52) and field boundary (Asset 54) in the western access area of the Site. With regard to the bank (Asset 35), as no precursors have been identified on historic maps and it is not visible on aerial photographs from 1988¹⁰⁷, it is considered likely that the bank is related to the construction of the adjacent track and not of archaeological significance. Further tracks are evident to the north of the Site (Asset 30) and also appear to relate to forestry operations as these are not depicted on OS maps until after the 1960s, and so likely also relate to the commercial forestry plantation present across much of the Site. The field boundary (Asset 54) appears first on the 1967 OS map¹⁰⁸, The pond (Asset 48) has been constructed between 2012 and 2018 according to satellite imagery.
- 5.6.32 One modern designated asset, a Category B Listed suspension footbridge (Asset 10) lies within the 5 km Study Area to the northeast of the Site, spanning the River Oykel. Four non-designated assets of modern date are recorded within the 1 km Study Area comprising an enclosure (Asset 60) near Doune, and a new road bridge (Asset 70) and two milestones (Assets 71 and 72) near the Oykel Bridge.
- 5.6.33 OS mapping throughout the 20th century shows no alterations to the majority of the Site¹⁰⁹. Aerial photographs from 1988 show that part of the central portion Site has been planted with forestry¹¹⁰, and the remainder of the standing forestry plantations evident today were likely planted shortly thereafter. Satellite imagery from 2012 shows the Site as it appears today¹¹¹, with standing blocks of commercial forestry plantation and a broad band of un-planted moorland extending northeast/southwest across the central and northeast portions of the Site.
- 5.6.34 It is considered that there is a low potential for further modern remains to be present within the Site. Any such remains would likely comprise tracks and banks created as part of the late 20th century forestry operations, or farming activity, and are considered to be of negligible importance.

Events

- 5.6.35 One event (Event 27) is recorded within the Site comprising a desk-based assessment and walkover survey carried out in 2021 to assess two potential forestry planting areas (see **Figure 5.1**, EIA Report Volume 3a). No archaeological features were identified.
- 5.6.36 Within the 1 km Study Area, nine events (Events 21, 37, 40-42, 44-46 and 63) have been recorded (**Figure 5.1**, EIA Report Volume 3a). These include the archaeological excavation (Event 21) undertaken at the Scheduled Langwell fort (Asset 1), the rescue excavation (Event 40) and augering and test-pitting evaluation (Event 42) associated with the cist burial (Asset 26), a photographic survey (Event 41) of the croft house (Asset 37) at Doune, desk-based assessments and walkover surveys (Event 44-46) undertaken over five separate areas on the north side of the River Oykel in advance of tree planting schemes or for wind farms, and a similar walkover survey (Event 63) undertaken on the south side of the river in advance of a forestry expansion, producing no archaeological remains but noting that the presence of peat across the area that may have subsumed any upstanding remains.

LiDAR, Aerial Photographs and Satellite Imagery

- 5.6.37 Phase 2 LiDAR is available for only the north-most elements of the Proposed Development, including the proposed borrow pit and turbine hardstands for turbine T1 and T2, with access via the existing forestry track through the Site. Extensive cultivation furrows are visible underlying the areas of standing

¹⁰⁷ NCAP, 1988. Sortie: ASS/62888 Frame: 0189. <https://ncap.org.uk/frame/8-1-3-1-45-175?pos=52> [Accessed 14 April 2025].

¹⁰⁸ OS, 1967. NH39NE - A, Surveyed / Revised: 1964 to 1965, Published: 1967. <https://maps.nls.uk/view/188134779> [Accessed 15 May 2025].

¹⁰⁹ OS, 1973, Sheet NH 49/59 - Strathcarron; A Edition, Revised: 1965 to 1972, Published: 1973. <https://maps.nls.uk/view/195441258> [Accessed 14 April 2025].

¹¹⁰ NCAP, 1988. Sortie: ASS/62888 Frame: 0189. <https://ncap.org.uk/frame/8-1-3-1-45-175?pos=52> [Accessed 14 April 2025].

¹¹¹ Esri World Imagery Wayback <https://livingatlas.arcgis.com/wayback/#active=10&mapCenter=-4.67716%2C57.95716%2C14> [Accessed 14 April 2025].

forestry, extending across the borrow pit and turbine hardstand location and indicating a high degree of disturbance to the sub-surface remains in these areas.

- 5.6.38 Aerial photographs of the Site from 1988 indicate that work was by then underway to develop part of the Site as a cultivated forestry plantation¹¹², with satellite imagery indicating that none of the forested areas have been felled within the last 15 years. No additional assets were identified as a result of reviewing this data.

Walkover Survey Results

- 5.6.39 The walkover surveys of the Site were undertaken on the 24th and 25th of September 2024 in overcast but generally dry conditions with good visibility, targeting the proposed infrastructure layout where accessible, and on 12 May 2025 in bright sunny conditions with good visibility, focusing on the western access track. Plates accompanying this section can be viewed in **Technical Appendix 5.2** (EIA Report Volume 4) and detailed asset descriptions can be viewed in **Technical Appendix 5** (EIA Report Volume 4).
- 5.6.40 The Site predominantly comprises an undulating parcel of terrain containing a mixture of mature commercial coniferous forestry plantations, planted in a mosaic pattern with fire breaks delineating stands of trees, and with areas of open moorland particularly in the central and northeast portions of the Site, and along the south periphery of the Site boundary (see **Plates 1-2, Technical Appendix 5.2**, EIA Report Volume 4).
- 5.6.41 An in-use forestry track, the same depicted on the 1988 aerial photographs, enters the Site from the east and extends in a curving manner to the north and then northeast (see **Plate 3, Technical Appendix 5.2**, EIA Report Volume 4). Relict tracks, likely modern in date and constructed during the planting phases of the operation and since fallen out of use, are also evident across the Site. Asset 35, a track with associated upcast bank of material, both now under dense grass, extends along the west side of one of the larger watercourses that extends through the Site, the '*Allt a' Phris Mhòir*' (see **Figure 5.1**, EIA Report Volume 3a). Such tracks are considered to be of negligible archaeological importance.
- 5.6.42 Much of the Proposed Development infrastructure layout is situated fully or partially within the stands of mature forestry plantation, and/or across the fire breaks or in-use tracks (such as the hardstands for turbine T1, T4-T6, T8-T11, and both the east and west substation and construction compound options; see **Plates 4-6, Technical Appendix 5.2**, EIA Report Volume 4). Hardstands for turbine T3 and T7 are fully within open moorland where little disturbance, which would affect archaeology, has likely taken place, and some hardstands (turbine T2 and T5) and tracks extend through both forestry plantation and what appears to be undisturbed (from an archaeological point of view) moorland (**Plates 8 and 9, Technical Appendix 5.2**, EIA Report Volume 4). Cognisance of this disturbance, and the likely impact it has had on underlying sub-surface archaeological remains, is taken into account in the proposed mitigation set out in **Section 5.10**.
- 5.6.43 The western access of the Site is more sheltered in comparison to the eastern access and central parts of the Site. It stands at the confluence of Glen Einig and Strath Oykel, with the north extent in particular sited along lower fertile terraces. Here the route progresses through post-medieval farmland and rough grazing areas that appear to be in use for deer-raising before ascending Cnoc na Con hill (see **Plate 10, Technical Appendix 5.2**, EIA Report Volume 4). The northern extent of the western access is situated on relatively low-lying ground around the River Einig, with post-medieval settlement remains present in the wider area. An ephemeral shieling settlement (Asset 47) comprising two distinct areas was identified atop a ridgeline to the immediate west of the western access route (see **Plates 11-12, Technical Appendix 5.2**, EIA Report Volume 4). The western access would utilise the existing road to the north of the River Einig, and part of an existing post-medieval track (Asset 49) south of the river, which has a modern pond (Asset 48) excavated beside it, revetted walls (Asset 50), a borrow pit (Asset) and a culvert (Asset 52) all in close proximity to the track (Asset 49) (see **Plates 13-17, Technical Appendix 5.2**, EIA Report Volume 4).
- 5.6.44 As the route progresses uphill, the terrain becomes steeper and less improved. Earth cut drains (Asset 53) are visible extending across this to aid in drainage, with large tree stumps in the peat visible suggesting the land was once forested, though it is not apparent to which period these may belong. There is a modern field boundary (Asset 54) extending across this higher portion of the western access, and a relict and ephemeral track (Asset 55) is just discernible as a variation in vegetation colour (see **Plates 18-20, Technical Appendix 5.2**, EIA Report Volume 4). The remains in the western portion of the Site range in importance from negligible to low. While not within the Site boundary, the in-use bridge (Asset 59) over the River Einig has been recorded for posterity. This will be used during the construction period for transportation of materials to Site but no adverse direct impacts are anticipated.

¹¹² NCAP. 1988. Sortie: ASS/62888 Frame: 0189. <https://ncap.org.uk/frame/8-1-3-1-45-175?pos=52> [Accessed 14 April 2025].

Future Baseline

- 5.6.45 If the Proposed Development does not go ahead, the future cultural heritage baseline of the Site is likely to remain relatively unchanged from the current baseline. Commercial forestry operations of planting and felling would continue and perhaps expand into areas that do not appear to have been disturbed by previous works, so there may be some potential for impacts upon as-yet unknown sub-surface archaeological remains, and upon the modern bank (Asset 35).

5.7 Embedded Mitigation

- 5.7.1 Potential direct physical effects on heritage assets within the Site have been considered throughout the design evolution of the Proposed Development. Where possible, impacts to heritage assets have been avoided or minimised through the micro-siting of infrastructure.
- 5.7.2 Potential significant direct setting effects upon designated cultural heritage assets outwith the Site have been considered, particularly for Langwell, fort and dun 500m WSW of (Asset 1) to the immediate north of the Site (see **Figure 5.1**, EIA Report Volume 3a). The design evolution is presented in detail in **Chapter 3** (EIA Report Volume 2). Incorporating consultation feedback, an iterative design process has been implemented, with the evolution of the design undertaken with reference to the HES scoping opinion (see **Table 5.1**) that highlighted an area of greatest concern in relation to the Scoping Layout (turbines T3, T4, and T8). The design taken forward for the Proposed Development has reduced the overall number of proposed turbines down from 19 to 11 and removed/moved turbines in the locations that were of most concern to HES (Scoping Layout turbines T3, T4 and T8), reducing down to one turbine (turbine T3) directly to the south in order to reduce potential setting effects (see **Figure 3.2**, EIA Report Volume 3a). The detailed setting assessment for this asset is presented in **Section 5.9**.

5.8 Receptors Brought Forward for Assessment

5.8.1 Direct Physical Effects

- 5.8.2 There is potential for direct effects to impact upon the known and as-yet unknown heritage resource within the Site, despite the fact that much of the Site has been impacted upon by the forestry works, and therefore it is likely there is only limited areas where there is potential for sub-surface archaeological remains.

5.8.3 Setting Effects

- 5.8.4 Potential operational effects on the settings of all designated assets within 5 km of the Site, and all nationally significant designated assets within 10 km of the Site, with the inclusion of some further assets beyond 10 km, have been considered. Particular attention has been paid to the Scheduled Langwell, fort and dun 500m WSW of (SM5302) (Asset 1), and an iterative design process has been used to reduce potential setting effects upon this asset.

5.9 Potential Effects

Construction

- 5.9.1 During construction, direct physical impacts can occur from vegetation clearance, earth moving operations, track construction (including track widening and turning head construction), and construction of all other associated infrastructure (turbine bases, lay down areas, compounds, drainage, etc.).
- 5.9.2 Setting impacts relating to construction would be short term temporary effects and may occur due to the introduction of construction machinery on-site, additional construction traffic, and/or construction of compounds. It is therefore considered that setting effects resulting during construction would not exceed the predicted operational effects upon the setting of heritage assets. As such, the potential for setting effects is considered under operational effects only.
- 5.9.3 Fourteen non-designated heritage assets have been identified within the Site. In the central area of the Site, these comprise a findspot location for a stone bowl (Asset 18) of unknown date, and a modern bank (Asset 35) associated with the modern forestry tracks. Both are considered to be of negligible importance as per the criteria presented in **Table 5.2**. The Proposed Development infrastructure layout avoids both these assets by a substantial distance and no direct impacts are predicted, resulting in no related direct effects.
- 5.9.4 In the western access track, twelve non-designated assets have been identified within the Site, comprising post-medieval tracks (Assets 49 and 55), enclosures (Assets 56 and 57), a field boundary, shielings (Asset 47), drainage ditches (Asset 53), and a modern pond (Asset 49), culvert (Asset 52), and field boundary (Asset 54). The Proposed Development has been designed to avoid or minimise direct impacts on known heritage assets where possible, however a number of these assets could potentially be directly impacted by the Proposed Development and are summarised in **Table 5.6**.

Table 5.6: Non-designated Heritage Assets Brought Forward for Assessment of Direct Effects

Asset No.	Type	Designation	Importance	Magnitude Of Impact	Level of Effect
47	Shielings, Amat	Non-designated asset	Low	Low/Medium	Negligible/minor adverse
48	Pond, Amat	Non-designated asset	Negligible	Low	Negligible
49	Track, Amat	Non-designated asset	Negligible	Low	Negligible
50	Revetment walls, Amat	Non-designated asset	Negligible	High	Minor adverse
51	Borrow pit, Amat	Non-designated asset	Negligible	Negligible	Negligible
52	Culvert, Amat	Non-designated asset	Negligible	Negligible	Negligible
53	Pit grips, Amat	Non-designated asset	Negligible	Negligible	Negligible
54	Field boundary, Amat	Non-designated asset	Negligible	Negligible	Negligible
55	Track, Amat	Non-designated asset	Negligible	Negligible	Negligible
56	Enclosures, Cnoc na h-Àtha	Non-designated asset	Negligible	Negligible	Negligible
57	Enclosure, Cnoc na h-Àtha	Non-designated asset	Negligible	Negligible	Negligible
58	Field boundary, Cnoc na h-Àtha	Non-designated asset	Negligible	Negligible	Negligible

5.9.5 Direct impacts upon known heritage assets within the western access part of the Site would likely be limited to impacts on small proportions of the heritage assets, which in combination with their negligible importance, would constitute **negligible** or **minor** overall direct effects which are not significant. Depending on the extent of groundworks required in the vicinity of the shielings (Asset 47), the potential magnitude of impact could increase to medium, with resulting **minor adverse** direct effects (not significant). It is likely that the revetment walls (Asset 50), although of negligible importance, would be lost in their entirety and so constitute a high magnitude impact and resulting **minor adverse** direct effect (not significant).

5.9.6 Direct physical impacts also include the possible disturbance of hitherto unknown archaeological remains within the Site. While there is considered to be low archaeological potential for remains of any period within the Site, these cannot be wholly discounted. To the extent that there are unknown heritage assets within the Site and that these are of a similar nature to those in the immediate surrounds, there is the potential for effects ranging between **negligible** and **moderate** significance, with **moderate** adverse level effects potentially being considered significant. If assets of low importance experience high magnitude impacts (such as removal in their entirety), the resulting overall effect is considered **moderate** adverse (**Table 5.5**). Mitigation measures to offset such effects are provided in **Section 5.10**.

Operation

5.9.7 Direct physical effects upon any known or previously unknown archaeological remains which may be present within the Site would cease with the completion of the groundworks stage of construction and consequently no direct effects are predicted during the operational phase of the Proposed Development.

5.9.8 This assessment considers the potential for impacts upon the setting of all designated heritage assets within 5 km of the Site, all designated heritage assets within 10 km of the Site that are considered to be nationally important including any Scheduled Monuments, Category A Listed Buildings, Inventoried Gardens and Designed Landscapes, Inventoried Battlefields and World Heritage Sites, and for selected nationally significant designated heritage assets beyond 10 km from the Site as identified during consultation with HES and the THC HET (see **Table 5.1** and **Figure 5.6**, EIA Report Volume 3a).

5.9.9 Where accessible, site visits were undertaken for all designated heritage assets, including assets where the ZTV indicated no direct intervisibility with the Proposed Development from the asset itself, but where the Proposed Development might feature within views towards the asset in such a way that it would impact upon the setting of the asset. The assessment has been informed by ZTV modelling, site visits, wireframes, and photomontages as appropriate (see **Figure 5.6**, EIA Report Volume 3a and **Figures 5.9-5.12**, EIA Report Volume 3b).

5.9.10 A detailed assessment is included below for assets for which the effect upon their setting has been predicted to be potentially significant during discussions with HES, or for where inclusion of the assets has been at specific request by HES. The assessment for all other designated assets within the defined Study Areas are detailed in **Technical Appendix 5.3** (EIA Report Volume 4).

Langwell, fort and dun, SM5302 (Asset 1)

- 5.9.11 Asset 1 comprises a fort and later dun occupying the top of a prominent knoll situated in a bend of the River Oykel, which curves from the southwest around it to the east (see **Figure 5.6**, EIA Report Volume 3a and **Figures 5.9** and **Figure 5.10**, EIA Report Volume 3b). The fort and dun are visible as a prominent grass-covered series of ridges atop the knoll, against a backdrop of commercial forestry plantation that stands on the north-facing slope of the south side of Strath Oykel (see **Figure 5.9a**, EIA Report Volume 3b). The elevated position and slightly spurred location to the north of the main north-facing slope of the south side of the strath afford excellent and long-ranging views along Strath Oykel to the west and east (see **Figure 5.10b** and **Figure 5.10d**, EIA Report Volume 3b), with visibility to the south and north naturally limited by the inclining topography of the strath's sides (see **Figure 5.10a** and **Figure 5.10c**, EIA Report Volume 3b).
- 5.9.12 Excavations undertaken in the 1970s indicate that these structures date to the Iron Age period. The excavation was focused on the dun rather than the earlier fort, but an evaluation trench through the wall of the fort indicated that it did not show evidence for vitrification, contrary to the earlier reports, and only the later dun showed vitrification. The fort is suggested to have an entrance in the south side, although there is no structural evidence for this, and potentially an entrance in the east-northeast side. The dun, composed of an internal roundhouse and outer timber and stone wall, is unusual for being a rare example of having a timber-laced (outer) wall, which led to vitrification of the wall core when the dun experienced an intense burning episode. The entrance to the dun is on the east side, and the dun showed at least two phases of occupation prior to the burning event, with at least one subsequent re-occupation phase following the burning event. The site was notably scarce in terms of artefacts, which is a common theme amongst contemporary fortified sites of this period in the Highlands, such as Comar dun (SM13578), occupying a very similar setting in Strathglass atop a spur, also notably artefact scarce, and occupied after successive burning events on the dun itself¹¹³. A lack of artefacts and ecofacts could suggest that these sites were used temporarily and intermittently, rather than as permanently inhabited structures.
- 5.9.13 The key elements of the asset's setting relate to its defensive situation atop a knoll, and the extensive and strategic views the asset commands to the east and west (see **Figure 5.10d** and **Figure 5.10b**, EIA Report Volume 3b) along the natural thoroughfare formed by Strath Oykel and its associated river, naturally lending itself to a defensive and dominant position with long-ranging views down the strath and affording a level of control over the routeway from the east coast to the west, as identified by HES in their scoping opinion. This would have not only have afforded the asset measures of control over the surrounds but also would have allowed for the asset to be visually prominent when moving through the landscape, visible in views from the wider surrounds. The Proposed Development would feature only peripherally in views from the asset itself as they extend along the strath to the east and west, and similarly in east/west views towards the asset from the strath – the lower levels in particular – the Proposed Development would peripherally appear beyond the ridge of the north facing slope. In views south, towards the asset from the north, so that the strath and the asset are then looked across rather than along, the Proposed Development would feature in the south view from the asset, along and behind the ridgeline that forms a backdrop to the asset in this view.
- 5.9.14 The Proposed Development has been subject to an iterative design process to reduce the potential impacts upon the asset's setting to a non-significant level. This design evolution has seen the reduction of the total turbines present reduce from 19 to 11 (see **Figure 3.1**, EIA Report Volume 3a) to reduce the density of turbines, and increased distance between the asset and the turbines situated along the north side of the Site boundary closest to the asset (**Table 5.1**). Originally, the 19 turbine Scoping Layout would have been visible from the asset itself, with the nearest turbines 1.7 km from the asset. Four of the most northerly Scoping Layout turbines (turbines T1, T3, T4, and T8; with T3, T4, and T8 highlighted by HES as those which would impact the most upon the asset¹¹⁴) were of key consideration during this process, with three removed and one turbine T3, moved further south, in the layout for the Proposed Development. The asset is situated 2.1 km north of the nearest turbine, T1. The ZTV indicates that there would 9-11 turbines visible in views to the south from the asset, with the wireline and photomontage (see **Figure 5.10a** and **Figure 5.10f**, EIA Report Volume 3b) indicating that a total of eight turbines (turbines T1-5 and T9-11) would be visible, three from blade height along the east edge of the view, and five from hub or near-hub height in the central and west side of the view.
- 5.9.15 When viewed from a distance and further north, so that the asset is overlooked south towards the Proposed Development, there is greater visibility of the Proposed Development (see **Figure 5.9a**, EIA Report Volume 3b) than from the asset itself, with all eleven turbines visible; seven (turbines T5-11) at hub or near-hub height and four (turbines T1-4) at mid-tower height. Note that turbine T11 is situated beyond the left frame of **Figure 5.9e**, EIA Report Volume 3b. The turbines extend above and beyond the ridgeline formed by the south side of the strath. The asset, visible as a grassy mound on the left side of **Figure 5.9a** (EIA Report Volume 3b), remains a distinctive landform largely due to the change in vegetation of the knoll (grass) with its surrounds (forestry), and the structures atop the knoll are

¹¹³ Birch, S, & Peteranna, M, 2017, ARO23: Excavation and Survey at Comar Wood Dun, Cannich, Strathglass, Inverness-shire. https://archaeologyreportsonline.com/PDF/ARO23_ComerWood.pdf [Accessed 14 April 2025].

¹¹⁴ HES, 2024, Coille Beithe – Scope of Cultural Heritage EIA Chapter. 11 November 2024. [Letter; Digital]

themselves not directly backed by the proposed turbines. The topography and vegetation of this locale demonstrated in **Figure 5.9** and **Figure 5.10** (EIA Report Volume 3b) suggests that the appreciable views from and towards the asset are related more to the east and west along the strath which affords a wider landscape appreciation of the strath topography, rather than the view across the strath to the asset to the south, through the limited windows of visibility presented by road-side trees. The views for most travelling through this landscape, along the A837 road, are broadly screened by the standing tree belts along the road and visibility of the asset is not readily afforded.

- 5.9.16 While some of the proposed turbines would be visible in varying degrees of height and prominence from the asset itself or in windows of visibility through the tree-line along the A837 road to the north, the asset's setting is best appreciated from the monument itself, with its long-ranging views to the east and west along the strath (that it likely exercised control of movement over), and when viewed from the east and west within the open-ground of the valley floor and lower sides where woodland and trees do not significantly screen the monument, and from closer to the asset itself. In these key appreciable views that form the integral parts of the asset's landscape setting, the Proposed Development would not disrupt the sightlines along either and the integrity of the asset's setting as it related to these key elements would not be significantly adversely affected. The asset is considered to have a High sensitivity to change in its setting, and it is judged, for the reasons outlined above, that the magnitude of impact would not exceed Low, resulting in a **minor** adverse level of effect, which is not significant. There would not be a significant adverse impact upon the integrity of the asset's setting in terms of NPF4.

Druim Baile Fuir, Stone Circle, Cairns, Hut Circles, and Enclosure, SM1784 (Asset 33)

- 5.9.17 This asset comprises several different prehistoric sites across four distinct Scheduled areas, 14. km to the northeast of the nearest turbine (T11) (see **Figure 5.6**, EIA Report Volume 3a). These occupy the top and southwest-facing slope of a small hill that overlooks a narrow glen containing the Grudie Burn to the southwest, the topography for which creates a relatively intimate topographic setting for some elements of this asset. The monuments in their distinct areas include: the west group, a hut circle and enclosure; the central group, a stone circle and a cairn; the east group, another cairn; and the south group, a possible cairn. All but the west group currently stand within a large commercial forestry plantation, but during the setting assessment it was observed that the forestry is being at least partly felled along the southwest extent, which may then afford outward views from the central and southern group. In addition to these designated assets, there are further non-designated prehistoric assets within the immediate surrounds that also contribute to the general prehistoric landscape in the vicinity, comprising further prehistoric settlement, burnt mounds, and other funerary monuments. The wireline visualisation for this asset has been produced per HES' request (**Table 5.1**) from the central asset group (see **Figure 5.11a**, EIA Report Volume 3b).
- 5.9.18 The west group of sites, comprising the hut circle and enclosure, are not considered to be particularly sensitive to change in setting as they are considered to be domestic and agricultural in nature with a setting localised to the glen within which they sit. It is assessed, therefore, that any distant visibility of the Proposed Development would not meaningfully impact upon this setting.
- 5.9.19 The remaining groups comprise probable mortuary monuments, but these are unexcavated, and their exact dates are unknown; they are likely of Neolithic or Bronze Age date. The central group of assets comprises a stone circle and a cairn, situated on the crest or near-crest of the hill. These are currently surrounded by mature commercial forestry plantation, and young windblown trees from the surrounding plantation and elsewhere have formed a dense lower thicker that precludes direct access. The forestry is currently being felled in close proximity to the southwest side of the Scheduled area. The Scheduled description records that these assets comprise the *"remains of the stone circle, three stones set in an arc, are presently almost completely obscured by growing and fallen timber. They lie just to the N of the cairn described next. The cairn is bell-shaped in profile, 12.1m across and up to 1.8m high, although only 1.2m of this height appears to be manmade, as the cairn lies on the edge of a dip."*¹¹⁵ with no further detail, and the NRHE description for these assets notes nine of the ten stones from the stone circle have fallen or are lost, with only two considered to be in-situ from a visit undertaken in 1976¹¹⁶. The cairn is described as a *"turf-covered cairn, situated on the edge of a declivity, consisting of a base platform 12.1m in diameter, which forms a berm 2.1m to 3.0m wide to a mound 1.2m to 1.8m high"*¹¹⁷. Key characteristics such as potential passages and chambers are not described, therefore limited interpretation can be made regarding intentional sightlines, but it is probable that these would have been intervisible with the 'south group' cairn somewhere to the southeast or south, and this may have been important, and not in the direction of the Proposed Development to the southwest. The asset is considered to have a High sensitivity to change in its setting with a resulting Low magnitude impact as no key elements of the setting will be materially impacted, as outlined above, with a resulting **minor adverse** level of effect. There would not be a significant adverse impact upon the integrity of the asset's setting in terms of NPF4.

¹¹⁵ HES. 2002, Druim Baile Fuir, stone circle, cairns, hut circles and enclosure, <https://portal.historicenvironment.scot/apex/f?p=1505:300:::VIEWTYPE,VIEWREF:designation,SM1784> [Accessed 14 April 2025].

¹¹⁶ NRHE, 1911, Druim Baile Fuir <https://www.trove.scot/place/5074> ('Activities' tab) [Accessed 12 June 2025].

¹¹⁷ NRHE, 1911, Druim Baile Fuir North, <https://www.trove.scot/place/5079> ('Activities' tab) [Accessed 12 June 2025].

5.9.20 The south group, comprising a cairn, has no recorded assets by the NRHE in the distinct Scheduled area. The Scheduling description notes the location in relation to the central asset group, *“The remains of the stone circle, three stones set in an arc, are presently almost completely obscured by growing and fallen timber. They lie just to the N of the cairn described next. The cairn is bell-shaped in profile, 12.1m across and up to 1.8m high, although only 1.2m of this height appears to be manmade, as the cairn lies on the edge of a dip. Another mound some 180m S by E may be a similar cairn, but it is too obscured to be certain.”*¹¹⁸ [Our emphasis]. The NRHE records a possible cairn (NC50SE 13; not illustrated on figures), c. 35 m southeast of the central Scheduled area and c. 70 m southeast from the above-described stone circle. This asset is described in the NRHE, from 19110, as *“About 100 yards SSE of the hut circle (NC50SE 1) is a mound, believed to be a cairn, overgrown with grass, and measuring about 25ft in diameter and 2ft 3ins high. On its NW face three large pointed stones stand in line of the circumference (the largest 2ft 2ins high, 2ft 2ins broad at base, and 1ft thick) with their broad faces outwards. Three similar stones lie as if displaced in the line of the circumference towards the S.”*¹¹⁹, then noting that it could not be found in 1963, and then in 1976 as *“near the summit of a conifer-covered hill and on a change of slope to the SW, is a low, grassy swelling some 8.0m diameter and 0.2m high. It is much disturbed by deep ploughing and is planted with trees; one or two large stones show on the periphery and also in the mound. This may well be the alleged cairn, but the present state precludes proper assessment.”*¹²⁰ The cairn could not be identified during the setting assessment, and as little is recorded in terms of its key characteristics, little can be ascertained regarding potentially key sightlines. The location on the south-facing slope of the hill may suggest southern views were important. Forestry likely screens this asset currently, but if felled, visibility of the Proposed Development would be similar to that described above for the central group, and any potential impacts would be identical to those presented. The asset is considered to have a High sensitivity to change in its setting with a resulting Low magnitude impact, as outlined above, with a resulting **minor adverse** level of effect. There would not be a significant adverse impact upon the integrity of the asset’s setting in terms of NPF4.

The east group, comprising a cairn known as Gruids Wood cairn on the NRHE¹²¹, occupies the immediate east side of the small hill, and is surrounded by mature commercial forestry that screens all outwards views. The cairn itself is under dense moss and vegetation and not readily recognisable. The long axis is east/west aligned and the cairn is otherwise indistinctive in form with no visible structural features such as an entrance passage or chamber to indicate any intentional alignments, this is echoed in the NRHE description. Considering the topography is shown on modern OS mapping to incline slightly to the southwest, it is unlikely this cairn would have been intervisible with the other cairns in this listing to the southwest, and that if outward views were of importance, these would be likely directed northeast, east, and south where the declining topography would have afforded longer-ranging views. The ZTV (see **Figure 5.6**, EIA Report Volume 3a) indicates that there would be potentially 9-11 turbines visible from this asset. Currently there would be no impact upon the cairn’s setting due to the standing forestry which screens outward views. If fully felled, any visibility would likely be restricted to the tops of turbines, set beyond a ridgeline, and would not have a significant impact upon the ability to understand and appreciate the monument and its setting.

5.9.21 The concentration of funerary cairns, and the potentially ceremonial stone circle, along with further designated and non-designated prehistoric assets in the vicinity, indicates a rich prehistoric landscape, with many of these monuments considered to have a High sensitivity to changes to their settings. The location of these on a pronounced hill overlooking the small glen to the southwest, as well as the wider somewhat hilly surrounds, suggests that there may have been a fairly enclosed sense of place for these monuments. Any visibility of the Proposed Development for the central and south groups, if the forestry is felled, would be of all eleven turbines, situated in a low-lying and small band on the horizon, appearing above a ridgeline (see **Figure 5.11a**, EIA Report Volume 3b)). It is considered that even if southwest views were of a key alignment to these monuments, there is no distinctive landform with which they may be aligned, and the Proposed Development is situated at such a distance that it would not impact upon the ability to understand and appreciate the setting of the monuments, and there would not, therefore, be a significant impact on the integrity of these assets setting. Overall, it is judged that there would be, in a worst-case scenario with felled forestry, a Low impact upon the asset’s settings, which coupled with a High sensitivity to changes to their settings, results in a **minor** adverse level of effect which is not significant. There would not be a significant adverse impact upon the integrity of the asset’s setting in terms of NPF4.

Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh, SM4046 (Asset 34)

5.9.22 This asset comprises the remains of a Neolithic chambered cairn, partly under vegetation, situated on a terrace on the southeast-facing slope of Cnoc Chaornaidh, 12.7 km to the northwest of the nearest turbine (turbine T2) (see **Figure 5.2**, EIA Report Volume 3a). At present the cairn is entirely surrounded by mature coniferous forestry plantation, screening all outward views. The cairn is described as heel-

¹¹⁸ HES, 2002, Druim Baile Fuir, stone circle, cairns, hut circles and enclosure, <https://portal.historicenvironment.scot/apex/f?p=1505:300:::VIEWTYPE,VIEWREF:designation,SM1784> [Accessed 14 April 2025].

¹¹⁹ NRHE, 1911, Druim Baile Fuir, <https://www.trove.scot/place/5078> ('Activities' tab) [Accessed 12 June 2025].

¹²⁰ Ibid.

¹²¹ NRHE, Undated, Gruids Wood, <https://www.trove.scot/place/5085> ('Activities' tab) [Accessed 12 June 2025].

shaped with a horned facade to the northeast, with a "*curved entrance passage entrance passage [that] leads from the centre of a horned façade on the northeast to a central chamber with two side chambers. Both chamber and passage are filled with loose stones and collapse.*"¹²² It derives much of its significance due to the fact that it appears to be mostly intact and therefore has potential for well-preserved archaeological remains within. The listing also states that cairns such as these often have an intimate relationship with their settings, intentionally located for outward views and for views towards them from the surrounding landscape where they may appear to break skylines or else be visible in valley floors, including from potential routeways¹²³. It is, therefore, judged as having a High sensitivity to changes in setting.

- 5.9.23 The cairn contains a central chamber with side chambers to the east and west (all infilled), and the passage (also infilled) leads from the central chamber to the northeast where the face of the cairn has a horned facade. The principal alignment of the monument is this northeast/southwest alignment along the passage, and the outward view to the northeast over Glen Oykel is then of high significance to the monument. This may have been for a myriad of reasons, but it is notable that the mountain Beinn an Eòin stands in the near east view and may have formed an impressive natural landform with which the asset's passage may have been deliberately aligned. The hill the cairn occupies stands on the west side of Glen Oykel which runs northwest/southeast, and on the north side of a smaller glen for the Allt Eileag burn which joins Glen Oykel to the east, and the passage through the hills of Cnoc Chaornaidh (the hill the cairn occupies) and Cnoc na Glas Choille, a hill to the west, between which the modern A837 runs. There are three further Scheduled cairns (SM4022, SM4023, and SM4045) to the northwest of this cairn, situated discretely and low on the southwest side of Cnoc Chaornaidh, aligned northwest/southeast (this group would not be intervisible with Asset 34 even if the forestry were to be felled due to the intervening topography). The confluence of landforms may then be considered a confluence of routeways, with three mentioned cairns and this cairn (Asset 34) potentially highly visible when moving through this landscape.
- 5.9.24 The ZTV indicates that 9-11 turbines would theoretically be visible if the forestry is felled (see **Figure 5.6**, EIA Report Volume 3a). With regard to the key sightline for the cairn, that which extends to the northeast along the entrance passage and from the northeast over the cairn to the southwest, any visibility of the Proposed Development would be peripheral on the south side of the view. The Proposed Development would not be visible within the main outward or inward views from the cairn, and it is therefore assessed that there would be no impact upon the ability to appreciate and understand this key element of the asset. The cairn may have been sited on this hill so as to appear prominently on a skyline when viewed from the surrounding landscape in views north, northeast, and northwest, with topography-limited views from other directions. In these instances, the Proposed Development would not be within these views and so there would not be a material impact upon setting in this regard. In views along the glen to the southeast, the wirelines suggests that the Proposed Development would appear as a band of turbines in the relatively far distance (c14 km) to the southeast (see **Figure 5.12a** and **Figure 5.12e**, EIA Report Volume 3b), along the view that extends over the course of Glen Oykel, which was likely a natural thoroughfare much as it is today. The Proposed Development would be partly backed by hills, with some turbines breaking the skyline. These would be situated at such a distance that it is judged that there would be an at-worst Low impact upon the asset's setting were the forestry to be felled, as it does not intervene in the key elements of the asset's characteristics and setting as outlined above. The asset is considered to have a High sensitivity to change in its setting with a resulting Low magnitude impact, as outlined above, with a resulting **minor adverse** level of effect, and there would not be a significant adverse impact upon the integrity of the asset's setting in terms of NPF4.

Decommissioning

- 5.9.25 The decommissioning phase would include the removal of all major equipment and structures, with detailed decommissioning proposals submitted to and agreed upon by relevant authorities prior to commencement of decommissioning works.
- 5.9.26 At the time of the assessment, the future baseline conditions (environment and other developments) cannot be predicted, and the best practice decommissioning guidance methods are likely to change during the lifetime of the Proposed Development. However, based on the current baseline and proposal for decommissioning, it is anticipated that direct impacts during the decommissioning phase would be limited and would only occur if new ground works outwith the Proposed Development are required beyond the areas disturbed during the original construction works. As such no significant direct effects are expected to arise from the decommissioning phase of the Proposed Development.
- 5.9.27 All operational effects upon the settings of designated assets would be reversed with the removal of the turbines and infrastructure following decommissioning, leading to a Neutral effect.

¹²² HES, 2018, Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh, <https://portal.historicenvironment.scot/apex/f?p=1505:300:::VIEWTYPE,VIEWREF:designation,SM4046> [Accessed 14 April 2025].

¹²³ Ibid.

5.10 Additional Mitigation

Mitigation during Construction

- 5.10.1 The Proposed Development has been designed to avoid or minimise direct impacts on known heritage assets. There would be at worst **minor adverse** direct effects which are not considered significant in EIA terms.
- 5.10.2 The assessment has indicated that there is a medium potential for further remains of post-medieval date within the western access area of the Site, with low potential for archaeological remains from any period to be present within the remainder of the Site, however, a lack of modern intrusive archaeological works in the region means that most of the baseline is informed solely by upstanding archaeological remains, and that there may be as-yet unknown sub-surface remains present. By their very nature, the importance of such assets cannot be quantified. Without mitigation, high magnitude impacts even upon assets considered to be of low importance could result in significant direct **moderate** adverse effects, as detailed in **Table 5.2, Table 5.4, and Table 5.5.**
- 5.10.3 Satellite imagery and current OS mapping of the Site (see **Figure 5.1**, EIA Report Volume 3a) indicates that the Proposed Development would predominantly be sited across land that has been previously disturbed for commercial forestry plantation, and that the east access route would utilise and/or upgrade existing forestry tracks for access. It is considered that due to the extent of commercial forestry plantation and the associated earthwork operations for planting and harvesting, there would be poor potential for preserved archaeological remains for the majority of the Proposed Development layout within the eastern access and main Site. Notable larger areas of ground which do not appear to have been impacted upon by forestry works and so may be less disturbed and with better potential for preserved sub-surface archaeological remains to survive, include areas of the hardstands for turbines T2, T3, T5, and T7, and some non-floating access tracks across the Site. The western access in comparison appears to extend across relatively undisturbed land in close proximity to heritage assets and would require mitigation as outlined below.
- 5.10.4 In the first instance it is recommended that smaller heritage assets in close proximity to the western access that may not require breaching (Assets 47, 48, 51, 52, 56, 57, and 58) are demarcated prior to construction, and the track micro-sited to avoid direct impacts where possible. Where avoidance is not possible, archaeological monitoring through a watching brief is recommended in order to preserve by record the features. If avoidance is not possible, a targeted excavation of any shieling structures (Asset 47) is advisable as this may require more thorough excavation in order to characterise and understand the nature of the settlement remains. It is also suggested that a programme of archaeological watching brief for a proportion of the areas surrounding known heritage assets and within the Site where ground disturbance is likely to have been minimal (turbines T2, T3, T5, and T7 hardstands; some portions of the proposed access tracks if groundbreaking works are required for their construction) may be required in order to evaluate the sub-surface archaeological potential of these areas. The aim of the watching brief would be to identify any unknown sub-surface archaeological remains threatened by the Proposed Development, to assess their significance and to mitigate any impact upon them either through avoidance (micro-siting) or, if preservation in situ is not warranted, through preservation by record. If significant archaeological remains were identified during these works there is the potential that further works, such as excavation and post-excavation analyses, may be required. The requirement for this watching brief and any further mitigation would be agreed with THC in consultation with the THC HET Archaeologist, with the scope of any required works defined through a Written Scheme of Investigation (WSI).

Mitigation during Operation

- 5.10.5 No significant adverse effects have been predicted for heritage assets during the operational phase of the Proposed Development. Minor adverse effects for some designated heritage assets have been predicted, however beyond the steps taken during the iterative design process to minimise impacts upon the settings of these monuments, there are no direct measures that can be applied to further mitigate effects; on this basis no further measures to offset these impacts are proposed.

Mitigation during Decommissioning

- 5.10.6 No direct effects are anticipated during decommissioning, provided works are contained within the Proposed Development's construction footprint. No mitigation is proposed.

Public Benefit

- 5.10.7 Public benefit proposals in relation to the Proposed Development are presented in line with NPF4. Scotland's Delivery of Public Benefit and Social Value Guidance for Archaeology in the Planning Process¹²⁴, adopted as best practice by the Association of Local Government Archaeologists Scotland (ALGAO Scotland), outlines possible site-specific activities that can be undertaken. To a degree, the

¹²⁴ Mann, B, 2023, Delivery of Public Benefit and Social Value Guidance for Archaeology in the Planning Process. <https://www.archaeologists.net/profession/publicbenefit> [Accessed 14 April 2025].

scope of such activities is dependent on the results of any archaeological works undertaken in advance of and during construction of the Proposed Development, but the approach would be flexible and open to adaptation based on results of the archaeological fieldwork and would be agreed by the Applicant, THC HET and the archaeological contractor.

- 5.10.8 Should any significant archaeological remains be uncovered through the course of any archaeological fieldwork undertaken to facilitate the Proposed Development, there could be Site open days and archaeological tours undertaken, with legacy items such as the installation of physical heritage interpretation boards and/or presentation of a digital platform also focused on the interpretation and dissemination of the Site's heritage resource.

5.11 Residual Effects

Construction

- 5.11.1 The maintenance of an archaeological evaluation and/or watching brief as outlined in **Section 5.10** would allow for the investigation of the archaeological potential for previously unknown assets in undisturbed areas of the Site and to preserve by record heritage assets which may be impacted upon by the construction works. This will further allow for the avoidance of direct effects or, in cases where this might not be possible, will allow for recording of elements of assets which would be removed. As such there would be minimal loss of information content and the residual effects would be negligible and not significant. Following the completion of construction, no further groundworks would be undertaken. Mitigation would allow for the detailed recording of any remains encountered during the construction phase and the results would therefore enhance our understanding of the area's cultural heritage. It is judged that residual effects would not exceed **minor** adverse which is not significant.

Operation

- 5.11.2 Impacts upon setting are a material consideration in the planning process and the predicted effects of the Proposed Development, which would be largely restricted to the operational phase, have been set out in **Section 5.9** and **Technical Appendix 5.3** (EIA Report Volume 4). Predicted setting effects are by their very nature hard to mitigate (beyond design iteration to minimise such effects as far as practicable). Residual operation effects would, therefore, be the same as operational effects defined earlier in **Section 5.9** and **Technical Appendix 5.3** (EIA Report Volume 4) and would not exceed **minor** adverse, which is not significant.

Decommissioning

- 5.11.3 No direct effects are anticipated to arise from decommissioning, provided works are contained within the Proposed Development construction footprint.
- 5.11.4 All operational and cumulative effects upon the settings of heritage assets would be reversed with the removal of the turbines following decommissioning, leading to a **neutral** residual effect.

5.12 Cumulative Assessment

- 5.12.1 The assessment of cumulative effects is based upon a list of operational, under construction, consented, or proposed developments (both in-scoping and in-planning) (where turbines are taller than 50 m to tip height and within 45 km of the Site). Cumulative developments are indicated on **Figure 2.11** (EIA Report Volume 3a). While all have been considered, only those which contribute to, or have the possibility to contribute to, cumulative effects on specific heritage assets are discussed in detail (**Table 5.7**; based on the potential intervisibility of cumulative schemes to these assets). Additionally, given the emphasis NatureScot places on significant effects, cumulative effects have only been considered in detail for those assets that have been assessed as possessing a Medium or High relative sensitivity to changes to their setting, and for which the level of effect on setting from the Proposed Development, alone, has been judged to be **minor** adverse or greater. While **minor** level effects are not considered significant by EIA terms, these assets could still experience significant cumulative effects as a result of the combination of the Proposed Development and existing cumulative baseline.

Table 5.7: Developments Considered within Cultural Heritage Cumulative Assessment

Wind Farm Name	Approx.Distance/Direction from Proposed Development	Status	No. of Turbines and Maximum Tip Height
Rosehall Wind Farm	5.2 km northeast	Operational	19 turbines, 90m
Achany	10.6 km northeast	Operational	19 turbines, 100m
Lairg Wind Farm	14.2 km northeast	Operational	3 turbines, 100m
Beinn Tharsuinn	25.4km southeast	Operational	17 turbines, 80m
Meall Buidhe Wind Farm	Immediately south of Site	Consented	8 turbines, 149.9 m
Strath Oykel Wind Farm	Immediately east of Site	Consented	11 turbines, 200m
Garvary Wind Farm	4.8 km east	Consented	25 turbines, 179.75m
Strath Tirry Wind Farm	18.5 km northeast	Consented	4 turbines, 135m
Lairg II Redesign	19.4km northeast	Consented	10 turbines, 68m
Chleansaid Wind Farm	22.8 km northeast	Consented	16 turbines, 179.5m
Allt An Tuir Wind Farm	2.7 km north	Application	9 turbines, 200m
Balblair Wind Farm	14.6 km east	Application	8 turbines, 180m
Acheilidh Wind Farm (Lairg III Wind Farm)	18 km east	Application	12 turbines, 230m
Inveroykel Wind Farm	1.9 km east	Scoping	29 turbines, 230m
Invercassley Wind Farm	2.4 km north	Scoping	22 turbines, 230m
Braelangwell Wind Farm	6.6 km southeast	Scoping	18 turbines, 145m
Creachan Wind Farm	19.8 km south	Scoping	21 turbines, 220m

5.12.2 The parameters of including assets with Medium/High sensitivity to change and for where **minor** adverse/greater levels of effect from the Proposed Development alone have been predicted have been set in order to scope out assets where it is considered that the cumulative level of effect upon their setting is unlikely to reach the threshold of significance as defined in **Table 5.5**. As set out in the cumulative assessment methodology in **Section 5.5**, cumulative effects relating to cultural heritage are for the most part limited to effects upon the settings of heritage assets. While there can, in some rare cases, be cumulative direct effects, none are anticipated to result from the construction, operation, or decommissioning of the Proposed Development. As such this assessment will consider the potential for cumulative effects upon the setting of heritage assets which have the potential to occur during the operational phase. Cumulative developments in-planning and in-scoping have the potential to change in array and presentation, and there is a degree of uncertainty as to whether these will be granted consent. The cumulative assessment presented herein is considered therefore to be a worst-case scenario, assuming all in-planning and in-scoping developments are constructed.

5.12.3 Seven designated assets have been brought forward for cumulative assessment as outlined in **Table 5.8**.

Table 5.8 - Designated Assets Brought Forward for Cumulative Assessment

Asset No.	Name and Designation No.	Status	Sensitivity or Importance/Magnitude of Impact/ Level of Effect (Proposed Development Alone)
1	Langwell, fort and dun 500m WSW of, SM5302	Scheduled Monument	High/Low/ Minor adverse
3	Croick Parish Church, LB7181	Category A Listed Building	High/Negligible/ Minor adverse
5	Rosehall House, LB275	Category B Listed Building	Medium/Low/ Minor adverse
6	Walled Garden, Rosehall House, LB275	Category B Listed Building	Medium/Low/ Minor adverse
9	United Free Church, Rosehall, LB278	Category C Listed Building	Medium/Low/ Minor adverse
33	Druim Baile Fuir, stone circle, cairns, hut circles and enclosure, SM1784	Scheduled Monument	High/Low/ Minor adverse
34	Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh, SM4046	Scheduled Monument	High/Low/ Minor adverse

Potential Minor Adverse Cumulative Effects

Langwell, fort and dun 500m WSW of, SM5302 (Asset 1)

- 5.12.4 The asset comprises a fort with later dun occupying a small knoll along Strath Oykel and is considered to have a High sensitivity to changes in setting. The current cumulative baseline, as viewed from the asset itself, comprises the proposed Invercassley wind farm (in-scoping; 19 turbines visible) to the north and the proposed Allt An Tuir wind farm (in-application; two blade tips) also to the north; see **Figures 5.10.c** and **5.10.d**, EIA Report Volume 3b). Most of the Invercassley turbines are relatively low-lying, forming a band on the north ridgeline of the strath. It is noted that this development is in scoping and therefore, its layout is uncertain and likely to change. The remaining cumulative developments are visible in views east along the strath (see **Figure 5.10.d**, EIA Report Volume 3b), either as nearly fully-screened middle distant developments (operational Rosehall and Achany wind farms), or far-distant (c. 19 km) and relatively inobtrusive (consented Garvery and Lairg II wind farms; and proposed Lairg III wind farm). The addition of the Proposed Development to this baseline would introduce turbines in the middle-distance in the south view (which is not integral to the asset's setting) where no other additional cumulative developments are visible (see **Figure 5.10.a**, EIA Report Volume 3b), so there would be no cumulative impact in respect to these southward views.
- 5.12.5 With regard to the baseline for the viewpoint from the north of the asset (see **Figure 5.9**, EIA Report Volume 3b), the inclining topography and dense vegetation fully screens the Invercassley wind farm (in-scoping) to the north (see **Figure 5.9c**, EIA Report Volume 3b). The consented Lairg II and Garvary wind farms would be visible in easterly views (see **Figure 5.9d**, EIA Report, Volume 3b) but again at a distance which is not meaningful. The consented Strath Oykel and in-scoping Inveroykel wind farms lie in the southeast view from this viewpoint, appearing as relatively low-lying features (see **Figures 5.9a, 5.9c, and 5.9d**, EIA Report Volume 3b) extending along the south ridge line formed by Strath Oykel, delineating one side of the strath that naturally forms the extent of the asset's setting as a natural thoroughfare. It is noted, however, that the Inveroykel wind farm is currently in scoping and its layout is uncertain and likely to change. The addition of the Proposed Development would extend the line of turbines along this ridge line further west, although these would be sited slightly behind the true ridge and so stand beyond this immediate setting. The asset is considered to have a High sensitivity to change in its setting. It is considered, therefore, that the level of cumulative effect would not significantly exceed the assessed level of effect of the Proposed Development on its own and would be, at worst, a low magnitude cumulative impact, resulting in a **minor** adverse level of cumulative effect, which is not significant.

Rosehall House, LB275 (Asset 5) and walled garden LB275 (Asset 6)

- 5.12.6 The cumulative assessment for these assets has been undertaken as a single entity considering their close relationship. Rosehall House comprises a 19th century mansion with possibly earlier structural fabric of a preceding house built into it, and the adjacent walled garden to the southeast. The principal elevation for the house is to the southwest, just south of the view towards the Site.
- 5.12.7 The cumulative baseline, informed by the use of the Druim Baile Fuir, Stone Circle, Cairns, Hut Circles and Enclosure (SM1784; Asset 34) wireline towards the Site (see **Figure 5.12a**, EIA Report Volume 3b), which is on a similar alignment though taken from a more distant position, comprises the consented Strath Oykel and Meall Buidhe wind farms, in scoping Inveroykel wind farm and Allt An Tuir wind farm (in application). From Rosehall House it is predicted that the in scoping Inveroykel wind farm would likely only be peripherally visible to the south (noting this scheme is in scoping and its layout is uncertain and likely to change), with the main visible development considered likely to be the consented Strath Oykel wind farm. The addition of the Proposed Development to the cumulative baseline suggests that there would be overlapping turbines as indicated by the wirelines, and that these developments would be seen as a single group of turbines, all similar in size (with 200 m blade tip heights). Therefore, it is judged that while there would be an addition of turbines in the southwest view from Rosehall, these would be relatively contained within a single discrete group that would only be extended slightly by the addition of the Proposed Development. The asset is considered to have a High sensitivity to change in its setting. It is considered, therefore, that the level of cumulative effect would not significantly exceed the assessed level of effect of the Proposed Development and that there would be a low magnitude cumulative impact, and resulting **minor** adverse cumulative effect, which is not significant.

United Free Church, Rosehall, LB278 (Asset 9)

- 5.12.8 The asset comprised a 19th century church, situated along the east edge of the Kyle of Sutherland, at the confluence of Strath Oykel and Strath Cassley (see **Figure 5.6**, EIA Report Volume 3a). The church is partially screened on the south, west and north sides by woodland. The cumulative baseline is similar to that of Rosehall (Asset 5) and its associated garden (Asset 6) to the west, and has again been informed by the use of the Druim Baile Fuir, Stone Circle, Cairns, Hut Circles and Enclosure (SM1784; Asset 34) wireline towards the Site (see **Figure 5.12a**, EIA Report Volume 3b), which is on a similar alignment though taken from a more distant position. The addition of the Proposed Development would be into a baseline comprising the consented Strath Oykel and Meall Buidhe wind farms and the in scoping Inveroykel wind farm and in planning Allt An Tuir wind farm in views to the southwest. The addition of

the Proposed Development to these would increase the number of turbines visible in these views, but the Proposed Development would remain relatively discrete behind the consented Strath Oykel wind farm, slightly extending the proportion of turbines on the horizon only somewhat. The asset is considered to have a Medium sensitivity to change in its setting. It is considered, therefore, that the level of cumulative effect would not significantly exceed the assessed level of effect of the Proposed Development on its own and that there would be an overall low magnitude cumulative impact, with resulting **minor** adverse cumulative effect which is not significant.

Druim Baile Fuir, stone circle, cairns, hut circles and enclosure, SM1784 (Asset 33)

- 5.12.9 The asset group is not well-understood in terms of key characteristics for the elements which may have had important long-ranging views (the cairns and stone circle). The surrounding commercial forestry at present screens all outward views for these specific assets, so the wirelines offer a worst-case scenario should this be felled. The elevated position the assets occupy theoretically allows for long-ranging views in all directions, with numerous cumulative developments potentially intervisible if the surrounding forestry were to be felled.
- 5.12.10 The cumulative baseline for the asset and its sub-groups in views towards the Proposed Development includes the operational Achany wind farm to the north, the consented Meall Buidhe and Strath Oykel wind farms extending across the central portion of the view, and the in scoping Inveroykel and Braelangwell wind farms occupying the southern half of the view (see **Figure 5.11a**, EIA Report Volume 3b). With the exception of Achany wind farm, which stands in the middle distance to the north side of the view, these cumulative developments would appear in the far distance in the central view and occupy a relatively low-lying band along the horizon. While visible, these do not significantly impact upon the asset groups' settings, limited as our understanding of the key elements of these (such as cairn passage alignments) are. The addition of the Proposed Development would site additional turbines in the horizon view behind the consented Strath Oykel wind farm, extending the overall band of turbines slightly in this view (see **Figure 5.11a**, EIA Report Volume 3b). The asset is considered to have a High sensitivity to change in its setting. It is considered, therefore, that the level of cumulative effect would not significantly exceed the assessed level of effect of the Proposed Development on its own and that there would be an, at most, low magnitude cumulative impact with resulting **minor** adverse level of cumulative effect, which is not significant.

Allt Eileag, chambered cairn 790m SE of Cnoc Chaornaidh, SM4046 (Asset 34)

- 5.12.11 This asset comprises a Neolithic chambered cairn that is considered to have important sightlines to the northeast and southwest along the passage alignment, and potentially southeast along the Glen Oykel landform, and may also have been sited on the hill it occupies to be highly visible from elsewhere in the landscape (see **Figure 5.6**, EIA Report Volume 3a). The surrounding commercial forestry at present screens all outward views, so the wirelines offer a worst-case scenario should this be felled.
- 5.12.12 The cumulative baseline in the southeast view includes the consented Strath Oykel and Meall Buidhe wind farms, situated somewhat centrally, with the in scoping Braelangwell and Inveroykel wind farms flanking these to the east and the in scoping Creachan wind farm to the west (blade tips only), forming a discrete cluster of wind developments set broadly atop and beyond the topographic ridge (see **Figure 5.12a**, EIA Report Volume 3b). The Allt An Tuir wind farm (in application) and Invercassley wind farm (in scoping) stand in the northeast view as a separate and closer-set group of turbines. It is considered that these offer a higher magnitude impact upon the asset's setting than the Proposed Development alone as they stand in the key northeast view, along the cairn's passage. It is noted, however, that Invercassley wind farm is in scoping and that its layout is uncertain and likely to change.
- 5.12.13 The addition of the Proposed Development to this cumulative baseline would introduce more turbines in the southeast cluster (comprising the consented Strath Oykel and Meall Buidhe wind farms), extending the arc of visible turbines here and introducing new turbines that would be backed by the topographic ridge. The southernmost turbines would be somewhat taller than the remainder of the band and so may be more prominent in this view, however the group would likely appear as one contiguous development at this distance. The asset is considered to have a High sensitivity to change in its setting. Therefore, it is assessed that the level of cumulative effect would not significantly exceed the assessed level of effect of the Proposed Development on its own and that there would be an, at worst, low magnitude cumulative impact, with resulting **minor** adverse level of cumulative effect which is not significant.

Croick Parish Church, LB7181 (Asset 3)

- 5.12.14 Croick church occupies a low terrace in the centre of Strath Cuileannach, c12.4 km to the southeast of the Proposed Development (see **Figure 5.6**, EIA Report Volume 3a). Much of the church's significance derives from it being the refuge for several families who sought refuge in the grounds in the mid-19th century as a result of the Highland Clearances. While neither the asset or its principal approaches along the strath are within the ZTV, views towards the asset from the hills to the south would likely feature both it and the Proposed Development. The cumulative baseline in these same views would include the consented Meall Buidhe wind farm in the middle distance and the consented Strath Oykel wind farm beyond. The Proposed Development would be situated to the west of consented Strath Oykel wind farm

and so likely expanding the arc of those visible turbines in the north view and at a further distance than the more closely-situated consented Meall Buidhe wind farm. The asset is considered to have a Medium sensitivity to change in its setting. It is judged that, in combination with the distance of the Proposed Development and the fact that visibility of it and the consented Strath Oykel wind farm would not be visible from either the asset itself or the principal views towards it along the strath's road, that the magnitude of the cumulative impact upon this asset's setting would not exceed low, with a resulting **minor** adverse level of cumulative effect, which is not significant.

5.13 Summary

- 5.13.1 Defined Study Areas have been used in the formation of a cultural heritage baseline to identify the potential for direct impacts to both the known and as-yet unknown cultural heritage resource within the Site, and the potential for settings effects upon designated heritage assets from the Proposed Development.
- 5.13.2 The potential for direct impacts has been informed by the use of a 1 km Study Area surrounding the Site, wherein all known heritage assets have been identified as part of a desk-based assessment.
- 5.13.3 A walkover survey of the Site was also undertaken in order to identify any previously unrecorded upstanding heritage assets that may be present. Fourteen non-designated assets (Assets 18, 35 and 47-58) have been identified within the Site, comprising a findspot for a stone bowl of unknown date and function, post-medieval shielings, tracks, a field boundary, revetment walls, drains and a borrow pit, and a modern pond, culvert and field boundary. Potential medium magnitude impacts are predicted for the shielings (Asset 47) if these cannot be avoided, and high magnitude impacts are predicted for the revetment walls (Asset 50), resulting in at worst **minor adverse** level effects. The remainder of the assets would experience no, negligible or low magnitude impacts resulting in **negligible** direct effects.
- 5.13.4 The potential for as-yet unknown sub-surface remains across the majority of the Site is considered low across all periods, and particularly as a result of the likely disturbance the forestry operations have carried out across the central portion of the Site and the eastern access. There is higher Medium potential for remains of post-medieval date to survive within the western access track area. There is still potential for **moderate** levels of effect if works across the Site are unmitigated. Mitigation measures in the form of demarcation and avoidance of known heritage assets, limited archaeological evaluation and/or monitoring of works which will impact known heritage assets, and in specific areas which have not been cultivated as part of the forestry operations, are proposed in order to ensure that the adverse effects on any as-yet unknown heritage assets are reduced and offset, which would ensure that the overall level of effect would not be significant.
- 5.13.5 Potential operational effects on the settings of all designated assets within 5 km of the Site, and all nationally significant designated assets within 10 km of the Site, with the inclusion of two further nationally significant designated assets beyond 10 km, have been considered. Close attention has been paid in particular to the Scheduled Langwell, fort and dun 500m WSW of (SM5302) (Asset 1), and an iterative design process has been used to reduce potential setting effects upon this asset. It is judged that setting effects for designated assets included within the assessment (11 in total) would not exceed **minor** adverse and so would not be significant.
- 5.13.6 Potential cumulative effects have also been considered and assessed, with at worst **minor** adverse cumulative effects predicted, which are not significant.
- 5.13.7 Potential subjects for public benefit activities with regard to cultural heritage have been proposed in line with NPF4's Policy 7o. The exact scope of such activities would be informed by the results of any archaeological fieldwork within the Site and would be agreed upon in consultation with HES (if required), THC HET, and the Applicant.

Table 5.9 - Summary of Potential Significant Effects of the Proposed Development

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Construction			
Direct impacts to known heritage assets	Demarcation and avoidance of heritage assets along western access where possible; where not possible, archaeological excavation and monitoring during construction works in order to preserve by record the assets.	Details of mitigation would be agreed with THC in consultation with the THC HET Archaeologist through a Written Scheme of Investigation (WSI) and undertaken as part of a planning condition.	Not significant
Direct impacts to as-yet-unknown heritage assets	A limited programme of archaeological evaluation and/or watching brief on proportion of ground-breaking works in areas of seemingly undisturbed ground (hard standings for Turbines 2,3, 5 and	Details of mitigation would be agreed with THC in consultation with the THC HET Archaeologist through a Written Scheme of Investigation (WSI) and undertaken as part of a planning condition.	Not significant

Likely Significant Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
	7; and potentially some access tracks outwith forestry layout)		
Operation			
No significant adverse effects predicted.	None	None	Not significant
Decommissioning			
No significant adverse effects predicted.	None	None	Not significant
Cumulative Construction			
No significant adverse effects predicted.	None	None	Not significant
Cumulative Operation			
No significant adverse effects predicted.	None	None	Not significant

5.14 Glossary and Abbreviations

Term	Definition
Setting	A detailed and nuanced definition for setting as understood in a Scottish cultural heritage context can be found in HES's 2016 Managing Change in the Historic Environment: Setting document. At its simplest, setting <i>"...is the way the surroundings of a historic asset or place contribute to how it is understood, appreciated and experienced."</i> (ibid 6).
Integrity of setting	Integrity of setting applies in this instance to Scheduled Monuments and their settings. The integrity of setting refers to an asset's key attributes or elements of setting which contribute to an asset's significance. This is of relevance with regard to NPF4, where development proposals affecting Scheduled Monuments will only be supported where <i>"significant adverse impacts on the integrity of setting of a scheduled monument are avoided"</i> (NP4F 2023, 46). For this EIA methodology, significant adverse impacts on integrity of setting are judged to relate to whether a change would adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance to the extent that the setting of the asset can no longer be understood or appreciated. It is considered that a significant impact upon the integrity of the setting of an asset will only occur where the degree of change that will be represented by the Proposed Development would adversely alter those factors of the monument's setting that contribute to cultural significance such that the understanding, appreciation and experience of an asset are not adequately retained. In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as 'significant' in EIA terms will have the potential to significantly adversely impact upon integrity of setting

Abbreviation	Expanded Term
ALGAO	Association of Local Government Archaeologists Scotland
CaSPlan	Caithness and Sutherland Plan
CifA	Chartered Institute for Archaeologists
DBA	Desk-based Assessment
EIA	Environmental Impact Assessment
EIA Report	Report to identify likely significant environmental effects of the development.
HEPS	Historic Environment Policy for Scotland
HER	Historic Environment Record
HES	Historic Environment Scotland
HET	Historic Environment Team
THC	The Highland Council
HLAMap	Historic Land-use Assessment Map
HwLDP	Highland-wide Local Development Plan
Ibidem (ibid.)	In the same source
LiDAR	Light Detection And Ranging
LB	Listed Building
NCAP	National Collection of Aerial Photography

Abbreviation	Expanded Term
NLS	National Library of Scotland
NPF4	The National Planning Framework for Scotland 4
NRHE	National Record of the Historic Environment
OS	Ordnance Survey
PAN	Planning Advice Note
SM	Scheduled Monument
ZTV	Zone of Theoretical Visibility
WSI	Written Scheme of Investigation

Chapter 6: Ecology

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6 Ecology

6.1 Executive Summary

- 6.1.1 This Chapter considers the potential effects on important ecological features (IEFs) associated with the construction, operation, and decommissioning of the Proposed Development.
- 6.1.2 The assessment is based on comprehensive baseline data, comprising specifically of targeted field surveys of legally protected and notable ecological features of conservation concern (i.e. IEFs) identified during desk study and consultation feedback. It draws on pre-existing information, where appropriate, from other studies, survey data sources, and is based on standard Environmental Impact Assessment (EIA) guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM) and NatureScot.
- 6.1.3 A suite of baseline ecology field surveys has been undertaken to inform the impact assessment, including for habitats and vegetation, badger, otter, pine marten, red squirrel, water vole, Scottish wildcat, bats, and fisheries.
- 6.1.4 There are several designated sites of nature conservation with ecological interest in the nearby and surrounding area to the Site. The closest and most relevant is the River Oykel Special Area of Conservation (SAC) which is designated for its important populations of Atlantic salmon and freshwater pearl mussel. The western access route crosses the River Einig (which is part of the River Oykel SAC) at an existing watercourse bridge crossing. The River Oykel SAC is 1.2 km from the nearest Proposed Development's turbine.
- 6.1.5 Baseline surveys have established that habitats within the Site predominantly comprise dense Sitka spruce and lodgepole pine plantation, with some open habitats around the centre of the Site and in the south of the Site associated with hill tops including Carn na Bo Maoile. The open habitats comprise wet heath, acid grassland and marshy grassland, with bog communities largely confined to the forestry rides and the high ground in the south, and also to the north. Peatland of Possible National Interest was recorded within the Site, principally on the Site's periphery. Field surveys confirmed the presence of pine marten, water vole, otter, red squirrel, badger and brown hare within the Site. Common pipistrelle, soprano pipistrelle, brown long-eared, and *Myotis* bat species were recorded during the bat activity surveys. The western access route (is part of the consented Meall Buidhe Wind Farm) predominantly passes through wet heath and marshy grassland, and over the River Einig via an existing bridge crossing. The eastern access route (is part of the consented Strath Oykel Wind Farm) and a review of publicly available documentation confirms this route largely follows an existing forestry track and passes through mainly coniferous plantation and coniferous plantation clear-fell.
- 6.1.6 The assessment identifies which of the IEFs identified through the desk study and field surveys require further consideration and receive a full impact assessment. The assessment covers the Proposed Development on its own as well as cumulatively with other relevant projects. Embedded mitigation and good practice measures, as detailed in this Chapter, would be implemented during construction and have been taken into account when undertaking the assessment, as is standard practice.
- 6.1.7 For all IEFs scoped in for detailed assessment, following the application of the embedded mitigation, no significant adverse direct and/or indirect effects are anticipated as a result of the Proposed Development.
- 6.1.8 In addition, information to inform a Habitats Regulations Appraisal (HRA) is also provided alongside the impact assessment (in **Section 6.16**). This looks at the potential for likely significant effects (LSEs) on the River Oykel SAC. Screening for LSEs determined that an Appropriate Assessment (AA) by the competent authority would be required in relation to potential impacts on qualifying interests associated with the River Oykel SAC (Atlantic salmon and freshwater pearl mussel). However, with the adoption of standard mitigation measures (including pollution control measures, works typically being appropriately offset from watercourses, and fish and freshwater pearl mussel monitoring, as stated above), any impacts upon the River Oykel SAC are predicted to be avoided or minimised to a negligible level such that there would be no LSEs on the integrity of the SAC.
- 6.1.9 Additional mitigation measures including habitat (peatland) restoration, together with habitat creation and enhancement measures to be implemented under the Outline Nature Enhancement Management Plan (ONEMP), are predicted to provide net beneficial effects associated with the Proposed Development, benefitting many IEFs in the long-term, and will leave biodiversity in a demonstrably better state than in the absence of the Proposed Development, consistent with Policy 3 of the National Planning Framework 4 (NPF4).
- 6.1.10 Impacts on Priority Peatland of Possible Interest have been assessed as resulting in an effect of **Minor** adverse significance, which is considered Not Significant in the context of the EIA Regulations. With the adoption of the mitigation and enhancement measures, it is anticipated that a long-term, Low magnitude

of impact would result in an effect of **Minor** beneficial significance on peatland habitats on-site, which is considered Not Significant in the context of the EIA Regulations.

- 6.1.11 Note, precautionary additional mitigation to reduce collision risk to foraging and commuting bats will also be adopted. During the operational phase of the Proposed Development, additional mitigation in the form of pitching the blades out of the wind ('feathering') to reduce rotation speeds below 2 revolutions per minute (rpm) while idling, will be implemented.

6.2 Introduction

- 6.2.1 This Chapter considers the potential for significant effects on Ecology associated with the construction, operation, and decommissioning of the Proposed Development. The assessment has been informed by comprehensive baseline data, compiled through targeted ecological field surveys of important and legally protected ecological features identified from desk study, and consultation with nature conservation bodies. It draws on pre-existing information, where appropriate, from other studies, survey data sources, and is based on the Chartered Institute of Ecology and Environment Management (CIEEM) 'Guidelines for Ecological Impact Assessment (EclA) in the UK and Ireland'¹ and NatureScot's Environmental Impact Assessment Handbook (formerly Scottish Natural Heritage (SNH), 2018)². The specific objectives of the Chapter are to:

- describe the ecology baseline;
- describe the assessment methodology and significance criteria used in completing the impact assessment;
- evaluate the sensitivity of each ecological feature;
- describe the potential effects, including direct, indirect, and cumulative effects;
- describe the mitigation measures proposed to address potential significant adverse effects; and
- assess the residual effects remaining following the implementation of mitigation.

- 6.2.2 The assessment has been carried out by Avian Ecology Ltd. The lead author was Dr Colin Bonnington DPhil MSc BSc (Hons) FBNA FLS MRSB MCIEEM (Principal Ecologist). Dr Bonnington has over 12 years' experience, respectively, in ecological consultancy. During his time, he has authored numerous ecology chapters for EIAs and reports to inform Habitats Regulations Appraisal (HRA) for numerous onshore wind energy developments in Scotland. The assessment has been reviewed by Mr Thomas Goater MSc BSc (Hons) MCIEEM, Technical Director, who has over 17 years' experience as a professional ecologist and has led on many large-scale renewable energy projects in Scotland, including numerous wind farm development projects.

- 6.2.3 This Chapter is supported by the following figures and technical appendices:

- Volume 3a: Figures
 - **Figure 6.1a: Ecological Statutory Designated Sites for Nature Conservation;**
 - **Figure 6.1b: Ecological Non-Statutory Designated Sites for Nature Conservation;**
 - **Figure 6.2a: Phase 1 Habitat Survey Plan;**
 - **Figure 6.2b: Phase 1 Habitat Survey Plan (Western Access Route);**
 - **Figure 6.2c: Phase 1 Habitat Survey Plan (Eastern Access Route);**
 - **Figure 6.3a: NVC Survey Plan;**
 - **Figure 6.3b: NVC Survey Plan (Western Access Route);**
 - **Figure 6.3c: NVC Survey Plan (Eastern Access Route);**
 - **Figure 6.4a: Peatland Condition Assessment;**
 - **Figure 6.4b: Peatland Condition Assessment (Western Access Route);**
 - **Figure 6.5: Protected Terrestrial Mammal Survey Plan and Results;**
 - **Figure 6.6: Bat Activity Survey Plan;**
 - **Figure 6.7: Fish Habitat Survey Plan;**
 - **Figure 6.8: Outline Nature Enhancement Management Plan; and**
 - **Figure 6.10: Preliminary Roost Appraisal Results.**

¹ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester. *Note, version 1.3 is the update from September 2024, but given this update reflects mainly some (modest) clarifications, the 2018 version is the main source, and is duly referenced in this chapter.*

² SNH (2018). Environmental Impact Assessment. Available at: <https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/environmental-impact-assessment>

- Volume 4: Technical Appendices
 - **Technical Appendix 6.1: Habitats and Vegetation;**
 - **Technical Appendix 6.2: Protected Terrestrial Mammals;**
 - **Technical Appendix 6.3: Bats;**
 - **Technical Appendix 6.4: Fisheries; and**
 - **Technical Appendix 6.5: Outline Nature Enhancement Management Plan.**
- 6.2.4 Note, a **Confidential Technical Appendix 6.6: Confidential Protected Terrestrial Mammals** and accompanying **Confidential Figure 6.9: Protected Terrestrial Survey Plan and Results (Sensitive)** are provided in Volume 5.
- 6.2.5 Figures and technical appendices are referenced in the text where relevant. No scientific (Latin) names are included for any species within this Chapter but are included in the respective technical appendices listed above.

6.3 Legislation, Policy and Guidelines

- 6.3.1 Relevant legislation, policy, and guidance has been reviewed and taken into account as part of this ecology assessment. Of particular relevance are:

National

- The Conservation (Natural Habitats, &c.) Regulations 1994³ (as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019) (collectively 'the Habitats Regulations'⁴ (collectively 'the Habitats Regulations').
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017⁵.
- The Nature Conservation (Scotland) Act 2004⁶.
- The Protection of Badgers Act 1992 (as amended in Scotland)⁷.
- The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003⁸.
- The Wildlife and Countryside Act 1981 (as amended in Scotland)⁹.
- The Wildlife and Natural Environment (Scotland) Act 2011¹⁰.
- The National Planning Framework 4¹¹; specifically 'Policy 3 – Biodiversity', 'Policy 4 – Natural Places' and 'Policy 5 – Soils'.
- Onshore Wind Policy Statement (OWPS)¹².

Local

- Highland-wide Local Development Plan (The Highland Council, 2012)¹³.
- Highland Nature: Biodiversity Action Plan 2021-2026 (Highland Environment Forum, 2021)¹⁴.

Guidance

- 6.3.2 Consideration has been taken of the following best practice guidelines/guidance:
- Highland Statutorily Protected Species Supplementary Guidance (The Highland Council, 2013a)¹⁵.
 - Trees, Woodlands & Development Supplementary Guidance (The Highland Council (THC), 2013b)¹⁶.

³ The Conservation (Natural Habitats, &c.) Regulations 1994. Available at: <https://www.legislation.gov.uk/uk/si/1994/2716/contents>

⁴ The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019. Available at: <https://www.legislation.gov.uk/si/2019/9780111041062>.

⁵ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/si/2017/101/contents>

⁶ Nature Conservation (Scotland) Act 2004. Available at: <https://www.legislation.gov.uk/asp/2004/6/contents>

⁷ Protection of Badgers Act 1992. Available at: <https://www.legislation.gov.uk/ukpga/1992/51>

⁸ Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003. Available at: <https://www.legislation.gov.uk/asp/2003/15/contents>

⁹ Wildlife and Countryside Act 1981. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents>

¹⁰ Wildlife and Natural Environment (Scotland) Act 2011. Available at: <https://www.legislation.gov.uk/asp/2011/6/contents>

¹¹ National Planning Framework 4. Available at: <https://www.gov.scot/publications/national-planning-framework-4/>

¹² Onshore wind: policy statement 2022. Available at: <https://www.gov.scot/publications/onshore-wind-policy-statement-2022/>

¹³ THC (2012). Highland-wide Local Development Plan . Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan

¹⁴ Highland Environment Forum (2021). Highland Nature Biodiversity Action Plan 2021 to 2026. Available at:

https://www.highland.gov.uk/downloads/file/27148/highland_nature_biodiversity_action_plan_2021_%E2%80%932026

¹⁵ THC (2013a). Highland Statutorily Protected Species Supplementary Guidance. Available at: https://www.highland.gov.uk/downloads/file/3026/highland_statutorily_protected_species_supplementary_guidance

¹⁶ THC (2013b). Trees, woodlands and development supplementary guidance. Available at: https://www.highland.gov.uk/downloads/file/354/trees_woodlands_and_development_supplementary_guidance

- Advising on peatland, carbon-rich soils and priority peatland habitats in development management (NatureScot, 2023)¹⁷.
- Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2012)¹⁸.
- Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd edition (Collins, 2016)¹⁹ and 4th edition (Collins, 2023)²⁰.
- Bat Surveys: Good Practice Guidelines 2nd edition (Hundt, 2012)²¹.
- Bats and Onshore Wind Turbines - Survey, Assessment and Mitigation (NatureScot, 2021)²².
- Land Use Planning System Guidance Note 31: Guidance on Assessing the Impacts of Groundwater Abstractions and Groundwater Dependant Terrestrial Ecosystems (SEPA, 2014)²³.
- Land Use Planning System Guidance Note 4: Planning Guidance on On-shore Windfarm Developments (Scottish Environment Protection Agency (SEPA), 2017)²⁴.
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018)¹.
- Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines (Marine Scotland Science, 2021)²⁵.
- Carbon and Peatland Map (SNH, 2016)²⁶.
- Scottish Biodiversity List (SBL) (NatureScot, 2020)²⁷.
- Standing Advice for Planning Consultations:
 - Protected Species: Badger (NatureScot, 2024a)²⁸;
 - Protected Species: Otter (NatureScot, 2024b)²⁹;
 - Protected Species: Pine Marten (NatureScot, 2024c)³⁰;
 - Protected Species: Red Squirrel (NatureScot, 2024d)³¹;
 - Protected Species: Water Vole (NatureScot, 2024e)³²;
 - Protected Species: Wildcat (NatureScot, 2024f)³³;
 - Protected Species: Bats (NatureScot, 2024g)³⁴; and
 - Protected Species: Freshwater Pearl Mussel (NatureScot, 2024h)³⁵.
- Pre-application guidance for onshore wind farms (NatureScot, 2024i)³⁶.
- Good Practice During Wind Farm Construction (NatureScot, 2024j)³⁷.
- BS 42020: Biodiversity - code of practice for biodiversity in planning and development (British Standards Institution, BSI, 2023)³⁸.

6.3.3 Guidance followed with respect to survey methodologies is detailed in **Technical Appendices 6.1 to 6.4 (EIA Report Volume 4)**.

¹⁷ NatureScot (2023). Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Available at: <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management>.

¹⁸ SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. Available at: <https://www.nature.scot/sites/default/files/2019-11/Guidance%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf>

¹⁹ Collins, J. (ed.) (2016). Bat surveys for Professional Ecologists: Good Practice Guidelines. (3rd edition). BCT, London.

²⁰ Collins, J. (ed.) (2023). Bat surveys for Professional Ecologists: Good Practice Guidelines. (4th edition). BCT, London.

²¹ Hundt, L. (2012). Bat Surveys: Good Practice Guidelines, 2nd edition, BCT.

²² NatureScot (2021). Bats and Onshore Wind Turbines - Survey, Assessment and Mitigation. Version: August 2021. Note, this guidance is a joint venture with other bodies including Natural England and Natural Resources Wales. Available at: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation>

²³ SEPA (2014). Land Use Planning System SEPA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. SEPA, Scotland.

²⁴ SEPA (2017). Land Use Planning System SEPA Guidance Note 4: Planning guidance on on-shore windfarm developments. SEPA, Scotland.

²⁵ Marine Scotland Science (2021). Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines.

²⁶ SNH (2016). Carbon and Peatland 2016 map. Available at: <https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/soils/carbon-and-peatland-2016-map>

²⁷ NatureScot (2020). Scottish Biodiversity List. Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list>

²⁸ NatureScot (2024a). Standing Advice for Planning Consultations – Badger. NatureScot, Inverness.

²⁹ NatureScot (2024b). Standing Advice for Planning Consultations – Otter. NatureScot, Inverness.

³⁰ NatureScot (2024c). Standing Advice for Planning Consultations – Pine Marten. NatureScot, Inverness.

³¹ NatureScot (2024d). Standing Advice for Planning Consultations – Red Squirrel. NatureScot, Inverness.

³² NatureScot (2024e). Standing Advice for Planning Consultations – Water Vole. NatureScot, Inverness.

³³ NatureScot (2024f). Standing Advice for Planning Consultations – Wildcat. NatureScot, Inverness.

³⁴ NatureScot (2024g). Standing Advice for Planning Consultations – Bats. NatureScot, Inverness.

³⁵ NatureScot (2024h). Standing Advice for Planning Consultations – Freshwater Pearl Mussel. NatureScot, Inverness.

³⁶ NatureScot (2024i). NatureScot pre-application guidance for onshore wind farms. Version: February 2024.

³⁷ NatureScot (2024j). Good Practice During Wind Farm Construction. NatureScot, Inverness.

³⁸ BSI (2013). BS 42020:2013 Biodiversity — Code of practice for planning and development. BSI Standards Publication.

- 6.3.4 Consideration has been given to NatureScot's recent, "Guidance on the use of existing biodiversity metrics in the Scottish planning system", which was published in June 2025³⁹. The guidance highlights that a Scottish metric is in development but is currently not available for use, and states that whilst there are some benefits to using non-approved metrics for the Scottish system, there are also issues and limitations. The guidance states that NPF4 Policy 3b *"doesn't specify that a particular assessment tool or methodology must be used"* in order to demonstrate that a proposal will *"conserve, restore and enhance biodiversity"*, and instead sets out general principles which should be adhered to in order to ensure meaningful biodiversity benefits are provided. The assessment provided within this Chapter aligns with the recommended approach of following the principles whilst using a qualitative approach using professional judgement from independent ecologists to demonstrate that the Proposed Development provides significant biodiversity enhancement in accordance with Policy 3b of NPF4.

6.4 Consultation

- 6.4.1 **Table 6.1** summarises the consultation responses received regarding ecology and provides information on where and/or how they have been addressed in this assessment.
- 6.4.2 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 6.1 – Consultation

Consultee and Date	Consultation Response	Applicant Response
NatureScot Pre-Scoping 16/10/2020	Stated ecological survey work appears to be largely adequate.	Noted.
	The Site is hydrologically linked to the River Oykel Special Area of Conservation (SAC).	Noted. Potential effects are considered in Section 6.9 , and information to inform a Habitats Regulations Appraisal (HRA) with respect to likely significant effects (LSEs) on the River Oykel SAC is provided in Section 6.16 .
	As well as the fish habitat survey undertaken, suggested seeking baseline electro-fishing data from the Kyle of Sutherland District Salmon Fishery Board (KSDSFB) associated with the lower tributary feeding into the River Oykel SAC at Brae.	Electro-fishing information has been sought and gathered from the KSDSFB and is summarised in Section 6.6 . Further information is provided in Technical Appendix 6.4 (EIA Report Volume 4).
	Recommended freshwater pearl mussel should be surveyed within the SAC tributary.	A fish habitat survey was undertaken of the watercourses on-site and downstream including tributaries of the River Oykel SAC, and the SAC itself. This survey identified those watercourses with the most potential for supporting freshwater pearl mussel, and the River Oykel SAC north of the Site is considered to have features that have a high potential to support the species. The assessment within this Chapter is carried out with the precautionary assumption that freshwater pearl mussel is likely to be present in the River Oykel SAC north of the Site.
	Advised (even though much of the Site is conifer forest) that a peat depth survey should be carried out, and opportunities to reduce impacts on peat should be explored.	Peat depth surveys were undertaken (see Chapter 8 , EIA Report Volume 2), and effects on peatland have been reduced largely through avoidance (see Section 6.7). Note, peatland restoration (and creation through forest-to-bog restoration) are key enhancement measures that would be implemented for the Proposed Development, if consented. Chapter 8 (EIA Report Volume 2) provides further information on minimising effects on the peat resource on-site.
	An HRA may need to be undertaken to assess any peat slide risk to the River Oykel SAC tributary, including the main stem.	Information to inform an HRA is provided in Section 6.16 . The SAC is 1.2 km from the nearest Proposed Development's turbine, with extensive commercial forestry between the Proposed Development footprint and the SAC. Noting, that the western access route crosses the River Einig (part of the River Oykel SAC) over an existing watercourse crossing. Effects on peatland habitat from the Proposed Development are modest (principally areas on the southern periphery of the Site at the greatest distance from the SAC with forestry in between), with the greatest loss of habitat concerning commercial forestry (with areas around the turbines to be key-holed and not clear-felled). The extensive areas of commercial forestry (and compensatory planting to be undertaken, see Technical Appendix 2.3 , EIA Report Volume 4) would mean the risk of peat slide would be further reduced, with forestry and tree planting helping to stabilise the soils further.

³⁹ Available at: <https://www.nature.scot/doc/guidance-use-existing-biodiversity-metrics-scottish-planning-system> (Accessed June 2025)

		A Peat Landslide Hazard Risk Assessment (PLHRA) has been undertaken in Technical Appendix 8.4 (EIA Report Volume 4). Based on the analysis presented in this report, risks are calculated to be "Low" or "Negligible" across the Site, and site-specific mitigation is not required to reduce risks pre-consent.
	Emphasised that surveys accord with Best Practice Guidelines and securing access through agreement where required.	Ecology surveys undertaken accorded with best practice guidelines, and any deviations and/or limitations are summarised in Section 6.5 (with further information in the respective Technical Appendices 6.1-6.4 (EIA Report Volume 4), and no substantive limitations to assessment identified.
	As well as focussing bat detectors on turbine locations (which are the most important), an open riparian zone, such as the one in the north of the Site, would be useful to cover too.	Noted. At least some bat detectors have been located close to potentially key bat features for foraging/commuting, including the open riparian zone in the north of the Site (monitoring station 11 'MS11' as shown in Figure 6.6 (EIA Report Volume 3a).
	Recognised there are multiple forest gaps and glades in close proximity to turbines which may be very suitable for foraging bats.	Noted. At least some bat detectors have been located close to potentially higher quality features that could be used by foraging/commuting bats, including forestry gaps/glades. The surveys have captured representative habitats on-site, including areas which provide higher potential for foraging/commuting bats. Full details of bat detector locations are provided in Technical Appendix 6.3 (EIA Report Volume 4).
	Agreed with main species of mammals listed for survey work. Directed to Best Practice Standing Advice regarding protected species.	Noted, and the best practice standing advice has been considered for protected species, see Section 6.5 , and with further confirmation in the respective Technical Appendices 6.1-6.4 (EIA Report Volume 4).
	Recommended a watching brief for any cat signs during mammal surveys. If any cat signs were found at remote locations, then wildcat surveys were recommended as a precaution, or to seek further advice from NatureScot.	The terrestrial mammal surveys did consider Scottish wildcat as summarised in Sections 6.5 and 6.6 , and within Technical Appendix 6.2 (EIA Report Volume 4). No evidence of wildcat was identified, nor potential for den sites.
NatureScot Pre-Scoping 07/07/2023	Confirmed that non-avian ecological data for species which can be surveyed any time of year (e.g. otter, badger) pre-application surveys would be valid for two years. For species with restricted survey periods (like bats, pine marten and water vole), pre-application surveys would remain valid for two more survey periods. It was said that ecological survey data collected in the 2021 survey period would remain valid until end of March 2024. If the assessment was submitted after this date, it was recommended that the ecological surveys are updated/repeated.	Scoping consultation (in August 2024) and particularly post-scoping consultation (in October 2024) with NatureScot (see below in this table) provided clarity on the satisfactory approach in relation to the ecological surveys undertaken, and data validity. Information from the October 2024 consultation with NatureScot is the most recent liaison and supersedes the advice provided by NatureScot during this pre-scoping July 2023 consultation.
Fisheries Management Scotland (FMS) Scoping Response 01/08/2024	The Proposed Development falls within the catchment relating to the KSDSFB. It is important that the proposals are conducted in full consultation with these organisations. Due to the potential for such developments to impact on migratory fish species and the fisheries they support, FMS have developed, in conjunction with Marine Scotland Science, advice for DSFBs and Trusts in dealing with planning applications. It was strongly recommend that these guidelines are fully considered throughout the planning, construction and monitoring phases of the Proposed Development: http://fms.scot/wp-content/uploads/2017/04/170412-Guidance-Terrestrial-windfarms.pdf https://fms.scot/about-us-2/our-members/dsfb-trust-map/	A Fish Monitoring Plan (FMP), and water quality monitoring programme including pre-, during- and post-construction fish (and freshwater pearl mussel) monitoring would be produced with input from the KSDSFB (see Sections 6.7 and 6.13). This FMP would form part of the CEMP if the Proposed Development is consented. The guidelines as recommended have been considered, with potential effects on watercourses covered in Sections 6.7, 6.8, 6.9 and 6.16. The monitoring programme for fish and water quality (see summarised above, and in Sections 6.7 and 6.13), with input from the KSDSFB accords with the guidelines.
SEPA Scoping Response 06/08/2024	In terms of peat and peatland, it should be clearly demonstrated that the assessment has informed careful project design and ensured, in accordance with relevant	Effects on peat and peatland have been avoided in the first instance through sensitive design (see Chapter 3, EIA Report Volume 2). Further details are provided in terms of embedded mitigation in Section 6.7 , with the assessment addressing the

	guidance and the mitigation hierarchy in NPF4, that adverse impacts are first avoided and then minimised through best practice.	potential effects on peatland habitat presented in Section 6.9 . Consideration on minimising effects on peat (from a peat resource point of view) is also provided in Chapter 8 (EIA Report Volume 2) .
	Submission should include a plan for peatland condition mapping – the Peatland Condition Assessment photographic guide lists the criteria for each condition category and illustrates how to identify each condition category.	A peatland condition assessment was undertaken in accord with NatureScot guidance (2023) ¹⁷ , with details provided in Technical Appendix 6.1 (EIA Report Volume 4), and the results provided on Figure 6.4 (EIA Report Volume 3a). Subsequently, potential effects on peatland (including any identified as Priority Peatland of Possible National Interest) are considered in Section 6.9 . The peatland condition assessment revealed that the peatland on-site is in varying stages of degradation, with none considered as near natural.
	The detailed series of layout drawings above should clearly demonstrate that development proposals avoid any near natural peatland and that all proposed excavation is on peat less than 1 m deep.	None of the peatland on-site is considered 'near-natural', with habitats typically forming mosaics, indicative of modification/degradation. Details on avoidance of deeper areas of peat are addressed in Chapter 8 (EIA Report Volume 2).
	A National Vegetation Classification (NVC) survey should be submitted which includes the following information: a) A set of drawings demonstrating that all ground water dependent terrestrial ecosystems (GWDTEs) and existing groundwater abstractions are outwith a 100 m radius of all excavations shallower than 1 m and outwith 250 m of all excavations deeper than 1 m and proposed groundwater abstractions. The survey needs to extend beyond the Site boundary where the distances require it. b) If the minimum buffers cannot be achieved, a detailed site specific qualitative and/or quantitative risk assessment will be required with reference provided to SEPAs Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (SEPA, 2014) ²³ for further advice and the minimum information required to be submitted.	An NVC survey plan is provided as Figure 6.3a-d (EIA Report Volume 3a). Specifics concerning the Proposed Development in relation to confirmed GWDTEs and existing groundwater abstractions are addressed in Chapter 8 (EIA Report Volume 2).
	Please note that due to discrepancies in habitat definition and ambiguity in correspondence with NVC types we do not accept the use of The UK Habitat Classification System (UKHab) as an alternative to NVC.	An NVC survey was undertaken and the UKHab methodology has not been used (see Sections 6.5 and 6.6 , respectively for a summary of the NVC methodology and results). Full details of the NVC survey is provided in Technical Appendix 6.1 (EIA Report Volume 4) and results presented in Figure 6.3a-d (EIA Report Volume 3a).
KSDSFB Scoping Response 07/08/2024	In the first instance we would expect any environmental assessment to include: a) Fish habitat data in any potentially affected watercourse both within and outwith the physical boundary of the proposed development. b) Fish presence, distribution and abundance data in all potentially affected watercourses. c) Macro-invertebrate data in all potentially affected watercourses. d) Freshwater pearl mussel abundance and distribution data in all potentially affected watercourses. e) Hydrology data, including for artificial drainage watercourses. Any artificial or modified drainage channels need to be fully mapped as part of the assessment process. f) Water quality data (i.e. turbidity, pH, dissolved organic carbon, acid neutralising capacity etc.) in all potentially affected watercourses. g) Peat slide risk assessment.	A fish habitat survey and freshwater pearl mussel habitat appraisal survey have been undertaken (see Section 6.5 , and Technical Appendix 6.4 , EIA Report Volume 4). Furthermore, the KSDSFB have provided electro-fishing survey data relevant to the Proposed Development, with the results summarised in Section 6.6 . The above information is considered in the assessment (see Section 6.8 , as well as Section 6.16). A FMP, and water quality monitoring programme including pre-, during- and post-construction fish (and freshwater pearl mussel) monitoring would be produced with input from the KSDSFB (see Sections 6.7 and 6.13). This FMP would form part of the CEMP if the Proposed Development is consented. Peat slide risk and hydrology data is considered and provided in Chapter 8 (EIA Report Volume 2).
	The construction of large objects, particularly those which have moving elements have the potential to cause	As discussed in Sections 6.8, 6.9 and 6.16 , the watercourses on-site have limited (if any) potential for supporting fish fauna, with many of the watercourses on moderate to steep slopes

	ongoing direct and indirect visual impacts such as shadow flicker. As such we would expect the following: a) Full mapping of the potential visual effect zones for all proposed turbines taking into account salmonid fish vision (i.e. incorporating a detailed understanding of factors such as Snell's Window). This would include both direct visualisation and other effects such as reflection and shadow flicker. b) Should an area be in a potential visual effect zone then we would expect to see full assessment/modelling of the impact on fish behaviour and performance resulting from direct visualisation of moving turbine blades. c) Should an area be in a potential visual effect zone then we would expect to see full assessment/modelling of the impact on fish behaviour and performance resulting from shadow flicker, reflections etc.	and are peaty headwaters. Furthermore, turbines are offset from watercourses by at least 74 m and thus the potential for shadow flicker is reduced. The Proposed Development is offset from watercourses which have the greatest potential to support fish fauna (the nearest turbine is approximately 1.2 km from the River Oykel SAC). Potential for shadow flicker to effect any fish using the River Oykel SAC is accordingly discounted. It is noted that the western access route passes over the River Einig (part of the River Oykel SAC) across an existing watercourse crossing, and effects on the River Oykel SAC are addressed in Sections 6.9 and 6.16. The potential effects from shadow flicker, more widely, is provided in Technical Appendix 2.4 (EIA Report Volume 4).
Woodland Trust Scoping Response 09/08/ 2024	Requested to ensure that ancient woodland, and ancient and veteran trees, are appropriately considered as part of the EIA for this development. Ancient woodland and ancient and veteran trees are afforded protection within the Scottish Government's NPF4 (Policy 6 - Forestry, Woodland and Trees).	There is long established woodland of semi-natural origin totalling 19 ha on-site, which is on the ancient woodland inventory (AWI). However this habitat is not defined as 'ancient woodland' by NPF4⁴⁰. Nonetheless, these areas have been considered in the sensitive design of the Proposed Development (see Sections 6.7 and also Chapter 3, EIA Report Volume 2). Effects on the Ancient Woodland Inventory (AWI) habitat are considered in Section 6.8. Further consideration of the AWI habitat is considered in Technical Appendix 2.4 (EIA Report Volume 4). Note, the enhancement measures include restoration of the AWI area (see the ONEMP, as Technical Appendix 6.5, EIA Report Volume 4).
NatureScot Scoping Response 16/08/2024	This development is hydrologically connected to the River Oykel SAC, which is protected for its Atlantic salmon and freshwater pearl mussel populations, see https://apps.snh.gov.uk/sitelink-api/v1/sites/8363/documents/66. Within our pre-application advice for this proposal, we highlighted that some tributaries of this SAC were put forward for SAC designation based on their spawning value for Atlantic salmon. With that in mind, the lower tributary feeding into the River Oykel SAC at Brae is one such location. This tributary is likely to be a sensitive receptor, as almost all the watercourses from the turbine layout cumulatively flow through it. We therefore recommend extra consideration is given for this development to adverse effects on this SAC salmon tributary considering its importance for Atlantic salmon. In addition to any fish habitat survey work proposed, we recommend that you source baseline electro-fishing data from the Kyle of Sutherland Fisheries for this specific River Oykel SAC tributary, which may also help determine likely periods of high sensitivity. We welcome that a freshwater pearl mussel survey has been carried out within the Brae SAC tributary, due to the hydrological significance of this development, as mentioned above. Standing advice for surveys and mitigation can be found here, see: https://www.nature.scot/doc/standing-advice-planning-consultations-freshwater-pearl-mussels.	Potential effects of the Proposed Development on the qualifying features of the River Oykel SAC (including tributaries of it) are considered in Sections 6.9 and 6.16. The KSDSFB were approached and electro-fishing survey data gathered for the specific SAC tributary near Brae. This information is considered in this assessment, with the results summarised in Section 6.6, and consideration of potential effects on the SAC (and its qualifying species) considered in Sections 6.9 and 6.16. It is clarified that a freshwater pearl mussel survey has not been carried out within the Brae SAC tributary, but instead a habitat suitability survey for freshwater pearl mussel has been undertaken of the watercourses within the Site (including tributaries of the SAC); see Technical Appendix 6.4 (EIA Report Volume 4), for full details. No further pre-application surveys are scheduled. However, a FMP including pre-, during- and post-construction fish (and freshwater pearl mussel) monitoring would be produced with input from the

⁴⁰ NPF4 defines ancient woodland as land that has been continuously wooded since at least 1750.

		KSDSFB (see Sections 6.7 and 6.13). This FMP would form part of the CEMP if the Proposed Development is consented.
	More information on the River Oykel SAC, complete with updated Conservation Objectives can be found within the Conservation & Management Document: https://apps.snh.gov.uk/sitelink-api/v1/sites/8363/documents/66 . It is possible that extra mitigation measures may be required to ensure that this SAC remains unaffected. However, acknowledging best practice construction measures to avoid pollution will still be important in shaping shadow HRA's for inclusion within the EIA Report (EIAR), see: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/renewable-energy/onshore-wind-energy/wind-farm-construction-good	The Conservation Objectives for the River Oykel SAC are considered as part of the information to inform an HRA section of this chapter (see Section 6.16). Embedded mitigation is considered with respect to potential effects on the SAC in relation to EIA assessment (see Sections 6.7 and 6.9), and with respect to the requirements of the HRA (Section 6.16). The implementation of fish (and freshwater pearl mussel) monitoring (see Sections 6.7 and 6.13) to form part of the CEMP, if the Proposed Development is consented, is a fundamental part of the mitigation.
	We provided clarification in July 2023 that ecological survey data collected during 2021 would only remain valid until the end of March 2024, and if submission was to occur after that period, non-ornithological surveys would need to be repeated. However, we note that from the Scoping Report that no updated surveys have been done, with confirmation that no more targeted ecological surveys are going to be undertaken. This approach has potential to delay this development during application.	Further consultation with NatureScot in October 2024 (see details below in this table) clarified this point with respect to the validity of ecological survey data. The most recent correspondence with NatureScot from October 2024 thus supersedes this earlier formal scoping consultation (from August 2024).
	We acknowledge that the Scoping Report would appear to include references to Best Practice Guidance, which may inform the shelf-life for Protected Species survey work. However please check for Protected Species updates on our website, to help inform any outdated survey work. https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents .	The NatureScot guidance as recommended has been considered for the approach to ecological surveys (see Section 6.5 , and with further details, respectively for terrestrial mammals and bats in Technical Appendices 6.2 and 6.3 , EIA Report Volume 4).
	In addition, the Bats and Onshore Wind Turbines has been updated in August 2021 (with minor revisions), see: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation .	The NatureScot guidance (2021) ²² as recommended has been considered, see Section 6.5 , and with further details in Technical Appendix 6.3 (EIA Report Volume 4).
	We welcome that potential impacts upon deer will be included within the EIAR, based on Best Practice Guidance. We also welcome that mitigation measures for reptiles will be included within the CEMP, where Best Practice Guidance can help inform that, see: https://www.nature.scot/doc/standing-advice-planning-consultations-reptilesadder-slow-worm-common-lizard .	Potential effects on deer are considered in Section 6.8 , and with a commitment to monitor grazing levels over the course of the Proposed Development (as part of the NEMP; see Section 6.13), which would identify whether the existing deer management on-site is appropriate or whether increased management (like culling) is needed. The CEMP, if the Proposed Development is consented, would consider measures to ensure any reptiles present on-site are protected during construction (with an outline CEMP (OCEMP) provided as Technical Appendix 2.1 , EIA Report Volume 4).
	Our Peatland Guidance has been updated to reflect NPF4 (November 2023). Therefore, please look through this to gauge if anything needs to be provided within the EIAR to help gauge 'condition' & 'quality' of any existing peatland habitats that may be affected, see: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitatsdevelopment-management . We recognise that most of this development does not sit within class	The updated NatureScot guidance (2023) ¹⁷ has been considered for the surveys, and assessment. A peatland condition assessment (following NatureScot guidance, 2023) ¹⁷ has been undertaken to identify any areas of Priority Peatland of Possible National Interest (see Section 6.5). Potential Effects on such priority peatland is considered in this chapter (Section 6.9), with areas of degraded peatland (and commercial forestry that can be returned to peatland) considered for restoration works (see the ONEMP, Technical Appendix 6.5 , EIA Report Volume 4). Identification of the peat resource on-site, and assessing the potential effects on

	1 or class 2 peatland habitats, being largely dominated by conifer plantation. However, we welcome recognition within the Scoping report of potential impacts to priority peatlands and NatureScot Guidance (as above).	the peat resource, is considered in Chapter 8 (EIA Report Volume 2) .
RSPB Scotland Scoping Response 23/08/2024	We are pleased that the River Oykel SAC will be included in the EIA and suggest it would be prudent to include the potential impacts of tree felling via run-off of sediments on the SAC, as it is located c. 250 m downstream, to the north of the Site.	The potential effects on the River Oykel SAC are included in Sections 6.9 and 6.16 . This includes consideration of pollution and run-off (such as silt) as a result of the Proposed Development, and the implementation of standard good practice measures through embedded mitigation (see Section 6.7). The SAC is 250 m from the Site (and >1.2 km from the nearest turbine) following design evolution (retraction of the northern boundary of the Site away from the SAC since the submission of the Scoping Report).
	We are concerned that non-wind farm proposals have been scoped out of further assessment. Cumulative impacts should also be considered in relation to other types of development such as overhead power lines and new woodland planting as per NatureScot guidance.	During the formal scoping, the question was asked whether any other specific non-wind developments should be considered, and none were recommended. Accordingly, only wind farm developments are considered in the cumulative assessment (see Section 6.12). The Proposed Development will result in a loss of mostly commercial forestry (through key-holing, not clear-felling), and compensatory planting would be required to replace the lost commercial crop (see Technical Appendix 2.3 EIA Report Volume 4). As such, there would not be a net loss of forestry, as a result of the Proposed Development, so at least in the long-term, the Proposed Development would not contribute to any cumulative change in forestry cover, and any implications on IEFs that this could have.
	Impacts on deep peat and blanket bog should be minimised through careful siting and design, and all of the infrastructure components should be sited where peat depths are less than 0.5 m.	The design of the Proposed Development has been sensitive to the location of areas of deep peat and blanket bog (see Chapter 3 , EIA Report Volume 2). Potential effects on deeper areas of peat are addressed in Chapter 8 (EIA Report Volume 2) .
	In relation to peatland, recent NatureScot guidance (2023) ¹⁷ states 'that restoration to achieve offsetting (i.e. compensation rather than biodiversity enhancement) would be in the order of 1:10 (lost: restored)' plus 'an additional 10 % of the baseline assessment of the extent of priority peatland habitat for biodiversity enhancement.	The ONEMP provides details on the extensive peatland restoration proposals which will be delivered as part of the Proposed Development to deliver significant biodiversity enhancement in accordance with NPF4. Areas of identified peatland and commercial forestry which would be considered as part of the peatland restoration programme (forestry to be cleared and returned to peatland) are discussed in Section 6.10, Technical Appendix 6.5 (EIA Report Volume 4), and shown in Figure 6.8 (EIA Report Volume 3a).
The Highland Council (THC) Scoping Response 11/11/2024	EIAR should provide baseline survey of animal interest on-site. Further account on habitats presents on-site required – identifying rare, threatened, and protected habitats.	Baseline results from the surveys on-site with respect to the animal and habitat interests (including any rare, threatened and/or protected ecological features), are summarised in Section 6.6 .
	Habitat enhancement and mitigation measures should be detailed – particularly blanket bog (biodiversity and peat slides).	Habitat enhancement measures are summarised in Section 6.10 , with further details in Technical Appendix 6.5 (EIA Report Volume 4). Mitigation measures to be adopted are provided in Section 6.7 (with respect to embedded mitigation) and Section 6.10 for additional mitigation. Consideration of peat slides can be found in Chapter 8 (EIA Report Volume 2).
	Specific peat assessment to inform siting, design, or other mitigation to overcome effects on peatland and caron rich soils, deep peat, and priority peatland habitat. Up to date NVC survey required.	Updated habitat surveys in July 2024 (including Peatland Condition Assessment, in accordance with NatureScot guidance, 2023) ¹⁷ were undertaken, see Section 6.5 , with results provided in Section 6.6 . Embedded mitigation with respect to minimising potential effects on peatland are provided in Section 6.7 , potential effects on peatland are provided in Section 6.9 and additional mitigation (and enhancement) with respect to peatland restoration are provided in Section 6.10 . Potential effects on the peat resource and details of a Peat Management Plan are provided in Chapter 8 (EIA Report Volume 2) .
	Commitment to undertake peatland restoration on an area of increased size to that of the application Site.	Areas of identified peatland and commercial forestry which would be considered as part of the peatland restoration programme (forestry to be cleared and returned to peatland) are discussed in Section 6.10, Technical Appendix 6.5 (EIA Report Volume 4) and shown in Figure 6.8 (EIA Report Volume 3a).

	Address impacts on nature conservation interests of all designated sites in development vicinity. Potential impact on other designated areas such as SSSI's should be carefully and thoroughly considered and, where possible, appropriate mitigation measures outlined in the EIAR.	Potential effects on designated sites (including SSSIs) with ecological qualifying interests are considered, see Section 6.8 . In addition, effects specific to the River Oykel SAC are also assessed in Section 6.16 .
	If wild deer are present or will use the site an assessment of the potential impact on deer will be required. This should address deer welfare, habitats, and other interests.	Wild deer were recorded on-site during the surveys, and potential effects on deer are considered in Section 6.14 . If the Proposed Development is consented as part of the monitoring for the NEMP, information of grazing pressure from deer particularly on restoration areas (like peatland) will be gathered. This will determine whether any change to the existing deer management and control is required (for example, increased culling requirements); see Sections 6.7 and 6.13 , and Technical Appendix 6.5 (EIA Report Volume 4).
	The EIAR needs to address the aquatic interests within local watercourses, including downstream interests that may be affected by the development, for example increases in silt and sediment loads resulting from construction works; pollution risk/incidents during construction; obstruction to upstream and downstream migration both during and after construction; disturbance of spawning beds / timing of works; and other drainage issues.	Effects on aquatic interests within local watercourses are considered in this Chapter (see Sections 6.8 and 6.16). Embedded mitigation that would be implemented is summarised in Section 6.7 , with further details, to be adopted in a CEMP, provided in Technical Appendix 2.1 (EIA Report Volume 4). The 11 new watercourse crossings required, and 14 upgrades of existing watercourse crossings (based on western access option as a worst-case scenario) (see Chapter 8 , EIA Report Volume 2) would be sensitively designed to allow the continued free movement of water and wildlife therein.
	The EIAR should include a map and assessment of impacts upon GWDTEs.	Chapter 8 (EIA Report Volume 2) addresses impact on confirmed GWDTEs.
	NPF4's commitment to deliver positive effects for biodiversity through development. Policy 3 states that, 'Development proposals for national, major and of EIA development should only be supported where it can be demonstrated that the proposal will conserve and enhance biodiversity, including nature networks within and adjacent to the site, so that they are in a demonstrably better state than without intervention, including through future management.' A draft or outline Habitat Management Plan (HMP) and Species Protection Plan (SPP) should be produced as part of the EIA, including any proposals for mitigation and enhancement in relation to important habitats and species. Any compensatory planting plans should be carefully considered and included in the HMP. The HMP should include a comprehensive monitoring programme for all habitat improvements, and breeding birds on the site. Lastly, the HMP (or other document) should also include a protocol for reporting collisions to NatureScot.	A ONEMP is provided as Technical Appendix 6.5 (EIA Report Volume 4), and this would form the basis of the final NEMP, if the Proposed Development is consented. The ONEMP details the areas identified for restoration and the measures and approach that would be considered to be implemented. The ONEMP outlines monitoring that would be undertaken to appraise the effectiveness of enhancement measures and to flag any requirement for remedial action (for example replace any planted trees that have failed, and/or reduce grazing pressure of deer through changes in management). Other monitoring that would be adopted would include surveying for evidence of bat collisions (carcass searches); see also Section 6.13 . There is a commitment for a SPP to be produced if the Proposed Development is consented, and this would be informed by pre-construction surveys that would be undertaken (see Section 6.7).
NatureScot Post Scoping Consultation 04/10/2024	Noted, that any additional bat survey in 2025 between April and September would likely delay submission, and as an alternative provided a pragmatic approach to bats, as per below. Recommend mitigation for bats through wind turbine operational measures, as follows: - Applicant to provide a commitment to feather all turbine blades from the outset, in addition to post-construction monitoring and carcass searches, as per the NatureScot guidance (2021) ²² . - Should post-construction monitoring (i.e. carcass searches) indicate a unacceptable levels of collision	The turbines would be feathered (see Section 6.10), and post-construction monitoring (bat carcass searches) would be undertaken (see Section 6.13 , and Technical Appendix 6.5 , EIA Report Volume 4). Post-consent bat monitoring would be agreed with THC and NatureScot, including a protocol for reporting collisions to NatureScot, and in what circumstance remedial actions would be required. It is proposed that the above measures would be secured through suitably worded condition(s).

	incidents, then 'curtailment' measures should be identified, such as at specific turbine(s) associated with collisions. - Recommend the above listed mitigation measures should be fully included and explained in the EIAR, with a commitment to delivery.	
	Welcome the proposed targeted terrestrial mammal update surveys in spring 2025, refreshing data ahead of submission.	The updated terrestrial mammal survey information is provided in Section 6.6 , and the results are considered in the assessment (see Section 6.8).

6.5 Assessment Methodology and Significance Criteria

6.5.1 Scope of Assessment

6.5.2 The assessment presented within this Chapter has been undertaken in accordance with CIEEM guidelines (CIEEM, 2018)¹ and considers the following potential impacts upon designated sites and ecological features associated with construction, operation, and decommissioning of the Proposed Development:

- habitat loss/deterioration - direct and indirect loss and deterioration of habitats;
- mortality/injury - direct or indirect loss of life or injury; and
- disturbance/displacement of species - disturbance and displacement of faunal species; loss, damage or disturbance to their breeding and/or resting places.

6.5.3 Potential effects upon ecological features are considered as a result of the Proposed Development alone and cumulatively with other developments which are the subject of a valid planning application (including any subject to appeal, but with relevant publicly available documentation), operational, under construction, and consented wind farm developments with design information in the public domain. Developments close to the end of their operational life are considered as part of the cumulative assessment to present a 'worst case scenario'.

6.5.4 CIEEM guidelines (2018)¹ stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological features that are sufficiently widespread, unthreatened and resilient to impacts of a Proposed Development. As such, the assessment presented within this Chapter considers effects upon designated sites and ecological features which are considered 'important' on the basis of baseline information, relevant guidance, literature, professional judgement of the authors and, where relevant, opinions of statutory advisory bodies provided through consultations in relation to the Proposed Development and, where relevant, other wind farm developments.

6.5.5 Where ecological features are not considered so important as to warrant a detailed assessment, or where it is clear they would not be significantly affected by the Proposed Development on the basis of baseline information, these are 'scoped out' (as agreed through the scoping report and opinion, see **Table 6.1** or as detailed in **Section 6.8**) of the assessment. Mitigation measures for impacts on such features may, however, still be outlined as appropriate to reduce and/or avoid any potentially adverse effects or to ensure legislative compliance. Where relevant, these ecological features may also be discussed qualitatively within the EIA Report and given consideration in Site-wide recommendations for habitat enhancement.

6.5.6 Following the principle of proportionate EIA, design evolution and embedded mitigation are considered at the outset of the assessment, including standard best practice and construction management measures included within the OCEMP, see **Technical Appendix 2.1** (EIA Report Volume 4). Ecological features are 'scoped in' to the assessment where there is still considered to be the potential for significant effects on the identified feature arising from the Proposed Development after the application of embedded mitigation measures.

6.5.7 The scope of the assessment has been informed by consultation responses summarised in **Table 6.1**.

Study Area

6.5.8 Study Areas, within which baseline information in relation to ecological features have been obtained, comprise the Site and areas out to 10 km from the Site for specific species.

6.5.9 The locations of statutory designated sites for nature conservation with ecological qualifying interests have also been identified within 10 km of the Site (**Figure 6.1**, EIA Report Volume 3a).

6.5.10 The Study Areas used have appropriately covered the areas within the Site with infrastructure, as well as adjacent habitats, as required.

6.5.11 Full details of Study Areas adopted for the desk study and field surveys are provided in **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4) and illustrated on **Figures 6.1 to 6.7** (EIA Report Volume 3a).

Desk Study

- 6.5.12 A desk study review of existing ecological information was undertaken to:
- identify the location of designated sites for nature conservation cited for ecological interest, within 10 km from the Site boundary (minus the access routes) for statutory sites, and 2 km from the Site boundary (minus the access routes) for non-statutory sites ('Search Area');
 - identify existing records of protected and/or notable species and habitats within 2 km of the Site (minus the access routes), extended to 6 km for bat roosts ('Search Area');
 - identify any factor or features that may influence the potential for impacts on ecological features as a result of the Proposed Development;
 - inform the requirement for further detailed survey; and
 - provide context for assessment.
- 6.5.13 The following key sources were consulted:
- Fishery Management Plan (2018 – 2021) (KSDSFB⁴¹, 2018)⁴²;
 - Freshwater pearl mussel information web page (Joint Nature Conservation Committee (JNCC), 2022)⁴³;
 - Highland Biological Recording Group (HBRG);
 - KSDSFB (for electro-fishing survey data);
 - SNH Carbon and Peatland Map (2016)²⁶;
 - NatureScot Open Data Geoportal (2025)⁴⁴;
 - NatureScot Sitelink website⁴⁵;
 - Saving Scotland's Red Squirrels website⁴⁶;
 - SEPA River Basin Management Plan (SEPA, 2021)⁴⁷;
 - Scotland's Environment Map website⁴⁸; and
 - UK Habitats Directive Article 17 Report (JNCC, 2019)⁴⁹.
- 6.5.14 Publicly available documentation concerning ecological features is also regarded for nearby wind farm schemes (the consented Meall Buidhe Wind Farm (THC Ref: 20/02659/FUL) and the consented Strath Oykel Wind Farm (ECU Ref: ECU00003246)).
- 6.5.15 Additional peer-reviewed literature and industry guidance are referred to where relevant.
- 6.5.16 Details and results of the desk study undertaken are provided in **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4).

Field Surveys

- 6.5.17 Detailed knowledge of habitats and vegetation and the presence or likely presence of protected and notable faunal species on or surrounding the Site have been derived from field surveys.
- 6.5.18 The following field surveys have been completed:
- Extended Phase 1 Habitat Survey;
 - NVC Survey;
 - Peatland Condition Assessment;
 - Terrestrial mammal surveys;
 - Bat habitat suitability appraisal;
 - Bat activity surveys - ground level automated monitoring;
 - Preliminary (bat) roost assessment; and

⁴¹ Note, the KSDSFB and Kyle of Sutherland Fisheries Trust are considered jointly given information, and the scoping response, is provided jointly. For the purpose of brevity, within this chapter from hereon in, the term for the organisation of 'KSDSFB' is used, but this should be also considered to represent the Kyle of Sutherland Fisheries Trust.

⁴² (KSDSFB, 2018). Fishery Management Plan. Available at: <https://kylefisheries.org/rivers/the-catchment/fishery-management-plan/>

⁴³ JNCC (2022). Freshwater pearl mussel *Margaritifera margaritifera*. Available at: <https://sac.jncc.gov.uk/species/S1029/>

⁴⁴ NatureScot (2025). Open Data Geoportal. Available at: <https://opendata.nature.scot/search?collection=Dataset>

⁴⁵ NatureScot's Sitelink website. Available at: <https://sitelink.nature.scot/home>

⁴⁶ Saving Scotland's Red Squirrels website. Available at: <https://scottishsquirrels.org.uk/squirrel-sightings/>

⁴⁷ SEPA (2021). River Basin Management Plan. Available at: <https://www.sepa.org.uk/data-visualisation/water-environment-hub>

⁴⁸ Scotland's Environment Map. Available at: <https://map.environment.gov.scot/sewebmap/>

⁴⁹ JNCC (2019). Article 17 Habitats Directive Report 2019: Species Conservation Status Assessments 2019. JNCC, Peterborough. Available at: <https://jncc.gov.uk/our-work/article-17-habitats-directive-report-2019-species/#regularly-occurring-species-vertebrate-species-mammals-terrestrial>

- Fish habitat survey.

6.5.19 **Table 6.2** provides a summary of field survey methodologies followed. Full details are provided in **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4).

Table 6.2 – Field Survey Methodologies

Ecological Feature	Survey Type	Methodology
Habitats and Vegetation	- Extended Phase 1 Habitat Survey - NVC Survey - Habitat Validation Survey - Peatland Condition Assessment	An Extended Phase 1 Habitat Survey and an NVC Survey of all land on the Site (minus the access routes) was undertaken in September 2021 (noting the survey area extended further to the north-east than the final Site boundary). The Phase 1 surveys were undertaken in accordance with the UK industry standard Joint Nature Conservation Committee (JNCC) Phase 1 Habitat Methodology (JNCC, 2010)⁵⁰ and were extended to include the additional recording of specific features indicating the presence, or likely presence, of protected or notable species of conservation concern. The NVC surveys followed the guiding principles detailed in the NVC: Users' handbook (Rodwell, 2006)⁵¹. The Site (minus the access routes) was subject to a habitat validation survey in July 2024 to check whether habitats on-site were comparable to those identified during the August 2021 surveys due to the elapse of time since the original surveys. A Peatland Condition Assessment of all land on the Site (and adjoining land to the north-east; but not the access routes) defined as priority peatland, as per guidance from NatureScot (2023)¹⁷, which in this case, comprised M17 and M19 blanket bog, M20 and M25 wet modified bog, and M15 wet heath was undertaken in July 2024. At the same time, these areas were checked to confirm, or otherwise update, the previous habitat (NVC community) identifications. The Peatland Condition Assessment was undertaken in accordance with NatureScot (2023)¹⁷ guidance, which was adapted from the Common Standards Monitoring Guidance for Upland Habitats, published by the JNCC (2009)⁵² and used by NatureScot for monitoring SSSIs. The western access route was subject to a habitat survey (Extended Phase 1 Habitat Survey, NVC Survey and Peatland Condition Assessment) in May 2025. Information on the eastern access route was gathered from the publicly available documentation for the consented Strath Oykel Wind Farm (ECU Ref: ECU00003246). Full details are provided in Technical Appendix 6.1 (EIA Report Volume 4).
Terrestrial mammals	- Terrestrial mammal surveys - Extended Phase 1 Habitat Survey	Targeted surveys for terrestrial mammals were undertaken in June and August 2021, using walkover surveys. Updated terrestrial mammal surveys were undertaken in April 2025. Target species for survey were badger, otter, pine marten, red squirrel, water vole, and Scottish wildcat. The Study Area comprised all suitable habitats for the target species within the Site (minus the access routes). This meant that the species-specific survey buffers required from the Proposed Development, as per NatureScot guidance (NatureScot, 2024a-2024f)^{28,29,30,31,32,33} were typically covered. These are out to at least 50 m for red squirrel and water vole, 100 m for badger, 200 m for otter, 250 m for pine marten, and 500 m for Scottish wildcat, as access allowed. Noting, that land in the survey buffers extending to outside the Site had to be surveyed from within the Site itself, or where publicly accessible. Surveys have been undertaken in accordance with NatureScot guidance and industry standard guidance, as detailed in Technical Appendix 6.2 (EIA Report Volume 4). In addition to the above, the Extended Phase 1 Habitat Survey of the Site in September 2021, and habitat surveys in July 2024, were extended to include the additional recording of specific features indicating the presence, or likely presence, of protected or notable species. During the walkover survey of the western access route, in May 2025, evidence of, or potential for, protected terrestrial mammals was recorded. Full details are provided in Technical Appendix 6.2 (EIA Report Volume 4).
Bats	- Bat Habitat Appraisal - Preliminary Roost Assessment - Bat Activity Survey	<u>Bat Habitat Appraisal</u> Habitats present within the Site were appraised for their potential to support bats in terms of both foraging and commuting opportunities in accordance with Bat Conservation Trust guidance (Collins, 2016¹⁹; applicable at the time of survey, and later updated in accordance with Collins, 2023)²⁰. A Habitat Suitability Appraisal (HSA) was undertaken through a review of aerial imagery and OS mapping, and further informed by ground truthing of habitats present during the Extended Phase 1 Habitat Survey which took place in September 2021, during the terrestrial mammal surveys in June and August 2021, and April 2025, and during the habitat surveys in July 2024. The habitats were also appraised with respect to the western access route during the walkover survey in May 2025. <u>Preliminary Roost Assessment</u> Structures and trees with the potential to support maternity roosts and significant hibernation or swarming sites within the Site (and therefore such structures/trees within at least 200 m plus rotor radius of the proposed turbine locations) were identified via ground truthing, undertaken during the baseline surveys (detailed above with respect to bat habitat appraisal) in 2021 and 2025 (in accordance with NatureScot, 2021)²². <u>Bat Activity Survey</u> Bat activity surveys were undertaken in 2021 in accordance with NatureScot guidance (2021)²² comprising the use of ten automated monitoring stations. Monitoring stations were located at, or within, relative proximity to proposed turbine locations at the time of survey. Ten bat statics were used which accords with the number required in accordance with NatureScot guidance

⁵⁰ JNCC (2010). Handbook for Phase 1 Habitat Survey - a technique for environmental audit. JNCC, Peterborough, ISBN 0 86139 636.

⁵¹ Rodwell, J.S. (2006). National Vegetation Community Users' Handbook. JNCC, Peterborough, ISBN 978 1 86107 574 1.

⁵² JNCC (2009). Common Standards Monitoring Guidance for Upland Habitats. Version July 2009, JNCC, Peterborough.

Ecological Feature	Survey Type	Methodology
		(2021) ²² for an 11-turbine scheme. Furthermore, an updated survey was carried out in autumn 2024, where 13 automated monitoring stations were deployed to determine whether bat activity levels within the Site were relatively comparable to bat activity in 2021. NatureScot guidance (2021) ²² advises a minimum of ten consecutive monitoring nights for each activity period (spring, summer and autumn); this has been met or exceeded for all monitoring stations across all three seasons, with the exception of one monitoring station in the 2021 summer season, four monitoring stations in autumn 2021, and two monitoring stations in the 2024 autumn season due to technical failures. Bat activity levels for high collision risk species (like <i>Pipistrellus</i> species) were assessed using the Ecobat assessment tool. Full details are provided in Technical Appendix 6.3 (EIA Report Volume 4) and see Figure 6.6 (EIA Report Volume 3a) for the location of static detectors deployed.
Fish	- Fish Habitat Survey	A fish habitat survey was completed of all watercourses on the Site in November 2021, extended to include watercourses to the north-east (tributaries of the River Oykel), and some of the River Oykel itself. The survey sought to identify any areas of critical fish habitat (i.e. spawning, nursery areas, juvenile and adult holding areas). Watercourses were then classified based on the Scottish Fisheries Co-ordination Centre's (SFCC's) Habitat Surveys Training Course Manual (SFCC, 2007 ⁵³). Full details are provided in Technical Appendix 6.4 (EIA Report Volume 4).

Field Survey Personnel

- 6.5.20 All field surveys were completed by experienced, reputable, and professional ecologists, fully conversant in established ecology survey methodologies for proposed wind farm developments.
- 6.5.21 Details of field surveyors are provided in **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4).

Other Species

- 6.5.22 As per NatureScot guidance (2024i)³⁶, there are some species that with standard mitigation are unlikely to experience significant effects as a result of the development of onshore wind farms (e.g. invertebrates and amphibians), and as such, do not require surveys to inform an EIA.
- 6.5.23 On this basis, baseline surveys for invertebrates, reptiles and amphibians have not been undertaken to inform the design and assessment of the Proposed Development. Mitigation measures to avoid or otherwise reduce adverse effects and ensure legislative compliance (where applicable) have however been outlined.

Assessment of Potential Effect Significance

- 6.5.24 The assessment has been undertaken in accordance with CIEEM guidelines (2018)¹ and includes the following stages:
- determination and evaluation of IEFs;
 - identification and characterisation of impacts;
 - assessment of the significance of effects prior to (additional) mitigation measures;
 - outline of (additional) mitigating measures to avoid and reduce significant impacts;
 - assessment of the significance of any residual effects after the application such measures; and
 - identification of appropriate compensation measures to offset significant residual effects.

Criteria for Assessing the Sensitivity of Ecological Features

- 6.5.25 Relevant European, national, and local guidance from governments and specialist organisations has been referred to in order to determine the sensitivity (or importance) of ecological features. Reference has also been made to NatureScot guidance on key ecological features when considering the development of onshore wind farms in Scotland (NatureScot, 2024i)³⁶.
- 6.5.26 In addition, sensitivity has also been determined using professional judgement and taking account of the results of baseline field and desk study findings and the functional role of features within the context of the geographical area.
- 6.5.27 It should be noted that sensitivity, or importance, does not necessarily relate 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, rarity, or the geographical location of species relative to their known range.
- 6.5.28 For the purposes of this assessment, the sensitivity or importance of an ecological feature is considered in the context of a defined geographical area, ranging from International to Local, as detailed in **Table 6.3**.

⁵³ SFCC (2007). Habitat Surveys Training Course Manual. Revised August 2007.

Table 6.3 –Sensitivity / Geographic Scale of Ecological Feature of Importance

Sensitivity/ Geographical Scale of Importance	Definition
High – International / National	An internationally or nationally designated site (i.e., SAC, Ramsar site or candidate site (e.g., cSAC) and/or cSSSI). Large areas of priority habitat listed under Annex 1 of the Habitats Directive, and smaller areas of such a habitat that are essential to maintain the viability of that ecological resource. Or significant extents of a priority habitat identified in the SBL, or smaller areas which are essential to maintain the viability of that ecological resource. A regularly occurring, nationally or regionally significant population of any internationally or nationally important species, listed under Annex 2 or Annex 4 of the Habitats Directive, or Schedule 1 or Schedule 5 of the Wildlife and Countryside Act, or a SBL priority species.
Medium - Regional	Viable areas of key semi-natural habitat identified in the 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 2 or Annex 4 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. Areas of habitat or species considered to appreciably enrich the ecological resource within the local context (e.g., species-rich flushes or hedgerows). 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.
Very Low - Site	Areas of habitat or species considered of value up to the site only level. Note, these features are not considered in this assessment.

Criteria for Assessing the Magnitude of Impacts

- 6.5.29 Once identified, potential impacts are described making reference to the following characteristics as appropriate:
- beneficial or adverse;
 - extent;
 - magnitude;
 - duration;
 - timing;
 - frequency; and
 - reversibility.
- 6.5.30 The assessment only makes reference to those characteristics relevant to understanding the nature of an impact and determining the significance of the resulting effects. For the purposes of this assessment the temporal nature of potential effects are described as follows:
- negligible: of inconsequential duration;
 - short-term: for 1-5 years;
 - medium-term: for 5-10 years;
 - long-term: for 10-50 years; and
 - permanent: >50 years.
- 6.5.31 The criteria used to determine the magnitude of impacts are set out in **Table 6.4**.

Table 6.4 – Impact Magnitude

Magnitude	Definition
Very High	The impact (either on its own or cumulatively with other proposals) may result in the permanent total or almost complete loss of a designated site and/or species/habitat status or productivity. Or alternatively notable gains in the designated site and/or species/habitat status or productivity.
High	The impact (either on its own or cumulatively with other proposals) may adversely, or beneficially, 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 cumulatively with other proposals) would not adversely, or beneficially, 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	Neither the above or below applies, but some observable adverse, or beneficial, impact is evident on a short-term basis or affects the extent of a habitat/species abundance in the local area.
Negligible	A very slight (indiscernible) reduction, or increase, in a habitat/species status or productivity and/or no observable effect.

Criteria for Assessing Effect Significance

- 6.5.32 For the purposes of assessment, significant effects are identified as those which encompass impacts on the structure and function of defined sites, habitats, or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution).
- 6.5.33 Such effects are identified by considering the sensitivity of a receptor, the magnitude of the impact and applying professional judgement based on best available evidence, to identify whether the integrity of a receptor will be affected.
- 6.5.34 The term 'integrity' is used here to refer to the maintenance of the conservation status of a population of a species or habitat at a specific location or geographical scale.
- 6.5.35 For the purposes of this assessment, significant effects are primarily expressed with reference to an appropriate geographical scale.
- 6.5.36 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.
- 6.5.37 Where the assessment proposes measures to mitigate potentially significant adverse effects on important ecological features, a further assessment of residual effects, taking into account such measures, has been undertaken.
- 6.5.38 CIEEM guidelines (2018)¹ do not recommend the sole use of a matrix table as commonly set out in EIAR chapters to determine 'Significant' and 'Not Significant' effects. For the purposes of the assessment presented in this chapter, **Table 6.5** sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations.
- 6.5.39 For the purpose of this assessment '**Major**' and '**Moderate**' effects alone (or **Major/Moderate** effects) are considered Significant in the context of the EIA Regulations.

Table 6.5 – Effect (EIA Significance)

Sensitivity	Impact Magnitude				
	Very High	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate/Minor	Minor	Negligible
Medium	Major/Moderate	Moderate	Minor	Minor/Negligible	Negligible
Low	Moderate/Minor	Minor	Minor	Minor/Negligible	Negligible

- 6.5.40 CIEEM guidelines (2018)¹ 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 have been lawfully permitted following EIA procedures."

Requirements for Mitigation

- 6.5.41 A mitigation hierarchy has been proposed to avoid, mitigate and compensate for potential adverse effects on IEFs as a result of the Proposed Development:
- 'avoidance' is used where a potential impact has been avoided from occurring e.g., through changes in Proposed Development design;
 - 'mitigation' is used to refer to measures to reduce a specific adverse effect in situ;

- 'compensation' describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible or sufficient; and
- 'enhancement' is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Assessment of Residual Effect Significance

- 6.5.42 Where the ecological assessment proposes measures to mitigate adverse effects on IEFs, a further assessment of residual effects, taking into account any mitigation recommended, will be undertaken.

Cumulative Assessment

- 6.5.43 Potentially significant cumulative effects can result from individually insignificant but collectively significant, or interacting, effects taking place over a period of time or concentrated in a location.
- 6.5.44 For aquatic features, potential cumulative effects are likely to be significant only for other developments located relatively close (i.e., within 2 km) and within the same hydrological sub-catchments.
- 6.5.45 Potentially significant cumulative effects are only likely where other developments are located within the regular range of more mobile species (e.g., bats). Cumulative effects have therefore been assessed with reference to NatureScot guidance (2021)²², for a Study Area within 10 km of the Proposed Development.
- 6.5.46 The cumulative assessment includes consideration of:
- existing wind farm developments, either operational or under construction;
 - approved wind farm developments, awaiting implementation; and
 - wind farm applications in planning, within the planning process with a valid planning application and sufficient information (including design information) in the public domain to allow a meaningful assessment.
- 6.5.47 Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.
- 6.5.48 No major non-wind developments are considered in the assessment given no such developments were identified by the Applicant or NatureScot during scoping (see consultation points in **Table 6.1**) as requiring consideration.
- 6.5.49 Those developments which have been withdrawn and/or refused are not considered, unless an appeal is currently in progress and information is available. Similarly, projects which are only at the pre-application/scoping stage are not included as sufficient details of relevant ecological features and potentially significant effects are not available.
- 6.5.50 Whilst single or small-scale wind turbine developments (three turbines or less) may contribute to cumulative effects, these have been scoped out of assessment, in line with NatureScot guidance (SNH, 2012)¹⁸, as applications for such developments do not generally consider the potential for impacts upon ecological features in sufficient detail so as to enable meaningful assessment, and information is often not readily available for small-scale developments.

Requirements for Information to Inform HRA

- 6.5.51 The Site is located in close proximity to the River Oykel SAC, where effects on the SAC's two qualifying species (Atlantic salmon and freshwater pearl mussel) from the Proposed Development are considered possible.
- 6.5.52 Accordingly, as required by the Habitats Regulations, this Chapter (see **Section 6.16**) provides a 'screening' stage assessment where the Proposed Development is examined to determine if it is likely to have a significant effect on the River Oykel SAC or its qualifying interests. Furthermore, **Section 6.16** provides information to inform an HRA (which is all the data and details gathered) to allow the competent authority (in this case Scottish Ministers) to undertake an Appropriate Assessment, if necessary.

Enhancement Opportunities

- 6.5.53 As a fundamental aspect of the Proposed Development, habitat enhancement opportunities on-site are investigated. Policy 3 of NPF4 requires that developments will contribute to the enhancement of biodiversity, and this could include restoring degraded habitats and strengthening nature networks and connections between them. Enhancement measures to be investigated and adopted are accordingly provided in the ONEMP (**Technical Appendix 6.5**, EIA Report Volume 4).

Limitations to Assessment

- 6.5.54 Limitations are discussed in full within **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4).
- 6.5.55 Regarding the bat activity surveys using automated static detectors, following subsequent changes to the Proposed Development (i.e., number of turbines and proposed locations) monitoring station locations

are not exact, but still representative of the Proposed Development area, and characteristic of both habitats and bat activity found in association. The static detector at Monitoring Station (MS) 8 failed during the 2021 summer recording period and MS 7 and MS 9 failed during the autumn recording period. As such, subsequent spatial analysis per individual location, and cumulative seasonal analysis, may have been impacted. However, given the general Site trends presented for the typically low activity of high collision risk (HCR) species, this is not a substantial limitation given the relative homogeneity of the habitats surveyed, and bat activity levels presented. Furthermore, during the autumn 2021 recording period, several MSs did not account for the minimum survey effort (i.e. ten suitable nights of recording) due to technical failures. However, reduced survey effort is not likely to impact the validity of the activity assessment, as supported by the levels of bat activity recorded at adjacent MSs during the autumn in 2021 within similar habitats being largely comparable. Overall, any limitations to the overall bat activity survey effort are not thought to represent a substantive constraint relative to the baseline data collected, which is considered sufficient to achieve the objectives of the study.

- 6.5.56 The Ecobat tool used to assess the bat activity survey data is in its infancy and given current limitations in available reference data on the database for many developments, definitive bat activity for regions is not generated and bat activity representations for regions are instead considered to be indicative.
- 6.5.57 During the fish habitat survey, although water levels were elevated following recent rains, it is considered that a robust assessment of the suitability and value of the Site's watercourses for fish fauna and freshwater pearl mussel was conducted. The survey is therefore considered not to be subject to any substantial limitations.
- 6.5.58 Many of the Study Areas were based on surveys within the Site (with access restricted to some off-site areas). This has meant that for some survey buffers (for example, 250 m for pine marten and 500 m for Scottish Wildcat from the Proposed Development), the extremities of the survey buffers may not have been fully surveyed for the entire Proposed Development. However, the area to be directly affected by the Proposed Development and adjacent habitats has been appropriately covered during surveys, and no substantive limitation is considered.
- 6.5.59 Overall, no substantive limitations to the survey data in establishing an accurate reflection of the levels of target species activity and distributions, and habitats, within adopted Study Areas, and particularly the Site, are identified.

6.6 Baseline Conditions

Current Baseline

- 6.6.1 This section provides a summary of baseline ecological conditions in relation to:
 - designated sites of nature conservation with ecological interests;
 - habitats and vegetation; and
 - protected and notable species:
 - terrestrial mammals;
 - bats; and
 - fisheries.
- 6.6.2 Full details are provided within **Technical Appendices 6.1 to 6.4** (EIA Report Volume 4).
Designated Sites for Nature Conservation
- 6.6.3 This section should be read with reference to **Figure 6.1a and 6.1b** (EIA Report Volume 3a). Statutory and non-statutory sites designated for ornithological features are addressed separately in **Chapter 7** (EIA Report Volume 2).
- 6.6.4 The distances provided in **Table 6.6** are from the Site boundary to the designated site boundary at their nearest points.
Statutory Designated Sites for Nature Conservation
- 6.6.5 **Table 6.6** provides a summary of statutory designated sites for nature conservation with ecological qualifying interests located within 10 km of the Site (minus the access routes).
- 6.6.6 In review of the NatureScot Sitelink website, the Site does not form a part of any internationally or nationally designated site for nature conservation with ecological qualifying interests, however the western access route crosses over the River Einig which is part of the River Oykel SAC.

Table 6.6 – Statutory Ecological Designated Sites

Designated Site	Approx. Distance and Direction from Site ⁵⁴	Botanical and / or Habitat Qualifying Interests
International		
River Oykel SAC	Abuts the Site (western access route)	Interest Features: – Atlantic salmon; and – Freshwater pearl mussel.
Caithness and Sutherland Peatlands Ramsar Site	7.3 km northeast	Interest Features: – Blanket bog; – Mire; – Oligotrophic lochs; – Dystrophic lochs; – Lochans and pools; and – Wet heath.
Caithness and Sutherland Peatlands SAC	7.3 km northeast	Annex 1 habitats that are primary reason for selection: – Oligotrophic to mesotrophic standing waters; – Natural dystrophic lakes and ponds; and – Blanket bogs. Annex 1 habitats present as a qualifying feature, but not a primary reason for selection: – Northern Atlantic wet heaths; – Transition mires and quaking bogs; and – Depressions on peat substrates.
Amat Woods SAC	7.4 km southeast	Annex 1 habitats that are primary reason for selection: – Caledonian forest.
National		
Kyle of Sutherland Marshes SSSI	5.2 km east	Designated Features: – Floodplain fen; – Wet woodland; and – Vascular plant assemblage .
Grudie Peatlands SSSI	7.3 km northeast	Designated Feature: – Blanket bog. Part of the Caithness and Sutherland Peatlands SAC.
Amat Wood SSSI	7.4 km southeast	Designated Features: – Native pinewood; and – Upland birch woodland. Part of the Amat Wood SAC.
Alladale Pinewood SSSI	7.4 km south	Designated Features: – Native pinewood. Part of the Amat Wood SAC.

Non-Statutory Designated Sites for Nature Conservation

- 6.6.7 Consultation with HBRG indicated that the Site does not form part of any non-statutory designated site for nature conservation and no such sites are located within 2 km of the Site.
- 6.6.8 A review of NatureScot's Open Data Geoportal (NatureScot, 2025)⁴⁴ and Littlewood *et al.* (2014)⁵⁵ identified the nearest wildcat priority area ('Strathpeffer') as 27 km from the Site.

Priority Habitats

- 6.6.9 No information on priority habitats was returned by the HBRG data search.

Ancient Woodland

- 6.6.10 There is an area of woodland habitat which is on the AWI within the centre of the Site, totalling 19 ha of long established woodland of semi-natural origin (as listed on Scotland's Environment Map⁴⁸). There are other areas on the AWI (long-established or ancient, of semi-natural origin) adjacent to the Site. All woodland habitats on the AWI are presented on **Figure 6.1b** (EIA Report Volume 3a), with details provided in **Technical Appendix 6.1** (EIA Report Volume 4). Note, NPF4 defines ancient woodland as

⁵⁴ Note, the distances are from the Site (minus the access routes) with exception of the River Oykel SAC given the western access route (which forms part of the Site) crosses the River Oykel SAC.

⁵⁵ Littlewood, N.A., Campbell, R.D., Dinnie, L., Gilbert, L., Hooper, R., Iason, G., Irvine, J., Kilshaw, K., Kitchener, A., Lackova, P., Newey, S., Ogden, R. and Ross, A. (2014). Survey and scoping of wildcat priority areas. Scottish Natural Heritage Commissioned Report No. 768.

'land that has maintained continuous woodland habitat since at least 1750'. The woodland habitat on-site is dated from a map from 1860 and thus is not considered as ancient woodland as defined by NPF4.

Peatlands

- 6.6.11 The Carbon and Peatland Map (SNH, 2016)²⁶ was consulted to determine likely peatland habitat classes present at the site. The Carbon and Peatland map has been developed as *"a high-level planning tool to promote consistency and clarity in the preparation of spatial frameworks by planning authorities"*. It identifies potential areas of *"nationally important carbon-rich soils, deep peat and priority peatland habitat"*. Class 1 peatlands are *"likely to be of high conservation value"* and Class 2 *"of potentially high conservation value and restoration potential"*. Class 1 and Class 2 peatlands are considered to be nationally important under NPF4. It is recognised that this definition is not purely for nature conservation and so not directly applicable to evaluating purely the Nature Conservation Value of a peatland.
- 6.6.12 Priority peatland habitats are defined by NatureScot as *"land covered by peat-forming vegetation or vegetation associated with peat formation"* which is considered to be comparable to the definition of Annex 1 'active' bog habitats.
- 6.6.13 The SNH Carbon and Peatland Map (2016)²⁶ shows the majority of the Site to have Class 5 peat soil. There are areas of Class 2 peatland in the open habitats in the centre and north of the Site. There are also areas of Class 1 peatland along the southern Site boundary.
- 6.6.14 As the Carbon and Peatland Map is a high-level tool, peat depth surveys (as detailed in **Chapter 8**, EIA Report Volume 2) and detailed Extended Phase 1 Habitat, NVC and Peatland Condition Assessment surveys have also been carried out across the Site to inform the detailed site assessment on peatland. Information derived from Site-specific surveys is considered to be the most accurate and is subsequently the most appropriate dataset for use in the assessment (see **Figure 6.4** for the Peatland Condition Assessment results). See **Chapter 8** (EIA Report Volume 2) for information into peat from a peat resource point of view.
- 6.6.15 This Chapter includes an assessment of priority habitats. For clarity, for the purposes of the impact assessment within this chapter, priority habitats have been defined with reference to Annex 1 of the Habitats Directive, SBL priority habitats and where relevant potential GWDTEs (although noting, effects on confirmed GWDTEs are considered in detail in **Chapter 8**, (EIA Report Volume 2). **Chapter 8** (EIA Report Volume 2) provides a more detailed assessment of the effects of the Proposed Development on the peatland (resource) on-site.
- 6.6.16 See **Chapter 2** and **Chapter 3** (EIA Report Volume 2) for information on how the design of the Proposed Development has sensitively considered peatlands.

Field Surveys

Habitats and Vegetation

- 6.6.17 A summary of habitats recorded within the Site (not access routes) is summarised below and in **Tables 6.7 and 6.8**.
- 6.6.18 Habitats are discussed with reference to both the Extended Phase 1 habitat survey and NVC survey results.
- 6.6.19 Detailed survey results are provided in **Technical Appendix 6.1** (EIA Report Volume 4) and illustrated on **Figures 6.2a and 6.3c** (EIA Report Volume 3a).

The Site (Not the Access Routes)

- 6.6.20 In summary, much of the Site is dominated by semi-mature coniferous plantation woodland (A1.2.2), with a species-poor understory due to high needle cover. There are however open habitats particularly in the north of the Site, which comprise of wet heath (D2), marshy grassland (B5), unimproved acid grassland (B1.1) and semi-improved acid grassland (B1.2), and mosaics of these habitats. There are some areas of bog habitat (E1.6.1) in the north and south of the Site (where it typically forms mosaics with the aforementioned habitats), and further areas within the forestry rides in the south. Between some blocks of coniferous plantation are remnant areas of semi-natural broad-leaved woodland (A1.1.1), some of which is listed on the AWI as long-established woodland of semi-natural origin (see details above). Waterbodies within the Site comprise a limited number of ponds (G1.4) and peat-stained streams flowing through the Site (G2.4). A summary of habitat types and approximate areas is provided in **Table 6.7**, with habitats ordered by dominance.

Table 6.7 - Summary of Baseline Habitats Within the Site (not Including the Access Routes)

Phase 1 Habitat Type	Extent (ha)	Relative Cover (%)
Coniferous woodland - plantation (A1.2.2)	655.740	62.069
Wet dwarf shrub heath (D2)	149.811	14.180
Wet dwarf shrub heath/Blanket bog (D2/E1.6.1)	73.944	6.999
Blanket bog (E1.6.1)	50.314	4.762
Acid grassland-unimproved/Acid grassland-semi-improved/Marshy grassland (B1.1/B1.2/B5)	31.678	2.998
Broadleaved woodland-semi-natural/Bracken/Dry dwarf shrub heath (A1.1.1/C1/D1)	26.029	2.464
Blanket bog/Wet dwarf shrub heath (E1.6.1/D2)	17.134	1.622
Acid grassland - unimproved (B1.1)	12.086	1.144
Wet heath/acid grassland (D6)	8.583	0.812
Acid grassland-unimproved/Marshy grassland (B1.1/B5)	7.287	0.690
Bracken/Acid grassland-unimproved/Wet dwarf shrub heath (C1/B1.1/D2)	6.849	0.648
Bracken/Dry dwarf shrub heath (C1/D1)	4.793	0.454
Marshy grassland (B5)	4.584	0.434
Bracken (C1)	2.999	0.284
Broadleaved woodland - semi-natural (A1.1.1)	1.823	0.173
Standing water - dystrophic (G1.4)	1.555	0.147
Dry dwarf shrub heath (D1)	1.259	0.119
Total	1,056.47⁵⁶	100

6.6.21 The surveys did not find any plant species that are listed under Schedule 8 of the Wildlife and Countryside Act 1981, or on the SBL, as having special protected status.

6.6.22 NVC communities identified through the NVC survey present on-site (not including the access routes) are summarised in **Table 6.8** along with corresponding Habitats Directive (92/43/EEC) Annex 1 Habitat types, SBL priority habitat type, Priority Peatland Status and potential GWDTE status in accordance with SEPA guidance (2014)²³ and NatureScot NVC / EUNIS / Annex 1 correspondence tables (SNH, 2017)⁵⁷. NVC communities inconsequential in extent (i.e. very localised) are not included in **Table 6.8**.

Table 6.8 - Summary of the Recorded Vegetation Communities and Sub-Communities Within the Site

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	SBL Priority Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
D1 Dry Dwarf Shrub Heath	H10 <i>Calluna vulgaris</i> - <i>Erica cinerea</i> heath		European dry heaths	Upland heathland	-	-
	H12 <i>Calluna vulgaris</i> - <i>Vaccinium myrtillus</i> heath	H12a <i>Calluna vulgaris</i> sub-community	European dry heaths	Upland heathland	-	-
D2 Wet Dwarf Scrub Heath	M15 <i>Tricophorum germanicum</i> - <i>Erica tetralix</i> wet heath	M15b typical sub-community	Northern Atlantic wet heaths with <i>Erica tetralix</i>	Upland heathland	Priority peatland communities that are unlikely to raise issues of national interest	Y
E2.1 Acid Flush	M6 <i>Carex echinata</i> - <i>Sphagnum fallax</i> flush	M6c <i>Juncus effusus</i> sub-community	-	Upland flushes, fens and swamps	-	Y
E1.6.1 Blanket Bog	M1 <i>Sphagnum denticulatum</i> bog pool community		Blanket bogs	Blanket bog	Priority peatland communities that should be completely avoided	-
	M2 <i>Sphagnum cuspidatum</i> bog pool		Blanket bogs	Blanket bog		-
	M17 <i>Tricophorum germanicum</i> - <i>Eriophorum vaginatum</i> mire	M17a <i>Drosera rotundifolia</i> - <i>Sphagnum</i> species sub-community	Blanket bogs	Blanket bog	Priority peatland communities where impacts have the potential to raise issues of national interest	-
	M19 <i>Calluna vulgaris</i> - <i>Eriophorum vaginatum</i> mire	M19a <i>Erica tetralix</i> sub-community	Blanket bogs	Blanket bog		-
	M20 <i>Eriophorum vaginatum</i> mire		-	Blanket bog	Priority peatland communities that	-

⁵⁶ Note, this does not include areas of existing forestry track, and thus the area may not exactly match the total area reported in other chapters (as well as modest scaling/habitat mapping differences).

⁵⁷ SNH (2017). Commissioned Report 766 - Manual of terrestrial EUNIS habitats in Scotland - correspondence tables.

Phase 1 Habitat	NVC Community	NVC Sub-Community	Annex I Habitat	SBL Priority Habitat	Priority Peatland Status*	Potential Groundwater Dependence**
E1.7 Wet Modified Bog	M25 <i>Molinia caerulea</i> - <i>Potentilla erecta</i> mire		-	Blanket bog	are unlikely to raise issues of national interest	-
B5 Marshy Grassland	M23 <i>Juncus effusus/acutiflorus</i> – <i>Galium palustre</i> rush pasture	M23a <i>Juncus acutiflorus</i> sub-community	-	Upland flushes, fens and swamps	-	Y
		M23b <i>Juncus effusus</i> sub-community	-	-	-	Y
B1.1 Acid Grassland – unimproved	U6 <i>Juncus squarrosus</i> - <i>Fesuca ovina</i> grassland		-		-	Y
A1.1.1 Broadleaved Woodland	W4 <i>Betula pubescens</i> – <i>Molinia caerulea</i> woodland		-	Upland birchwoods	-	Y
	W17 <i>Quercus petraea</i> - <i>Betula pubescens</i> - <i>Dicranum majus</i> woodland		-	Upland birchwoods	-	-
G1.4 Dystrophic Standing Water			-	Ponds	-	-
G2.4 Dystrophic Running Water			-	Rivers	-	-
* As per guidance from NatureScot (2023)¹⁷. Based on vegetation communities present and further informed by the peatland condition assessment. ** As listed in guidance note from SEPA (2024)⁵⁸. The categorisation of groundwater dependent terrestrial ecosystems is preliminary and is based on vegetation communities present. Confirmed categorisation is based on subsequent formal hydrological assessment, see Chapter 8 (EIA Report Volume 2).						

6.6.23 The survey identified 15 instances of priority peatland communities during the NVC survey where the communities' condition indicates blanket bog where any impacts from the Proposed Development would likely be of possible national interest. Areas of Priority Peatland of Possible National Interest (and Not of National Interest) are provided in **Figure 6.4a** (EIA Report Volume 3a). The Priority Peatland of Possible National Interest were:

- six areas of M15 wet heath;
- five areas of M17 blanket bog; and
- four areas of M19 blanket bog.

6.6.24 None of these areas were considered as 'near natural' as per NatureScot guidance (2023)¹⁷, with the vast majority of the habitats forming mosaics indicative of some level of degradation and/or modification (particularly presence of artificial drainage ditches and haggings/bare exposed peat).

Western Access Route

6.6.25 The survey area along the western access route is predominantly wet heath (D2, and M15b⁵⁹), but with some coniferous plantation (standing, A1.2.2 and clear-fell A4.2) and marshy grassland (B5, and M25a). Less extensive (but present) habitats include blanket bog (E1.6.1, and M17a), bracken (C1, and U20a and U20b), acid grassland (B1.2, and U4b) and running water (G2.3) (the western access route passes over an existing watercourse crossing over the River Einig, which is part of the River Oykel SAC). A Phase 1 Habitat Survey plan is provided as **Figure 6.2b** (EIA Report Volume 3a) and a NVC Survey plan as **Figure 6.3b** (EIA Report Volume 3a). The Peatland Condition Assessment identified 7.1 ha of drained peatland within the survey area, and a single area of eroded peatland (0.3 ha), with none of the peatland considered near natural (see **Figure 6.4b** (EIA Report Volume 3a)).

6.6.26 NVC communities recorded along the western access route (and which are present along the proposed route and/or to 10 m) which were not recorded in the rest of the Site comprised:

⁵⁸ SEPA (2024). Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems. Available online: <https://www.sepa.org.uk/media/a1yh0blq/guidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx>

⁵⁹ Note, these codes provided in this paragraph respectively are the Phase 1 Habitat Survey code and NVC Survey code.

- U4a *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland, typical sub-community;
- U4b *Festuca ovina*-*Agrostis capillaris*-*Galium saxatile* grassland, *Holcus lanatus*-*Trifolium repens* sub-community;
- U20 *Pteridium aquilinum*-*Galium saxatile* community, U20a *Anthoxanthum odoratum* sub-community;
- U20 *Pteridium aquilinum*-*Galium saxatile* community, U20b *Vaccinium myrtillus* sub-community;
- MG10 *Holcus lanatus*-*Juncus effusus* rush-pasture, typical sub-community;
- M25a *Molinia caerulea*-*Potentilla erecta* mire, *Erica tetralix* sub-community;
- W11 *Quercus petraea*-*Betula pubescens*-*Oxalis acetosella* woodland;
- W11b *Quercus petraea*-*Betula pubescens*-*Oxalis acetosella* woodland, *Blechnum spicant* sub-community;
- M15a *Trichophorum germanicum*-*Erica tetralix* wet heath, *Carex panicea* sub-community; and
- W17b *Quercus petraea*-*Betula pubescens*-*Dicranum majus* woodland, typical sub-community.

6.6.27 Of these, M25a (like M25 in **Table 6.8**) is on the Scottish Biodiversity List ('blanket bog'), but is drained and is not peatland of possible national interest⁶⁰. W11, W11b and W17b are on the Scottish Biodiversity List as 'upland birchwoods'. M15a is on the Scottish Biodiversity List ('upland heathland') and Annex I habitat ('Northern Atlantic wet heaths with *Erica tetralix*'). M17a is also present along the western access route and this like the M17 in **Table 6.8** is considered as a Scottish Biodiversity List and Annex I habitat. The Peatland Condition Assessment identified the M17a as drained/degraded, see **Figure 6.4b** (EIA Report Volume 3a); and not of possible national interest).

Eastern Access Route

6.6.28 The eastern access route was not surveyed, however information has been gathered from publicly available habitat information from the consented Strath Oykel Wind Farm (ECU Ref: ECU00003246). The Phase 1 Habitat Survey plan and NVC Survey plan are respectively provided as **Figure 6.2c** and **Figure 6.3c** (EIA Report Volume 3a).

6.6.29 The eastern access route passes on a largely existing forestry track and passes through coniferous plantation (A1.2.2) and some coniferous plantation clear-fell (A4.2). The route diverges from the existing forestry track most notably where it passes Loch Mhic-Mharsaill, with the eastern access route passing along to the south of the loch, and the existing track passes to the north of the loch. The eastern access route also passes through some isolated areas of wet modified bog (E1.7; M25 at NVC community) within the coniferous plantation. The M25 would be considered as blanket bog (and on the Scottish Biodiversity List) but given it is isolated, and within a block of coniferous plantation it is not considered peatland of possible national interest, nor is the quality of the habitat considered to qualify as Annex I habitat.

Terrestrial Mammals (excluding bats)

6.6.30 Baseline terrestrial mammal conditions are summarised in **Table 6.9**. Full details (with respect to field survey results) are provided in **Technical Appendix 6.2** (EIA Report Volume 4) and **Figure 6.5** (EIA Report Volume 3a). Records considered sensitive are provided in **Confidential Technical Appendix 6.6** and accompanying **Confidential Figure 6.9** (EIA Report Volume 5). There are no statutory sites with qualifying mammal species interests within 10 km of the Site.

⁶⁰ Not likely to qualify as 'Blanket Bog' as an Annex I habitat (like the M25 in **Table 6.8**) due to the degraded condition.

Table 6.9 - Summary of Terrestrial Mammal Survey Results

Terrestrial Mammal Species	Summary of Survey Results
Badger	HBRG returned no badger records within the Search Area, in the last ten years (since 2014). No evidence of badger was identified during field surveys for the Meall Buidhe Wind Farm or Strath Oykel Wind Farm. Evidence of badger was recorded during field surveys for the Proposed Development in April 2025, comprising of a print and active sett.
Otter	HBRG returned no otter records within the Search Area, in the last ten years (since 2014). During the field surveys for the Meall Buidhe Wind Farm, a single otter holt and a potential couch were recorded (features treated as sensitive and thus not publicly available). During the field surveys for the Strath Oykel Wind Farm, no evidence of otter was recorded within the wind farm site itself, but otter signs were recorded along the River Oykel. Evidence of otter was recorded during field surveys for the Proposed Development in April 2025, comprising a number of records of spraint (including fresh spraint) and a couch (with nearby slide).
Pine marten	HBRG returned no pine marten records within the Search Area, in the last ten years (since 2014). During the field surveys for the Meall Buidhe Wind Farm no evidence of pine marten was recorded. During field surveys for the Strath Oykel Wind Farm several pine marten scats were recorded along existing access tracks and plantation edge. This included several scats in clusters indicative of a territory boundary. During the field surveys for the Proposed Development, in 2021 and 2025, a number of records of pine marten scat were recorded within the Site.
Red squirrel	HBRG returned no red squirrel records within the Search Area, in the last ten years (since 2014). A review of the Saving Scotland's Red Squirrels website revealed nine red squirrel records within 2 km of the Site, with the closest record located on the northern Site boundary. No evidence of red squirrel was recorded during field surveys for the Meall Buidhe Wind Farm or Strath Oykel Wind Farm. Evidence of red squirrel was recorded during field surveys for the Proposed Development, in April 2025, comprising cone feeding remains, attributed to squirrel.
Water vole	HBRG returned no water vole records within the Search Area, in the last ten years (since 2014). Evidence of water vole (including burrows) were recorded during field surveys for the Meall Buidhe Wind Farm and Strath Oykel Wind Farm. During field surveys for the Proposed Development, in 2021 and 2025, water vole signs were recorded mainly along watercourses in the centre of the Site. Signs included latrines (i.e. droppings), burrows and runs.
Scottish wildcat	HBRG returned no records of Scottish wildcat within the Search Area, in the last ten years (since 2014). No evidence of wildcat was identified during field surveys for the Meall Buidhe Wind Farm or Strath Oykel Wind Farm. The Site is 27 km from the nearest wildcat priority area (Strathpeffer). No evidence of Scottish wildcat was recorded during the field surveys for the Proposed Development. The Site comprises habitat (forestry and open habitat) that may be suitable for the species, at least for foraging, but no potential den sites were identified within the Site.

6.6.31 Evidence of deer (roe, sika, and red deer) presence was also recorded across the Site during the baseline surveys.

6.6.32 Brown hare was recorded in the north of the Site during a survey in June 2021.

Bats

6.6.33 Full details of bat survey results are provided in **Technical Appendix 6.3** (EIA Report Volume 4) and **Figure 6.6** and **Figure 6.10** (EIA Report Volume 3a).

Desk Study

6.6.34 The Proposed Development is not located within 10 km of any national or internationally designated sites for nature conservation with bat qualifying interests.

6.6.35 The HBRG did not return any bat records within the Search Area, in the last ten years (since 2014).

6.6.36 Field surveys for the Meall Buidhe Wind Farm and Strath Oykel Wind Farm recorded four species of bat: common pipistrelle, soprano pipistrelle, *Myotis* species, and brown long-eared.

6.6.37 In review of the UK Habitats Directive Article 17 Report 'Habitats Directive Report 2019: Species Conservation Status Assessments 2019' (JNCC 2019)⁴⁹, the Site is located within the known UK distribution range of common pipistrelle, soprano pipistrelle, Daubenton's, Natterer's and brown long-eared bat.

Bat Habitat Suitability Appraisal (HSA)

6.6.38 The Site provides viable foraging and commuting opportunities for bats, which include habitat niches suitable for a variety of bat assemblages (i.e., edge-space and generalist species). However, ecologically valuable habitats are mainly limited to sheltered corridors found between expansive plantation blocks, and the habitats found within (e.g., broad-leaved woodland, bogs and streams). As such, the vast

majority of the Site is unlikely to be extensively utilised by local bat populations, although localised areas within the Site are considered to be of value.

- 6.6.39 Consequently, the Site is most representative of 'Moderate' suitability relative to habitats descriptions outlined in Table 4.1 of BCT guidance (Collins, 2023)²⁰, and 'Moderate' habitat risk relative to the proposed windfarm development (4. Assessment of Potential Risk to Bats), as outlined in Table 3a of NatureScot Guidance (2021)²².

Preliminary Roost Assessment

- 6.6.40 No substantial preliminary roost features (PRFs) were recorded within the Study Area during the survey in August 2021, but two PRFs were recorded within the Study Area (within the Site) during the April 2025 survey. There were two birch trees with potentially suitable cavities for roosting bats at NH42089 98801 (scoring PRF-I or PRF-M) and NH42103 98360 (scoring PRF-M); scored in accordance with Collins (2023)²⁰. See **Figure 6.10** (EIA Report Volume 3a) for the location of the PRFs.

Bat Activity Survey

- 6.6.41 Common pipistrelle, soprano pipistrelle, brown long-eared, and *Myotis* species were recorded during the bat activity surveys. Of these, common pipistrelle and soprano pipistrelle are high collision risk (HCR) species, in accordance with NatureScot (2021)²².
- 6.6.42 Common pipistrelle was the most abundantly recorded species, accounting for 70.6 % of total calls recorded. Furthermore, common pipistrelle was also the most frequently recorded species, recorded on 33.2 % of the sampled nights.
- 6.6.43 *Myotis* species represented 15.9 % of total call registrations and was recorded on 20.9 % of sampled nights. Brown long-eared represented 11.3 % of total call registrations and was recorded on 27.4 % of sampled nights. Soprano pipistrelle represented only 2.2 % of total call registrations and was recorded on 5.8 % of sampled nights.
- 6.6.44 Based on analysis of the bat activity survey results, it is possible that common pipistrelle, brown long-eared, and *Myotis* species roosts may be present within close proximity to the site.
- 6.6.45 As detailed within **Technical Appendix 6.3** (EIA Report Volume 4), the Site has been assessed as having an 'Initial Site Risk' of 3, representing a Medium Site Risk:
- the Site 'Habitat Risk' is classified as 'Medium'.
 - the Site 'Project Size' is classified as being 'Medium'.
- 6.6.46 In summary, in terms of the 2021 surveys, per MS location the 'Overall Risk Assessment' equates to 'Low Risk' when considering median activity percentile for both common and soprano pipistrelles. Maximum activity percentiles also uniformly accounted for 'Low Risk' relative to soprano pipistrelle; however, maximum activity percentiles mostly accounted for 'Low Risk' relative to common pipistrelle, but 'Medium Risk' in relation to MS 2 and MS 3. Per recording period, in terms of the 2021 surveys, the Overall Risk Assessment equates to 'Low Risk' when considering median activity percentiles for both common and soprano pipistrelle. When considering maximum activity percentiles, the maximum activity percentile for soprano pipistrelle during the autumn recording period also accounted for 'Low Risk'; however, maximum activity percentiles accounted for 'Low Risk' during summer, and 'Medium Risk' during spring and autumn, relative to common pipistrelle.
- 6.6.47 Based on the updated autumn 2024 surveys, per MS location the 'Overall Risk Assessment' equates to 'Low Risk' when considering median activity percentile for both common and soprano pipistrelles. However, maximum activity percentiles ranged from 'Low Risk' to 'Medium Risk' for both common pipistrelle and soprano pipistrelle, but more frequently accounted for 'Low Risk' relative to soprano pipistrelle. Per 'month' period, in terms of the autumn 2024 surveys, the Overall Risk Assessment equates to 'Low Risk' when considering median activity percentiles for both common and soprano pipistrelle. However, maximum activity percentiles per month uniformly accounted for 'Medium Risk' relative to common pipistrelle but varied relative to soprano pipistrelle (accounting for 'Low Risk' during August, and 'Medium Risk' during September).
- 6.6.48 On this basis of the results from the 2021 and 2024 surveys, the Stage 2 overall risk assessment concludes that there is a Low/Medium likelihood of the Proposed Development resulting in significant impact on bat species populations.
- 6.6.49 *Myotis* species and brown long-eared bat are not considered further given they are not HCR species.

Fisheries

- 6.6.50 This section should be read with reference to **Technical Appendix 6.4** (EIA Report Volume 4) and **Figure 6.7** (EIA Report Volume 3a).

Desk Study

- 6.6.51 The nearest Proposed Development's turbine is located 1.2 km from the River Oykel SAC, which has Atlantic salmon and freshwater pearl mussel as qualifying interests. However, the western access route crosses over the River Einig (which is part of the River Oykel SAC) by passing over an existing watercourse crossing bridge.
- 6.6.52 HBRG returned no fish species records within 2 km of the Site, within the last ten years (since 2014).
- 6.6.53 Electro-fishing survey data from the KSDSFB for two sampling sites along the River Oykel in the Brae area, to the north-east of the Site, revealed the highest number of salmonids were young (0+ year old) Atlantic salmon, with a lower number of older individuals (1+ year old). Young (0+ year old) brown trout were also recorded at both sampling sites, albeit in lower numbers. The results reveal that the River Oykel to the north of the Site is used by both young (0+ year old) salmonids and older (1+ year old) Atlantic salmon.
- 6.6.54 The JNCC website (JNCC, 2022)⁴³ on the distribution of the freshwater pearl mussel, notes that the River Oykel supports an excellent, high-quality freshwater pearl mussel population with high densities recorded in some areas, and high percentages of juveniles within the population, indicating recent successful recruitment.
- 6.6.55 The European Water Framework Directive (WFD) requires that surface waterbodies in member states are classified according to ecological status. SEPA's River Basin Management Plan website (SEPA, 2021)⁴⁷ confirms there are two classified watercourses within the Study Area: the River Oykel (Dornoch Firth to Loch Craggie) and the Allt a Bhraigh.
- 6.6.56 The River Oykel (Dornoch Firth to Loch Craggie) is currently classified as having moderate overall ecological status (predicted to improve to 'good' by 2027) and high access for fish migration. Allt a Bhraigh is classified as having good overall ecological status at present and high access for fish migration.
- 6.6.57 Among impacts to fish fauna identified in KSDSFB's Fishery Management Plan (KSDSFB, 2018)⁴², that considered to be particularly relevant at the Site level is riparian habitat management. Bankside habitat is either bare or dominated by commercial conifer forestry over almost the entire watercourse stretches within the Study Area resulting a lack of cover for fish fauna or overshadowing.

Fish Habitat Survey

- 6.6.58 All watercourses within the Site drain into the River Oykel (with exception of Allt a Ghuail which flows into the River Carron). Where the watercourses are labelled, for example 'W1' and 'W2' this relates to the watercourses as shown in **Figure 6.7** (EIA Report Volume 3a). See also **Technical Appendix 6.4** (EIA Report Volume 4).
- 6.6.59 The Allt a Bhraigh (W1) was assessed as potentially suitable for supporting freshwater pearl mussel and salmonid fry and parr. Tributaries of the Allt a Bhraigh (W2) were appraised as having some suitability for spawning, but other smaller tributaries (W3, W4 and W30) are of limited suitability for fish fauna.
- 6.6.60 Allt an Sgeireach and tributary (W5 and W6), and Allt Badam Uilleim and tributary (W7 and W8), are of limited suitability for fish fauna (although W8 is appraised as offering some potential for low numbers of juvenile fish), mainly owing to the considerable slope of these watercourses.
- 6.6.61 Allt Fliuich Bhadaid (W9) is a very minor watercourse and offers limited suitability for fish fauna.
- 6.6.62 Allt Lon a Bhadaid Bhig (W10 and W11), Allt a Choire Bhuidhe (W12), Meior Leathan and tributaries (W13 to W15, and W31), Meur an da Sgoiltein and tributaries (W16 to W18) have limited suitability for fish fauna, but may support low fish numbers, when there is sufficient water in the channels.
- 6.6.63 Allt a Phris Mhoir and tributaries offer negligible potential for fish fauna (W20, W21, and W23 to W25) given these channels are peaty headwaters, choked with vegetation, and likely ephemeral. W19 and W22 (with W22 part of Allt a Phris Mhoir and W19, a tributary of Allt a Phris Mhoir) are of limited suitability for fish fauna.
- 6.6.64 Allt a Ghuail headwater (W26) is appraised as negligible for fish fauna, and this channel flows into the River Carron (it is not part of the River Oykel catchment).
- 6.6.65 Allt Mor and tributaries (W27 to W29) is appraised as having little, or no suitability for fish fauna.
- 6.6.66 River Oykel (W32) offers a range of flow conditions, including shallower, faster flowing run and riffle section to deep pools. The channel has a high proportion of gravel substrates favour by freshwater pearl mussel. The River Oykel along the survey channel (W32a to W32c) is on a shallow gradient and suitable for salmonids of all ages. Atlantic salmon were recorded in the river channel during the survey, and although no freshwater pearl mussel was recorded anecdotally during the survey, the channel is considered of high potential to support the species.

- 6.6.67 Of the watercourses surveyed the most suitable habitat for supporting fish fauna (including freshwater pearl mussel) was the River Oykel and the Allt a Bhraigh which tributaries into the River Oykel south of Brae. These watercourses are north/north-east of the Site. The watercourses which flow through the Site itself, offer limited (if any) habitat for low numbers of fish.
- 6.6.68 During the walkover of the western access route the River Einig (which is part of the River Oykel SAC), and which the western access route crosses over using an existing watercourse crossing was appraised as potentially suitable for supporting fish fauna, like Atlantic salmon (and freshwater pearl mussel) (see **Technical Appendix 6.4** (EIA Report Volume 4)). Other watercourses which abut the western access route were appraised as minor in nature (forming narrow heavily vegetated brooks which pass through the marshy grassland) and offered limited negligible habitat suitability for fish fauna and freshwater pearl mussel.

Other Species

- 6.6.69 The data search with HBRG returned a record of a deer warble fly⁶¹ within 2 km of the Site, within the last ten years (since 2014). With no further records of protected species since 2014.
- 6.6.70 The ponds on-site are considered potentially suitable for supporting common amphibians, and dragonflies were also noted at one of the ponds during the habitat surveys. The potential for great crested newt to use any pond on-site is discounted given the very restricted range for the species in the Highlands, and no reported records in close proximity to the Site (see NatureScot, 2024k)⁶², and no great crested newt records returned from the data search with HBRG.

Future Baseline

- 6.6.71 In the absence of the Proposed Development, or assuming a gap between baseline surveys and the commencement of the Proposed Development construction, changes in baseline ecology conditions (i.e. distributions and populations) are most likely to result from habitat modifications within or surrounding the Site due to land management practices, principally forestry works and to a lesser extent grazing (by livestock and deer).
- 6.6.72 In the absence of the Proposed Development, the habitats within the Site are considered to largely remain under the existing management regime (principally commercial forestry and with cycles of harvesting, with grazing in the open habitats).
- 6.6.73 Commercial forestry operations within the Site, such as felling, may alter the distribution of species recorded during baseline surveys; however, it is highly unlikely this would be in such a way as to substantially alter the baseline reported on-site. This is principally due to the Site being subject to cycles of forestry planting, establishment and then harvest.
- 6.6.74 The Site is not subject to any other development pressures or management which would affect the habitats or ecological species in such a way that the present baseline conditions presented here would become substantively different.
- 6.6.75 Whilst short-term and small-scale variability in populations and distributions may occur, and revisions to conservation statuses and designations are possible, such changes would be unlikely to qualitatively alter the conclusion of the assessment presented in this chapter and have been accounted for through the application of a precautionary approach and appropriate mitigation.
- 6.6.76 Increased summer and winter temperatures and higher average precipitation rates in summer and winter, predicted by climate change, are likely to result in an extended growing/breeding season with vegetation growth and breeding activity of key species likely commencing earlier in the year. Increased rainfall is likely to result in greater vegetation growth, although for some botanical species it may have adverse effects (through water-logging). Higher rates of juvenile mortality for key species may be expected as a result of higher rates of rainfall. The bat activity season is likely to be extended by the higher seasonal temperatures, but conversely higher rates of rainfall are likely to adversely affect foraging activity.
- 6.6.77 The opposing potential effects of climatic change on ecology features makes predicting future likely outcomes difficult. However, the potential effect on ecology features detailed in this chapter are not predicted to substantively change in relation to climate change over the next 50 years.

⁶¹ Taxa with small populations that are not at present Endangered or Vulnerable, but are at risk. In Great Britain, this was interpreted as species which exist in fifteen or fewer 10 km squares. Superseded by new IUCN categories in 1994, but still applicable to lists that have not been reviewed since 1994.

⁶² NatureScot (2024k). Standing Advice for Planning Consultations – Great Crested Newt. NatureScot, Inverness.

6.7 Embedded Mitigation

Mitigation through Design

- 6.7.1 The Proposed Development has been subject to a number of design iterations and evolution in response to constraints identified as part of the baseline studies, intended to reduce environmental effects (see **Chapter 3**, EIA Report Volume 2).
- 6.7.2 In accordance with the mitigation hierarchy, the following design considerations have been incorporated to avoid and minimise adverse effects upon ecological features:
- the Proposed Development design has been sensitive to the River Oykel SAC which lies 1.2 km from the nearest Proposed Development's turbine. The Proposed Development has been largely offset from the SAC (but noting the western access route crosses the River Einig, and associated tributaries which is part of the River Oykel SAC).;
 - design of the Proposed Development has largely avoided those areas of peatland, bog (and heath). For example, nine of the Proposed Development's 11 turbines (and majority of other infrastructure) are located within the commercial forestry plantation block;
 - the Proposed Development largely avoids direct impacts on watercourses, with only 11 new vehicular watercourse crossing required (based on the western access option as a worst-case scenario), and all of these will be sensitively designed to allow the continued movement of water and wildlife therein (See **Chapter 8**, EIA Report Volume 2 for further details);
 - upgrades to existing watercourse crossings (14, based on the western access option as a worst-case scenario) will be sensitively designed to allow the continued free passage of water and wildlife therein;
 - where the access track does cross watercourses, where possible, the track has been aligned to cross watercourses at around 90 degrees (perpendicular) to the direction of flow. This minimises disturbance during construction and operation in the vicinity of watercourses and ensures separation from the watercourse buffer zones as much as possible;
 - the length of new track construction has been minimised with existing forestry tracks used to minimise land take;
 - a minimum 50 m buffer has been included around all mapped watercourses (at a 1:25,000 scale) for turbine hardstandings and the substation compound;
 - the Proposed Development design has been sensitive to the watercourses which support water voles (including burrows), with appropriate buffers (≥ 50 m) between the Proposed Development and identified water vole signs;
 - the Proposed Development is at least 120 m from the identified otter (non-breeding) couch, and well in excess of 100 m from the active badger sett;
 - the Proposed Development's turbines are positioned ≥ 290 m from the identified BRFs on-site;
 - the length of access track within 50 m of mapped watercourses has been minimised as part of the sensitive Proposed Development design, with existing track used, where possible. Works within 50 m of watercourses has been restricted where possible to localised widening and upgrading of existing tracks, but some new areas of track (within 50 m of watercourses) and a number of watercourse crossings (see above) will be required;
 - a minimum 74 m buffer⁶³ between turbine locations and watercourses has additionally been included to achieve a minimum 50 m 'standoff' from bat habitat features (watercourses) and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance (2021)²²;
 - a minimum 106 m radius key-holing requirement around turbine locations has been incorporated into felling and restocking plans for the Proposed Development, to achieve a minimum 50 m 'standoff' from bat habitat features (woodland) and turbine blade tips in accordance with current good practice mitigation outlined in NatureScot guidance (2021)²²;
 - the areas of long-established woodland of semi-natural origin on-site have been avoided (the nearest turbine is over 150 m from such woodland on-site) with existing forestry track (not to be upgraded) used to pass through the AWI area; and
 - a minimum 50 m buffer between proposed working areas and waterbodies has been included to protect potential amphibian habitat.

⁶³ Micrositing will take these required buffers into account.

Construction Environmental Management Plan

- 6.7.3 Full details of construction phase mitigation measures for the Proposed Development will be contained within a CEMP (see OCEMP, **Technical Appendix 2.1**, EIA Report Volume 4). The CEMP will include all good practice construction measures, pollution prevention controls, sediment management, and sensitive techniques with regards to construction in peatlands and near watercourses to be implemented over the course of the construction of the Proposed Development in line with current industry and statutory guidance. The CEMP will include information on water quality monitoring during the construction phase of the Proposed Development (which will be agreed with the KSDSFB). The CEMP will also include a commitment to no nocturnal works using artificial lighting, which could otherwise adversely affect foraging/commuting bats.
- 6.7.4 Information about the tree felling and re-planting is provided in **Technical Appendix 2.3** (EIA Report Volume 4).
- 6.7.5 Safe methods for on-site concrete batching and lorry washout will be included in the CEMP, to consider both airborne and waterborne paths of impact.
- 6.7.6 To minimise damage or alteration in pH from leaching of cement or other alkaline building materials into sensitive wet acidic habitats (blanket bog and mire), where groundwater is encountered in the excavation for the turbine bases, the excavation will be lined with an impermeable membrane to prevent seepage of cementitious material into the sub-soil.
- 6.7.7 An Outline Peatland Management Plan (OPMP) (**Technical Appendix 8.3**, EIA Report Volume 4) has been developed to manage excavation, handling, storage and reuse or reinstatement of peat and includes measures to minimise handling of peat and avoid removal from ecologically sensitive areas.
- 6.7.8 Pollution management best practices for re-fuelling, bunding and storing fuel, oil or hazardous substances, careful storage of chemicals, fuel and oil, as well as spillage incident protocols, will be included in the CEMP. Re-fuelling will only take place at a distance of more than 50 m from watercourses. Appropriate bunding will also be used around re-fuelling and chemical storage areas, preventing any fuel or chemical leaks from contaminating the capping layer stone or being washed into the receiving water environment. The protocols to be adopted in the event of a fuel spillage or similar incident within the compound area will be contained in the CEMP and will include the requirement for all on-site vehicles to carry spill kits. Measures to prevent hydrological impacts are set out, which will prevent impacts such as contamination to the rivers and streams within the site as well as downstream rivers and designated sites to which they connect. These and other good practice pollution prevention measures during works are discussed further in **Chapter 2** (EIA Report Volume 2).
- 6.7.9 Good practice measures to protect retained habitats during the construction works will also be implemented, including the sensitive demarcation of working areas, to be overseen by an Ecological Clerk of Works (ECow), further details of this role are provided below.
- 6.7.10 The CEMP will include Habitat Specific Protection Plans (HSPPs) detailing good practice measures for construction works in or adjacent to Annex 1, SBL and/or GWDTE habitats. HSPPs will detail measures required to manage construction works within these sensitive habitats and include habitat restoration measures.
- 6.7.11 Good practice measures to prevent harm to faunal species will also be included in Species Protection Plans (SPP) (see Pre-construction Surveys, below). Excavations will either be temporarily covered at night or designed to include a ramp, to allow species to exit any excavation if they were to fall in.
- 6.7.12 Good practice habitat reinstatement measures will also be adopted and implemented in areas subject to disturbance during construction works as soon as it is practical to do so. Further details of habitat reinstatement measures to be implemented will be provided within the CEMP, and with habitat enhancement measures provided within the Outline NEMP (see **Technical Appendix 6.5**, EIA Report Volume 4).
- 6.7.13 A fish monitoring plan will also be implemented to record pre-, during, and post- construction fish populations in watercourses on and adjoining the site, in consultation with the KSDSFB. This would be extended to include water quality monitoring during those stages of the Proposed Development (pre-, during and post- construction).
- 6.7.14 Measures to protect fish during construction of watercourse crossings will be included in the CEMP.
- ### Pre-Construction Surveys
- 6.7.15 There is potential for the distribution of protected terrestrial mammal species within the Site to change between the completion of baseline surveys presented herein and the commencement of construction activities for the Proposed Development. Pre-construction surveys for protected terrestrial mammals including otter, water vole, badger, pine marten, and red squirrel will therefore be undertaken, within a defined period prior to the commencement of construction works and as set out within the OCEMP (**Technical Appendix 2.1**, EIA Report Volume 4).

- 6.7.16 This will cover all areas within up to 250 m of the Proposed Development and associated working areas.
- 6.7.17 The results of the pre-construction surveys will inform the need for further mitigation (if required) in respect of sensitive working practices, SPPs and/or the requirement to consult with NatureScot in relation to protected species licencing.

Ecological Clerk of Works

- 6.7.18 A suitably qualified ECoW will be employed for the duration of the construction and reinstatement periods, to ensure ecological interests are safeguarded, although this may not necessarily be a full-time role throughout. The role of the ECoW related to ecological work will include the following tasks:
- provide toolbox talks and information to all site personnel, so that construction workers are aware of the ecological sensitivities within the Site and the legal implications of not complying with agreed working practices;
 - agree and monitor measures designed to minimise damage to retained habitats, particularly sensitive habitats;
 - undertake pre-construction surveys and advise on ecological issues and working restrictions where required;
 - complete Site-supervision works as required, in relation to sensitive habitats and protected species; and,
 - oversee restoration of working areas following construction.

Operational Period

- 6.7.19 Direct effects for sensitive IEFs (such as habitat loss and disturbance) are not anticipated to occur during the operational period of the Proposed Development with good practice measures in place, including pollution prevention controls and operational vehicles keeping to defined access routes. It is proposed that such measures will be adopted in an Operation Management Plan (OMP), if the Proposed Development is consented.
- 6.7.20 During the operation of the Proposed Development maintenance visits would be infrequent and unlikely to result in disturbance to ecological receptors.

Decommissioning Environmental Management Plan

- 6.7.21 At the point of decommissioning, a Decommissioning Environmental Management Plan (DEMP) will be developed through consultation with THC, NatureScot, and other relevant consultees in line with relevant legislation and guidance at that point in time. This will detail those measures to be adopted to ensure the protection of IEFs. This will typically mirror those measures adhered to in the CEMP and will include pollution prevention protocols and pre-decommissioning surveys.

Outline Nature Enhancement Management Plan

- 6.7.22 The ONEMP (see **Technical Appendix 6.5**, EIA Report Volume 4) details the measures which will be implemented throughout the operational phase to deliver significant biodiversity enhancement and includes subsequent monitoring which will measure the effectiveness of restoration works, with restoration works adaptable in response to monitoring outcomes. Restoration works will benefit ecological species (such as terrestrial mammals, foraging/commuting bats, fish and plants) present on, and close to, the Site. The ONEMP will be finalised into a NEMP post-consent.
- 6.7.23 The ONEMP accords with NPF4 with regards to biodiversity enhancement (Policy 3), peatland restoration (Policy 5) and woodland protection and enhancement (through the protection and restoration of long-established woodland of semi-natural origin and riparian native tree planting; Policy 6).

6.8 Receptors Brought Forward for Assessment

- 6.8.1 The results of the desk study and field surveys were used to inform the identification of IEFs within, and around, the Site to be brought forward for assessment. IEFs which are unlikely to be affected, or which are considered sufficiently widespread, unthreatened or resilient to impacts from the Proposed Development, and hence would remain viable and sustainable, have not been subject to a detailed assessment and have been 'scoped out'.
- 6.8.2 Mitigation measures for 'scoped out' IEFs, are however outlined as appropriate to ensure legislative compliance.
- 6.8.3 A summary of identified IEFs in the Study Area relevant to the Proposed Development is provided in **Table 6.10** which details whether each feature is scoped in or out of the assessment. The level of importance assigned to each feature is based upon baseline survey results and professional judgement. Only IEFs identified during baseline information gathering are considered in **Table 6.10**, with all other IEFs scoped out of further assessment given the lack of evidence that the IEF is present.

Table 6.10 – Summary of IEF Sensitivity

IEF	Sensitivity	Scoped In or Out?	Justification
River Oykel SAC	High - International	In – Construction phase only	The River Oykel SAC is located off-site, 1.2 km from the nearest Proposed Development's turbine. The River Einig however which is part of the SAC is crossed by the western access route over an existing raised watercourse bridge crossing (and there are other minor brooks which abut the western access route, which flows into the River Einig). The SAC is designated for Atlantic salmon and freshwater pearl mussel. Most watercourses which pass through the Site tribute into the River Oykel SAC, although the watercourses on-site are considered sub-optimal for supporting fish fauna (including those listed qualifying species of the SAC, and no SAC qualifying species are predicted to use the watercourses on-site itself). The exception to this is the River Einig where the western access route will pass over (using an existing watercourse crossing), which is assessed as potentially suitable for supporting SAC qualifying species. No effects during the operation phase are anticipated with works involving vehicles passing over the watercourse crossings. Accordingly, potential significant adverse effects on the qualifying features of the River Oykel SAC are scoped in for further assessment at the construction phase. Furthermore, an information to inform an HRA is provided in Section 6.16 , in relation to the River Oykel SAC, and the SAC's qualifying species.
Caithness and Sutherland Peatlands SAC and Ramsar site	High - International	Out	The Caithness and Sutherland Peatlands SAC and Ramsar site is located 7.3 km north-east of the Site boundary (not including the access routes). The SAC and Ramsar site are designated for static habitats, including blanket bog, waterbodies and heath. As well as the considerable spatial separation between the Site and the SAC and Ramsar site, and static nature of the qualifying features, there is the River Oykel, a road network (including the A837) and considerable commercial forestry between the Site and the SAC. As such, no potential pathways for impacts upon the SAC and Ramsar site have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying features of the Caithness and Sutherland Peatlands SAC and Ramsar site are scoped out of further assessment.
Amat Woods SAC	High - International	Out	The Amat Woods SAC is located 7.4 km south-east of the Site boundary (not including the access routes). The SAC is designated for static habitat; Caledonian forest. As well as the considerable spatial separation between the Site and the SAC, and static nature of the qualifying feature, there is a major watercourse (the Abhainn an t-Srath Chuileannach) and considerable commercial forestry between the Site and the SAC. As such, no potential pathways of impacts on the SAC have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying feature of the Amat Woods SAC is scoped out of further assessment.
Kyle of Sutherland Marshes SSSI	High - National	Out	The Kyle of Sutherland Marshes SSSI is located 5.2 km east of the Site boundary (not including the access routes). The SSSI is designated for static habitats, including floodplain fen and vascular plant assemblage. As well as the considerable spatial separation between the Site and the SSSI, and static nature of the qualifying features, there is considerable commercial forestry between the Site and the SSSI. As such, no potential pathways of impacts on the SSSI have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying features of the Kyle of Sutherland Marshes SSSI is scoped out of further assessment.
Grudie Peatlands SSSI	High - National	Out	The Grudie Peatland SSSI (part of the Caithness and Sutherland Peatlands SAC) is 7.3 km north-east of the Site (not including the access routes). The SSSI has the static habitat, blanket bog, as a qualifying feature. As well as the considerable spatial separation between the Site and the SSSI, and static nature of the qualifying feature, there is the River Oykel, a road network (including the A837) and considerable commercial forestry between the Site and the SSSI. As such, no potential pathways of impacts on the SSSI have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying feature of the Grudie Peatlands SSSI is scoped out of further assessment.
Amat Woods SSSI	High - National	Out	The Amat Woods SSSI (part of the Amat Woods SAC) is located 7.4 km south-east of the Site boundary (not including the access routes). The SSSI is designated for static habitats (native pinewood and upland birch woodland).

IEF	Sensitivity	Scoped In or Out?	Justification
			As well as the considerable spatial separation between the Site and the SSSI, and static nature of the qualifying features, there is a major watercourse (the Abhainn an t-Srath Chuileannach) and considerable commercial forestry between the Site and the SSSI. As such, no potential pathways of impacts on the SSSI have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying features of the Amat Woods SSSI is scoped out of further assessment.
Alladale Pinewood SSSI	High - National	Out	The Alladale Pinewood SSSI (also part of the Amat Woods SAC) is located 7.4 km south of the Site boundary (not including the access routes). The SSSI is designated for static habitat (native pinewood). As well as the considerable spatial separation between the Site and the SSSI, and static nature of the qualifying features, there is a major watercourse (the Abhainn an t-Srath Chuileannach) and considerable commercial forestry between the Site and the SSSI. As such, no potential pathways of impacts on the SSSI have been identified as a result of the Proposed Development, and accordingly potential significant adverse effects on the qualifying feature of the Alladale Pinewood SSSI is scoped out of further assessment.
Ancient (of semi-natural origin) woodland	High - National	Out	There is an area of woodland on the AWI within the Site, totalling 19 ha of long-established woodland of semi-natural origin. These long-established woodland areas will not be directly affected by the Proposed Development, with these areas appropriately offset from the Proposed Development (>150 m from the nearest turbine). An existing track which passes through areas of long-established woodland will be used for the Proposed Development, however, no upgrading of the existing route would be required. Providing the implementation of good practice construction measures, including pollution prevention measures and the adoption of appropriately distanced tree root protection zones between sensitive woodland and the works (as detailed in the OCEMP provided as Technical Appendix 2.1 , EIA Report Volume 4), there is no route to impact on the long-established woodland areas, and potential significant adverse effects on long-established woodland is scoped out of further assessment.
Notable habitats (Annex 1 and/or SBL)	High - National (Priority Peatland of Possible National Interest) Medium - Regional (other listed habitats)	In – Construction phase only	These habitats are included on Annex 1 of the Habitats Directive, and/or listed on the SBL. Some of these habitats are also identified as potential GWDTEs although confirmation of these as actual GWDTEs is based on detailed hydrological assessment (see Chapter 8 , EIA Report Volume 2). Habitat loss as a result of the Proposed Development has been minimised through a sensitive and iterative design process, however direct land take resulting in the loss of some Annex 1 and/or SBL habitat types will be unavoidable. The potential for indirect effects on adjoining/nearby habitats through local changes to hydrology is also considered within the assessment, at least for hydrologically dependent habitats, like bog and wet heath. Direct effects on habitats are not anticipated to occur during the operational period of the Proposed Development with good practice measures in place, including pollution prevention controls and operational vehicles keeping to defined access routes. Furthermore, effects of pollution (including dust) and run-off to habitats during the construction phase are also scoped out with the implementation of the CEMP (see OCEMP in Technical Appendix 2.1 , EIA Report Volume 4). As such, the potential for impacts upon Annex 1 and/or SBL habitats through habitat loss only during the construction stage is scoped in for further assessment.
All other habitats	Low - Local	Out	Habitats within the Site which are not subject to direct or indirect effects of the Proposed Development by virtue of distance from the Proposed Development are scoped out of further assessment. Habitats and vegetation communities which are not listed in Annex 1 (of the Habitats Directive) and/or the SBL, or which are considered of low groundwater dependency (based on the NVC survey results), are also scoped out of further assessment.
Bats - foraging/commuting	Medium - Regional	In	All bat species are protected under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004 (as amended). They are also SBL priority species. The Overall Risk Assessment is considered (based on 2021 surveys) to fall under “Low Site Risk” when using the median percentile for common and soprano pipistrelles, “Low Site Risk” when using max percentile for soprano pipistrelle, and “Low/Medium Site Risk” when using max percentile for common pipistrelle.

IEF	Sensitivity	Scoped In or Out?	Justification
			Comparable assessment classifications (to the 2021 results above) are considered based on the 2024 autumn surveys, with the assessment for both pipistrelle species being "Low Site Risk" when using the median percentile, and at most "Low/Medium Site Risk" when using the max percentile. <i>Myotis</i> species and brown long-eared bat are not considered further given they are not HCR species (see Technical Appendix 6.3, EIA Report Volume 4 for further details). The nature of potential impacts on foraging and commuting bats relate to the construction phase (loss of foraging habitat) and the operational phase (loss of foraging habitat; death or physical injury via collision or barotrauma; and/or, displacement of individuals or populations from the area). As such, commuting and foraging bats are scoped in for further assessment.
Bats - roosting	Low - Local	Out	All bat species are protected under the Conservation (Natural Habitats &c.) Regulations 1994 (as amended), the Wildlife and Countryside Act 1981 (as amended) and the Nature Conservation (Scotland) Act 2004 (as amended). They are also SBL priority species. Two PRFs were identified on-site but these are located in woodland in or/adjacent to the AWI area which is being retained and appropriate buffered from the Proposed Development (≥ 290 m). Given no such PRFs with the potential to support maternity roosts and/or significant swarming or hibernation roosts were identified within at least 200 m plus rotor radius of the Proposed Development turbines, roosting bats are scoped out of further assessment.
Terrestrial mammals (otter, pine marten, red squirrel, water vole and brown hare)	Low - Local	Out	During field surveys the Site was found to support water vole (including burrows along some watercourses), pine marten (presence of scat), badger (print and active sett), otter (spraint and couch and slide) and red squirrel (cone feeding remains). These IEFs were recorded in numbers of relative low importance during the baseline studies (field surveys and desk study), in that the potential for significant adverse effects from the Proposed Development on these species at a population-level is considered inconsequential. The watercourses on-site are typically minor, on at least moderately steep slopes, and many are peaty headwaters, which are considered suboptimal for otter, although the presence of otter principally using a watercourse in the north-east of the Site was recorded (>250 m from the Proposed Development). Embedded mitigation, including (but not restricted to) the implementation of good practice construction measures, pollution prevention controls, maintain an appropriate 50 m buffer between works and identified water vole signs (particularly burrows), at least 120 m from the identified otter couch, in excess of 100 m from the active badger sett, sediment management, sensitive techniques with regards to construction near water, pre-construction surveys, SPPs (where required), the presence of an ECoW and licencing requirements (where applicable), (to be secured via the CEMP, see Technical Appendix 2.1, EIA Report Volume 4), are considered appropriate to avoid any potentially significant adverse effects upon terrestrial mammals. On consideration of the desk study and field survey results, the extent and nature of the Proposed Development, and embedded mitigation (as detailed above), no impacts which are likely to lead to significant adverse effects upon these IEFs are anticipated.
Fisheries	Low - Local	Out	The watercourses passing through the Site were of limited value for fish fauna and not suitable for freshwater pearl mussel, principally due to these watercourses being minor, on moderate to steep slopes and/or characteristic of peaty headwaters (exception being the River Einig, which is part of the River Oykel SAC, and the western access route crosses over the watercourse using an existing watercourse bridge crossing). The River Oykel SAC, which is 1.2 km from the nearest Proposed Development's turbine, offers the highest quality habitat for fish fauna (and freshwater pearl mussel). Neither of the River Oykel SAC's two qualifying species (Atlantic salmon and freshwater pearl mussel) are predicted to use watercourses flowing within the Site itself (but noting the above comment with regards to the River Einig which the western access route crosses over). Potential effects on fish fauna and freshwater pearl mussel are scoped out given the adoption of embedded mitigation which will include the maintenance of appropriate buffers between the Proposed Development and watercourses, typical avoidance of direct impacts to watercourses (all

IEF	Sensitivity	Scoped In or Out?	Justification
			new and upgraded vehicular watercourse crossings will be sensitively designed and installed to allow the continued uninterrupted movement of waterflow, and any potential wildlife present therein), and fish monitoring, prior to, and over the course of, the construction phase of the Proposed Development (as detailed in the OCEMP, Technical Appendix 2.1 , EIA Report Volume 4). Based on the above listed measures, effects on fish populations and freshwater pearl mussel widely are scoped out of further assessment. Note however, effects on the qualifying species (Atlantic salmon and freshwater pearl mussel) with respect to the River Oykel SAC are however considered in Section 6.9 and as an information to inform an HRA, as provided in Section 6.16 .
Other wildlife (reptiles, amphibians and invertebrates)	Low – Local	Out	IEFs of 'Local' importance are scoped out of this assessment. Such IEFs are considered to be generally common and widespread (with these not sensitive to wind farm developments; see NatureScot, 2024i) and/or were recorded very infrequently or in numbers of very low importance during the baseline studies, in that the potential for effects from the Proposed Development on such species is considered inconsequential. Given the location of the Site (northern Scotland) the potential for any of the waterbodies to support great crested newt (which has an extremely localised and limited range in the north of Scotland) are discounted. Furthermore, embedded mitigation, including the implementation of good practice construction measures and works being undertaken under the supervision of an ECoW (see the OCEMP in Technical Appendix 2.1) are considered appropriate to avoid any potentially significant adverse effects upon other wildlife. As such, effects on other wildlife (as listed) are scoped out of further assessment. It is considered that wildlife including reptiles, amphibians and invertebrates will benefit from enhancement measures (such as peatland restoration and riparian tree planting) that would be implemented as part of the ONEMP (see Technical Appendix 6.5 , EIA Report Volume 4).

6.9 Potential Effects

6.9.1 This section presents an assessment of effects upon IEFs scoped in for further assessment (see **Table 6.10**), as a result of the Proposed Development alone, and in the absence of additional mitigation, considered in **Section 6.12**.

Construction

6.9.2 Potential construction phase impacts on IEFs associated with the Proposed Development are considered to relate to:

- direct land take (habitat loss) to accommodate the Proposed Development;
- temporary disturbance and land take for laydown areas and construction compounds;
- disturbance to, fragmentation or severance of connecting habitat or potential commuting routes within, and adjacent to, the Site; and
- disturbance and pollution (indirect effects such as noise and vibration, dust, pollution from surface water run-off) resulting from Site clearance and construction, plant and vehicles movements, and Site workers' activities.

6.9.3 Potential effects are assessed on the assumption that embedded mitigation measures, as detailed in **Section 6.7** are implemented.

River Oykel SAC

6.9.4 The River Oykel is off-site, 1.2 km from the nearest Proposed Development's turbine. However, the River Einig (which is part of the River Oykel SAC) is crossed by the western access route over an existing raised watercourse bridge crossing (and there are other minor brooks which abut the western access route, which flows into the River Einig). The SAC is designated for Atlantic salmon and freshwater pearl mussel. Most watercourses which pass through the Site tribute into the River Oykel SAC, although the watercourses on-site are considered sub-optimal for supporting fish fauna (including those listed qualifying species of the SAC, and no SAC qualifying species are predicted to use the watercourses on-site itself). The exception to this is the River Einig where the western access route will pass over, which is assessed as potentially suitable for supporting SAC qualifying species.

6.9.5 In the absence of mitigation, the construction phase of the Proposed Development has potential to have an adverse effect on the River Oykel SAC through factors including increase siltation from works,

increased erosion, changes to hydrological connectivity and pollution runoff. These factors could affect the SAC's qualifying species, Atlantic salmon and freshwater pearl mussel.

- 6.9.6 As summarised in **Section 6.7** (and detailed in **Chapter 2** (EIA Report Volume 2)) the Proposed Development design and evolution has limited the number of watercourse crossings, and all 11 new crossings and 14 upgraded crossings will be sensitively designed and installed to allow the continued, uninterrupted flow of water and wildlife therein (see **Chapter 8**, EIA Report Volume 2) for further information). Note, 11 new and 14 upgraded watercourse crossings are considered to be worst-case scenario and is based on the western access route being used. Furthermore, a minimum 50 m buffer around all mapped watercourses from turbine hardstanding and substation compounds has been adopted and works within 50 m of watercourses will be limited (where possible) to vehicular access along existing tracks (although there will be some localised construction of new tracks and upgrading and widening works). Embedded mitigation and good practice measures implemented under the CEMP, including (but not restricted to) pollution and siltation protection measures, water quality monitoring (pre-, during and post-construction) and the presence of an ECoW during construction, would prevent adverse impacts associated with the Proposed Development to the River Oykel SAC and its two qualifying species. Although most of the watercourses, within the Site, lie on moderately steep to steep gradients and many are peaty headwaters with negligible-low suitability for fish, an FMP, including provision for pre-, during- and post-construction fish monitoring (and water quality monitoring) would be produced in consultation with the KSDSFB for on-site watercourses and those downstream, including part of the River Oykel. This would include locations associated with River Einig where the western access route crosses over. The existing watercourse crossing over the River Einig will be used.

- 6.9.7 With the implementation of good practice construction measures detailed herein (and in the OCEMP provided as **Technical Appendix 2.1**, EIA Report Volume 4), it is considered that potential effects on the River Oykel SAC can be minimised. Impacts on the River Oykel SAC (and its qualifying species, Atlantic salmon and freshwater pearl mussel) are considered to be of short-term in duration and of no more than Low magnitude resulting in a **Minor** adverse effect which is considered Not Significant in the context of the EIA Regulations.

Habitats and Vegetation

Habitat Loss

- 6.9.8 There are two main ways by which habitats and vegetation may be affected by habitat loss as a result of the construction phase of the Proposed Development:

- direct loss – the loss of habitats and vegetation under the footprint of the Proposed Development; and
- indirect loss - calculated for Annex 1 and/or SBL habitats which are located up to 10 m of direct habitat loss areas, to account for potential changes in habitat vegetation structure due to drying effects as a result of construction works.

- 6.9.9 For the purposes of assessment, a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of Annex 1 and/or SBL habitats represents a permanent, irreversible adverse effect. In practice, some areas indirectly affected may be able to be reinstated i.e., during habitat reinstatement following construction in accordance with the OCEMP (**Technical Appendix 2.1**, EIA Report Volume 4).

Site (not including the Access Routes)

- 6.9.10 There are also modest areas to be temporarily lost and then reinstated, comprising the construction compound and laydown areas. These comprise of 0.078 ha of Priority Peatland Not of National Interest (including mosaics with M20 but not M17/M19), 0.993 ha of Priority Peatland of Possible National Interest (including mosaics of M17 and/or M19), and 0.553 ha of Priority Peatland Not of National Interest (including mosaics of M17 and/or M19). Given, these areas will be only temporarily lost and will be reinstated, these are not considered in **Table 6.11**, or further in the assessment.

- 6.9.11 **Table 6.11** details the estimated direct and indirect habitat losses as a result of the construction of the Proposed Development on Annex 1 and/or SBL habitats. Many areas of the Site comprise a mix of habitats which are too complex to separate into defined habitat types. As such, habitats have been grouped into the following categories: Priority Peatland of Possible National Interest (with mosaics containing M17 and/or M19), Priority Peatland Not of National Interest (with mosaics containing M17 and/or M19), Priority Peatland Not of National Interest (with mosaics containing M20) and woodland (W4). These habitat types are shown on **Figures 6.3a** and/or **6.4a** (EIA Report Volume 3a) and are included in **Table 6.11**.

- 6.9.12 Total direct land take for the Proposed Development will be 36.64 ha⁶⁴, of which 5.187 ha are accounted for in **Table 6.11**. The remaining habitats are not Annex 1 and/or SBL habitats which have been scoped

⁶⁴ Includes, forestry areas around the turbines that would be key-holed.

out of this assessment. The greatest loss of habitat is that of coniferous plantation as a result of the Proposed Development (although noting compensatory planting is proposed, see **Technical Appendix 2.3**, EIA Report Volume 4).

- 6.9.13 Potential indirect losses of protected and notable habitats within 10 m of the Proposed Development are of a greater extent (see **Table 6.11**), though are less certain to take place.

Table 6.11 - Summary of Habitat Losses On-Site (Not Including Access Routes)

Habitat Type Category	NVC Community/sub-community	Total Area Within Site ⁶⁵ (ha)	Habitat Losses (ha)			Relative Coverage Lost (%)
			Direct	Indirect (out to 10 m)	Total (Direct plus indirect out to 10 m)	
Priority Peatland of Possible National Interest	Mosaics containing M17 and/ or M19 ⁶⁶	194.081	2.683	6.657	9.34	1.38 (direct) 3.43 (indirect) 4.81 (total)
Priority Peatland Not of National Interest	Mosaics containing M17 and/ or M19	88.606	2.296	7.047	9.343	2.59 (direct) 7.95 (indirect) 10.54 (total)
Priority Peatland Not of National Interest	Mosaic containing M20	17.445	0.208	0.25	0.458	1.19 (direct) 1.43 (indirect) 2.63 (total)

Peatland

- 6.9.14 The Proposed Development is predicted to result in the permanent direct (2.683 ha) and indirect (6.657 ha) loss of a combined 9.34 ha of Priority Peatland of Possible National Interest, which represents a total of 4.81 % of the Priority Peatland of Possible National Interest present within the Site (not including the access routes). None of the peatland areas were assessed as near natural condition (see **Technical Appendix 6.1**, EIA Report Volume 4), with the peatland present on-site typically forming mosaics with other habitats, with evidence of drying out effects, indicative of modification and/or degradation. Of the Priority Peatland of Possible National Interest to be lost only 2.683 ha will be directly lost, with the remainder (6.657 ha) to be indirectly lost and potentially able to be reinstated.
- 6.9.15 The Proposed Development is also predicted to result in the permanent direct and indirect loss of 9.343 ha of Priority Peatland Not of National Interest (with mosaics of M17 and/ or M19), which represents 10.54 % of Priority Peatland Not of National Interest (of this type) present within the Site. Of the 10.54 % loss, only 2.59 % is to be lost directly. Furthermore, there is also a predicted permanent direct and indirect loss of 0.458 ha of Priority Peatland Not of National Interest (with mosaics of M20, and not M17/M19), which represents only 2.63 % of Priority Peatland Not of National Interest (of this type) present within the Site.
- 6.9.16 There are some isolated bog pools within the peatland habitats on-site (as shown in **Figure 6.4a** EIA Report Volume 3a). This includes pools in the north, centre and south of the Site. These bog pools typically have features that are indicative of degradation, with signs of erosion and bare exposed peat. For some of the bog pools the water level appears to sit below the surround bog surface, suggesting pools may be draining the adjacent peatland. The Proposed Development is typically offset from any identified bog pools. The exception are some isolated bog pools in the south of the Site in close proximity to turbine (T7). The peatland in that area has notable evidence of haggling and erosion, and so is considerably degraded. Micro-siting of T7 and associated infrastructure would be sensitive where possible to the bog pools at the locality to avoid potential effects. Enhancement opportunities (peatland restoration) at the locality would improve condition and functionality of peatland including associated bog pools.
- 6.9.17 The permanent direct and indirect loss of Priority Peatland of Possible National Interest (High sensitivity) is therefore predicted to be of long-term duration but no more than Low magnitude, resulting in an effect of **Minor** adverse significance, which is considered Not Significant in the context of the EIA Regulations.
- 6.9.18 The permanent direct and indirect loss of Priority Peatland Not of National Interest (Medium sensitivity) is also predicted to be of long-term duration but no more than Low magnitude, resulting in an effect of **Minor/Negligible** adverse significance, which is considered Not Significant in the context of the EIA Regulations.

⁶⁵ Not including the access routes.

⁶⁶ Note, this includes 1.973 ha of M17 habitat on-site (which does not form a mosaic), although this M17 habitat will not be impacted by the Proposed Development.

Other Notable Habitats

6.9.19 There are no anticipated losses to any other notable habitats as a result of the Proposed Development in the Site (not including access routes).

6.9.20 For purpose of this assessment, potential for impacts on confirmed GWDTEs are not discussed in detail herein and are discussed separately in **Chapter 8** (EIA Report Volume 2).

Western Access Route

6.9.21 Based on the proposed western access route (as shown in **Figures 6.2b, 6.3b and 6.4b** (EIA Report Volume 3a)), a total of 1.59 ha of habitat will be directly lost, with a further 6.79 ha indirectly lost (within 10 m), although the indirect habitat loss is less likely to occur, particularly given only shallow excavations will be undertaken for the access route.

6.9.22 **Table 6.12** details the estimated direct and indirect habitat losses as a result of the construction of the western access route on Annex 1 and/or SBL habitats. Some areas comprise a mix of habitats which are too complex to separate into defined habitat types. Note, given the degraded condition of the peatland habitats along the western access route, none of the peatland is considered as priority peatland of possible national interest.

6.9.23 Total direct land take for the Proposed Development for the western access route will be 1.59 ha, of which 1.486 ha are accounted for in **Table 6.12**, which lists Annex 1 and/or SBL habitats. The remaining habitats are not Annex 1 and/or SBL habitats which have been scoped out of this assessment.

6.9.24 Potential indirect losses of protected and notable habitats within 10 m of the Proposed Development are of a greater extent (see **Table 6.12**), though are less certain to take place. In fact, such indirect effects out to 10 m, given excavations during construction works on the western access route will be shallow (<1 m), are considered unlikely and highly precautionary.

Table 6.12 - Summary of Habitat Losses (Western Access Route)

Habitat Type Category	NVC Community/sub-community	Total Area Within Western Access Route Boundary (ha)	Habitat Losses (ha)			Relative Coverage Lost (%)
			Direct	Indirect (out to 10 m)	Total (Direct plus indirect out to 10 m)	
Wet dwarf shrub heath	M15b	90.4	1.034	3.954	4.988	1.14 (direct) 4.37 (indirect) 5.52 (total)
Wet dwarf shrub heath/Marshy Grassland	M15a (incl. mosaics with M25a)	0.85	0.0002	0.0156	0.0158	0.24 (direct) 1.84 (indirect) 1.86 (total)
Marshy Grassland	M25a	33.24	0.347	1.381	1.728	1.04 (direct) 4.15 (indirect) 5.20 (total)
Marshy Grassland/Acid Grassland/Neutral Grassland	M25a mosaic with U4a and MG10	0.64	0.037	0.126	0.163	5.78 (direct) 19.69 (indirect) 25.47 (total)
Blanket Bog (Peatland) ⁶⁷	M17a	6.98	0.065	0.316	0.381	0.93 (direct) 4.53 (indirect) 5.46 (total)
Woodland	W4, W11, W11b, W17, W17b	5.66	0.003	0.317	0.32	0.05 (direct) 5.6 (indirect) 5.65 (total)

6.9.25 The western access route is predicted to result in the permanent direct and indirect loss of 4.988 ha wet dwarf heath (M15b) (only 1.034 ha directly lost), 1.728 ha marshy grassland (M25a) (only 0.347 ha directly lost), 0.381 ha of blanket bog/peatland (M17a) (only 0.065 ha directly lost), and 0.32 ha woodland (W4, W11, W11b, W17, W17b) (only 0.003 ha directly lost, which in reality is likely to be no direct loss, and the negligible amount of 0.003 ha is due to mapping scaling/resolution). For these notable habitats (Annex 1 and/or SBL) this consistently represents <6 % of the relative coverage of these habitats in the western access route boundary (<1.5 % relative coverage when regarding only direct loss).

6.9.26 The permanent direct and indirect loss of the above listed notable habitats as a result of construction of the western access route is therefore predicted to be of long-term duration but no more than Low

⁶⁷ Not considered of possible national interest following the Peatland Condition Assessment.

magnitude, resulting in an effect of **Minor/Negligible** adverse significance, which is considered Not Significant in the context of the EIA Regulations.

Eastern Access Route

- 6.9.27 The proposed eastern access route (as shown in **Figures 6.2c** and **6.3c** (EIA Report Volume 3a)), largely follows an existing forest track through coniferous plantation and coniferous plantation clear-fell. There will be minor loss of M25 habitat within the coniferous plantation. For the purpose of the assessment and largely follows an existing track, effects are considered on the western access route as a worst-case scenario, and no further assessment into effects of the eastern access route on habitats is undertaken.

Bats (foraging/commuting)

- 6.9.28 The Site is considered to offer moderate opportunities for foraging and commuting bats, mostly from habitat features including watercourses and forestry edge (in accordance with Collins, 2023)²⁰. Baseline surveys have demonstrated an Overall Risk Assessment of "Low/Medium Site Risk", with most of the bat activity relating to common pipistrelle.
- 6.9.29 The closed canopy coniferous plantation woodland which dominates the Site (and is the main habitat to be lost) is appraised as having low suitability for bats (in accordance with Collins, 2023)²⁰, but as noted above some features offer higher suitability foraging and commuting opportunities.
- 6.9.30 In terms of effects of habitat loss on foraging and commuting bats given it is principally commercial forestry being lost (and to a lesser extent open habitat like peatland habitat) during construction these are considered to be of long-term duration but no more than Negligible magnitude, resulting in a **Negligible** adverse effect which is considered Not Significant in the context of the EIA Regulations.
- 6.9.31 The baseline surveys revealed activity of common pipistrelle, soprano pipistrelle, *Myotis* species, and brown long-eared bat on-site within the established emergence times for three of these species (all but soprano pipistrelle, as detailed in **Technical Appendix 6.3**, EIA Report Volume 4). Therefore, it is likely there are roosts for three of these species in the local area, albeit no potential maternity or hibernation/swarming sites were identified within at least 200 m plus rotor radius of the Proposed Development turbines.
- 6.9.32 Noise, lighting, and dust generation during the construction period could potentially result in disturbance and reduced foraging opportunities for bats, particularly if night-time work is undertaken. Works during the construction period will be largely during daytime working hours, but some night-time working is anticipated, including during the core bat activity period, April to September. Any lighting required during construction would be directed away from the most suitable bat foraging habitats, such as forest edge and watercourses/waterbodies. This can be achieved in a number of ways, including the use of low-level lighting and use of hoods and careful selection of lighting (further information is provided in the 2018 BCT guidance⁶⁸).
- 6.9.33 Given the largely sub-optimal foraging and commuting habitat for bats on-site within the vicinity of the Proposed Development, and the adoption of embedded mitigation (buffers from key bat habitat features) impacts of bat displacement/disturbance during construction are considered to be of short-term in duration and of no more than Low magnitude resulting in a **Minor/Negligible** adverse effect which is considered Not Significant in the context of the EIA Regulations.

Operation

- 6.9.34 Potential operational effects are restricted to bats only; effects on all other IEFs are scoped out (see **Table 6.10**).

Bats (foraging/commuting)

- 6.9.35 Operational turbines can affect bats in a number of ways, although the main concerns to bat populations relate to collision mortality, and to a lesser extent barotrauma (i.e. injury caused by a change in air pressure) and other injuries resulting from collision with or flying in very close proximity to moving turbines (NatureScot, 2021)²².
- 6.9.36 The assessment of operational effects is restricted to common and soprano pipistrelle only, as they are categorised as HCR species in relation to wind farm developments.
- 6.9.37 The assessment of potential effects upon bats resulting from the operation of the Proposed Development's turbines has been based on the two-stage methodology set out in NatureScot guidance (2021)²² using the Ecobat tool. Full details are presented in **Technical Appendix 6.3** (EIA Report Volume 4).
- 6.9.38 In accordance with NatureScot guidance (2021)²² a Stage 1 'Initial Site Risk Assessment' of the potential risk level of the Site has been undertaken based on a consideration of the Site's habitats and

⁶⁸ Bat Conservation Trust. (2018). Bats and Lighting in the UK: Bats and the Built Environment Series. Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/> (Accessed 01.07.2020).

development-related features. This concludes that the Site is assessed as having an overall 'Site Risk' of 3, which represents a 'Medium' Site Risk. This is due to the Site 'Habitat Risk' and 'Project Size' both being classified as 'Medium'.

- 6.9.39 Stage 2 'Overall Risk Assessment' of the two-stage process detailed within NatureScot guidance (2021)²² has then subsequently been completed to provide an overall assessment of risk to bat species, by considering the conclusions of Stage 1 in relation to relative levels of bat activity obtained through using the Ecobat tool and considering the vulnerability of species recorded, at the population-level.
- 6.9.40 In accordance with NatureScot guidance (2021)²², Stage 2 has been carried out separately for all HCR species recorded during baseline bat activity surveys, which are common and soprano pipistrelle bats.
- 6.9.41 The calculated Stage 2 'Overall Risk Assessment' per species, both temporally and spatially is presented in **Technical Appendix 6.3** (EIA Report Volume 4).
- 6.9.42 It is highlighted that the Ecobat tool is in its infancy and given current limitations in available reference data on the database for many developments, definitive bat activity for regions is not generated and bat activity representations for regions are instead considered to be indicative. In summary, the Overall Risk Assessment is considered to fall under "Low Site Risk" when using the median percentile and "Low Site Risk" when using the max percentile for soprano pipistrelle, and "Low Risk" when using the median percentile and "Low/Medium Site Risk" when using the max percentile for common pipistrelle.
- 6.9.43 The risk of operational mortality to bats is generally acknowledged to be lowest at locations with low bat activity. Additionally, the availability of suitable foraging habitats within 1.5 km of proposed turbine locations, such as watercourses, waterbodies and woodland, is suggested to have a protective effect on bat species, with bats more likely to use these high value foraging habitats (and other suitable linear features) than be attracted to the turbines (Mathews *et al.*, 2016)⁶⁹. It is considered that habitat features such as the River Oykel 250 m to the north of the Site will provide higher foraging and commuting opportunities for bats.
- 6.9.44 When using the max percentile, the Overall Risk Assessment for common pipistrelle was 'low' across all monitoring stations, with the exception of being 'medium' risk at MS 2 and MS 3. The Overall Risk Assessment for soprano pipistrelle was low across all monitoring stations. Most of the monitoring stations were positioned at, or near, expected key habitat features like forestry edge or rides. It is not clear why common pipistrelle activity was medium at MS 2 and MS 3 and low at the other monitoring stations. However, MS 2 is right on the edge of a forestry block (more pronounced than other monitoring stations which tended to be more within the forestry block itself) so that may, at least, partly explain higher common pipistrelle activity at that locality.
- 6.9.45 NatureScot guidance (2021)²² advises that to reduce potential impacts upon bats resulting from operational wind turbine developments, a 50 m 'stand-off' distance should be maintained around bat habitat features, into which no part of the turbine intrudes. The guidance provides a formula for calculating this 'stand-off' distance. The Proposed Development turbine locations include a 50 m 'stand-off' (from blade tip) around bat habitat features (including woodland, watercourses and waterbodies) to reduce potential impacts on bats in accordance with NatureScot guidance (2021)²².
- 6.9.46 The layout of the Proposed Development would require the felling of plantation woodland habitat around most Proposed Development turbines. Re-planting would be undertaken within much of the felled area (with the exception of some areas for forest-to-bog restoration; see **Technical Appendix 6.5**, EIA Report Volume 4), but a minimum buffer of 106 m would be maintained between the turbine and the re-planted plantation woodland, creating a 'key-hole' design. This is based on the calculation provided in the bats and wind farm guidance (NatureScot, 2021)²² and tree height reaching a maximum of 30 m during the lifespan of the Proposed Development. As such the Proposed Development provides a 50 m buffer (from blade tip) for all turbine locations. Note, also any micro-siting would respect the bat buffers required as considered above, and/or in **Section 6.7** (turbines positioned 106 m from forestry edge and 74 m from mapped watercourses).
- 6.9.47 The Proposed Development is not considered to represent a site of concern for bat collision risk following the approach set out in the bats and wind farm guidance (NatureScot, 2021)²². It is acknowledged that low or medium risk sites can still result in bat casualties, and therefore embedded mitigation (i.e. the turbines are located away from those habitat features most used by bats) would reduce the level of risk for all turbines.
- 6.9.48 A 50 m buffer between the blade tip and woodland edge will ensure appropriate mitigation requirements for all bat species in accordance with NatureScot (2021)²² are implemented as part of the Proposed Development. With these measures in place, impacts of bat collision risk mortality, whilst long-term in duration, are considered to be of no more than Low magnitude, resulting in a **Minor/Negligible** adverse effect which is considered Not Significant in the context of the EIA Regulations.

⁶⁹ Mathews, F., Richardson S., Lintott, P. and Hosken, D. (2016) Understanding the Risk to European Protected Species (bats) at Onshore Wind Turbine Sites to Inform Risk Management. Final report. University of Exeter.

- 6.9.49 Based on activity levels recorded and subsequent analysis as outlined, displacement levels are likely to be low and although long-term in duration are considered to represent an impact of no more than Low magnitude, resulting in a **Minor/Negligible** adverse effect which is considered Not Significant in the context of the EIA Regulations.

Decommissioning

- 6.9.50 Decommissioning phase impacts are considered to result in effects of no greater scope or significance upon IEFs than those which would occur during the construction phase, albeit occurring over a shorter timescale.
- 6.9.51 The future presence of IEFs at the time of decommissioning (50 years) is unknown and cannot be reasonably assumed with any certainty or accuracy.
- 6.9.52 As such, decommissioning phase effects upon IEFs are not considered explicitly within this assessment. However, providing the implementation of good practice measures, such as those outlined in **Section 6.7**, are included (and presented in a DEMP at the point of decommissioning), it is unlikely that significant effects upon IEFs would occur.

6.10 Additional Mitigation and Enhancement

- 6.10.1 Embedded mitigation and good practice measures are summarised in **Section 6.7**, as well as in the OCEMP (**Technical Appendix 2.1**, EIA Report Volume 4).
- 6.10.2 No significant adverse effects upon any IEFs are predicted as a result of the construction or operation (or decommissioning) of the Proposed Development, however the below additional mitigation measures are proposed, during the operational phase, given consideration of recent guidance and advice.

Mitigation during Construction

- 6.10.3 No mitigation is required as there are no significant effects as a result of the construction of the Proposed Development. However, as summarised in **Section 6.7**, embedded mitigation is to be implemented to include production of a CEMP, SPPs and HSPPs. This will ensure IEFs are protected during the construction phase of the Proposed Development.

Mitigation during Operation

Peatland

- 6.10.4 Some, principally mosaic, areas of M19 and M17 are considered likely to be Priority Peatland of Possible National Interest, while other mosaic areas of M19 and M17 are considered Priority Peatland Not of National Interest. Furthermore, there are other mosaic areas of Priority Peatland Not of National Interest, with M20 present (and no M19 or M17). M20 is typical of degraded M19 habitat where much of the sphagnum moss has been depleted due to factors, including over-grazing and over-burning.
- 6.10.5 In summary, 9.34 ha of Priority Peatland of Possible National Interest may be permanently lost as a result of the Proposed Development; 2.683 ha direct and 6.657 ha indirect resulting from the Proposed Development footprint. With the amount of Priority Peatland of Possible National Interest to be directly lost (2.683 ha); 9.34 ha is considered the worst-case scenario and precautionary and the area of genuine Priority Peatland of Possible National Interest to be lost is likely to be lower than this.
- 6.10.6 Up to 77 ha of peatland identified as potentially restorable exists on-site. In addition a further 17 ha of peatland which is currently comprised of commercial forestry which will be restored back to peatland. Thus, there is a total of up to 94 ha of peatland within the Site which would be restored/created (and these areas would be subject to further investigation for the most appropriate restoration measures to adopt). These identified areas are detailed in **Technical Appendix 6.5** (EIA Report Volume 4), with some restoration signifying compensation/mitigation and some restoration signifying enhancement. Peatland restoration areas that have been identified as potentially suitable for restoration include areas which have been subject to some level of unfavourable management, principally through the presence of hags/exposed bare peat, and some artificial drains. As detailed in **Technical Appendix 6.5** (EIA Report Volume 4) there is a commitment to undertake extensive peatland restoration across the Site predominantly through adoption of measures to reinstate peatland where it has suffered from haggings and erosion (and the presence of bare exposed peat) and where appropriate ditch blocking,, mainly focusing on the open hills in the south of the Site (this would also improve condition of degraded bog pools at the locality). As well as restoration of peatland in the key-holed areas around the Proposed Development's turbines, which collectively will achieve up to 77 ha of peatland restoration. Of this 77 ha habitat that would be restored, 75 ha would be restored as compensation/mitigation. This signifies a 1:8 compensation of peatland restoration to the loss (direct and indirect) of Priority Peatland of Possible National Interest on-site. Restoration or creation of 75 ha of peatland would signify a significant biodiversity benefit and represent appropriate mitigation on-site which is compliant with NPF4.
- 6.10.7 The peatland restoration and creation programme would be secured if the Proposed Development is consented through a suitably worded condition, with the specifics subject to further on-site investigation

from experienced ecologists and hydrologists to ensure the most appropriate restoration measures are implemented, and the appropriate areas are targeted. The effectiveness of the peatland restoration would be monitored over the lifespan of the Proposed Development, to appraise the success of the measures, and to ensure that any requirement for remedial action can be identified and implemented. The programme of peatland restoration and creation would be agreed with NatureScot, and it is proposed that the works would be implemented from the first year of commercial operation of the Proposed Development. It is proposed that a peatland restoration and creation strategy would be incorporated into or form an Annex to the NEMP if the Proposed Development is consented.

Bats (foraging/commuting)

- 6.10.8 Although no significant effects on foraging/commuting bats are predicted, precautionary good practice measures would be adopted to reduce unnecessary risk to foraging and commuting bats. During the operational phase of the Proposed Development, additional mitigation in the form of pitching the blades out of the wind ('feathering') to reduce rotation speeds below 2 revolutions per minute (rpm) while idling, as detailed in NatureScot guidance (2021)²² would be implemented. The reduction in speed resulting from feathering compared with normal idling can reduce bat fatality rates by up to 50 % (NatureScot guidance, 2021)²². Feathering would therefore be implemented using automated Supervisory Control and Data Acquisition (SCADA) data for the lifetime of the Proposed Development.
- 6.10.9 A programme of bat monitoring (including bat carcasses searches) is also proposed, whereby any records of bat casualties as a result of operational turbines would be identified, and any remedial action implemented (see also **Section 6.13**).

Mitigation during Decommissioning

- 6.10.10 No mitigation is required as there are no significant effects as a result of the decommissioning of the Proposed Development.

Enhancement

- 6.10.11 An ONEMP for the Proposed Development has been provided as **Technical Appendix 6.5** (EIA Report Volume 4) and **Figure 6.8** (EIA Report Volume 3a) and details outline habitat enhancement principles to be implemented as part of the Proposed Development.
- 6.10.12 The final NEMP would be agreed in consultation with NatureScot and implemented as approved in accordance with a suitably worded condition. In summary, measures are to include peat restoration and creation (forest-to-bog restoration) within the Site, the enhancement of riparian habitats (through tree planting along up to 9 ha of watercourse on-site to benefit wildlife like aquatic invertebrates and foraging/commuting bats), improving opportunities for nesting birds and roosting bats (through deployment of bird and bat boxes), improving habitats on-site for invertebrates (though creation of log piles/hibernacula), and enhancing and increasing native tree cover, and AWI habitat enhancement (restoring the woodland habitat which is on the AWI to maximise the ecological integrity of the woodland).
- 6.10.13 There is a total of 194.1 ha of Priority Peatland of Possible National Interest within the Site. A 10 % proportion of this total is 19 ha. It is proposed that 19 ha of peatland will be restored, and will comprise the 17 ha forest-to-bog restoration area, and a further 2 ha of the 77 ha area of peatland identified for restoration (the other 75 ha will comprise of the mitigation/compensation for peatland loss, see above in the 'Mitigation during Operation' section).
- 6.10.14 Creation of 17 ha of peatland through forest-to-bog measures (and a further 2 ha of peatland restoration) totalling 19 ha of peatland restoration or creation would signify a significant biodiversity benefit and represent appropriate habitat enhancement on-site which is compliant with NPF4.
- 6.10.15 Enhancement measures, provided as part of the ONEMP, would remain in place throughout the operational phase, subject to periodic review. It is envisaged that proposed enhancement measures would start to provide benefits after a period of around five to 10 years, with peatland restoration measures (such as rewetting) reported as bringing back/increasing the abundance of peat-forming vegetation during this time period (see Cris *et al.* 2011)⁷⁰.

Summary

- 6.10.16 Mitigation measures, together with habitat creation and enhancement measures to be implemented under the ONEMP, are expected to provide net beneficial effects associated with the Proposed Development long-term and will leave biodiversity in a demonstrably better state than in the absence of the Proposed Development, consistent with Policy 3 of the NPF4.

6.11 Residual Effects

⁷⁰ Cris, R., Buckmaster, S., Bain, C. and Bonn, A. (eds.) (2011) UK Peatland Restoration - Demonstrating Success. IUCN UK National Committee Peatland Programme, Edinburgh.

Construction

- 6.11.1 No additional mitigation is proposed at the construction stage. Therefore, residual effects on scoped in IEFs at the construction phase, as a result of the Proposed Development mirror the assessment conclusions in **Section 6.9** and remain Not Significant.

Operation

Peatland

- 6.11.2 With the adoption of the additional mitigation measures (peatland restoration and peatland creation totalling up to 75 ha), it is anticipated that although long-term in duration, beneficial impacts of Low magnitude would occur, resulting in an effect of **Minor** significance on peatland habitats on-site, which is considered Not Significant in the context of the EIA Regulations.

Bats (foraging/commuting)

- 6.11.3 With the adoption of the mitigation measures (feathering of operational turbines), it is anticipated that any impacts on foraging or commuting bats would be of Negligible magnitude result in an effect of **Negligible** significance, with respect to collision mortality, on-site, which is considered Not Significant in the context of the EIA Regulations.

Decommissioning

- 6.11.4 No additional mitigation is proposed at the decommissioning stage. Therefore, residual effects on scoped in IEFs at the decommissioning phase, as a result of the Proposed Development mirror the assessment conclusions in **Section 6.9** and remain Not Significant.

6.12 Cumulative Assessment

- 6.12.1 This section considers the potential effects of the Proposed Development upon IEFs in combination with other wind farm developments in accordance with NatureScot guidance (2021²²; and SNH, 2012)¹⁸ with respect to the appropriate approach to assessing cumulative effects. The assessment considers operational, consented (including under construction), and in application wind farms for bats (foraging/commuting) and habitat loss only and within 10 km of the Proposed Development (distance from a central point on-site). All of the listed schemes are within THC planning authority boundary.
- 6.12.2 There is one operational wind farm within 10 km of the Proposed Development:
- Rosehall Wind Farm (ref: 05/00429/FULSU), a 19-turbine scheme, 9.4 km northeast of the Site boundary.
- 6.12.3 There are two consented wind farms within 10 km of the Proposed Development:
- Strath Oykel Wind Farm (ref: 22/02717/S36 - ECU00003246 - WIN-270-18), an 11-turbine scheme, 2.26 km east of the Site boundary; and
 - Meall Buidhe Wind Farm (ref: 20/02659/FUL), an 8-turbine scheme, 3.78 km southeast of the Site boundary.
- 6.12.4 There is one in application wind farm within 10 km of the Proposed Development:
- Allt an Tuir Wind Farm (ref: 23/06043/SCOP - ECU00005008), a 9-turbine scheme, 6.59 km north of the Site boundary.
- 6.12.5 Given no other specific major non-wind developments were requested to be considered by consultees during the scoping opinion (see **Table 6.1**), the cumulative assessment only considers effects of wind farm projects (as detailed above).

Construction

- 6.12.6 Cumulative construction related effects are considered in relation to bats, habitat loss (notable habitats) and the River Oykel SAC.
- 6.12.7 Cumulative construction effects are only considered for those other wind farms (that may have construction phases which coincide with that of the Proposed Development) within 5 km of the Proposed Development which represents a realistic zone of influence for cumulative effects to occur (i.e. Strath Oykel Wind Farm 2.26 km, away; and Meall Buidhe Wind Farm 3.78 km away). Note, for potential effects on the River Oykel SAC, the Allt an Tuir Wind Farm was also considered, given potential effects on the SAC were also considered for that project.
- 6.12.8 Adverse effects on bats during construction are considered unlikely such that the Proposed Development is not anticipated to contribute to cumulative effects (given no potential roost site was recorded within 200 m plus blade plus rotor radius of the Proposed Development's turbines, and the Proposed Development would result in the loss of typically suboptimal foraging/commuting bat habitat). Both the

assessments for the Strath Oykel Wind Farm and Meall Buidhe Wind Farm scoped out effects on bats during the construction phase. Furthermore, cumulative impacts of all wind farms being developed at once are not anticipated to have a significant effect on bats due to the spatial separation between the Proposed Development and the other wind farm projects, such that it is likely to be different populations located in proximity to the Site which could potentially be affected by the Proposed Development, compared to those populations which are likely to occur in proximity to the other wind farm projects.

- 6.12.9 Both the Strath Oykel Wind Farm and Meall Buidhe Wind Farm report modest losses of bog (or wet modified bog; peatland) habitat. For Strath Oykel Wind Farm, a negligible non-significant effect is predicted and for Meall Buidhe Wind Farm, a minor adverse non-significant effect is predicted, in terms of losses of notable habitat (including bog). Both schemes also provide commitments to restore bog (peatland) habitat. Habitat mitigation measures detailed above for the Proposed Development, and enhancement measures proposed under the ONEMP (see **Technical Appendix 6.5**, EIA Report Volume 4, and **Figure 6.8**, EIA Report Volume 3a) would restore notable habitats (peatland) on-site and result in an increase in the extent of better-quality peatland on-site.
- 6.12.10 With the implementation of mitigation measures (CEMP, including fish and water quality monitoring) for the Proposed Development, any impacts upon the River Oykel SAC as a result of pollution and/or silt run-off into watercourses on-site which are hydrologically linked to the SAC are predicted to be avoided or minimised.
- 6.12.11 The wind farms in closest proximity to the Site (consented Strath Oykel Wind Farm, consented Meall Buidhe Wind Farm, and in-application Allt an Tuir Wind Farm) and with publicly available information, all reported adoption of mitigation (including measures to be detailed in a CEMP, like pollution prevention controls and fish/freshwater pearl mussel and water quality monitoring), which are comparable with the measures that would be implemented for the Proposed Development. With all of the other listed wind farm developments adopting appropriate mitigation, the potential for cumulative adverse construction effects on the River Oykel SAC through pollution and/or silt run-off are considered to be highly unlikely.
- 6.12.12 Based on the above, it is predicted that cumulative adverse effects upon all scoped in IEFs during the construction phase will be Not Significant in the context of the EIA Regulations.

Operation

- 6.12.13 Cumulative operational effects are considered in relation to bats (foraging/commuting) only given this was the only IEF scoped into the assessment at the operational phase, and those other wind farms within 10 km of the Proposed Development.
- 6.12.14 Bat collision impacts have been minimised through the sensitive and considered design of the Proposed Development with turbines appropriately positioned relative to bat habitat features (i.e. woodland, watercourses and waterbodies) in order to minimise the potential for impacts on commuting and foraging bats and therefore any contribution to cumulative impacts upon bats. This has been implemented through the adoption of a 50 m buffer between the blade tip and bat habitat features (including woodland, watercourses and waterbodies), which is a key component in the design of the Proposed Development. Further precautionary mitigation in the form of pitching the blades out of the wind (feathering) to reduce rotation speeds below 2 rpm while idling, as detailed in NatureScot (2021)²² will be implemented.
- 6.12.15 A review of publicly available information for the two consented wind farms (Strath Oykel Wind Farm and Meall Buidhe Wind Farm), and the in-application Allt an Tuir Wind Farm (within 10 km of the Site) has confirmed that good practice measures regarding buffer distances of turbines from suitable foraging and commuting habitats (such as woodland edges and watercourses) are proposed for all the three schemes. To further minimise effects on foraging/commuting bats the Strath Oykel Wind Farm and Allt an Tuir Wind Farm also commit to implementing feathering of operational turbines.
- 6.12.16 The implementation at other wind farm sites of these measures (which would also be implemented for the Proposed Development) to minimise impacts on commuting and foraging bats, further minimises the likelihood of cumulative impacts. Whilst cumulative impacts on bats (foraging/commuting) would be of long-term duration, they are predicted to be no more than a Low magnitude, resulting in an effect of **Minor/Negligible** adverse significance, which is considered Not Significant in the context of the EIA Regulations.

6.13 Monitoring

- 6.13.1 Monitoring will be undertaken during construction in accordance with the CEMP (see OCEMP in **Technical Appendix 2.1**, EIA Report Volume 4) in relation to pollution prevention measures and also fish and water quality monitoring (see details in **Section 6.7**).
- 6.13.2 The fish and water quality monitoring plans would also be established and incorporated into the CEMP with input from the KSDSFB. The aim of the monitoring plans would be to review and where necessary, update baseline conditions prior to construction works commencing and to continue throughout the

construction and initial operational phases to confirm that the mitigation measures with respect to fish populations, water quality, sedimentation and maintenance of potential fish passages are performing.

- 6.13.3 The ONEMP (see **Technical Appendix 6.5**, EIA Report Volume 4) includes summary information on monitoring protocols to be undertaken during the operational phase of the Proposed Development, which would be finalised in a NEMP if the Proposed Development is consented. The monitoring protocols would include details of checks of the habitat mitigation (peatland compensation) and habitat enhancement measures, and details of response and remediation measures in the event mitigation/enhancement measures are found not to be performing.
- 6.13.4 Monitoring (as detailed in the ONEMP) would also include checks for any evidence of bat collisions during the operational phase of the Proposed Development, with the programme to be agreed with THC and NatureScot.
- 6.13.5 Furthermore, the monitoring protocols would include details of checks for grazing pressures from deer. The requirement for a DMP for the Site would be discussed with the landowner. If the requirement for a DMP is identified, the DMP would be agreed in consultation with the landowner and adjacent interested parties, to avoid adverse impacts on collaborative parties.

6.14 Deer Impact Statement

- 6.14.1 During the field surveys, evidence of deer (roe, sika and red deer) was recorded on-site.
- 6.14.2 The Proposed Development will result in the loss of predominantly commercial forestry, with some loss of open habitats in the south and north. The process of removal of the forestry would be key-holing and not clear-felling, and thus of the 655.74 ha commercial forestry mapped on-site (during the habitat surveys) only 13.116 ha would be directly lost as a result of the Proposed Development (at least c.98 % of the commercial forestry to be retained on-site). As such, the vast majority of the shelter habitat for deer on-site would be retained, and would continue to provide shelter. Furthermore, as detailed in **Technical Appendix 2.3** (EIA Report Volume 4), compensatory planting would be undertaken so there would be no net loss in forestry, thus shelter/cover for deer, in the long-term.
- 6.14.3 Any requirement for wild deer management is assumed to be undertaken by the landowner. As such, there would be a commitment on the Applicant to liaise with the landowner to ensure that ongoing deer management activities take account of the construction and operational phases of the Proposed Development, with wild deer to be managed on-site as per the status quo. Any requirement for a Deer Management Plan (DMP) for the Site would be discussed with the landowner. If the requirement for a DMP is identified (for example over-grazing is identified on-site during the habitat monitoring, see **Technical Appendix 6.5** (EIA Report Volume 4)), the DMP would be agreed in consultation with the landowner and any adjacent interested parties, to avoid adverse impacts on collaborative parties.
- 6.14.4 Embedded mitigation, including pre-construction surveys and the presence of an ECoW (to be secured via the CEMP, see **Technical Appendix 2.1** (EIA Report Volume 4)) are considered appropriate to avoid any potentially significant adverse effects upon deer, including on deer welfare. Some temporary, open excavations may be created as part of the Proposed Development within suitable sheltering and/or foraging areas. As detailed in **Section 6.7**, these excavations would be covered outside work hours to ensure that no animals, including deer, fall in. If excavations are left open, boards would be positioned so that any animal can escape. These measures would be secured via the CEMP. The potential for deer collision with plant machinery or vehicles within the Site as part of construction works would also be avoided through adherence to on-site speed limits which will be detailed in a future CEMP.
- 6.14.5 The potential for the displacement of deer onto adjacent roads is considered to be limited, with the direction of deer displacement reasonably expected to occur into adjacent available woodland cover, principally retained on-site (with compensatory planting to be undertaken). No anticipated change to existing deer numbers crossing the local road network and potential for deer vehicle collisions is therefore anticipated. It should be noted however, that any requirement for a DMP will be guided by monitoring as part of the NEMP (if the Proposed Development is consented).
- 6.14.6 The Proposed Development does not include the erection of any temporary or permanent deer fencing to exclude deer from the Site. Local deer populations would therefore continue to be able to move freely within the Site and around the Proposed Development infrastructure following the completion of construction works. Given the extensive availability of suitable open habitats within the immediate and wider surrounding area available for deer, grazing resources for deer populations within the Site and local area, would not be adversely affected by the Proposed Development.
- 6.14.7 During operation, the potential for deer collision with plant machinery or vehicles within the Site as part of operational maintenance works would be avoided through adherence to on-site speed limits, to be secured via the OMP.
- 6.14.8 On account of embedded mitigation (as detailed above), no impacts which are likely to lead to significant adverse effects on deer are anticipated.

6.15 Summary

- 6.15.1 Using a comprehensive programme of baseline ecological surveys, supplemented by desk study data, an assessment has been made as to the potential impacts of the Proposed Development on IEFs.
- 6.15.2 IEFs have been identified and assessed for potential impacts on these features. Embedded mitigation measures, including adherence to good practice guidelines, have been taken into account when undertaking the assessments.
- 6.15.3 Embedded mitigation and pre-construction surveys, together with the employment of a suitably qualified ECoW, would enable the protection of IEFs, including otter, bats, badger, red squirrel, water vole, pine marten, fish (freshwater pearl mussel), and herpetofauna during construction.
- 6.15.4 A fish (extended to include freshwater pearl mussel) monitoring plan will also be implemented to record pre-, during and post- construction fish populations in watercourses on and adjoining the Site and will be developed in consultation with the KSDSFB. Monitoring will also be implemented to assess peatland compensatory restoration areas and habitat enhancement measures during the operational phase of the Proposed Development.
- 6.15.5 Some peatland habitats on-site (including some currently under commercial forestry) will be restored (up to 94 ha of habitat has been identified for potential peatland restoration) to compensate for the loss of modest amounts of Priority Peatland (and provide significant biodiversity benefits and enhancement) which is compliant with NPF4.
- 6.15.6 The Proposed Development turbine locations include a 50 m 'stand-off' (from blade tip) around bat habitat features to reduce potential impacts on bats in accordance with NatureScot guidance (2021)²². Further precautionary additional mitigation in the form of pitching the blades out of the wind (feathering) to reduce rotation speeds below 2 rpm while idling, as detailed in NatureScot guidance (2021)²² will be implemented.
- 6.15.7 No significant adverse effects are predicted on IEFs from the Proposed Development, alone or cumulatively with other relevant developments, in terms of the EIA Regulations.
- 6.15.8 Information to inform a HRA is also provided with respect to assessing the potential for LSEs on the River Oykel SAC and the designated site's two qualifying species, Atlantic salmon and freshwater pearl mussel. No LSEs are predicted on the integrity of the River Oykel SAC, either from the Proposed Development alone, or in-combination with other relevant developments.
- 6.15.9 The Proposed Development includes substantial habitat enhancement that will deliver broader biodiversity benefits, including for many locally occurring IEFs.
- 6.15.10 **Table 6.13** provides a summary of potential significant effects in relation to the Proposed Development.

Table 6.13 - Summary of Potential Significant Effects of the Proposed Development

IEF and Potential Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
Construction			
River Oykel SAC – Disturbance/Damage	Not required; standard, embedded mitigation, and good practice protocols (including pollution prevention and monitoring, as part of CEMP and sensitive design of essential watercourse crossings) applied.	n/a	Not Significant
Priority Peatland of Possible National Interest – Habitat loss	Not required; standard, embedded mitigation applied (but see operational phase).	n/a	Not Significant
Priority Peatland Not of Possible National Interest – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Other notable habitat – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Foraging/commuting bats – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Foraging/commuting bats – Displacement/disturbance	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Operation			
Priority Peatland of Possible National Interest – Habitat loss	Up to 94 ha of peatland will be restored or created, with 75 ha of this peatland representing mitigation/compensation. This	The restoration protocol will be implemented as additional mitigation and will be a condition of any consent.	Not Significant

IEF and Potential Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/Residual Effect
	signifies significant biodiversity benefits.	Enhancement measures (detailed in the NEMP) will also restore peatland on-site, and this is considered additional to the compensation to be implemented. Total of 94 ha peatland for restoration/creation is considered as appropriate additional mitigation (75 ha) and enhancement (19 ha).	
Priority Peatland Not of Possible National Interest – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Foraging/commuting bats – collision mortality	Not required; standard, embedded mitigation applied. Although feathering of blades to reduce rotation speeds below 2 rpm while idling.	Through scheme design of the Proposed Development.	Not Significant
Foraging/commuting bats – habitat loss/displacement/disturbance	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Decommissioning			
River Oykel SAC – Disturbance/Damage	Not required; standard, embedded mitigation, and good practice protocols (including pollution prevention and monitoring, as part of CEMP and sensitive design of essential watercourse crossings) applied.	n/a	Not Significant
Priority Peatland of Possible National Interest – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Priority Peatland Not of Possible National Interest – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Other notable habitat – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Foraging/commuting bats – Habitat loss	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Foraging/commuting bats – Displacement/disturbance	Not required; standard, embedded mitigation applied.	n/a	Not Significant
Cumulative Construction			
As above with respect to the outcome of the Proposed Development (alone) potential effects and mitigation at the construction phase.	As above	As above	As above
Cumulative Operation			
As above with respect to the outcome of the Proposed Development (alone) potential effects and mitigation at the operation phase.	As above	As above	As above

6.16 Information to Inform Habitats Regulations Appraisal (HRA)

Screening for Likely Significant Effects (LSEs)

- 6.16.1 This section summarises information relating to the potential for likely significant effects (LSEs) upon ecological qualifying features of the River Oykel SAC, as a result of the construction and operation of the Proposed Development. All other designated sites with ecological interests (see **Tables 6.6** and **6.10**) are appropriately spatially separated from the Site, with ecological interests for the other sites static and with notable features between the Site and the designated sites (like road network, forestry and watercourses) likely to have buffering effects, and therefore no pathways of LSEs are considered to warrant further assessment in this section.
- 6.16.2 The River Oykel SAC is located off-site, 1.2 km from the nearest Proposed Development's turbine, but the western access route crosses the River Einig (which is part of the River Oykel SAC) over an existing watercourse bridge crossing (and over a small number of minor brooks which flow into the River Einig). The River Oykel SAC is designated for the following qualifying interests:

- Atlantic salmon; and
 - Freshwater pearl mussel.
- 6.16.3 The Overarching Conservation Objectives for both qualifying features of the River Oykel SAC are:
- to ensure that the qualifying features of the SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status; and
 - to ensure that the integrity of the SAC is restored by meeting objectives 2a, 2b and 2c for both qualifying features (and 2d for freshwater pearl mussel).
- 6.16.4 The Conservation Objectives specifically for freshwater pearl mussel are:
- 2a. restore the population of freshwater pearl mussel as a viable component of the site;
 - 2b. restore the distribution of freshwater pearl mussel throughout the site;
 - 2c. restore the habitats supporting the freshwater pearl mussel within the site and availability of food; and
 - 2d. maintain the distribution and viability of freshwater pearl mussel host species and their supporting habitats.
- 6.16.5 The Conservation Objectives specifically for Atlantic salmon are:
- 2a. maintain the population of Atlantic salmon, including range of genetic types, as a viable component of the site;
 - 2b. maintain the distribution of Atlantic salmon throughout the site; and
 - 2c. maintain the habitats supporting the Atlantic salmon within the site and availability of food.
- 6.16.6 As assessed during the Fish Habitat Survey (**Technical Appendix 6.4**, EIA Report Volume 4), most of watercourses within the Site all drain into the River Oykel SAC, which is north of the Site. As such, there is hydrological connectivity between the Site and the SAC, with the prospect of hydrological flow from the Site into the SAC. The watercourses flowing through the Site however were appraised as being of sub-optimal value for fish fauna and this extends to the Atlantic salmon and freshwater pearl mussel, and both species are predicted to not use watercourses on-site itself. However, the River Einig which the western access route crosses over an existing watercourse bridge crossing has potential to support both SAC species (and is part of the SAC).
- 6.16.7 During construction works, in the absence of any mitigation measures there is the potential for pollution and silt run-off to enter watercourses and flow into the River Oykel SAC. This may adversely affect the integrity of the SAC both in terms of its habitats and its qualifying features, with regard to the Conservation Objectives.
- 6.16.8 Operational activities, including maintenance, are likely to result in irregular/occasional vehicular movements during the operational phase of the Proposed Development; however, this would be constrained to the access tracks and infrastructure. No disturbance to watercourses and surrounding habitats is anticipated. As no effects on watercourses are predicted, LSEs at the operation phase are ruled out.
- 6.16.9 However, LSEs from the construction of the Proposed Development cannot be ruled out for River Oykel SAC in the absence of mitigation. Accordingly, information to inform an AA has been provided below.
- Information to Inform an Appropriate Assessment (AA)**
- 6.16.10 In the absence of mitigation, the potential for LSEs is identified for both qualifying species (Atlantic salmon and freshwater pearl mussel) for the River Oykel SAC as a result of the Proposed Development.
- 6.16.11 This section therefore considers the potential for adverse effects upon the integrity of both qualifying species, in view of the SAC's Conservation Objectives and on the basis of mitigation measures.
- 6.16.12 It is predicted that although the SAC's qualifying species (Atlantic salmon and freshwater pearl mussel) are unlikely to use watercourses on-site itself, they are likely (and for Atlantic salmon are confirmed) to be using watercourse stretches downstream in the River Oykel. Noting, that the River Oykel SAC is hydrologically connected to most watercourses that flow through the Site. Furthermore, the River Einig (part of the River Oykel SAC) which the western access route crosses over via an existing watercourse bridge crossing has potential to support Atlantic salmon and freshwater pearl mussel.
- 6.16.13 Proposed Development design and evolution have minimised the number of new watercourse crossings (with 11 required, based on the western access option as a worst-case scenario), and with all new crossings being sensitively designed to allow the continued flow of water and wildlife therein. Furthermore, a 50 m buffer around all mapped watercourses for turbine hard-standings and substation compounds has been applied. Works within 50 m of watercourses are, where possible, limited and in

many areas limited to vehicular access along existing tracks (with a small number of localised works for new watercourse crossings), but creation of new track especially along the western access route within 50 m is noted. The existing crossing over the River is a clear span bridge which is elevated c. 10 m, above the River Einig and would be used as part of the western access option.

Construction Environmental Management Plan (CEMP)

- 6.16.14 A CEMP will be prepared for the Proposed Development, to be approved by THC and NatureScot. The CEMP would be finalised and implemented by way of a suitably worded planning condition.
- 6.16.15 The CEMP, once finalised, would include all standard measures to ensure the Proposed Development is constructed in accordance with industry good practice applicable at the time of commencement. The CEMP would also include habitat reinstatement measures following the cessation of construction works.
- 6.16.16 With specific reference to the protection of the SAC and its qualifying features during the construction of the Proposed Development, the CEMP would include all good practice construction measures including sensitive construction techniques for works in and adjacent to watercourses, sediment management and pollution prevention controls and monitoring to be implemented over the course of the construction phase, particularly regarding working in and immediately adjacent to watercourses, in line with current industry and statutory guidance.

Pre-, during and post- Construction Monitoring Surveys

- 6.16.17 Although the watercourses on-site mainly lie on moderately steep to steep gradients and many are peaty headwaters with low-negligible suitability for fish (or freshwater pearl mussel), an FMP, including provision for pre-, during- and post-construction fish (and freshwater pearl mussel) monitoring would be produced in liaison with the KSDSFB (and the FMP will form part the CEMP). This will include sample points downstream of the Site (including in the River Oykel), along the River Einig (close to the western access route crossing) and on-site. The survey scope will be extended to include water quality monitoring. The purpose of the fish and water quality monitoring would be to ascertain any changes in baseline conditions within, and particularly downstream (where the watercourses offer much better-quality habitat for Atlantic salmon and freshwater pearl mussel) of the Site to identify any requirement for additional mitigation.
- 6.16.18 With the adoption of these mitigation measures, the risk of any impacts from the Proposed Development on the River Oykel SAC or its qualifying species, Atlantic salmon and freshwater pearl mussel are is not anticipated to result in LSEs on the integrity of the SAC.

In Combination Impacts

- 6.16.19 LSEs from the construction of the Proposed Development cannot be ruled out for River Oykel SAC in the absence of mitigation. However, with the implementation of the above mitigation measures (CEMP, including fish and water quality monitoring), any impacts upon the River Oykel SAC as a result of pollution and/or silt run-off into watercourses on-site which are hydrologically linked to the SAC are predicted to be avoided or minimised to a negligible level such that there would be no adverse effects on the integrity of the SAC.
- 6.16.20 The wind farms in closest proximity to the Site (consented Strath Oykel Wind Farm, consented Meall Buidhe Wind Farm, and in-application Allt an Tuir Wind Farm) and with publicly available information, all reported adoption of mitigation (including measures to be a detailed in a CEMP, like pollution prevention controls and fish/freshwater pearl mussel and water quality monitoring), which are comparable with the measures that would be implemented for the Proposed Development. With all of the other listed wind farm developments adopting appropriate mitigation, the potential for cumulative adverse construction effects on the River Oykel SAC through pollution and/or silt run-off are considered to be highly unlikely. As such, no in-combination impacts are anticipated upon the River Oykel SAC.
- 6.16.21 As LSEs on the River Oykel SAC and its qualifying features from the Proposed Development can be avoided/minimised to a negligible level through mitigation, it can be concluded that there would be no measurable adverse effects from the Proposed Development which would contribute cumulatively to those associated with other developments in the nearby and wider surrounding area which, when considered in combination, could result in adverse effects on the integrity of these designated sites.

Conclusion

- 6.16.22 Information to inform an AA has been provided. This has concluded that with the adoption of the above mitigation measures, the Proposed Development would have no adverse effect on-site integrity of the River Oykel SAC, either on its own, or in combination, with other considered projects.

6.17 Glossary and Abbreviations

Term	Definition
Additional mitigation	Measures which are bespoke to the Proposed Development, and are required to mitigate adverse significant effects over and above the standard (see 'embedded mitigation') mitigation.
Assessment	Process by which information about effects of Proposed Development is collected, assessed and used to inform decision making.
Baseline conditions	Environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
Construction phase	Period during which the building or assembling of the Proposed Development and its infrastructure would be undertaken.
Consultation	Process by which those organisations or individuals with an interest in the area associated with the Proposed Development are identified and engaged as part of the EIA process.
Consultation bodies	Organisations that the competent authority is required to consult by virtue of the EIA Regulations.
Cumulative impact	Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. A cumulative impact may arise as the result of (a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project on a single receptor/ resource or (b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource.
Decommissioning	Period during which the Proposed Development and its associated infrastructure would be removed from active operation.
Ecobat	A programme which provides a standardised and objective method for analysing bat activity data.
Effect	Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact with the importance (or sensitivity) of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the IEF.
EIA Regulations	Collective term for the various statutory instruments through which the directives on environmental assessment have been implemented in the UK.
Environmental Impact Assessment Report	Otherwise known as an EIAR. Document produced in accordance with the EIA directive (as transposed into UK law by the EIA regulations) that reports the outcomes of the EIA process.
Embedded mitigation	Measures that are implemented which are 'standard' and 'guaranteed' to be delivered, such as the adoption of standard pollution prevention measures.
European site (or international site)	Sites that make up the European ecological network (previously known as Natura 2000 sites). With respect to ecology, these include Special Areas of Conservation (SACs) and candidate or possible SACs (cSAC or pSAC), and Ramsar sites.
Feathering	The form of pitching the turbine blades out of the wind to reduce rotation speeds below 2 revolutions per minute (rpm) while idling to reduce the potential for bat collisions.
Feature	Defined individual environmental feature usually associated with population, fauna and flora with the potential to be affected by the Proposed Development. For respective to ecology, this concerns consideration of important ecological features.
Habitats Regulations	EC Council Directive 92/43/EEC, known as the Habitats Directive, was translated into legal obligations in Scotland by the Conservation (natural habitats) Regulations 1994 (most recently amended in 2019 as the EU Exit Regulations). This legislation is more commonly known as the Habitats Regulations. The Habitats Regulations cover requirements for sites that are internationally important for threatened habitats and species (e.g. European sites), species that require strict protection (e.g., European protected species), and other aspects of the Habitats Directive (which is still used as a reference under UK Law).
Habitats Regulations Appraisal	Assessment of the impacts of implementing the Proposed Development on a European site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the designated site.
Impact	Change that is caused by an action; for example, land clearing (action) during construction that results in habitat loss (impact).
In combination effects	Similar to 'cumulative effects' but concerns such effects in the context of the Habitats Regulations.
Information to Inform Habitats Regulations Appraisal	Provides information (data and details gathered) to allow the competent authority to assess whether the Proposed Development is likely to a significant effect on a European/ international site.
Integrity	Maintenance of the conservation status of a habitat or population of a species at a specific location or geographical scale.

Term	Definition
Additional mitigation	Measures which are bespoke to the Proposed Development, and are required to mitigate adverse significant effects over and above the standard (see 'embedded mitigation') mitigation.
Mitigation	Measures intended to avoid, reduce and compensate adverse environmental effects (see 'additional mitigation and 'embedded mitigation').
Monitoring	Continuing assessment of the performance of the Proposed Development, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.
Non-statutory consultee	Organisations and bodies that should be consulted on relevant planning applications.
Operation	Functioning of the Proposed Development on completion of construction.
Pollution	Any increase of matter or energy to a level that is harmful to living organisms of their environment (when it becomes a pollutant).
Priority peatland	Defined based on the assessment from NatureScot guidance (2023), which further considers Priority Peatland as being of Possible National Interest and Not of National Interest, depending on condition and species composition. This includes appraising for characteristics of the peatland which are indicative of near natural condition or modified condition.
Proposed Development	The project that the Applicant seeks to implement.
Roosting site (bats)	Place where bats rest or sleep.
Scoping	Process of identifying the issues to be addressed by the Environmental Impact Assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered Not Significant.
Scoping opinion	Opinion provided by a competent authority that indicates the issues an Environmental Impact Assessment of the Proposed Development should consider.
Significance	See 'significance of effect'.
Significance of effect	Measure of the importance or gravity of the environmental effect, defined by either generic significance criteria or criteria specific to the environmental topic.
Sites of Special Scientific Interest	Main national conservation site protection measure in Britain designated under the wildlife and countryside act 1981.
Special Area for Conservation	Sites designated under EU Directive (82/43/ECC) for the conservation of natural habitats and wild fauna and flora.
Study area	Spatial area within which environmental effects are assessed (i.e. extending a distance from the Proposed Development in which significant environmental effects are anticipated to occur). This varies between the topic areas and with respect to ecology, between different features.

Abbreviation	Expanded Term
AA	Appropriate Assessment
AWI	Ancient Woodland Inventory
BCT	Bat Conservation Trust
BSI	British Standards Institution
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute for Ecology and Environmental Management
cSAC	Candidate Special Area of Conservation
cSSSI	Candidate Site of Special Scientific Interest
DEMP	Decommissioning Environmental Management Plan
DMP	Deer Management Statement
EcIA	Ecological Impact Assessment
ECOW	Ecological Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
FMP	Fish Management Plan

Abbreviation	Expanded Term
GWDTE	Groundwater Dependent Terrestrial Ecosystems
ha	Hectare
HBRG	Highland Biological Recording Group
HCR	High Collision Risk
HRA	Habitats Regulations Appraisal
HSA	Habitat Suitability Appraisal
HSPP	Habitat Specific Protection Plan
IEF	Important Ecological Feature
JNCC	Joint Nature Conservation Committee
KSDSFB	Kyle of Sutherland District Salmon Fisheries Board
Km	Kilometre
LSE	Likely Significant Effect
M	Metre
NEMP	Nature Enhancement Management Plan
NPF4	National Planning Framework 4
NVC	National Vegetation Classification
OCEMP	Outline Construction Environmental Management Plan
OMP	Operation Management Plan
ONEMP	Outline Nature Enhancement Management Plan
OPMP	Outline Peat Management Plan
OWPS	Onshore Wind Policy Statement
PEAG	Peatland Expert Advisory Group
PRF	Preliminary Roost Feature
rpm	Revolutions per minute
RSPB	Royal Society for Protection of Birds
SAC	Special Area of Conservation
SBL	Scottish Biodiversity List
SFCC	Scottish Fisheries Coordination Centre
SNH	Scottish Natural Heritage (now NatureScot)
SEPA	Scottish Environment Protection Agency
SPP	Species Protection Plan
SSSI	Site of Special Scientific Interest
THC	The Highland Council
UKBAP	UK Biodiversity Action Plan
UKHab	UK Habitat Classification System
WFD	Water Framework Directive

Chapter 7: Ornithology

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7 Ornithology

7.1 Executive Summary

- 7.1.1 This Chapter considers the potential significant effects on important ornithological features (IOFs) associated with the construction, operation, and decommissioning of the Proposed Development.
- 7.1.2 The assessment is based upon comprehensive baseline data, comprising specifically targeted field surveys of legally protected and notable ornithological features of conservation concern identified during desk study and consultation feedback. It draws on pre-existing information, where appropriate, from other studies and survey data sources, and is based on Environmental Impact Assessment (EIA) guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM) and NatureScot.
- 7.1.3 A full year's-worth of ornithological surveys were carried out to support the application, as agreed through consultation with NatureScot. Surveys consisted of Vantage Point (VP) flight activity surveys, and surveys for moorland breeding birds, Annex I and Schedule 1 breeding raptors and owls, black grouse and breeding divers.
- 7.1.4 The habitats in the wider area surrounding the Site support a reasonable number of bird species regarded as 'target species', as evidenced from baseline surveys and desk study records; however, the Site itself is of relatively low importance to such species. This is reflective of the commercial plantation forestry which dominates the Site. Based on a review of the ornithological features associated with the Site and the immediately surrounding area, no IOFs were taken forward for detailed assessment. This includes potential impacts on Caithness and Sutherland Peatlands Special Protection Area (SPA) and Wetland of International Importance (Ramsar Site) based on its distance of separation from the Site and the absence of any species whose ranging distances potentially extend as far as the Site. This conclusion is reiterated through a shadow Habitats Regulations Appraisal (sHRA) to demonstrate that the Proposed Development will not result in any Likely Significant Effects (LSEs) on these designated sites. Consequently, the Proposed Development is not anticipated to pose any significant adverse effects on IOFs and hence will not contribute to any significant cumulative effects. Therefore, a cumulative impact assessment is not necessary.
- 7.1.5 Embedded mitigation and good practice control measures have been considered from the outset when undertaking the assessment. These include production of a Construction Breeding Bird Protection Plan (CBBPP) involving pre-and during construction surveys and appointment of an Ecological Clerk of Works (ECOW) to oversee the implementation of standard ornithological protection measures.
- 7.1.6 Habitat enhancement opportunities detailed in an Outline Nature Enhancement Management Plan (ONEMP), including peat restoration and native tree planting, would improve nesting and foraging opportunities for locally occurring bird species.

7.2 Introduction

- 7.2.1 This Chapter considers the potential for significant effects on important ornithological features (IOFs) associated with the construction, operation, and decommissioning of the Proposed Development. For the assessment of potential significant effects on ecological (non-avian) features, please see **Chapter 6: Ecology** (EIA Report Volume 2).
- 7.2.2 The assessment is based upon comprehensive baseline data, comprising ornithological field surveys of legally protected and notable ornithological features of conservation concern identified during desk study, and consultation feedback. It draws on pre-existing information, where appropriate, from other studies and survey data sources, and is based on the 'Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland' CIEEM (2018)¹ and NatureScot's 'Environmental Impact Assessment Handbook' (formerly Scottish Natural Heritage (SNH), 2018a)².
- 7.2.3 The specific objectives of the Chapter are to:
- describe the ornithological baseline conditions associated with the Site and Study Areas;
 - describe the assessment methodology and significance criteria used in completing the impact assessment;

¹ CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester. *Note, version 1.3 is the update from September 2024, but given this update reflects mainly some (modest) clarifications, the 2018 version is the main source, and is duly referenced in this chapter.*

² SNH (2018a). Environmental Impact Assessment. Available at: <https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/environmental-impact-assessment>

- evaluate the sensitivity of each ornithological feature in order to identify the IOFs which will be the focus of this assessment;
 - determine the magnitude of impacts on IOFs;
 - describe and assess the potential effects, including direct, indirect, and cumulative effects (if required);
 - describe the mitigation measures proposed to avoid, reduce and offset potentially significant adverse effects (if required); and
 - assess the significance of residual effects remaining following the implementation of mitigation.
- 7.2.4 The assessment has been carried out by Avian Ecology Ltd. Lead author: Mr Thomas Goater MSc BSc (Hons) MCIEEM, Technical Director, with support from Mr Graeme Garner BSc (Hons), Principal Ornithologist, and Dr Colin Bonnington DPhil MSc BSc (Hons) FBNA FLS MRSB MCIEEM, Principal Ecologist. Mr Goater, Mr Garner and Dr Bonnington have over 17, 16 and 12 years' experience respectively as professional ecologists/ornithologists, specialising in renewable energy developments. Mr Goater, Mr Garner and Dr Bonnington have contributed to, and led on, many large-scale renewable energy projects in Scotland, including numerous wind farm development projects.
- 7.2.5 This Chapter is supported by the following figures and technical appendices:
- Volume 3a: Figures
 - **Figure 7.1: Ornithological Designated Sites for Nature Conservation;**
 - **Figure 7.2: Vantage Point Locations and Viewsheds;**
 - **Figure 7.3: Breeding Bird Survey Plan;**
 - **Figure 7.4a: Target Species Flight Activity – Raptors;**
 - **Figure 7.4b: Target Species Flight Activity - Other Species;**
 - **Figure 7.5: Moorland Breeding Bird Survey Results;**
 - **Figure 7.9: Golden Eagle Topographic (GET) Model Appraisal Score; and**
 - **Figure 7.10: Scarce Breeding Bird Survey Results (Western Access Route).**
 - Volume 4: Technical Appendices
 - **Technical Appendix 7.1: Ornithology; and**
 - **Technical Appendix 7.2: Collision Risk Model Analysis.**
 - Volume 5: Confidential
 - **Confidential Figure 7.6a: Desk Study Results Sensitive (the Royal Society for the Protection of Birds (RSPB));**
 - **Confidential Figure 7.6b: Desk Study Results Sensitive (Highland Raptor Study Group (HRSB));**
 - **Confidential Figure 7.7: Breeding Raptor and Owl Survey Results;**
 - **Confidential Figure 7.8: Breeding Black Grouse Survey Results (Sensitive); and**
 - **Confidential Technical Appendix 7.3: Confidential Ornithology.**
- 7.2.6 Figures and technical appendices are referenced in the text where relevant.
- 7.2.7 Information in figures, technical appendices, and other chapters are referred to where relevant, but in the interests of concision, information contained in other chapters and appendices is not repeated herein unless essential for understanding. Confidential figures and appendices will be supplied to relevant consultees.

7.3 Legislation, Policy and Guidelines

Legislation

- 7.3.1 Relevant legislation has been reviewed and taken into account as part of this ornithology assessment. Of particular relevance are:
- The Conservation (Natural Habitats, &c.) Regulations 1994³ (as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019) (Scottish Government, 2019) (collectively 'the Habitats Regulations').

³ The Conservation (Natural Habitats, &c) Regulations 1994. Available at: <https://www.legislation.gov.uk/ukSI/1994/2716/contents>

- The Nature Conservation (Scotland) Act 2004 (Scottish Government, 2004) ⁴.
- The Wildlife and Countryside Act 1981 (as amended) (UK Government, 1981) ⁵.
- The Wildlife and Natural Environment (Scotland) Act 2011 (Scottish Government, 2011) ⁶.
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017) ⁷.

Planning Policy

7.3.2 Relevant planning policy regarding ornithology include:

- The National Planning Policy Framework 4 (NPF4) (Scottish Government, 2023) ⁸., and specifically 'Policy 3 - Biodiversity' and 'Policy 4 - Natural Places'.
- Highland-wide Local Development Plan (The Highland Council (THC), 2012) ⁹, particularly 'Policy 57 - Natural, Built and Cultural Heritage', 'Policy 58 - Protected Species', 'Policy 59 - Other Important Species' and 'Policy 60 - Other Important Habitats and Article 10 Features';
- Highland Biodiversity Action Plan 2021-2026 (Highland Environment Forum, 2021) ¹⁰; and
- Highland Statutorily Protected Species Supplementary Guidance (THC, 2013) ¹¹.

Guidance

7.3.3 The following best practice guidelines/guidance have been taken account of:

- Pre-application guidance for onshore wind farms (NatureScot, 2024) ¹².
- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018) ¹.
- Environmental Impact Assessment Handbook (SNH, 2018a) ².
- Recommended bird survey methods to inform impact assessment of onshore windfarms (NatureScot, 2025a) ¹³.
- Assessing Connectivity with Special Protection Areas (SPAs) (SNH, 2016a) ¹⁴.
- Environmental Statements and Annexes of Environmentally Sensitive Bird Information: Guidance for Developers, Consultants and Consultees (SNH, 2016b) ¹⁵.
- Assessing Significance of Impact From Onshore Windfarms on Birds Outwith Designated Areas (NatureScot, 2025b) ¹⁶.
- Assessing the Cumulative Impact of Onshore Wind Farms on Birds (SNH, 2018b) ¹⁷.
- Windfarms and Birds - Calculating a Theoretical Collision Risk Assuming No Avoiding Action (SNH, 2000) ¹⁸.
- Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model (SNH, 2018c) ¹⁹.
- Natural Heritage Zones Bird Population Estimates (Wilson *et al.*, 2015) ²⁰.
- 'Fifth Birds of Conservation Concern' (Stanbury *et al.*, 2021) ²¹.

⁴ Nature Conservation (Scotland) Act 2004. Available at: <https://www.legislation.gov.uk/asp/2004/6/contents>

⁵ Wildlife and Countryside Act 1981. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/contents>

⁶ Wildlife and Natural Environment (Scotland) Act 2011. Available at: <https://www.legislation.gov.uk/asp/2011/6/contents>

⁷ The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents>

⁸ National Planning Framework 4. Available at: <https://www.gov.scot/publications/national-planning-framework-4/>

⁹ THC (2012). Highland-wide Local Development Plan . Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide-local-development-plan

¹⁰ Highland Environment Forum (2021). Highland Nature Biodiversity Action Plan 2021 to 2026. Available at: <https://www.highland.gov.uk/downloads/file/27148/highland-nature-biodiversity-action-plan-2021-%E2%80%93-2026>

¹¹ THC (2013a). Highland Statutorily Protected Species Supplementary Guidance. Available at: <https://www.highland.gov.uk/downloads/file/3026/highland-statutorily-protected-species-supplementary-guidance>

¹² NatureScot (2024). NatureScot pre-application guidance for onshore wind farms. Version: February 2024.

¹³ NatureScot (2025a). Recommended bird survey methods to inform impact assessment of onshore windfarms. Updated: March 2025. *Note this was updated in March 2025, and surveys in 2021 followed the previous version, but survey protocols as carried out remain largely the same between the two versions.*

¹⁴ SNH (2016a). Assessing connectivity with Special Protection Areas (SPAs). Guidance. Version 3 – June 2016.

¹⁵ SNH (2016b). Environmental statements and annexes of environmentally sensitive bird information.

¹⁶ NatureScot (2025b). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas. Guidance Note. March 2025.

¹⁷ SNH (2018b). Assessing the cumulative impacts of onshore wind farms on birds. Guidance. August 2018.

¹⁸ SNH (2000). Wind farm impacts on birds – calculating a theoretical collision risk assuming no avoiding action.

¹⁹ SNH (2018c). Avoidance rates for the onshore SNH wind farm collision risk model. September 2018 v2.

²⁰ Wilson, M. W., Austin, G. E., Gillings S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504. pp72.

²¹ Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds* 114: 723-747.

- Scottish Biodiversity List (SBL) (Scottish Government, 2020)²².
- Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species (Goodship and Furness, 2022)²³.
- Developing Field and Analytical Methods to Assess Avian Collision Risk at Wind Farms (Band *et al.*, 2007)²⁴.
- Using a collision risk model to assess bird collision risks for onshore wind farms (Band, 2024)²⁵.
- Implications of additional protection for hen harrier, red kite and golden eagle under schedules A1 and 1A of the Wildlife and Countryside Act (1981) (SNH, 2014)²⁶.

7.3.4 Additional sources of guidance and peer-reviewed literature have also been referred to during the interpretation of baseline ornithological information for the purposes of this assessment and are referenced where appropriate.

7.4 Consultation

7.4.1 **Table 7.1** summarises the consultation responses received regarding ornithological matters and provides information on where and/or how they have been addressed in this assessment.

7.4.2 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 7.1 - Consultation

Consultee and Date	Consultation Response	Applicant Response
NatureScot Pre-Scoping 16/11/2020	A component part of the Caithness & Sutherland Peatlands Special Protection Area (SPA) is located approximately 6-7 km from the Site. The Proposed Development is within the connectivity distance for species which could be linked to the SPA (e.g. red- and black-throated diver). Overall, the proposed survey work was considered to be largely adequate, with further comments/ recommendations made as follows. The Site and immediately surrounding area is likely to be attractive to foraging golden eagle and white-tailed eagle. The 2015 National Eagle Survey did not show any active territories within 6 km of the Site, but this could have changed since then, and it was recommended to consult with the HRSG and RSPB for updated records. It was also recommended that vantage point (VP) flight activity survey effort was weighted to capture the early breeding season display activity of eagles and/or other target species relevant to the Site based on consultation data. The open nature of the forestry associated with the Site provides potential breeding and foraging habitat for hen harrier, merlin, & short-eared owl. Breeding bird surveys should also take account of Schedule 1 species redwing, greenshank and wood sandpiper, noting that Slavonian grebe were extremely unlikely to occur in the vicinity of the Site.	Assessment of the connectivity of Caithness & Sutherland Peatlands SPA (and Ramsar Site) with the Site is provided in Section 7.8. Ultimately the SPA/Ramsar Site is scoped out of further assessment based on distance of separation and absence of affiliated qualifying species. A summary of the desk study and field survey methods and their results are presented in Section 7.5 and 7.6 respectively, with full details provided in Technical Appendices 7.1 (EIA Report Volume 4) and Technical Appendices 7.3 (EIA Report Volume 5) where these comments are addressed.
NatureScot Pre-Scoping 20/10/2021	Based on the information provided, NatureScot agree that a single year of bird surveys should be sufficient to inform the potential impacts of the Proposed Development, noting that the data collected was very similar to that collected over a two-year period for a neighbouring development. It was also acknowledged that only low levels of flight activity by species of conservation significance had been recorded with minimal connection to any SPAs in the wider surrounding area.	NatureScot's acceptance of a single year's-worth of survey effort was noted.

²² Scottish Government (2020). Scottish Biodiversity List. Available at: <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list>

²³ Goodship, N.M. and Furness, R.W. (MacArthur Green) (2022) Disturbance distances review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

²⁴ Band, W., Madders, M. and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms. In: Janss, G, de Lucas, M & Ferrer, M (eds.) Birds and Wind Farms. Quercus, Madrid. 259-275.

²⁵ Band, W. (2024). Using a collision risk model to assess bird collision risks for onshore wind farms. NatureScot Research Report 909.

²⁶ SNH (2014). Implications of additional protection for hen harrier, red kite and golden eagle under schedules A1 and 1A of the Wildlife and Countryside Act (1981). Guidance. March 2014.

Consultee and Date	Consultation Response	Applicant Response
	The recorded sighting of goshawk was considered to be notable for this part of the country and avoidance of impacts on this species was recommended.	Assessment of the Site's importance for goshawk and the Proposed Development's potential to adversely affect them is provided in Section 7.8 .
	The relative abundance of breeding curlew on and immediately surrounding the Site was noted and it was advised that positive measures to help maintain successful breeding curlew territories would be welcomed.	Assessment of the Site's importance for curlew and the Proposed Development's potential to adversely affect them is provided in Section 7.8 . Habitat enhancement measures with the potential to benefit locally occurring breeding waders, including curlew (where appropriately away from operational turbines and forestry edge) are proposed in Technical Appendix 6.5 (EIA Report Volume 4) and summarised in Section 7.10 .
Nature Scot Pre-Scoping 07/07/2023	It was agreed that the existing 2020-2021 bird survey data remained valid to assess the potential impacts of this proposal, assuming a late 2024 submission.	NatureScot's acceptance of the validity of the original survey data was noted. Ultimately the development programme was extended, and NatureScot were re-consulted on this matter, as summarised further below.
Nature Scot Scoping Response 16/08/2024	NatureScot confirmed that they had previously commented on the bird survey work carried out (summarised above).	NatureScot's acknowledgement of previous consultation is noted.
	It was confirmed that although the Proposed Development sits within connectivity distance for red-throated and black throated divers associated with Caithness and Sutherland Peatlands SPA (approx. 6-7 km), since neither species were recorded during the 2020-2021 field surveys it is likely that that SPA will not be affected by the Proposed Development, subject to detail provided within the Ornithology Chapter of the EIA Report. This would inform a shadow Habitats Regulation Appraisal (HRA) for the Caithness & Sutherland Peatlands SPA.	NatureScot's agreement that the Proposed Development is unlikely to adversely affect Caithness & Sutherland Peatlands SPA (and Ramsar Site) is noted and is reflected in the assessment of the designated site in Section 7.8 .
	NatureScot offered to provide additional Nature Heritage Zone (NHZ) data to assist with the cumulative ornithological impact assessment.	NatureScot's offer was noted. However, a cumulative impact assessment has not been required for the Proposed Development due to impacts on IOFs from the Proposed Development on its own being considered negligible/inconsequential.
RSPB Scoping Response 21/08/2024	RSPB was content with the species which had been scoped into the assessment but expressed disappointment that a single year's worth of survey effort had been accepted by NatureScot. It was requested that the justification for this be presented in the EIA Report. RSPB also requested that justification be provided for the selection and viewshed coverage of VP locations relative to the proposed turbine locations and a surrounding buffer of 500 m. It was also requested that the EIA provides full details of the adequacy of the field surveys (i.e. guidance compliant and coverage/accessibility) and worked examples of the collision risk calculations as well as raw data for independent verification.	NatureScot's justification for accepting a single year's-worth of survey effort is provided above in relation to their response on that matter. A summary of the desk study and field survey methods and their results, including limitations and justifications, are presented in Section 7.5 and 7.6 respectively, with full details provided in Technical Appendix 7.1 (EIA Report Volume 4) and Technical Appendix 7.3 (EIA Report Volume 5), whilst worked examples of the collision risk calculations are presented in Technical Appendix 7.2 (EIA Report Volume 4).
	Based on the information provided in the Scoping Report, RSPB was satisfied that the Proposed Development is unlikely to have a significant impact on any ornithological designated sites of nature conservation importance.	RSPB's agreement that the Proposed Development is unlikely to adversely affect any ornithological designated sites of nature conservation importance is noted and is reflected in the assessment of relevant designated sites in Section 7.8 .
	The suitability of the habitats within and immediately surrounding the site for various protected and notable species of conservation concern were noted, as summarised below.	RSPB's comments regarding habitat suitability for protected and notable species was noted and responded to as detailed below.
	Scottish crossbill: RSPB holds records for this species	The Scottish crossbill records held and

Consultee and Date	Consultation Response	Applicant Response
	from within the Site and further surveys for this species were recommended on the assumption that the baseline surveys would not be expected to adequately account for this species.	provided by RSPB were over 15 years old and considered to be out of date. It is now acknowledged that it is not possible to confidently identify Scottish crossbill from common crossbill. NatureScot do not generally consider passerines to be significantly impacted by wind farms and surveys for Schedule 1 species with more restricted ranges are only recommended where the proposal site is in a key area for the species which is not considered to be the case. NatureScot also advise that crossbill survey would only be required as part of pre-construction surveys which are committed to (see Section 7.7).
	Breeding waders: the presence of various species of breeding wader within the Study Area was noted, particularly the relatively high number of curlew territories. Breeding waders should be included in the impact assessment and advice was provided regarding the responses of curlew to wind farm developments. It was also recommended that consideration should be given to enhancement measures for curlew within the proposed Nature Enhancement Management Plan (NEMP).	Assessment of the Site's importance for breeding waders and the Proposed Development's potential to adversely affect them is provided in Section 7.8 . Habitat enhancement measures with the potential to benefit locally occurring breeding waders, including curlew (where appropriately away from operational turbines and forestry edge) are proposed in Technical Appendix 6.5 (EIA Report Volume 4) and summarised in Section 7.10 .
	Black grouse: The confirmed presence of black grouse in and around the Site through the field surveys aligned with records RSPB hold for the species' presence in the area. The presence of a lek of 12 males is one of the largest RSPB are aware of in Sutherland. While the majority of lekking birds were recorded outside of the Site, the removal of forestry to accommodate the Proposed Development may open up habitat encouraging black grouse into the wind farm area in the future. The EIA should consider the potential impacts of the Proposed Development on black grouse and advice was provided regarding the species' sensitivity to disturbance. Biodiversity enhancement measures for the species were recommended and should focus on areas within 1.5 km of identified lek sites.	Assessment of the Site's importance for black grouse and the Proposed Development's potential to adversely affect them is provided in Section 7.8 . Habitat enhancement measures with the potential to benefit locally occurring black grouse are proposed in Technical Appendix 6.5 (EIA Report Volume 4) and summarised in Section 7.10 .
	Golden eagle: The presence of up to three golden eagle territories within 6 km of the Site was raised, with the Site likely to form part of the closest pairs' range. The Proposed Development was therefore considered likely to result in loss of territorial area and potential foraging habitat. Further information on golden eagle territories in the nearby and wider surrounding area should be obtained from the HRSG as well as from the assessments for adjacent wind farm developments with potential impacts upon the species from the Proposed Development being included in the EIA. It was acknowledged that golden eagle collision mortality was rare, but incidents have occurred in Scotland and NatureScot may be able to provide further information. It was recommended that Golden Eagle Terrain (<i>sic</i>) [Topographical] (GET) modelling was used to identify potential suitability of land within and immediately surrounding the Site for golden eagles in support of the assessment.	A summary of the golden eagle information provided through the desk study, including GET model analysis, is presented in Section 7.6 with full details provided in Technical Appendix 7.1 (EIA Report Volume 4) and Technical Appendix 7.3 (EIA Report Volume 5) where these comments are addressed. Assessment of the Site's importance for golden eagle and the Proposed Development's potential to adversely affect them is provided in Section 7.8 .
	Contrary to the Scoping Report, RSPB advised that effects on ground-nesting wetland species, black grouse and Schedule 1 and Annex I raptors and owls should be scoped into the assessment particularly with regards to displacement.	Assessment of the Site's importance for IOFs and the Proposed Development's potential to adversely affect them is provided in Section 7.8 .
	The proposed forestry felling and biodiversity enhancement measures will improve and create more open habitat within and surrounding the Site and the EIA should assess the change on all relevant species,	Forestry removal to accommodate the Proposed Development will involve key-hole felling as opposed to large-scale clear-felling, and so it is not anticipated that substantial areas will be opened up

Consultee and Date	Consultation Response	Applicant Response
	especially black grouse and breeding waders.	to locally occurring birds. Furthermore, there will be no net loss of forestry with compensatory planting a requirement (see Technical Appendix 2.3 , EIA Report Volume 4). Biodiversity enhancement measures are presented in Technical Appendix 6.5 (EIA Report Volume 4) and summarised in Section 7.10 .
	The EIA should consider all the components and phases of the proposal including the turbines, the battery energy storage system, substation, grid connection, borrow pits, and associated infrastructure (including the route on public roads to get the turbines on-site), as well as temporary construction compounds.	Assessment of the potential effects of the Proposed Development, including its various phases and relevant components is considered in Sections 7.8 and/or 7.9 . Note: Battery Energy Storage does not form part of the Proposed Development.
	The EIA should include a robust cumulative impact assessment including consideration of impacts from other proposed wind energy schemes, (in particular the adjacent Strath Oykel and Meall Buidhe Wind Farms) as well as other relevant plans or projects that could impact on bird populations of the relevant NHZ (NHZ7, North Highlands). Advice and comments were also provided on the proposed approaches to identifying other cumulative development projects.	A cumulative impact assessment has not been required for the Proposed Development due to impacts on IOFs from the Proposed Development on its own being considered negligible/inconsequential.
	Advice was provided regarding the Outline Nature Enhancement Management Plan (ONEMP) and its role in meet the requirements of NPF4 Policy 3. The commitment to provide an ONEMP was welcomed and it was recommended that this should be developed to complement measures being undertaken in the wider Strath Oykel. It was also recommended that this should include a comprehensive monitoring programme, including a protocol for reporting bird collisions.	Habitat enhancement measures with the potential to benefit locally occurring birds are proposed in Technical Appendix 6.5 (EIA Report Volume 4) and summarised in Section 7.10 . Given the negligible/inconsequential impacts which are predicted for IOFs, no operational phase monitoring is proposed.
The Highland Council (THC) Scoping Response 7/11/2024	THC reiterated NatureScot's comment that the Proposed Development was unlikely to affect Caithness and Sutherland Peatlands SPA or associated qualifying interests, subject to detail provided within the Ornithology Chapter of the EIA Report, and that this should be covered off in a shadow HRA.	THC's agreement that the Proposed Development is unlikely to adversely affect Caithness and Sutherland Peatlands SPA (and Ramsar Site) is noted and is reflected in Section 7.8 .
	Recommendations and advice were provided regarding the scope of surveys and assessment approach with reference to NatureScot's relevant guidance. THC reiterated the validity of the original 2020-2021 dataset subject to provision of updated records from HRSG and RSPB.	A summary of the desk study and field survey methods and their results are presented in Section 7.6 with full details provided in Technical Appendix 7.1 (EIA Report Volume 4) and Technical Appendix 7.3 (EIA Report Volume 5) where these comments are addressed.
	NatureScot's advice regarding assessment against the relevant NHZ populations was reiterated, while additional comment was made on consideration of potential impacts from turbine lighting on birds.	Assessment of the Site's importance for IOFs and the Proposed Development's potential to adversely affect them is based on the relevant NHZ populations as explained in Section 7.5 and Section 7.8 .
NatureScot Post Scoping Consultation 20/10/2024	It was agreed that the existing 2020-2021 bird survey data is valid, subject to updated consultation with HRSG and RSPB. It was advised that should the proposal be submitted later than 2025, then a full resurvey was likely to be recommended.	NatureScot's acceptance of the validity of the original survey data was noted with the HRSG, RSPB and Highland Biological Records Group (HBRG) being re-consulted for relevant records to identify any significant changes in baseline data, as detailed in Section 7.5 .
NatureScot Post Scoping Consultation 10 December 2024	Clarified that the existing 2020-21 bird survey data, given this included breeding season surveys in 2021, would be viable until August 2026.	Noted that ornithological survey data is confirmed as appropriate and robust for assessment.

7.5 Assessment Methodology and Significance Criteria

Assessment Methodology

- 7.5.1 The assessment presented within this Chapter has been undertaken in accordance with CIEEM guidelines (CIEEM, 2018)¹ and considers the following potential impacts upon IOFs associated with construction, operation, and decommissioning of the Proposed Development:
- collision mortality – the risk of mortality resulting from collision or interaction with the turbines and/or other wind farm infrastructure;
 - disturbance/displacement of species - disturbance and displacement of birds from the area occupied by the Proposed Development and surrounding areas as a result of the construction and operation of the Proposed Development, including where the presence of the operational turbines pose an obstruction to the regular/traditional flight paths of migratory or local foraging/commuting birds along recognised flight corridors (termed a 'barrier effect'); and
 - habitat loss as a result of the construction and operation of the Proposed Development.
- 7.5.2 In addition to the above, THC noted in their Scoping Response that effects of artificial lighting on birds should also be covered in the assessment. NatureScot guidance (2020)²⁷ states that the main risk of artificial lighting on turbines to ornithological receptors is that of phototaxis (attraction to the lights), which has potential to result in collision with the structures, if sufficiently attracted to the light source. Two types of bird are considered to be at risk from phototaxis: burrow-nesting seabird species and nocturnally migrating passerines. Species that are considered at particular risk of collision with turbines, for example raptor and waterbird species, are not susceptible to phototaxis. There is no route to impact for burrow-nesting seabirds, as such species are highly tied to the marine environment. The Proposed Development is not located in a position that would filter migrating passerines, such as a coastal headland, with any migrating passerines likely to be passing over on a very broad front. Such migrations would pass over innumerable sources of artificial light during the course of their migration and so apportioning risk to the Proposed Development is not considered appropriate. Consequently, the impact of turbine lighting on ornithological receptors is not considered further in this assessment.
- 7.5.3 Where necessary (if any IOFs are considered for further assessment), the potential effects are considered as a result of the Proposed Development alone and cumulatively, in combination with other wind farm developments.
- 7.5.4 CIEEM guidelines (2018)¹ stipulate that it is not necessary to carry out a detailed assessment of impacts upon ecological (including ornithological) features that are sufficiently widespread, unthreatened, and resilient to impacts of the Proposed Development. As such, the assessment considers effects upon designated sites and ornithological features which are considered important on the basis of baseline information, relevant guidance, literature, professional judgement of the authors, and opinions of statutory advisory bodies, provided through consultations in relation to the Proposed Development and, where relevant, other wind farm developments; with such features classed as IOFs.
- 7.5.5 Where ornithological features are not considered so important as to warrant a detailed assessment, or where it is clear they will not be significantly affected on the basis of baseline information (e.g. passerine species), these ornithological features are 'scoped out' of the assessment. Mitigation measures for such features may, however, still be outlined as appropriate to reduce and/or avoid any potentially adverse effects or to provide legislative compliance for breeding and roosting birds.

Consultation

- 7.5.6 As well as the formal consultation undertaken with NatureScot, RSPB, and THC, as summarised in **Table 7.1 - Consultation**, relevant non-statutory nature conservation organisations were also approached for relevant ornithological records, further details of which is provided in the Desk Study section below.

Study Area

- 7.5.7 The main Study Area within which baseline information in relation to ornithological features has been obtained, comprises the Site boundary (excluding the access routes) and appropriate species-specific search areas ranging from 500 m up to 6 km for field surveys of specific species as per current guidance (NatureScot, 2025a)¹³ (see **Technical Appendix 7.1** (EIA Report Volume 4) and **Figure 7.3** (EIA Report Volume 3a)). Meanwhile, desk-based studies have sought to gather records of protected and notable species of conservation concern within a search area of at least 2 km with searches for international statutory designated sites of nature conservation importance (i.e. Special Protection Areas (SPAs) and Wetlands of International Importance (Ramsar sites)), out 10 km, extending to 20 km for internationally

²⁷ NatureScot (2020). The effect of aviation obstruction lighting on birds at wind turbines, communication towers and other structures. NatureScot Information Note. September 2020 v1.1.

designated sites with migratory goose interests in accordance with NatureScot guidance (SNH, 2016a)¹⁴. Note, the Study Area concerning the western access route was the proposed route and out to 750 m, as shown in **Figure 7.10** (EIA Report Volume 3a).

- 7.5.8 Full details of Study Areas adopted for the desk study and field surveys (as well as any limitations) are provided in **Technical Appendix 7.1** (EIA Report Volume 4) and illustrated on **Figures 7.1 - 7.3** and **7.10** (EIA Report Volume 3a).

Desk Study

- 7.5.9 As per current guidance (NatureScot, 2025a)¹³ an initial review of existing ornithological information and consultation with NatureScot was undertaken at the beginning of the field survey programme. This enabled a preliminary overview of likely bird species and populations in proximity to the Site to be formed, possible target species (defined below) for surveys to be identified and field survey requirements to be defined, which were subsequently agreed in consultation with NatureScot.
- 7.5.10 Additionally, the RSPB, HRSG and HBRG were consulted for relevant ornithological records within at least 2 km and up to 10 km for eagles in October and November 2020 and August 2021 respectively. All three groups were re-consulted for updated records in March 2025 for the intervening period since the original consultation.
- 7.5.11 The desk study also sought relevant ornithological information from existing or proposed wind farm applications in the nearby area surrounding the Site (within 5 km) in order to provide additional context for field survey observations. This included the consented Strath Oykel and Meall Buidhe Wind Farms and Inveroykel Wind Farm which was at the scoping stage at the time of the review.
- 7.5.12 In order to inform the assessment of potential impacts on golden eagle, and as recommended by RSPB (see **Table 7.1**), GET model data for the Site was reviewed to evaluate the potential importance of the habitats within and immediately surrounding the Site for golden eagles. In summary, the GET model uses topographical online Ordnance Survey (OS) mapping to score habitats between '1' to '10' to every 50 m pixel, following the approach developed by Fielding *et al.* (2020)²⁸. Habitat which is scored '6+' is a good indicator of potential golden eagle activity particularly where there are large contiguous blocks, and habitat with a score of '5' or less is considered likely to be used infrequently. However, areas of closed forestry cover and wind farms are considered to be unsuitable for, and largely avoided by golden eagles irrespective of the GET score.
- 7.5.13 Full details and results of the desk study undertaken are provided in **Technical Appendix 7.1** (EIA Report Volume 4) with sensitive desk study information provided in **Technical Appendix 7.3** (EIA Report Volume 4) and **Confidential Figures 7.6a** and **7.6b** (EIA Report Volume 5).

Field Surveys

Target Species

- 7.5.14 Target species for field surveys and recording were drawn from the following lists adopting a precautionary approach and with reference to the NatureScot guidance which was available at the time of the baseline studies (SNH, 2017a, noting this has now been superseded by NatureScot, 2025a)¹³ and NatureScot (2025b)¹⁶:
- Annex I of the EC Birds Directive;
 - Schedule 1 of the Wildlife & Countryside Act 1981 (as amended);
 - Qualifying species of designated sites of nature conservation interest in the nearby and wider surrounding area, most notably red- and black-throated divers which may be associated with Caithness and Sutherland Peatlands SPA;
 - 'Red-listed' Birds of Conservation Concern (Stanbury *et al.*, 2021)²¹; and
 - Annex I 'Priority bird species for assessment when considering the development of onshore wind farms in Scotland' (NatureScot, 2025b)¹⁶.
- 7.5.15 The list of target species was extended to include mute swan and snipe which may be more vulnerable to wind farm developments based on their size and low manoeuvrability, and display behaviour, respectively.
- 7.5.16 Passerine species were not identified as target species for survey and recording and are not considered sensitive to wind farm developments (NatureScot, 2025a¹³ and 2025b)¹⁶. Observations of notable species e.g. those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and Red-listed Birds of Conservation Concern (BoCC) species (i.e. Stanbury *et al.*, 2021)²¹ made during the Moorland Breeding Bird Survey (MBBS) were however recorded.

²⁸ Fielding, A.H., Haworth, P., Anderson, D., Benn, S., Dennis, R., Weston, E. and Whitfield, D.P. (2020). A simple topographical model to predict Golden Eagle *Aquila chrysaetos* space use during dispersal. *Ibis* 162, 400-415.

7.5.17 Gulls, raven, and commoner raptor species including buzzard, kestrel, and sparrowhawk, were also not identified as target species given their general widespread number and/or abundance, and for gulls, given there are no SPAs with gulls as qualifying species within 20 km. These birds were recorded as secondary species during VP flight activity surveys (detailed below).

7.5.18 For further information into the target species considered during field surveys, see **Technical Appendix 7.1** (EIA Report Volume 4).

Surveys

7.5.19 The following field surveys were carried out between September 2020 and August 2021 (and April to June 2025, with respect to the scarce breeding bird survey) to inform the design and assessment of the Proposed Development:

- VP flight activity surveys;
- MBBS;
- Annex I and Schedule 1 breeding raptor and owl searches, including extended searches for eagles;
- Breeding black grouse searches;
- Breeding diver searches; and
- Scarce breeding bird survey (of western access route).

7.5.20 Surveys were undertaken in accordance with the NatureScot guidance (NatureScot, 2025a)¹³, full details of which are provided in **Technical Appendix 7.1** (EIA Report Volume 4).

7.5.21 Whilst the NatureScot guidance (NatureScot, 2025a)¹³ recommends that a minimum of two years of ornithological surveys are carried out to inform the assessment of wind farm developments (unless otherwise justified/agreed), it was agreed through consultation that a single year's worth of survey effort was sufficient for this Site, as outlined in **Table 7.1**.

Field Survey Personnel

7.5.22 All field surveys were completed by experienced, reputable, and professional ornithologists fully conversant in established bird survey methodologies for proposed wind turbine developments.

7.5.23 A list of the field surveyors used is provided in **Technical Appendix 7.1** (EIA Report Volume 4).

Assessment of Potential Effect Significance

7.5.24 The assessment has been undertaken in accordance with CIEEM guidelines (2018)¹ and includes the following stages:

- determination and evaluation of important ornithological features;
- identification and characterisation of impacts;
- consideration of embedded mitigation measures;
- assessment of the significance of effects prior to (additional) mitigation measures;
- outline of (additional) mitigating measures to avoid and reduce significant impacts;
- assessment of the significance of any residual effects after the application of such measures; and
- identification of appropriate compensation measures to offset significant residual effects.

7.5.25 The assessment has also been undertaken with reference to NatureScot guidance (SNH, 2016a¹⁴ and NatureScot, 2025a)¹³ on the assessment of wind farm developments in relation to designated sites and those located within the wider countryside.

7.5.26 In accordance with current NatureScot guidance (NatureScot, 2025b)¹⁶ the assessment of impacts has been undertaken at a regional scale with regards species populations, unless an alternative geographical scale is considered appropriate on the basis of best available information. The Nature Heritage Zone (NHZ) is considered to be the most appropriate default regional scale, with the Proposed Development located at the northern extent of the Northern Highlands NHZ (NHZ7). Accordingly, effects on NHZ7 are considered in the assessment, as advised by RSPB (see **Table 7.1**).

7.5.27 For any scoped-in IOFs which are qualifying features of designated sites of nature conservation interest (i.e. SPAs or Ramsar Sites), the assessment of impacts is also made against the conservation objectives of the designated sites.

7.5.28 The assessment has also considered (where relevant) effects on IOFs for the Proposed Development cumulatively with other developments, see **Section 7.12**.

Criteria for Assessing the Sensitivity of Features

- 7.5.29 For the purpose of the assessment, 'sensitivity' is synonymous with 'importance'.
- 7.5.30 Relevant European, national, and local guidance has been referred to in order to determine the importance of ornithological features. Reference has also been made to NatureScot guidance on 'Priority' bird species for assessment, when considering the development of onshore wind farms in Scotland (NatureScot, 2025b)¹⁶.
- 7.5.31 In addition, importance has also been determined using professional judgement and taking account of the results of baseline surveys, desk study and the importance of features within the context of the regional geographic area.
- 7.5.32 For the purposes of this assessment the importance of ornithological features is considered within a defined geographical context, from local to international, as outlined in **Table 7.2**. It should be noted that importance does not necessarily relate 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, rarity/abundance at the locality, or the geographical location of species relative to their known range.
- 7.5.33 Similarly, whilst a particular feature may be associated with a nearby internationally designated site, the feature is not automatically assigned a value of 'International' importance, if for example it is only recorded occasionally in small numbers.

Table 7.2 – Sensitivity/ Geographic Scale of Ornithological Feature of Importance

Sensitivity/ Geographical Scale of Importance	Definition
High - International/ National	Species listed on Annex I of the EU Birds Directive (2009/147/EC) and which comprise a qualifying interest of a potentially connected internationally statutory designated site for nature conservation i.e., SPA and/or Ramsar site. Nationally or internationally important numbers of a species, including regularly occurring migratory species listed on Annex I of the Birds Directive i.e., >1 % of the relevant national or international biogeographical population). Species not listed on Annex I of the EU Birds Directive but listed in Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and which comprise a qualifying interest of a potentially connected nationally designated site for nature conservation i.e., Site of Special Scientific Interest (SSSI).
Medium - Regional	Species not listed on Annex I of the EU Birds Directive but listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and which do not comprise a qualifying interest of a statutory designated site for nature conservation i.e., SPA, Ramsar site or SSSI. Regionally important numbers of a species i.e., >1 % of the relevant regional NHZ population (NHZ7) or appropriate alternative and listed on Annex I of NatureScot guidance (NatureScot, 2025b) ¹⁶ .
Low – Local	Species which are widespread and common, and which are not present in regionally or nationally important numbers, but which form part of the breeding/wintering bird assemblage within the Site (and surrounding area). Note, this may also include species listed on Annex I of the EU Birds Directive and/ or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), but which are present in low number (i.e., <1% of the relevant regional NHZ population (NHZ7) or appropriate alternative).
Very Low - Site	Species which are widespread and common, and which are not present in regionally, nationally or locally important numbers, but which form part of the breeding/wintering bird assemblage within the Site only. Note, these features are not considered in this assessment.

Criteria for Assessing the Magnitude of Impact

- 7.5.34 The likelihood or probability that an effect would occur is described as far as possible based on best available information.
- 7.5.35 The criteria used to determine the magnitude of impact are set out in **Table 7.3**.
- 7.5.36 It is important to note that where reference is made to population level impacts to assess magnitude (e.g. at the national, regional/NHZ or SPA population level), population estimates used are considered to be guides.
- 7.5.37 In addition, it is often impossible to equate an impact to an actual population loss. For example, where birds may be displaced from a wind farm site as a result of construction or operational activities, such a loss may be temporary or may reasonably result in the relocation of birds to suitable habitats elsewhere within the Site or the immediate or wider surrounding area. Where uncertainty arises, a precautionary approach has been adopted.

7.5.38 As such, professional judgement, on the basis of best available evidence, has been used to inform the assessment of impacts presented within.

Table 7.3 – Impact Magnitude

Magnitude	Definition
Very High	The impact (either on its own or in combination with other proposals) may be adverse and result in the permanent total or almost complete loss of a designated site and/or species status or productivity. Or alternatively the impact may be positive, and result in notable gains in the species status or productivity. E.g., Affecting >80 % of the relevant Regional NHZ population (NHZ7).
High	The impact (either on its own or in combination with other proposals) may adversely, or positively, 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. E.g., Affecting >21 % - 80 % of the relevant Regional NHZ population (NHZ7).
Medium	The impact (either on its own or in combination with other proposals) would not adversely, or positively, 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. E.g., Affecting >6 % - 20 % of the relevant Regional NHZ population (NHZ7).
Low	Neither the above or below applies, but some observable adverse, or positive, impact is evident on a short-term basis or affects the extent of a species abundance in the local area. E.g., Affecting >1 % - 5 % of the relevant Regional NHZ population (NHZ7).
Negligible	A very slight adverse impact which is an indiscernible reduction, or very slight positive impact which results in an indiscernible increase, in a species status or productivity, and/or no observable effect. E.g., Affecting ≤1 % of the relevant Regional NHZ population (NHZ7).

Characteristics Provided in Assessment of Potential Impacts

7.5.39 Once identified, potential impacts are described with reference to the following characteristics as appropriate:

- beneficial or adverse;
- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

7.5.40 The assessment only makes reference to those characteristics which are relevant to understanding the nature of an effect and determining its significance. For the purposes of this assessment the temporal nature of potential effects is described as follows:

- negligible: of inconsequential duration;
- short-term: for 1 to 5 years;
- medium-term: for 5 to 10 years;
- long-term: >10 to 50 years; and
- permanent: >50 years.

Criteria for Determining Significance

7.5.41 CIEEM guidelines (2018)¹ 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 have been lawfully permitted following EIA procedures."

7.5.42 For the purposes of assessment, significant effects are identified as those which encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance, and distribution).

7.5.43 Such effects are identified by considering the sensitivity of a feature, the magnitude of the impact and applying professional judgement based on best available evidence, to identify whether the integrity of a feature will be affected.

7.5.44 The term integrity is used here to refer to the maintenance of the conservation status of a population of a species at a specific location or geographical scale.

7.5.45 For the purposes of this assessment, significant effects are primarily considered with reference to the most recently published Regional NHZ population level (Wilson *et al.*, 2015²⁰; or suitable alternative), in

line with NatureScot's interests of a species' status at wider spatial levels. The significance of effects at other geographical scales is also considered where appropriate on a precautionary basis and where sufficient information allows a meaningful assessment.

- 7.5.46 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no potential for a significant effect, a potentially significant effect has been assumed as a precautionary approach. Where uncertainty exists, this is acknowledged.
- 7.5.47 Where the assessment proposes measures to mitigate adverse effects on ornithological features, a further assessment of residual effects, taking into account such measures, has been undertaken.
- 7.5.48 CIEEM guidelines (2018)¹ do not recommend the sole use of a matrix table as commonly set out in EIA Reports to determine 'significant' and 'non-significant' effects on ornithological features. For the purposes of this assessment, **Table 7.4 – Effect (EIA) Significance** sets out adapted CIEEM terminology and equivalent in the context of the EIA Regulations.
- 7.5.49 For the purpose of this assessment **'Major'** and **'Moderate'** effects alone (or **Major/Moderate** effects) are considered significant in the context of the EIA Regulations.

Table 7.4 – Effect (EIA) Significance

Sensitivity	Impact Magnitude				
	Very High	High	Medium	Low	Negligible
High	Major	Major/Moderate	Moderate/Minor	Minor	Negligible
Medium	Major/Moderate	Moderate	Minor	Minor/Negligible	Negligible
Low	Moderate/Minor	Minor	Minor	Minor/Negligible	Negligible

Requirements for Mitigation

- 7.5.50 A mitigation hierarchy has been proposed to avoid, mitigate, and compensate for potential adverse effects on ornithological features as a result of the Proposed Development:
- 'avoidance' is used where a potential impact has been avoided from occurring e.g., through changes in scheme design;
 - 'mitigation' is used to refer to measures to reduce a specific adverse effect and can either be implemented as standard good practice to minimise predictable impacts and achieve legal compliance (i.e., embedded mitigation) or to offset significant adverse effects upon IOFs which are predicted as a result of the Proposed Development;
 - 'compensation' describes measures taken to offset residual effects, i.e., where mitigation in situ is not possible or sufficient; and
 - 'enhancement' is the provision of new benefits for biodiversity that are additional to those provided as part of mitigation or compensation measures, although they can be complementary.

Assessment of Residual Effect Significance

- 7.5.51 Where the assessment proposes measures to mitigate adverse effects on ornithological features, a further assessment of residual effects, taking into account any mitigation recommended, will be undertaken.

Cumulative Assessment

- 7.5.52 Potentially significant cumulative effects can result from individually not significant, but collectively significant effects taking place over a period of time or concentrated in a location.
- 7.5.53 Where necessary, cumulative effects are assessed with reference to guidance (SNH, 2018b)¹⁷ for IOFs subject to a detailed assessment. As detailed in **Section 7.12** however, a cumulative impact assessment has not been required for the Proposed Development due to impacts on IOFs from the Proposed Development on its own being considered negligible/inconsequential.

Requirements for Information to Inform HRA

- 7.5.54 Whilst the Site does not overlap with, nor lie in close proximity to any internationally important ornithological designated sites of nature conservation interest (i.e., SPAs or Ramsar Sites) it is considered to be within the ranging distance of red- and black-throated divers which are qualifying species of the Caithness and Sutherland Peatlands SPA and Ramsar Site which is located 7.3 km northeast of the Site (see **Table 7.5**), as identified in the Scoping Report (Statkraft, 2024²⁹) and raised through statutory consultee Scoping Responses (see **Table 7.1**).

²⁹ Statkraft (2024). Coille Beith Wind Farm Environmental Impact Assessment Scoping Report. July 2024

- 7.5.55 Accordingly, as required by the Habitats Regulations, this Chapter (see **Section 7.13**) provides a 'screening' stage where the Proposed Development is examined to determine if it is likely to have a significant effect on this designated site or its qualifying interests. Furthermore, **Section 7.13** information to inform an HRA is provided, if required, to aid the competent authority (in this case Scottish Ministers) in undertaking an appropriate assessment.

Enhancement Opportunities

- 7.5.56 As a fundamental part of the Proposed Development, habitat enhancement opportunities on-site have been investigated. The requirements of Policy 3 of NPF4 state that developments will contribute to the enhancement of biodiversity, and this could include restoring degraded habitats and strengthening nature networks and connections between them. Enhancement measures have been investigated and proposed to be adopted are accordingly provided in the ONEMP (**Technical Appendix 6.5**, EIA Report Volume 4).

Limitations to Assessment

- 7.5.57 Limitations related to baseline data gathering are provided in **Technical Appendix 7.1** (EIA Report Volume 4). The below provides a summary of the main considerations.
- 7.5.58 NatureScot guidance (2025a)¹³ recommends that, where possible, VPs should be sited over 500 m from the turbine area in order to prevent the presence of the surveyor from potentially altering flight behaviour and artificially affecting the level of flight activity during the course of the surveys. VPs 1 and 2 are both located within 500 m of the turbine area (see **Figure 7.2**, EIA Report Volume 3a), however, their locations were established before the turbine layout was finalised and had originally been sited in accordance with the guidance to cover an earlier indicative layout. While VP 1 could have been repositioned and resurveyed once the final turbine layout had been defined, the very low levels of flight activity recorded around that VP indicate that part of the Site is of limited importance for target species, and it was concluded that its location and the presence of surveyors had had no effect on bird flight activity or behaviour. VP 2 was only required to cover a small proportion of the original Study Area which was not already covered by VPs 1 and 3 and only covers a very small proportion of the Study Area associated with the final turbine layout. If bird flight activity was significantly affected by the presence of a surveyor at VP 2 it is reasonable to assume that 'normal' flight activity and behaviour in the area surrounding that location would have been picked up from the overlapping parts of VPs 1 and 3 viewsheds. As it is, the low level of flight activity also recorded around this VP from all VPs indicates that the southern part of the Site is of limited importance for target species and the flightlines and recorded behaviour in the vicinity of VP 2 indicate no evidence of bird activity being influenced by the presence of surveyors. Ultimately all VP locations were positioned off the peaks (i.e., below the skyline) and surveyors wore muted clothes to be as inconspicuous as possible, while maximising visibility of the Study Area. In conclusion therefore, it is considered that the location of the VPs relative to the final turbine layout and the presence and potential detectability of surveyors, have not had any influence on the activity and behaviour of flight activity by target bird species.
- 7.5.59 During the Annex I/Schedule 1 breeding raptor and owl searches, MBBS, black grouse surveys, and breeding diver searches, direct access to land outside the original Site for survey was restricted. Suitable habitat features were however scanned from appropriate vantage points within the Site and from publicly accessible areas to detect activity and likely breeding locations of key species. It is considered that coverage of the Study Areas within 2 km of the Site receive adequate coverage for the target species associated with these surveys. It is acknowledged that the 6 km search area for eagles will have had coverage gaps, but in conjunction with the desk study data, it is considered unlikely that any important records of breeding target species would have been overlooked.
- 7.5.60 Forestry within the Study Areas was surveyed by traversing tracks, clearings, and the intricate network of rides rather than walking directly through dense plantation habitat, due to logistical and health and safety considerations. Nonetheless, the Study Area is considered to have been appropriately covered from the accessible tracks, clearings and rides, and this is not therefore considered a limitation to the results obtained.
- 7.5.61 The Site boundary has evolved since the baseline surveys were completed, with the boundary having been retracted from the northeast and the Proposed Development layout being concentrated in the southern area of the Site (e.g. see **Figure 7.3**, EIA Report Volume 3a). Therefore, many of the survey results, particularly in the northeastern parts of the Study Areas, are well away from the Proposed Development. This largely included sheep-grazed grasslands associated with the River Oykel floodplain. Nonetheless the data from this area have been retained in the baseline results for broader context.
- 7.5.62 Most of the Study Area for the scarce breeding bird surveys along the western access route in 2025 was accessible, with the exception of some land on the northern periphery; mainly north of the A837. This area is buffered from the western access route and is not anticipated to be affected by any works associated with the route, and accordingly its omission is not considered a substantive limitation.

- 7.5.63 Given the challenging topographical and large extent of forestry on-site not all the 500 m buffer around proposed turbines could be covered by the viewsheds of the VPs used in the flight activity surveys. However, the VPs did provide coverage of all proposed turbines and a relatively high proportion of the 500 m buffer around the proposed turbines. Such minor gaps in survey coverage are often unavoidable and are acceptable (see NatureScot, 2025a)¹³.
- 7.5.64 The Study Areas used for field surveys, and search areas for the desk study, were based on a previous iteration of the Site boundary. However, given the notable difference was that the previous iteration included an extended area to the north and the Proposed Development has always been located within the original Site, the surveys and desk study have appropriately covered the Site.
- 7.5.65 Overall, no substantive limitations to the survey data (and desk study data) in establishing an accurate reflection of the levels of target species activity within Study Area, and particularly the Site, are identified.

7.6 Baseline Conditions

Current Baseline

- 7.6.1 This section provides a summary of baseline ornithological conditions. Full details are provided within **Technical Appendices 7.1** (EIA Report Volume 4) and **Confidential Technical Appendix 7.3** (EIA Report Volume 5).

Desk Study

Designated Sites for Nature Conservation

- 7.6.2 This section should be read with reference to **Figure 7.1** (EIA Report Volume 3a). Designated sites for non-ornithological features are addressed separately in **Chapter 6: Ecology** (EIA Report Volume 2).
- 7.6.3 **Table 7.5** provides a summary of statutory designated sites for nature conservation with cited ornithological interests, located within 10 km of the Site (excluding the access routes), extended to 20 km for any such designated site with cited migratory goose interests. The distances provided in **Table 7.5** are from the Site boundary to the designated site boundary at their nearest points.
- 7.6.4 The Site does not form a part of any internationally or nationally designated site for nature conservation with cited ornithological interests.

Table 7.5 – Statutory Ornithological Designated Sites

Designated Site	Approximate Distance at Closest Point and Orientation from Site ³⁰	Qualifying Features
Caithness and Sutherland Peatlands Special Protection Area (SPA) and Ramsar Site	7.3 km, northeast	Breeding • Red-throated diver; • Black-throated diver; • Hen harrier; • Golden eagle; • Merlin; • Golden plover; • Wood sandpiper; • Short-eared owl; • Dunlin; • Common scoter; • Wigeon, and • Greenshank.
Grudie Peatlands Site of Special Scientific Interest (SSSI)	7.3 km, northeast	Breeding • Dunlin; • Golden plover; and • Greenshank.

- 7.6.5 Consultation with the HBRG indicated there are no non-statutory designated sites for nature conservation (with ornithological interests) within 2 km of the Site.

Existing Ornithological Desk Study Records

- 7.6.6 Ornithological records were returned from the RSPB and HRSG and comprised records of golden eagle, white-tailed eagle, black grouse, osprey, golden plover, curlew, dunlin, and greenshank. These comprised two 'confirmed breeding' records of black grouse within the Site (but spatially separated from the Proposed Development), and two osprey pairs located within 1 km of the Site (the western access route).
- 7.6.7 All other records were over 2 km from the Site, the most notable of which related to two active golden eagle territories located over 4 km from the Site but within 10 km (noting there is no information of one

³⁰ Note this excludes the access routes.

of the pairs since 2018). Information from the other pair revealed use of at least two nest sites, but there is no evidence that the pair have successfully fledged young at least before 2016. . All other species records related to confirmed presence or sightings of individual birds (i.e., breeding status was not confirmed).

- 7.6.8 All desk study records are detailed in **Technical Appendix 7.3** (EIA Report Volume 4) and shown in **Confidential Figures 7.6a** and **7.6b** (EIA Report Volume 5).
- 7.6.9 Information from the publicly available application documents for the consented Strath Oykel and Meall Buidhe, and in scoping Inveroykel Wind Farms is summarised in **Table 7.6**.

Table 7.6 – Existing Key Ornithological Data from Nearby Wind Farms

Wind Farm Scheme (Status)	Distance & Direction Relative to the Site	Key Ornithological Results
Strath Oykel Wind Farm (Consented)	2.26 km, east	- Surveys undertaken in 2018 - 2020. Flight Activity (VP) Surveys: Frequent flights by key target species included greylag goose (eight flights), white-tailed eagle (eight flights), and hen harrier (four flights). Breeding bird surveys: A fledged juvenile goshawk was the only evidence of breeding by Schedule 1 raptors or owls. There was no evidence of breeding black grouse or divers. Breeding waders included curlew (two territories), common snipe (one territory), golden plover (two territories), and potentially greenshank (one territory).
Meall Buidhe Wind Farm (Consented)	3.78 km, southeast	- Surveys undertaken in 2016 - 2019. Flight Activity (VP) Surveys: Frequent flights by key target species included golden plover (35 flights), greenshank (12 flights) and golden eagle (nine flights). Breeding bird surveys: Sensitive information on information on Schedule 1 raptors and owls was redacted but surveys involved checks of golden eagle and goshawk nest sites. Lekking black grouse were recorded in the north, west, and northwest of the Site. Waders included dunlin, golden plover, greenshank, lapwing and snipe which were considered potentially breeding. There was no evidence of breeding divers.
Inveroykel Wind Farm (Scoping)	4.07 km, east	Surveys are ongoing, and given the wind farm scheme is at the scoping stage there was limited publicly available information at the time of writing. However, the scoping report noted greenshank, greylag goose, pink-footed goose, black grouse, red-throated diver, golden eagle, white-tailed eagle, hen harrier, osprey, and red kite as being scoped-in for assessment.

GET Model Data Appraisal

- 7.6.10 The GET model data results are shown in **Figure 7.9** (EIA Report Volume 3a). The Site (excluding access routes) comprises 497.24 ha of GET 6+ habitat (47.07 %) with 21,736.94 ha of the surrounding habitat (out to 10 km, not including the Site) also representing GET 6+ habitat (47.66 %).
- 7.6.11 Within the Site, the GET 6+ habitat is predominantly associated with Beinn Chreagach in the north as well as along the western Site boundary, with the central and eastern parts of the Site where the majority of the proposed turbines will be located, being less suitable for golden eagles (typically scoring 5 or less). However, as the Site is predominantly forested with dense conifer plantation it is largely considered to be suboptimal for supporting golden eagles as such habitat is generally avoided.
- 7.6.12 Note, the access routes offer very limited potential habitat for golden eagles with all of the eastern access route <GET6+ (and predominantly forested) and the majority of the western access route <GET6+ (as can be seen from **Figure 7.9**, EIA Report Volume 3a).
- 7.6.13 In context of the wider surrounding area, GET 6+ habitat to the north, west, and east largely exists as small and sparsely distributed areas associated with isolated high points. These areas are associated with the open, expansive, and gently undulating uplands of Rhidorroch Forest, Glen Oykel, and Glen Cassley, and rise either side of the Kyle of Sutherland. Much more extensive and contiguous GET 6+ habitat is located to the south and southwest of the Site, particularly beyond 2 km. These theoretically much more suitable areas for golden eagles are associated with the largely unforested Freewater Forest and Glencalvie Forest, which represent the eastern mountain ranges of Wester Ross.

Field Surveys

- 7.6.14 The following provides an overview of the field survey results. Full details are provided in **Technical Appendix 7.1** (EIA Report Volume 4).

VP flight activity surveys

- 7.6.15 All flight activity of target species as well as activity at collision risk height and within the buffer of the proposed turbines³¹ as recorded during the entire VP survey effort (September 2020 – August 2021) is summarised in **Table 7.7**. The total number of flights, total number of birds recorded, and the total flight time at collision risk (seconds)³² are presented.
- 7.6.16 Detailed flight records are presented in **Technical Appendix 7.1** (EIA Report Volume 4), with flight lines illustrated in **Figures 7.4a-b** (EIA Report Volume 3a) for raptors and all other target species respectively.

Table 7.7 – Target Species ‘At Collision Risk’ Flight Activity Summary

Species	Total No. of Flights	Total No. of Birds	Total No. of ‘At Risk’ Flights	Total No. of ‘At Risk’ Birds	Total Flight Time at Collision Risk (seconds)
Pink-footed goose	7	369	5	238	315
Golden eagle	7	7	3	3	1,437
Golden plover	6	17	4	12	269
Greenshank	2	3	1	1	71
White-tailed eagle	1	2	1	2	357
Great skua	1	2	1	2	120
Red kite	1	1	1	1	501
Greylag goose	1	7	0	0	0
Hen harrier	1	1	0	0	0
Merlin	1	1	1	1	158
Marsh harrier	1	1	1	1	90
Goshawk	1	1	1	1	50

- 7.6.17 Of the 12 target species recorded during the flight activity surveys, sufficient ‘at collision risk’ flights to be included in the collision risk model (CRM) (i.e. three or more ‘at collision risk’ flights, or over 20 birds) were recorded for three species: pink-footed goose, golden plover, and golden eagle (identified in **bold**). However, as described in **Technical Appendix 7.2** (EIA Report Volume 4), and as per NatureScot’s latest guidance (2025), CRM analysis was not undertaken for pink-footed goose given the robust population, high avoidance rate (99.8 %), and because the geese recorded were not considered connected to a SPA (no SPA with qualifying pink-footed goose interest within 20 km of the Site).
- 7.6.18 Given the low number of ‘at collision risk’ flights by all other target species, the collision risk for those species is reasonably concluded to be negligible and no modelling has been carried out for them.
- 7.6.19 Predicted collision mortality for the two species for which CRM was carried out is summarised **Table 7.8**, with full details presented in **Technical Appendix 7.2** (EIA Report Volume 4).

Table 7.8 – Predicted Collision Mortality

Species	Season/Year	Collision Mortality Estimate
Golden eagle	Breeding season	0.014
	Non-breeding season	0.000
	Annual estimate	0.014
Golden plover	Breeding season	0.008
	Non-breeding season	0.028
	Annual estimate	0.036

Moorland Breeding Bird Survey (MBBS)

- 7.6.20 Surveys in 2021 recorded a modest breeding bird assemblage within the Study Area as summarised in **Table 7.9** and illustrated on **Figure 7.5** (EIA Report Volume 3a). Many of the wading bird species were concentrated on habitats associated with the River Oykel floodplain to the north of the Site, and also to a lesser extent open habitats located within the northern part of the Site as well as on the open moorland to the south. Breeding common and black-headed gulls were recorded at Loch Mhic Mharsaill along the eastern access route, along with breeding teal and little grebe.

Table 7.9 – MBBS Results

Species	No. of Territories
Curlew	8
Oystercatcher	5
Golden plover	2
Snipe	2
Common sandpiper	2

³¹ ‘At collision risk’ – at rotor sweep height (28 - 200 m) and within 300 m of proposed turbine locations for all species. It is based on a maximum 200 m tip height, 172 m maximum rotor diameter and 114 m hub height. Note, given the upper height band was 180+ m, flights at this height band were treated as ‘at collision risk’ even though in reality, at least some of the flights would be above the ‘at collision risk’ height.

³² Duration of each flight is multiplied by the number of birds and summed for each species.

Species	No. of Territories
Little grebe	2
Common gull	2
Black-headed gull	1
Woodcock	1
Teal	1
Tufted duck	1
Greylag goose	1

Annex I and Schedule 1 Breeding Raptors and Owl Searches

7.6.21 An active osprey nest and a suspected barn owl nest (or roost) site were recorded within the Study Area >650 m west of the Site (the western access route), and adjacent to the Site (the western access route), respectively, in 2021. Given the sensitivity of these records further details are restricted to Confidential **Technical Appendix 7.3** (EIA Report Volume 5) with nest/roost site locations presented in Confidential **Figure 7.7** (EIA Report Volume 5).

7.6.22 Activity of other raptor species recorded in 2021 were golden eagle, white-tailed eagle, red kite, goshawk, hen harrier, and hobby. However, no evidence of breeding was identified by any of these species within the Study Area. Anecdotal evidence suggested there was a white-tailed eagle nest site in the wider surrounding area, but this was over 10 km from the Site and hence outside of the Study Area.

Breeding Black Grouse Searches

7.6.23 One lek comprising of 12 males was located, and a further two locations with solo males (one lekking male, and another male flushed from potentially suitable lekking habitat in mid-April but not recorded lekking) were recorded during the surveys in 2021. Given the sensitivity of these records further details are restricted to Confidential **Technical Appendix 7.3** (EIA Report Volume 5) with lek site locations presented in Confidential **Figure 7.8** (EIA Report Volume 5).

Breeding Diver Searches

7.6.24 No divers, or evidence of breeding, were recorded during surveys.

Scarce Breeding Bird Surveys (Western Access Route)

7.6.25 One breeding curlew pair, one golden plover pair, two breeding snipe pairs and one breeding red grouse pair were recorded in the Study Area in 2025 (see **Figure 7.10**, EIA Report Volume 3a).

7.6.26 One female black grouse was flushed within forestry in the west of the Study Area, and one male black grouse was flushed from open habitat near the edge of forestry (at NH38566 99234) and flew into the forestry plantation. Neither black grouse record was indicative of lekking activity.

Future Baseline

7.6.27 As recommended by CIEEM (2018)¹, consideration must be given to the likely baseline situation at the time of project construction, as it may not be the same as the conditions at the time of the impact assessment. In order to determine this, it is necessary to try to predict any changes that will alter conditions prior to the start of the proposed construction.

7.6.28 In the absence of the Proposed Development, assuming a 'do-nothing' scenario or a substantial gap in time between baseline surveys and the commencement of construction of the Proposed Development, changes in the baseline ornithology conditions (i.e., distributions and populations) are most likely to result from habitat modifications within, or surrounding, the Site. These are most likely to result from changes in local land management practices, principally, forestry works and some livestock grazing in open habitats in the north of the Site. Commercial forestry plantation is expected to remain albeit subject to rotational felling and planting in accordance with forestry management plans.

7.6.29 Breeding bird densities would therefore reasonably be expected to remain at comparable levels with those recorded during field surveys and identified through desk study i.e., at relatively low levels, albeit central territory locations may shift.

7.6.30 The likelihood of new breeding raptor territories being establishment within the Site is considered to be low, given the general absence of suitable nesting habitat features for raptor species (such as deep heather swards and crags). There is a possibility however, that tree-nesting species recorded during the baseline surveys such as goshawk or osprey could establish nest sites within or immediately surrounding the Site in the future.

7.6.31 Climatic changes in the medium to long-term future may include increased summer and winter temperatures and higher average precipitation rates in summer and winter. These factors are likely to result in an extended breeding bird season with earlier in the year (and likely more) nesting attempts (which has potential to increase breeding productivity, although this will be dependent on prey

availability). Contrary to this however, the increased rainfall may result in higher rates of fledgling mortality.

- 7.6.32 The opposing potential effects of climatic change on ornithology features makes predicting likely future outcomes difficult. There is no reason to consider that the breeding bird assemblage presently using the Site will change markedly over the next 50 years due to climate change. However, given the substantially higher rates of average precipitation which are predicted across the next 50 years breeding productivity is considered likely to reduce and this may have notable effects for species which have one brood per year, with species such as golden eagle particularly susceptible to poor productivity during wet breeding seasons.
- 7.6.33 Potential effects on ornithology receptors detailed in this Chapter are not predicted to substantively change in relation to climate change over the next 50 years.

7.7 Embedded Mitigation

- 7.7.1 A number of embedded mitigation measures have been identified through the iterative EIA process and have been incorporated into the design and construction planning of the Proposed Development. As these mitigation measures have been embedded into the design, are legal requirements or are standard practices that will be implemented irrespective of the ornithological features identified, the assessment of likely significant effects assumes that these measures are in place.

Mitigation through Design

- 7.7.2 The extent of the Site Boundary and the layout of the Proposed Development have been subject to a number of design iterations in response to constraints, identified as part of the baseline studies, intended to reduce environmental impacts, including a reduction from 19 turbines to the 11 turbine scheme of the Proposed Development (see **Chapter 2 and Chapter 3**, EIA Report Volume 2) for further details. This has included avoidance, where possible, of open areas which are typically more valuable to IOFs, such as breeding and foraging raptors, breeding waders and lekking black grouse. The majority of turbines are located within the commercial forestry plantation which is typically of low ecological value to most IOFs.
- 7.7.3 Additionally, the turbines will be accommodated within the forestry by key-hole felling as opposed to clear-felling large swathes of the woodland. This will prevent large parts of the Site being opened up which may subsequently have become more suitable for ornithological features, such as breeding and foraging raptors, breeding waders and lekking black grouse, and encourage them into the wind farm area where they may have been at increased risk of collision mortality. For golden eagle in particular, the retention of forestry cover will maintain the Site's unsuitability for the species, particularly given the theoretical suitability of the northern and western parts of the Site in the absence of forestry cover according to the GET model data (as described in **Section 7.5**).

Embedded Mitigation Measures

Construction Environmental Management Plan

- 7.7.4 Should the Proposed Development be consented a Construction Environmental Management Plan (CEMP) will be prepared. This will include all good practice construction measures, pollution prevention controls, and monitoring to be implemented over the course of construction of the Proposed Development in line with current industry statutory guidance.
- 7.7.5 All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally or recklessly kill, injure, or take any wild bird; the Act also makes it an offence to take, damage, or destroy the nest (whilst being built or in use) or its eggs. In addition, all wild birds listed in Schedule 1 of the Act receive additional legal protection which makes it an offence to intentionally or recklessly disturb these species while building a nest, or while using or when near a nest containing eggs or young, or to disturb their dependent young.
- 7.7.6 An Outline CEMP (OCEMP) is provided in **Technical Appendix 2.1** (EIA Report Volume 4) and sets out the broad environmental protection measures which will form the basis for the measures which will be prescribed in the final CEMP.

Construction Breeding Bird Protection Plan (CBBPP)

- 7.7.7 Prior to the commencement of construction activities, a CBBPP would be prepared and submitted for agreement in consultation with THC and NatureScot.
- 7.7.8 The CBBPP would be informed by pre-commencement breeding bird surveys to establish the status and distribution of all nesting bird species, and with particular attention paid to Schedule 1 breeding birds and lekking black grouse, within the Site and a surrounding buffer of 1 km from disturbing activities. This would be carried out in the breeding season preceding the construction phase of the Proposed Development to ensure the most updated information is considered, following receipt of consent.

7.7.9 Surveys would also be undertaken during the construction phase to inform of 'live' constraints covering all bird species and extending to the same extents as the pre-commencement surveys above. These surveys would focus on the bird breeding season and include for those species covered by the baseline surveys. While the bird breeding season is typically taken to extend from March to August inclusive, given the potential for crossbills to occur on-site, surveys would be extended to include earlier in the year (from c. February) to account for their breeding patterns. The appointed ECoW (see below) would accordingly advise whether there should be any deviation from this approach.

7.7.10 Where necessary, based on the findings of the construction phase breeding bird surveys, work exclusion buffers around identified nest sites would be established in accordance with best available species guidance applicable at the time and/or as agreed in consultation with NatureScot.

Ecological Clerk of Works

7.7.11 A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to ensure ornithological interests are safeguarded; although this may not necessarily be a full-time role throughout. The role of the ECoW would include the following tasks:

- provide briefings and information to all staff on-site, so staff are aware of the ornithological sensitivities related with the Site and the legal implications of not complying with agreed working practices;
- agree and monitor measures designed to minimise damage to retained habitats;
- undertake pre- and during construction surveys, and advise on ornithological issues and working restrictions where required; and
- complete site-supervision works as required, in relation to sensitive habitats and protected ornithological species.

Site Clearance Activities

7.7.12 Habitat clearance activities, where these coincide with the breeding bird season (March to August, inclusive) would be subject to a pre-clearance survey by the ECoW or a competent ornithologist to identify any active wild bird nests. Should any active nests or leks be found, works would only proceed under the advice of the ECoW/appointed ornithologist and following a disturbance risk assessment. This would include all works within the Site.

7.7.13 Work exclusion buffers around identified nest or lek sites would be implemented where necessary in accordance with best available species guidance applicable at the time and/or as agreed in consultation with NatureScot.

7.7.14 Note, works will be timed to avoid activity within 100 m of the identified barn owl nest/roost site (between March and August, inclusive), and works within 100 m will be preceded by a check of the nest/roost site by a licensed barn owl surveyor (at all times of year, given barn owl breeding seasons have potential to extend beyond the March to August period) to ensure no nesting barn owl are disturbed.

7.7.15 Works will also be restricted to >750 m from the osprey nest sites identified from the desk study and/or field surveys. If the event that any essential works are required within the 750 m buffer, these should be timed outside the period March to August (when the species is unlikely to be present at the locality).

Interim Decommissioning Restoration and Aftercare Strategy

7.7.16 At the point of decommissioning, an interim Decommissioning Restoration and Aftercare Strategy (DRAS) would be developed through consultation with THC, NatureScot, and any other relevant consultees in line with relevant legislation and guidance at that point in time. This will detail those measures to be adopted to ensure the protection of key ecological/ornithological features. This will typically mirror those measures adhered to in the CEMP and will include pollution prevention protocols and pre-decommissioning surveys.

7.8 Ornithological Features Brought Forward for Assessment

7.8.1 The results of the desk study and field survey were used to inform the identification of IOFs (important ornithological features) within and around the Site to be considered in the assessment.

7.8.2 In accordance with NatureScot guidance (NatureScot, 2025a)¹³ effects on passerines, which are not sensitive to wind farm developments, are scoped out of detailed assessment, and are not considered further. This includes Schedule 1 listed passerines, such as crossbill, which would be protected through pre-felling breeding bird surveys and so do not require assessment following the application of embedded mitigation.

7.8.3 A summary of identified IOFs in the Study Area relevant to the Proposed Development is provided in **Table 7.10** and details of whether each feature is scoped in or out of the assessment, with justification provided.

Table 7.10 – Summary of Sensitive/Important Ornithological Feature Sensitivity

IOF	Sensitivity	Scoped In or Out	Justification
Caithness and Sutherland Peatlands SPA/Ramsar Site (and the component Grudie Peatlands SSSI)	High / International	Out	Caithness and Sutherland Peatlands SPA and Ramsar Site is located 7.3 km from the Site and is designated for its upland breeding raptors, waterfowl and wading birds (see Table 7.5). Of all the qualifying species, the SPA is only located within the core foraging range of red- and black-throated diver from the Site (up to 8 km and 10 km respectively, taken from SNH, 2016a)¹⁴. However, no divers were recorded during the field surveys and no records of breeding divers were returned from the desk study. Based on the SPA/Ramsar Site's distance from the Site, and the absence of those species' whose ranging distances potentially extend as far as the Site, there is considered to be no connectivity and therefore no anticipated significant effects from the Proposed Development upon Caithness and Sutherland Peatlands SPA/Ramsar Site (and the component Grudie Peatlands SSSI) or their associated qualifying species. This conclusion was accepted by NatureScot, RSPB and THC through the Scoping consultation (see Table 7.1).
Golden eagle	Moderate / Regional	Out	Golden eagle is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Records of golden eagle were returned from the desk study (HRSG) for the wider surrounding area including details of two breeding territories with both territories/nest sites greater than 4 km from the Site. One of the pairs was active in 2018 (but no information is available since), and the other pair has utilised at least two nest sites (one nest site >10 km from the Site) and has not fledged young since at least before 2016. These two breeding territories represents 4.7 % of the NHZ7 population estimate (43 pairs, based on Wilson <i>et al.</i>, 2015)²⁰. The field surveys found no evidence of any other golden eagle breeding territories within the wider 6 km Study Area around the Site, thus these nearest territories identified through the desk study is well over the species' 1 km limit for disturbance (Goodship and Furness, 2022)²³ and on the outer proportion of the species' recognised core range of 6 km (SNH, 2016a)¹⁴. The distance of these territories from the Site is reflected in the relatively low level of flight activity, which was observed with only seven flights, all of individual birds, being recorded, of which only four flights were 'at collision risk'. The majority of the recorded flight activity was focussed around Beinn Ulbhaidh to the southeast of the Site with only two flights actually passing over the forestry on-site. Indeed, as stated in the GET Model Appraisal (see Section 7.6), as the Site is predominantly forested it is largely considered to be unsuitable for golden eagles so there will be no loss of golden eagle habitat, and the proposed turbines will be accommodated through key-hole felling, as opposed to clear-felling. Even if the forestry was removed (a highly improbable scenario), the majority of the Site remains largely unsuitable to golden eagles, largely comprising GET 5 habitat or less, with the exception of the ridgeline associated with Beinn Chreagach and along the Site's northern boundary. Moreover, the Site is relatively segregated from much more extensive and contiguous GET 6+ habitat which is located over 2 km to the south and southwest of the Site which is where the core territory of the nearest golden eagle pairs are most likely to cover. Consequently, it is more likely that individuals occurring over the Site are non-territorial, juvenile, and immature birds dispersing from their natal ranges. However, the unsuitability of the habitat immediately associated with the Site remains for these birds. The collision risk model predicted an annual collision rate of 0.014 birds per year which equates to one bird approximately every 71 years and hence potentially no more than one bird over the Proposed Development's 50-year life span and potentially no collisions at all within the operational phase. Notwithstanding the above, research into the effects of wind farm developments on golden eagle range use using satellite tag data from territorial and non-territorial birds has demonstrated that golden eagles exhibit strong avoidance of wind turbines (Fielding <i>et al.</i>, 2021³³ and 2024³⁴). These studies have found that eagles typically do not fly within operational wind farms and avoid them by at least 300 m. Based on the above, the potential for the Proposed Development to result in adverse effects on golden eagles is considered to be negligible.

³³ Fielding, A.H.; Anderson, D.; Benn, S.; Dennis, R.; Geary, M and Weston, E.D. (2021). Non-territorial GPS-tagged golden eagles *Aquila chrysaetos* at two Scottish wind farms: Avoidance influenced by preferred habitat distribution, wind speed and blade motion status. PLoS ONE 16(8): e0254159.

³⁴ Fielding, A.H.; Anderson, D.; Benn, S.; Taylor, J.; Tingay, R.; Weston, E.D. and Whitfield, D.P. (2024). Approach Distances of Scottish Golden Eagles *Aquila chrysaetos* to Wind Turbines according to Blade Motion Status, Wind Speed, and Preferred Habitat. Diversity 2024, 16, 71.

IOF	Sensitivity	Scoped In or Out	Justification
White-tailed eagle	Low / Local	Out	White-tailed eagle is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). While records of white-tailed eagle were returned for the wider surrounding area through the desk study (over 2 km from the Site), only a single flight involving two birds was recorded during the flight activity surveys; and although the species was recorded during the raptor surveys there was no evidence of breeding within the 10 km Study Area, inferring that use of the Site and collision risk for this species is negligible. Therefore, the Proposed Development is not anticipated to have any adverse effects on white-tailed eagle, through loss of feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon any white-tailed eagles can be avoided.
Osprey	Medium / Regional	Out	Osprey is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Two breeding osprey pairs were identified to the west of the Site through the desk study (from HRSG) and one of these osprey pairs was located during the breeding raptor surveys in 2021 (all within forestry), further details of which are restricted to Confidential Technical Appendix 7.3 (EIA Report Volume 5)³⁵. The associated nest sites for these two osprey pairs (identified from the desk study) are located over 880 m from the Site boundary (and considerably more from the proposed western access route itself; >950 m), which is beyond the species' disturbance threshold of 350 - 750 m, (Goodship and Furness, 2022)²³. The nest site located during the field surveys in 2021 is 670 m from the Site boundary (western access route Study Area), and 800 m from the proposed western route itself. The nest site is therefore also appropriate spatially separated from the proposed western access route (and visually buffered by the presence of forestry from the route) for no disturbance of any nesting osprey at the nest site to be anticipated. Furthermore, no osprey flights were recorded over or around the Site during the flight activity or breeding raptor surveys inferring that use of the Site and collision risk for this species is negligible. The Proposed Development is not anticipated to have any adverse effects on osprey through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks, and maintenance of appropriate buffers between works and identified nest sites), significant adverse effects upon any osprey can be avoided.
Red kite	Low / Local	Out	Red kite is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). While non-breeding records of red kite were returned for the wider area through the desk study only a single flight involving an individual bird was recorded during the flight activity surveys; and although the species was recorded during the raptor surveys there was no evidence of breeding inferring that use of the Site and collision risk for this species is negligible. Therefore, the Proposed Development is not anticipated to have any adverse effects on red kite, through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon any red kites can be avoided.
Goshawk	Low / Local	Out	Goshawk is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). While records of goshawk were returned for the wider area through the desk study only a single flight involving an individual bird was recorded during the flight activity surveys; and although the species was recorded during the raptor surveys there was no evidence of breeding inferring that use of the Site and collision risk for this species is negligible. Therefore, the Proposed Development is not anticipated to have any adverse effects on goshawk through loss of important feeding or nesting

³⁵ Even though grid references did not exactly match between the identified nest site in 2021 and grid references received from the HRSG, the nest site identified in 2021 is considered to be the same pair as one of the pairs identified from the HRSG.

IOF	Sensitivity	Scoped In or Out	Justification
			habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon any goshawk can be avoided.
Marsh harrier	Low / Local	Out	Marsh harrier is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Only a single flight involving an individual bird was recorded during the flight activity surveys and there were no sightings during the raptor surveys inferring that use of the Site and collision risk for this species is negligible. The Site, and surrounding area, does not support any habitat suitable to breeding marsh harrier. Therefore, the Proposed Development is not anticipated to have any adverse effects on marsh harrier through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes.
Hen harrier	Low / Local	Out	Hen harrier is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). While non-breeding records of hen harrier were returned for the wider area through the desk study, only a single flight involving an individual bird was recorded during the flight activity surveys; and although the species was recorded during the raptor surveys there was no evidence of breeding inferring that use of the Site and collision risk for this species is negligible. Therefore, the Proposed Development is not anticipated to have any adverse effects on hen harrier, through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon any hen harrier can be avoided.
Merlin	Low / Local	Out	Merlin is listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Only a single flight involving an individual bird was recorded during the flight activity surveys and there were no sightings during the raptor surveys inferring that use of the Site and collision risk for this species is negligible. Therefore, the Proposed Development is not anticipated to have any adverse effects on merlin, through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon any merlin can be avoided.
Barn owl	Low / Local	Out	Barn owl is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). A barn owl nest/roost site was identified to the west of the Site (near the western access route) during the breeding raptor surveys in 2021, further details of which are restricted to Confidential Technical Appendix 7.3 (EIA Report Volume 5). This nest/roost site is located 90 m from the western access route Study Area, which is within the species' upper-range disturbance threshold of 50 - 100 m, (Goodship and Furness, 2022)²³. The nest/roost site is visually buffered from the western access route by trees (and thus some visual and noise screening will be present). The nest/roost site is also beside a minor road, and thus any barn owl using the site will be subject and habituated to a certain level of disturbance associated with vehicles/road traffic. Any road widening requirements within 100 m of the nest/roost site would avoid the main barn owl breeding season (March to August, inclusive). A check of the nest/roost site by a licensed barn owl surveyor would precede works within 100 m (at all times of year, given barn owl breeding season have potential to extend beyond March to August). Furthermore, the commercial plantation forest of the Site is largely unsuitable for nesting barn owls and no barn owl flights were recorded over or around the Site during the flight activity or breeding raptor surveys inferring that use of the Site and collision risk for this species is negligible. The Proposed Development is not anticipated to have any adverse effects on barn owl through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes.

IOF	Sensitivity	Scoped In or Out	Justification
			Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7 , including pre-construction nesting bird checks and sensitive timing of works in close proximity to the nest/roost site), significant adverse effects upon any barn owl can be avoided.
Black grouse	Low / Local	Out	Black grouse is a BoCC Red-listed species. Records of black grouse were returned from within the Site through the desk study, including an adult with a brood of chicks, however, these records were from 2010 (15 years ago). No birds were recorded within the Site itself during the field surveys and no black grouse flights were recorded during the flight activity surveys. However, the absence of flight is not surprising given the Site's predominantly forested nature and the species' low flying behaviour. Indeed, black grouse typically fly below collision risk height of modern turbine specifications reducing the risk of collisions. Nonetheless they can be susceptible to collision with the towers themselves, particularly in reduced visibility conditions (i.e. fog/low cloud). The species' presence was however, confirmed in the immediate and wider area. Two separate single males (one lekking, the other flushed from potentially suitable lekking habitat) were recorded within 750 m of the Site boundary (with the non-lekking bird within the Site itself), which represents the species' upper-range limit for disturbance for lekking males (Goodship and Furness, 2022)²³. It should be noted however, that the bird which was actually lekking was located over 2.5 km from the Proposed Development. A more substantial lek site comprising 12 males was located in the wider surrounding area, but over 1 km from the Site (and on the other side of the River Oykel and the A837 from the Site). The total of 13 confirmed lekking males represents 2.7 % of the NHZ7 population estimate (473 lekking males, based on Wilson <i>et al.</i>, 2015)²⁰. However, given the distance of separation between both the larger and single-male leks and the Proposed Development and the species' upper-range disturbance distance, the Proposed Development is not anticipated to have any adverse effects on birds using these lek sites. No further lekking records were recorded during field surveys. Therefore, based purely on the sighting of a single (non-lekking) male in potentially suitable lekking habitat (on-site), black grouse is considered of Low/ Local sensitivity in accordance with the criteria set out in Table 7.2. The Proposed Development is not anticipated to have any adverse effects on black grouse through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures and pre-construction nesting bird checks through the CBBPP, to be included within the Proposed Development's CEMP (as detailed in Section 7.7) significant adverse effects upon black grouse can be avoided.
Pink-footed goose	Low / Local	Out	The Site is not within 20 km of any international designated site with pink-footed goose as a qualifying species, nor are the habitats within the Site considered suitable for supporting foraging wintering or roosting goose flocks, or identified as known important foraging habitats (Mitchell, 2012)³⁶. Only very low levels of flight activity were recorded with seven flights comprising 369 birds being recorded, of which only five flights comprising 238 birds were 'at collision risk'. All of these flights were at the highest height band (180 m+) either for the whole flight or for part of the flight. As noted in Section 7.6, CRM analysis was not undertaken for pink-footed goose given the robust population, high avoidance rate (99.8 %) of the species, and because the geese recorded were not considered connected to any SPA (in accordance with NatureScot, 2025c)³⁷. The Proposed Development is not anticipated to have any adverse effects on pink-footed goose, through loss of important feeding habitat, collision risk, or displacement/barrier effects on any established movement routes.
Greylag goose	Low / Local	Out	The Site is not within 20 km of any international designated site with greylag goose as a qualifying species, nor are the habitats within the Site considered suitable for supporting foraging wintering or roosting goose flocks, or identified as known important foraging habitats (Mitchell, 2012)³⁶. A breeding pair of greylag geese were identified in the MBBS buffer to the south of the Site, however, only a single flight comprising a flock of seven birds was recorded during the flight activity surveys inferring that use of the Site and collision risk for this species is negligible.

³⁶ Mitchell, C. (2012). Mapping the distribution of feeding pink-footed and Iceland greylag geese in Scotland. A report by the Wildfowl & Wetlands Trust, as part of a programme of work jointly funded by WWT and SNH. July 2012.

³⁷ NatureScot (2025c). Assessing impacts to pink-footed and greylag geese from small-scale wind farms in Scotland. March 2025.

IOF	Sensitivity	Scoped In or Out	Justification
			The Proposed Development is not anticipated to have any adverse effects on greylag goose, through loss of important feeding habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures to be included within the Proposed Development's CEMP (as detailed in Section 7.7, including pre-construction nesting bird checks), significant adverse effects upon breeding greylag geese can be avoided.
Golden plover	Low / Local	Out	Golden plover is listed on Annex I of the EU Birds Directive. Records of golden plover were returned for the wider area through the desk study and two breeding territories were identified on the open moorland in the buffer zone to the south of the Site during MBBS (see Figure 7.5 (EIA Report Volume 3a)). These two territories represent 0.07 % of the NHZ7 population estimate (3,009 pairs, based on Wilson <i>et al.</i>, 2015)²⁰. The open moorland immediately surrounding the Site therefore only supports a very small proportion of the NHZ7 population. Both of these two breeding territories were centred over 900 m from the nearest respective turbines, which exceeds the upper limit for disturbance (500 m) documented for the species (Goodship and Furness, 2022)²³. All infrastructure for the Proposed Development is also located over 500 m from the centre of these territories. During the scarce breeding bird survey, in 2025, along the western access route, one golden plover breeding territory was recorded (see Figure 7.10 (EIA Report Volume 3a)). This territory is over 500 m from the proposed western access route and therefore exceeds the upper limit for disturbance (500 m, as above). Despite the presence of these breeding territories in proximity to the Site, very low levels of flight activity were recorded with only six flights comprising 17 birds being recorded, of which four flights comprising 12 birds were 'at collision risk' indicating that use of the Site itself and theoretical collision risk for this species is negligible. Indeed, the collision risk model predicted an annual collision rate of 0.036 birds per year which equates to one bird approximately every 28 years and hence potentially up to two birds over the Proposed Development's 50-year life span. Notably, the majority of the golden plover flights which were recorded (four out six) occurred during the non-breeding season during which the golden plover population in the UK is significantly greater than during the breeding season. Whilst a regional/NHZ non-breeding population figure is not available for golden plover, the national (Scottish) non-breeding population is estimated to be in the region of 25,000-35,000 birds (Forrester <i>et al.</i>, 2012)³⁸. Consequently, the potential loss of one non-breeding bird every 28 years as a result of the Proposed Development is considered to be inconsequential. Overall, therefore, the Proposed Development is not anticipated to have any adverse effects on golden plover through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures and pre-construction nesting bird checks through the CBBPP, to be included within the Proposed Development's CEMP (as detailed in Section 7.7) significant adverse effects upon golden plover can be avoided. No such adverse effects are anticipated particularly given the spatial separation from the Proposed Development to the breeding territories identified during surveys and the inconsequential effects of collision mortality on the golden plover population..
Curlew	Low / Local	Out	Curlew is a BoCC Red-listed species. Records of curlew were returned for the wider area through the desk study and eight breeding territories were identified within the MBBS Study Area. These eight territories represent 3.2 % of the NHZ7 population estimate (249 pairs, based on Wilson <i>et al.</i>, 2015)²⁰. However, only two of these territories were located within the Site itself with a further one territory centred within 300 m of the Site boundary (see Figure 7.5 (EIA Report Volume 3a)), which represents the species' upper-range limit for disturbance for lekking males (Goodship and Furness, 2022)²³. Notably, only one of these three curlew territories is located within 300 m of the Proposed Development, albeit over 250 m away: the other two being located over 1 km from the Proposed Development. During the scarce breeding bird survey, in 2025, along the western access route, one curlew breeding territory was recorded (see Figure 7.10 EIA Report Volume 3a). This territory is over 400 m from the proposed western access route and

³⁸Forrester, R.W., Andrews, I.J., McInerney, C.J., Murray, R.D., McGowan, R.Y., Zonfrillo, B., Betts, M.W., Jardine, D.C. and Grundy, D.S. eds. (2012). The digital birds of Scotland. The Scottish Ornithologists' Club, Aberlady.

IOF	Sensitivity	Scoped In or Out	Justification
			therefore exceeds the upper limit for disturbance (300 m, from Goodship and Furness, 2022)²³. No curlew flights were recorded during the flight activity surveys, which is not surprising given the predominantly forested nature of the Site and the species' affiliation with open moorland habitat. Therefore, the theoretical collision risk for curlew is negligible. Given the spatial separation from the Proposed Development's to all but one of the breeding territories identified during the field surveys, significant effects on breeding curlew by the Proposed Development are not anticipated, with the locally occurring breeding pairs expected to continue using the undeveloped parts of the Site or habitats in the nearby surrounding area for breeding in the future, including birds associated with the territory located closest to the Proposed Development. Overall, therefore, the Proposed Development is not anticipated to have any adverse effects on curlew through loss of important feeding or nesting habitat, collision risk, or displacement/barrier effects on any established movement routes. Through design considerations and embedded mitigation such as the implementation of good practice construction measures and pre-construction nesting bird checks through the CBBPP, to be included within the Proposed Development's CEMP (as detailed in Section 7.7) significant adverse effects upon curlew can be avoided.
Red- and black throated diver	None	Out	Red-throated and black-throated divers are listed on Annex I of the EU Birds Directive and Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). There were no records of either red- or black-throated divers within or surrounding the Site during the field surveys or desk study records.
Other breeding waders (greenshank, dunlin, oystercatcher, woodcock, common snipe and common sandpiper)	No greater than Low / Local	Out	The only records of greenshank were two flights recorded during the flight activity surveys. Although the desk study revealed records of breeding greenshank in the wider area there was no evidence of breeding by this species in the vicinity of the Site through the MBBS. Although records of breeding dunlin were returned for the wider area through the desk study there were no records of this species in the vicinity of the Site through the field surveys. Although five oystercatcher breeding territories were identified through the MBBS, these were all located along the River Oykel floodplain in the wider survey buffer off-site. Consequently, not only are these breeding territories located outside of the Site, the closest is located over 1.5 km from the Proposed Development. Additionally, no oystercatcher flights were recorded during the flight activity surveys. No more than two breeding territories were identified for woodcock, common snipe, and common sandpiper during the MBBS with only one woodcock and common snipe territory being located within the Site. Additionally, no flights were recorded for any of these species during the flight activity surveys. Two common snipe breeding territories were recorded during the scarce breeding bird surveys in 2025 along the western access route. These territories are >300 m from the proposed route. Given the low number and activity of these species during the surveys and/or their unaffiliated distribution relative to the Site, it is not considered to be an important breeding, foraging or commuting area for these species.
Other bird species (teal, tufted duck, little grebe, common gull, black-headed gull, great skua and red grouse)	No greater than Low / Local	Out	No more than two breeding territories were identified for teal, tufted duck, little grebe, common gull, or black-headed gull during the MBBS. The small number of breeding gulls (one black-headed gull pair and two common gull pairs), teal (one pair) and little grebe (one pair) were using Loch Mhic Mharsaill along the eastern access route. One tufted duck pair was using Lochan Phail in the west of the Site. . Additionally, no flights were recorded for any of these species during the flight activity surveys. The only record of great skua was a single record of two birds passing over the Site during a spring flight activity survey, which was assumed to have been birds on migration. One red grouse breeding pair was recorded close to the western access route (c. 100 m from the proposed route). Given the low number and activity of these species during the surveys and/or their unaffiliated distribution relative to the Proposed Development (with the Loch Mhic Mharsaill by the eastern access route, which is access for the consented Strath Oykel Wind Farm), it is not considered to be an important breeding, foraging or commuting area for these species.

7.9 Potential Effects

- 7.9.1 Effects on IOFs are scoped out of the assessment as explained and justified in **Table 7.10**. It is considered that with the embedded and committed mitigation in place (as detailed in **Section 7.7**), potentially significant adverse direct and / or indirect effects on such ornithological features can be avoided at all stages of the Proposed Development (construction, operation, and decommissioning).

7.10 Additional Mitigation and Enhancement

- 7.10.1 No additional mitigation is required as there are no significant effects as a result of the construction, operation, or decommissioning of the Proposed Development.
- 7.10.2 In accordance with Policy 3 of NPF4, the ONEMP for the Proposed Development details enhancement measures which includes measures which will provide nesting and foraging opportunities for locally occurring birds.
- 7.10.3 An ONEMP for the Proposed Development has been provided in **Technical Appendix 6.5** (EIA Report Volume 4) and **Figure 6.8** (EIA Report Volume 3a) and details outline habitat enhancement principles to be implemented as part of the Proposed Development.
- 7.10.4 The detailed NEMP would be agreed in consultation with NatureScot and implemented as approved in accordance with a suitably worded condition. In summary, measures are to include up to 18 ha of peat restoration and creation (forest-to-bog restoration) within the Site, restoration/creation of a further 77 ha of peatland (especially in the south of the Site, and within key-hole areas around turbines), the enhancement of riparian habitats and enhancement and expansion of native tree cover and restore ancient woodland inventory habitat. These measures are proposed to enhance wider biodiversity conditions benefitting a variety of associated flora and fauna and which would include improving nesting and foraging opportunities for birds. For instance, the bog restoration measures will provide greater opportunities for breeding waders and black grouse (where appropriately offset from operational turbines and forestry edge). Native tree planting including along riparian corridors will also benefit black grouse, with prescriptions being included for such planting not to extend within 500 m of turbine locations in order to not encourage any birds into areas where they may be at risk of collision.
- 7.10.5 Proposals are also included for the provision of bird nesting boxes onto larger, more mature (non-commercial) trees, including boxes suitable for raptors and owls, and a variety of passerine species (open and cavity nest boxes).
- 7.10.6 Additionally, where any fencing is required for deer management or the protection of newly planted trees, it would be marked with droppers to reduce collision risk for black grouse.
- 7.10.7 Enhancement measures provided through the NEMP would remain in place throughout the operational phase, subject to periodic review in accordance with any emerging best practice management advice. It is envisaged that proposed enhancement measures would start to provide benefits after a period of around five to 10 years.

7.11 Residual Effects

- 7.11.1 No significant residual adverse effects are anticipated to occur upon any IOFs as a result of the construction, operation, or decommissioning of the Proposed Development.

7.12 Cumulative Assessment

- 7.12.1 Given no IOFs are scoped into the assessment, and no significant adverse direct and/or indirect effects on such features are anticipated from the Proposed Development, the contribution of the Proposed Development to cumulative impacts for consideration alongside other relevant projects are considered inconsequential. Therefore, cumulative effects are not considered further in this assessment.

7.13 Shadow Habitats Regulations Appraisal

Introduction

- 7.13.1 Under the Conservation (Natural Habitats, &c.) Regulations 1994, as amended (the Habitats Regulations), any development that may have a LSE on an internationally designated site (SPA or SAC), either alone or in combination with other projects, requires an Appropriate Assessment (AA) to be carried out, to determine whether or not the development would have an adverse effect on the integrity of the relevant designated area(s) in light of its Conservation Objectives. NPF4 provides the same level of protection to Wetlands of International Importance (Ramsar Sites) to that afforded to SPAs and SACs.
- 7.13.2 Before an AA is initiated, a screening process is undertaken to determine whether any of the predicted impacts of a development would result in a LSE. This Screening Assessment ('Stage 1') is presented to

provide information to the competent authority to allow them to reach a decision on whether or not the Proposed Development would have a LSE on any internationally designated sites and therefore whether an AA is required, as recommended by NatureScot and THC in their Scoping Responses (see **Table 7.1**). Should the potential for a LSE be concluded, the process moves on to 'Stage 2' (AA).

- 7.13.3 The two-stage process is referred to as a Habitats Regulations Appraisal (HRA); however, as only the competent authority can undertake the HRA, the information provided here is called a 'shadow HRA (sHRA)'.
- 7.13.4 This sHRA only covers internationally designated sites with ornithological qualifying features (i.e. SPAs and Ramsar Sites). An sHRA/information to inform HRA for relevant sites designated for their non-avian ecological features is presented in **Chapter 6** (EIA Report Volume 2).
- 7.13.5 For the purposes of this appraisal, professional judgement based on best available evidence has been used to establish the likelihood of a significant effect and to determine whether a conclusion of no adverse effect on the integrity of any relevant designated sites can be reached.

Designated Sites for Consideration

- 7.13.6 As identified in **Table 7.5**, Caithness and Sutherland Peatlands SPA and Ramsar site is the only internationally designated site with ornithological qualifying features located within the Study Area (as defined in **Section 7.5**). This SPA and Ramsar Site is located 7.3 km from the Site (excluding the access routes) and is designated for its upland breeding raptors, waterfowl, and wading birds - full details of which are provided in **Table 7.5**.

Conservation Objectives

- 7.13.7 All SPAs in Scotland have standard Conservation Objectives, summarised as follows:
- avoid deterioration to the habitats of the qualifying species, or significant disturbance to the qualifying species, thus maintaining integrity of the designated area; and
 - ensure that, for the qualifying features, the following are maintained in the long-term:
 - the population of the species as a viable component of the designated area;
 - the distribution of the species within the designated area;
 - the distribution and extent of habitats supporting the species;
 - the structure, function and supporting processes of habitats supporting the species; and
 - no significant disturbance to the species.

Stage 1: Screening for Likely Significant Effects

- 7.13.8 Screening for LSE is undertaken to remove any proposals, or components of proposals, that do not require consideration under Stage 2 (AA). This Screening process considers two important aspects for the Proposed Development:
- connectivity between the Proposed Development and designated areas (and their qualifying features where these occur outside the boundary of the designated area); and
 - routes to impact between the Proposed Development and designated areas (and their qualifying features).
- 7.13.9 If it can be clearly demonstrated that there is no connectivity and/or no route to impact, the conclusion will be that there is no LSE on the designated areas. If, however, it is concluded that there is the potential for a LSE, an AA is required.
- 7.13.10 As explained in **Table 7.10**, the only qualifying species of Caithness and Sutherland Peatlands SPA/Ramsar Site whose core ranging distances extend as far as the Site are red- and black-throated diver (up to 8 km and 10 km respectively, taken from SNH, 2016a)¹⁴. Therefore, these are the only species associated with the SPA/Ramsar Site which could potentially occur on or around the Site. However, no divers were recorded during the field surveys and no records of breeding divers were returned from the desk study. Additionally, there are no waterbodies to the southwest of the Site and within range of the designated area that are suitable for foraging divers, and which could result in regular movements across the Site in the future.
- 7.13.11 Based on the Caithness and Sutherland Peatlands SPA/Ramsar Site's distance from the Site, and the absence of those species' whose ranging distances potentially extend as far as the Site, there is considered to be no connectivity or routes to impact and therefore no LSE from the Proposed Development. Indeed, this conclusion was accepted by NatureScot, RSPB, and THC through the Scoping consultation (see **Table 7.1**).

Conclusion

- 7.13.12 With no connectivity and no routes to impact, it is concluded that impacts resulting from all phases of the Proposed Development (construction, operation, and decommissioning phases) would not result in any

LSE on the qualifying ornithological features of Caithness and Sutherland Peatlands SPA/Ramsar Site. This conclusion would remain the same were the Proposed Development to be considered in combination with other projects.

- 7.13.13 With no LSE demonstrated for the Proposed Development, the process does not move on to Stage 2: AA; i.e., an AA is not required for Caithness and Sutherland Peatlands SPA/Ramsar Site.

7.14 Summary

- 7.14.1 This Chapter has considered the potential significant effects on important ornithological features associated with the construction, operation, and decommissioning of the Proposed Development.
- 7.14.2 The assessment is based upon comprehensive baseline data, comprising specifically targeted field surveys of legally protected and notable ornithological features of conservation concern identified during desk study and consultation feedback. It draws on pre-existing information, where appropriate, from other studies and survey data sources, and is based on EIA guidance published by the CIEEM and NatureScot.
- 7.14.3 A full year's-worth of ornithological surveys were carried out to support the application, as agreed through consultation with NatureScot. Surveys consisted of VP flight activity surveys, and surveys for moorland breeding birds, Annex I and Schedule 1 breeding raptors and owls, black grouse and breeding divers.
- 7.14.4 The habitats in the wider area surrounding the Site support a reasonable number of bird species regarded as 'target species', as evidenced from baseline surveys and desk study records, the Site itself is of relatively low importance to such species. This is reflective of the commercial plantation forestry which dominates the Site. Based on a review of the ornithological features associated with the Site and the immediately surrounding area, no IOFs were taken forward for detailed assessment. This includes potential impacts on Caithness and Sutherland Peatlands SPA and Wetland of International Importance (Ramsar Site) based on its distance of separation from the Site and the absence of any species whose ranging distances potentially extend as far as the Site. This conclusion is reiterated through a sHRA to demonstrate that the Proposed Development will not result in any LSEs on these designated sites. Consequently, the Proposed Development is not anticipated to pose any significant adverse effects on IOFs and hence will not contribute to any significant cumulative effects; therefore, a cumulative impact assessment is not deemed to be necessary.
- 7.14.5 Standard mitigation adopted would include embedded mitigation through good practice control measures including production of a CBBPP involving pre-and during construction surveys and appointment of an ECoW to oversee the implementation of any necessary ornithological mitigation measures.
- 7.14.6 Habitat enhancement opportunities detailed in an outline NEMP, including peat restoration and native tree planting which would improve nesting and foraging opportunities for locally occurring bird species.

7.15 Glossary and Abbreviations

Term	Definition
Additional mitigation	Measures which are bespoke to the Proposed Development, and are required to mitigate adverse significant effects over and above the standard (see 'embedded mitigation') mitigation.
Annex I	Annex I of the Birds Directive lists bird species that are considered vulnerable, rare, or threatened.
Assessment	Process by which information about effects of Proposed Development is collected, assessed and used to inform decision making.
Baseline conditions	Environment as it appears (or would appear) immediately prior to the implementation of the Proposed Development together with any known or foreseeable future changes that will take place before completion of the Proposed Development.
Construction phase	Period during which the building or assembling of the Proposed Development and its infrastructure would be undertaken.
Consultation	Process by which those organisations or individuals with an interest in the area associated with the Proposed Development are identified and engaged as part of the EIA process.
Consultation bodies	Organisations that the competent authority is required to consult by virtue of the EIA Regulations.
Cumulative impact	Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. A cumulative impact may arise as the result of (a) the combined impact of a number of different environmental topic-specific impacts from a single environmental impact assessment project on a single receptor/ resource or (b) the combined impact of a number of different projects within the vicinity (in combination with the environmental impact assessment project) on a single receptor/resource.
Decommissioning	Period during which the Proposed Development and its associated infrastructure would be removed from active operation.

Term	Definition
Effect	Term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact with the importance (or sensitivity) of the receptor or resource in accordance with defined significance criteria. For example, land clearing during construction results in habitat loss (impact), the effect of which is the significance of the habitat loss on the IEF.
EIA Regulations	Collective term for the various statutory instruments through which the directives on environmental assessment have been implemented in the UK.
Environmental Impact Assessment Report	Document produced in accordance with the EIA directive (as transposed into UK law by the EIA regulations) that reports the outcomes of the EIA process.
Embedded mitigation	Measures that are implemented which are 'standard' and 'guaranteed' to be delivered, such as the adoption of standard pollution prevention measures.
European site (or international site)	Sites that make up the European ecological network (previously known as Natura 2000 sites). With respect to ecology, these include Special Areas of Conservation (SACs) and candidate or possible SACs (cSAC or pSAC), and Ramsar sites.
Feature	Defined individual environmental feature usually associated with population, fauna and flora with the potential to be affected by the Proposed Development. For respective to ecology, this concerns consideration of important ecological features.
Habitats Regulations	EC Council Directive 92/43/EEC, known as the Habitats Directive, was translated into legal obligations in Scotland by the Conservation (natural habitats) Regulations 1994 (most recently amended in 2019 as the EU Exit Regulations). This legislation is more commonly known as the Habitats Regulations. The Habitats Regulations cover requirements for sites that are internationally important for threatened habitats and species (e.g. European sites), species that require strict protection (e.g., European protected species), and other aspects of the Habitats Directive (which is still used as a reference under UK Law).
Habitats Regulations Appraisal	Assessment of the impacts of implementing the Proposed Development on a European site, the purpose being to consider the impacts of a project against conservation objectives of the site and to ascertain whether it would adversely affect the integrity of the designated site.
Impact	Change that is caused by an action; for example, land clearing (action) during construction that results in habitat loss (impact).
In combination effects	Similar to 'cumulative effects' but concerns such effects in the context of the Habitats Regulations.
Integrity	Maintenance of the conservation status of a habitat or population of a species at a specific location or geographical scale.
Mitigation	Measures intended to avoid, reduce and compensate adverse environmental effects (see 'additional mitigation and 'embedded mitigation').
Monitoring	Continuing assessment of the performance of the Proposed Development, including mitigation measures. This determines if effects occur as predicted or if operations remain within acceptable limits, and if mitigation measures are as effective as predicted.
Non-statutory consultee	Organisations and bodies that should be consulted on relevant planning applications.
Operation	Functioning of the Proposed Development on completion of construction.
Pollution	Any increase of matter or energy to a level that is harmful to living organisms of their environment (when it becomes a pollutant).
Proposed Development	The project that the Applicant seeks to implement.
Ramsar site	Wetland designated site of international importance under the Ramsar Convention on wetlands.
Schedule 1	Species in the UK which are given special protection under the Wildlife and Countryside Act 1981
Scoping	Process of identifying the issues to be addressed by the Environmental Impact Assessment process. It is a method of ensuring that an assessment focuses on the important issues and avoids those that are considered Not Significant.
Scoping opinion	Opinion provided by a competent authority that indicates the issues an Environmental Impact Assessment of the Proposed Development should consider.
Shadow Habitats Regulations Appraisal	Provides information (data and details gathered) to allow the competent authority to assess whether the Proposed Development is likely to a significant effect on a European/ international site.
Significance	See 'significance of effect'.
Significance of effect	Measure of the importance or gravity of the environmental effect, defined by either generic significance criteria or criteria specific to the environmental topic.
Sites of Special Scientific Interest	Main national conservation site protection measure in Britain designated under the wildlife and countryside act 1981.
Special Protection Area	Sites designated under EU Directive on the Conservation of Wild Birds for the conservation of bird fauna.

Term	Definition
Study Area	Spatial area within which environmental effects are assessed (i.e. extending a distance from the Proposed Development in which significant environmental effects are anticipated to occur). This varies between the topic areas and with respect to ornithology, between different features.

Abbreviation	Expanded Term
AA	Appropriate Assessment
BoCC	Birds of Conservation Concern
CBBPP	Construction Breeding Bird Protection Plan
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute for Ecology and Environmental Management
CRM	Collision Risk Model
DEMP	Decommissioning Environmental Management Plan
DRAS	Decommissioning Restoration and Aftercare Strategy
EcIA	Ecological Impact Assessment
ECOW	Ecological Clerk of Works
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
GET	Golden Eagle Topographical
ha	Hectare
HBRG	Highland Biological Recording Group
HRA	Habitats Regulations Appraisal
HRSG	Highland Raptor Study Group
Km	Kilometre
LSE	Likely Significant Effect
M	Metre
MBBS	Moorland Breeding Bird Survey
NEMP	Nature Enhancement Management Plan
NHZ	Natural Heritage Zone
NPF4	National Planning Framework 4
OCEMP	Outline Construction Environmental Management Plan
IEF	Important Ornithological Feature
ONEMP	Outline Nature Enhancement Management Plan
RSPB	Royal Society for Protection of Birds
SBL	Scottish Biodiversity List
sHRA	Shadow Habitats Regulations Appraisal
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
THC	The Highland Council
VP	Vantage Point

Chapter 8: Geology, Hydrology and Peat

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8 Geology, Hydrology and Peat

8.1 Executive Summary

- 8.1.1 This Chapter considers the potential significant effects on important geological, hydrological and peat features associated with the Proposed Development.
- 8.1.2 The assessment is based upon comprehensive baseline data, comprising desk study information, hydrological field surveys, peat depth surveys, peat landslide hazard risk assessment surveys, outline peat management plan, watercourse crossing assessment, groundwater dependent terrestrial ecosystem assessment, private water supply assessment, and borrow pit assessment. The assessment of important and legally protected soil and water features is based on standard Environmental Impact Assessment (EIA) guidance.
- 8.1.3 The Proposed Development Site supports the following sensitive receptors: extensive areas of commercial forestry on heavily modified peat, open moorland and unmodified peat in the southern section of the Site and various watercourses that have the potential to support fish. The Site is adjacent to and upstream of the River Oykel Special Area of Conservation (SAC) to the north designated for Fresh water Pearl Mussel and Atlantic Salmon and upstream of a Geological Conservation Review (GCR) area to the south.
- 8.1.4 The Proposed Development has been designed to minimise impacts on peat resource, alongside the need to take into account other environmental effects and technical design constraints e.g. numerous steep gradients areas (see **Chapter 3** (EIA Report Volume 2)), but it has not been possible to avoid peat altogether. Construction techniques to reduce peat excavation, such as the use of floating tracks, are proposed where engineering requirements allow. Areas of unmodified peat, i.e. areas which have avoided the effects of afforestation, have been avoided, where possible, by design to minimise disturbance.
- 8.1.5 Standard good practice measures to be adopted will include the production of a Drainage Management Plan (DMP), a water quality monitoring plan (WQMP), appointment of an Environmental Clerk of Works (ECOW) and Geotechnical Engineer to oversee the implementation of the ecological, geological and hydrological best practice, and the implementation of the Outline Peat Management Plan (OPMP), including appropriate reuse of peat on-site to reinstate temporary infrastructure and for Bat Exclusion Areas (BEA) and Forest to bog (FTB) peatland restoration, see **Technical Appendix 8.3** (EIA Report Volume 4) and the Outline Nature Enhancement Management Plan (ONEMP) **Technical Appendix 6.5** (EIA Report Volume 4). Additional specific good practice mitigation includes 100 m micro-siting where possible and following further detailed ground investigations and subsequent detailed infrastructure specification and design post consent.
- 8.1.6 The infrastructure, and associated construction activities, will result in an overall significance of effect that is **minor** (not significant) for erosion/sedimentation of watercourses, for alteration of natural drainage patterns/runoff volumes and rates, pollution events affecting groundwater and surface water quality, increase in the magnitude and frequency of flood events and effects on peat landslide hazard and peat resource.
- 8.1.7 Overall, the effects from the Proposed Development to the water and soil environment are assessed to be **minor** (not significant).

8.2 Introduction

- 8.2.1 This Chapter considers the likely significant effects on Geology, Hydrology and Peat associated with the construction, operation, and decommissioning of the Proposed Development. The specific objectives of the Chapter are to:
- describe the Geology, Hydrology, and Peat baseline;
 - describe the assessment methodology and significance criteria used in completing the impact assessment;
 - describe the potential effects, including direct, indirect and cumulative effects;
 - describe the mitigation measures proposed to address likely significant effects; and
 - assess the residual effects remaining following the implementation of mitigation.
- 8.2.2 The assessment has been carried out by the following Fluid Environmental Consulting, with the assessment team credentials outlined in **Table 8.1**.

Table 8.1- Assessment Team Credentials

Name	Company	Qualifications	Memberships	Experience	Role
Duncan Saunders	Fluid Environmental Consulting	BSc (Hons), Geophysical Sciences MSc, Water Resources Systems Engineering	Chartered Institute of Water and Environmental Management – Member since 2007 Chartered Scientist	25 years' of consulting experience in hydrogeology and water resources.	Technical Lead – Reviewer
Lucy Parker	Fluid Environmental Consulting	BSc (Hons) Environmental Geoscience, MRes, Science in the Environment	Member of the Chartered Institute of Water and Environmental Management (CIWEM) –since 2002 Fellow of the Geological Society (FGS) – since 2002	Over 18 years' experience in Environmental Consultancy	Technical Lead – Reviewer
Karen Fitzsimons	Fluid Environmental Consulting	BSc Hons Applied Geology, MSc Hydrogeology	Fellow of the Geological Society of London since 2013. Chartered Geologist since 2016.	18 years' experience in Environmental Consultancy	Lead Author
Andy Mills	OWC Ltd	BSc (Natural Sciences) MSc (Geomorphology) PhD (Peat Landslides)	Fellow of the Geological Society of London since 2004. Chartered Geologist since 2006.	21 years' experience in geoscience consultancy	Lead Author-Peat

8.2.3 This Chapter is supported by the following figures and technical appendices:

- Figures (EIA Report Volume 3a):
 - Figure 8.1: Hydrological Setting;
 - Figure 8.2: National Soil Map of Scotland;
 - Figure 8.3: SNH Carbon and Peatland Map 2016;
 - Figure 8.4: British Geological Survey (BGS) Superficial Geology;
 - Figure 8.5: British Geological Survey (BGS) Bedrock Geology;
 - Figure 8.6: Hydrological Features;
 - Figure 8.7: Hydrogeological Regime;
 - Figure 8.8: Peat Depth of Penetration;
 - Figure 8.9: Estimated Peat Depth; and
 - Figure 8.10: Peat Reuse Areas.
- Technical Appendices (EIA Report Volume 4):
 - Technical Appendix 8.1: Good Practice Methods;
 - Technical Appendix 8.2: Peat Survey Report;
 - Technical Appendix 8.3: Outline Peat Management Plan (OPMP);
 - Technical Appendix 8.4: Peat Landslide and Hazard Risk Assessment (PLHRA);
 - Technical Appendix 8.5: Groundwater Dependent Terrestrial Ecosystems (GWDTE) Assessment;
 - Technical Appendix 8.6: Private Water Supply (PWS) Assessment;
 - Technical Appendix 8.7: Watercourse Crossing Inventory; and
 - Technical Appendix 8.8: Initial Borrow Pit Assessment.

8.2.4 Figures and technical appendices are referenced in the text where relevant.

8.3 Legislation, Policy and Guidelines

8.3.1 This section identifies legislation and national and local policy of relevance to geology, hydrology and peat.

National

8.3.2 Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended) A Practical Guide v9.4, July 2024¹;

¹ Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended) A Practical Guide
<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fcd3doeli%2Fcar-a-practical-guide.docx&wdOrigin=BROWSELINK>

- 8.3.3 The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 (amends and revokes the Private Water Supplies (Scotland) Regulations 2006)²;
- 8.3.4 The Public Water Supplies (Scotland) Amendment Regulations 2017 (amends the Public Water Supplies (Scotland) Regulations 2014)³;
- 8.3.5 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017⁴;
- 8.3.6 National Planning Framework (NPF) 4: National Spatial Strategy for Scotland, approved by Scottish Parliament on 11 January 2023⁵. Some of the SEPA planning guidance is being reviewed and updated to reflect the NPF4 policies and Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions⁶ and Groundwater Dependent Terrestrial Ecosystems⁷. It still provides useful and relevant information, but some parts may be updated further in the future.
- 8.3.7 The Water Framework Directive (WFD)⁸ has been implemented in Scotland through the Water Environment and Water Services (Scotland) Act 2003 (WEWs Act)⁹ and the Water Environment (Controlled Activities) (Scotland) Regulations (CAR) 2011 (as amended in July 2024)¹. The primary objective of the Directive is for all surface and coastal water bodies to achieve good chemical and ecological status, and groundwater bodies to achieve good quantitative and chemical status, by 2015 or 2021. This required assessment of a much wider set of water quality parameters than had previously been used. SEPA have published River Basin Management Plans (RBMPs)¹⁰ which detail the current and target status of water bodies, and the means of achieving these targets (as last assessed in 2014 and 2020).
- 8.3.8 Some of the SEPA planning guidance is being reviewed and updated to reflect the NPF4 policies, for example, the Flood Risk Standing Advice¹¹ and Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions⁶ and Groundwater Dependent Terrestrial Ecosystems⁷. It still provides useful and relevant information, but some parts may be updated further in the future.

Local

- 8.3.9 The statutory Local Development Plans and related guidance applicable to geology, hydrology, geology and peat and adopted by The Highland Council are:
- Highland-wide Local development Plan (HwLDP) adopted April 2012¹²;
 - Inner Moray Firth Local Development Plan (IMFLDP) adopted 2015¹³; and
 - The Onshore Wind Energy Supplementary Guidance (OWESDG) (2016) and its Addendum (2017)¹⁴

Guidance

- 8.3.10 Recognisance has been taken of the following best practice SEPA and other relevant guidelines/guidance etc:
- The Guidance for Pollution Prevention (GPP)¹⁵ includes the documents referred to below, which are the principal documents which establish best practice for preventing contamination of surface water from construction activities. Those relevant to the Proposed Development include:

² The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 (amends and revokes the Private Water Supplies (Scotland) Regulations 2006) <https://www.legislation.gov.uk/ssi/2017/282/contents/made>

³ The Public Water Supplies (Scotland) Amendment Regulations 2017 (amends the Public Water Supplies (Scotland) Regulations 2014) <https://www.legislation.gov.uk/ssi/2017/281/contents>

⁴ The Public Water Supplies (Scotland) Amendment Regulations 2017 (amends the Public Water Supplies (Scotland) Regulations 2014) <https://www.legislation.gov.uk/ssi/2017/101/contents>

⁵ National Planning Framework (NPF) 4 <https://www.gov.scot/publications/national-planning-framework-4/>

⁶ Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fmfzpnjwb%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx&wdOrigin=BROWSELINK>

⁷ Guidance on Assessing the Impacts of Developmentsw on Groundwater Dependent Terrestrial Ecosystems

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fa1yh0blq%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK>

⁸ https://environment.ec.europa.eu/topics/water/water-framework-directive_en

⁹ <https://www.legislation.gov.uk/ssi/2015/270/contents/made>

¹⁰ SEPA River Basin Management Plans <https://www.sepa.org.uk/environment/water/river-basin-management-planning/publications/>

¹¹ Flood Risk Standing Advice

<https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fnckhycrj%2Fflood-risk-standing-advice.docx&wdOrigin=BROWSELINK>

¹² Highland-wide Local development Plan (HwLDP) adopted April 2012 https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan

¹³ Inner Moray Firth Local Development Plan (IMFLDP) adopted 2015

https://www.highland.gov.uk/info/178/development_plans/202/inner_moray_firth_local_development_plan

¹⁴ The Onshore Wind Energy Supplementary Guidance (OWESDG) (2016) and its Addendum (2017).

https://www.highland.gov.uk/downloads/download/165/onshore_wind_energy_supplementary_guidance

¹⁵ Guidance for Pollution Prevention documents (GPP) <https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/>

- GPP1: Understanding your Environmental Responsibilities – Good Environmental Practices version 1.2 (SEPA, DAERA, NRW & NIEA, June 2021) replaces PPG1: General guide to the prevention of pollution (EA, SEPA & EHSNI, published 2013, withdrawn December 2015);
- GPP2: Above ground oil storage tanks (SEPA, NIEA & NRW, January 2018);
- GPP4: Treatment and disposal of sewage where no foul sewer is available (SEPA, DAERA, NRW & NIEA, 2021);
- GPP5: Works and maintenance in or near water (SEPA, DAERA, NRW & NIEA, January 2017);
- GPP6: Working at construction and demolition sites, version 1 (EA, SEPA & NIEA, 2023);
- GPP8: Safe storage and disposal of used oils (SEPA, DAERA, NRW & NIEA, July 2017);
- GPP21: Pollution incidence response planning, version 1.1 (SEPA, DAERA, NRW & NIEA, June 2021); and,
- GPP26: Storage and handling of drums and intermediate bulk containers, version 1.2 (SEPA, DAERA, NRW & NIEA, 2017/June 2021).

8.3.11 Additional SEPA Guidance

- SEPA Flood maps / Indicative River & Coastal Flood Map (Scotland) (SEPA January 2014, updated April 2018 and 2022)¹⁶.
- Temporary Construction Methods, Engineering in the Water Environment Good Practice Guide, WAT-SG-29 (SEPA; 2009)¹⁷
- River Crossings, Engineering in the water environment, WAT-SG-25 (SEPA, 2010)¹⁸.
- Water Run-Off from Construction Sites, Sector Guidance, Sector Specific Guidance WAT-SG-75 (SEPA, 2021)¹⁹.
- SEPA Regulatory Position Statement – Developments on peat (SEPA, 2010)²⁰.

8.3.12 Other Relevant Guidance

- Advising on peatland, carbon-rich soils and priority peatland habitats in development management NPF4 (NatureScot, 2023, revised November 2023)²¹;
- Control of water pollution from constructions sites. Guidance for consultants and contractors C532 (CIRIA, 2001)²²;
- Environmental good practice on-site C650 2nd Edition (CIRIA, 2005)²³;
- Control of water pollution from linear construction projects: technical guidance C648 (CIRIA, 2006)²⁴;
- Good practice during windfarm construction (Scottish Renewables, SNH, SEPA & Forestry Commission Scotland, 4th Edition 2019)²⁵;
- Good practice during wind farm construction (NatureScot, July 2024);
- Managing Forest Operations to Protect the Water Environment Practice Guide (Forestry Commission Scotland, 2019)²⁶;
- Practice guide for forest managers to assess and protect Groundwater Dependent Terrestrial Ecosystems when preparing woodland creation proposals (Forestry and Water Scotland Initiative, January 2018)²⁷;

¹⁶ SEPA Flood maps / Indicative River & Coastal Flood Map (Scotland) (SEPA January 2014, updated April 2018 and 2022
<https://map.sepa.org.uk/floodmaps>

• ¹⁷ Temporary Construction Methods, Engineering in the Water Environment Good Practice Guide, WAT-SG-29 (SEPA; 2009)¹⁷, https://www.sepa.org.uk/media/150997/wat_sg_29.pdf

¹⁸ River Crossings, Engineering in the water environment, WAT-SG-25 (SEPA, 2010)

¹⁹ Water Run-Off from Construction Sites, Sector Guidance, Sector Specific Guidance WAT-SG-75 <https://www.sepa.org.uk/media/340359/wat-sg-75.pdf>, 2021

²⁰ SEPA Regulatory Position Statement – Developments on peat (SEPA, 2010)

https://www.sepa.org.uk/media/143822/peat_position_statement.pdf

²¹ Advising on peatland, carbon-rich soils and priority peatland habitats in development management NPF4 (NatureScot, 2023, revised November 2023 <https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management#:~:text=The%20purpose%20of%20this%20guidance%20is%20to%20help,on%20peatland%2C%20carbon-rich%20soils%20and%20priority%20peatland%20habitat>

²² Control of water pollution from constructions sites. Guidance for consultants and contractors C532 (CIRIA, 2001)

²³ Environmental good practice on-site C650 2nd Edition (CIRIA, 2005)

²⁴ Control of water pollution from linear construction projects: technical guidance C648 (CIRIA, 2006)

²⁵ Good practice during windfarm construction (Scottish Renewables, SNH, SEPA & Forestry Commission Scotland, 4th Edition 2019

<https://www.scottishrenewables.com/publications/498-guidance-good-practice-during-wind-farm-construction>

²⁶ Managing Forest Operations to Protect the Water Environment Practice Guide (Forestry Commission Scotland, 2019)

²⁷ Practice guide for forest managers to assess and protect Groundwater Dependent Terrestrial Ecosystems when preparing woodland creation proposals (Forestry and Water Scotland Initiative, January 2018)

- Planning Advice Note 50 Controlling the Environmental Effects of Surface Mineral Workings (1996)²⁸;
- Planning Advice Note 79: Water and Drainage (2006)²⁹;
- Guidance on Road Construction and Maintenance (Forests and Water Guidelines Fifth Edition 2011, Forestry Commission)³⁰;
- A Handbook of Environmental Impact Assessment, 5th Edition (SNH, 2018)³¹;
- Design Guidance on River Crossings and Migratory Fish (Scottish Executive, 2000)³²;
- Peatland Survey. Guidance on Developments on Peatland. Scottish Government, Scottish Natural Heritage (SEPA, 2017)³³; and
- Peat Landslide Hazard and Risk Assessments: Good practice Guide for Proposed Electricity Generation Developments (Scottish Government, Second Edition, 2017)³⁴.

8.4 Consultation

8.4.1 **Table 8.2** summarises the consultation responses received regarding Geology, Hydrology, and Peat, and provides information on where and/or how they have been addressed in this assessment.

8.4.2 Full details on the consultation responses can be reviewed in Technical Appendix 1.1 (EIA Report Volume 4).

Table 8.2 – Consultation

Consultee and Date	Consultation Response	Applicant Response
SEPA Pre Scoping Consultation 06/9/2024	Response to request for information on licenced abstractions: <i>We have found two registered water abstractions, please see attached: Please note the one with no activities may not be relevant, we have no further information available for these records.</i> SEPA provided a CAR Licence CAR/L/1011251, for Lower Oykel Fishings.	Licensed abstractions are addressed in Technical Appendix 8.6 (EIA Report Volume 4).
NatureScot Response to Scoping 16/8/2024	River Oykel Special Area of Conservation (SAC) This development is hydrologically connected to this SAC, which is protected for its Atlantic salmon and freshwater pearl mussel, see https://apps.snh.gov.uk/sitelink-api/v1/sites/8363/documents/66 Within our pre-application advice for this proposal, we highlighted that some tributaries of this SAC were put forward for SAC designation based on their spawning value for Atlantic salmon. With that in mind, the lower tributary feeding into the River Oykel SAC at Brae is one such location. This tributary is likely to be a sensitive receptor, as almost all the watercourses from the turbine layout cumulatively flow through it. We, therefore, recommend extra consideration is given for this development to adversely affect this SAC salmon tributary considering its importance for Atlantic salmon. In addition to any fish habitat survey work proposed, we recommend that you source baseline electro-fishing data from the Kyle of Sutherland Fisheries for this specific SAC tributary, which may also help determine likely periods of high sensitivity. We welcome that a freshwater pearl mussel survey has been carried out within the Brae SAC tributary, due to the hydrological significance of this development, as mentioned above. Standing advice for surveys and mitigation can be found here, see: https://www.nature.scot/doc/standing-advice-planning-consultations-freshwater-pearl-mussels .	Noted, effects of the Proposed Development on the qualifying features of the River Oykel SAC (including tributaries of it) are considered in the EIA Report. Noted, and the Kyle of Sutherland Fisheries were contacted for electro-fishing (and any freshwater pearl mussel) data they may have for the SAC tributary to be considered in the assessment. It is clarified that a freshwater pearl mussel survey has not been carried out within the Brae SAC tributary, but instead a freshwater pearl mussel habitat suitability survey has been

²⁸ Planning Advice Note 50 Controlling the Environmental Effects of Surface Mineral Workings <https://www.gov.scot/publications/planning-advice-note-pan-50-controlling-environmental-effects-surface-mineral/>

²⁹ Planning Advice Note 79: Water and Drainage (2006) <https://www.gov.scot/publications/planning-advice-note-pan-79-water-drainage/>

³⁰ Guidance on Road Construction and Maintenance (Forests and Water Guidelines Fifth Edition 2011, Forestry Commission

³¹ A Handbook of Environmental Impact Assessment, 5th Edition (SNH, 2018)

³² Design Guidance on River Crossings and Migratory Fish (Scottish Executive, 2000)

³³ Peatland Survey. Guidance on Developments on Peatland. Scottish Government, Scottish Natural Heritage (SEPA, 2017)³³

<https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument/Guidance%2Bon%2Bdevelopments%2Bon%2Bpeatland%2B-%2Bpeatland%2Bsurvey%2B-%2B2017.pdf>

³⁴ Peatland Survey. Guidance on Developments on Peatland. Scottish Government, Scottish Natural Heritage (SEPA, 2017)
<https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf>

Consultee and Date	Consultation Response	Applicant Response
	More information on the River Oykel SAC, complete with updated Conservation Objectives can be found within the Conservation & Management Document: https://apps.snh.gov.uk/sitelink-api/v1/sites/8363/documents/66. It is possible that extra mitigation measures may be required to ensure that this SAC remains unaffected. However, acknowledging best practice construction measures to avoid pollution will still be important in shaping shadow HRA's for inclusion within the EIA Report, see: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/renewable-energy/onshore-wind-energy/wind-farm-construction-good Our Peatland Guidance has been updated to reflect NPF4 (November 2023). Therefore, please look through this to gauge if anything needs to be provided within the EIA Report to help gauge 'condition' & 'quality' of any existing peatland habitats that may be affected, see: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management. We recognise that most of this development does not sit within class 1 or class 2 peatland habitats, being largely dominated by conifer plantation. However, we welcome recognition within the Scoping report of potential impacts to priority peatlands and NatureScot Guidance (as above).	undertaken of the watercourses within the Site (including tributaries of the SAC). No further pre-application surveys are scheduled. Noted. A peatland condition assessment (following NatureScot guidance, 2023) has been undertaken to identify any areas of priority peatland of possible national interest and results are presented in Technical Appendix 8.2, Technical Appendix 8.3, and Technical Appendix 8.4 (EIA Report Volume 4). Effects on such priority peatland has been considered in the EIA Report, with any areas of degraded peatland considered for restoration works. Effects on the peat resource and identification of the peat resource onsite has been considered in the Chapter.
The Highland Council Response to Scoping 11/9/2024	Peat The EIAR should include a full assessment on the impact of the development on peat. The assessment of the impact on peat must include peat probing for all areas where development is proposed. The Council are of the view this should include probing not just at the point of infrastructure as proposed by the scheme but also covering the areas of ground which would be subject to micro-siting limits. SEPA can provide detailed advice on methodology for peat probing and the peat assessment. Carbon balance calculations should be undertaken and included within the EIAR with a summary of the results provided focussing on the carbon payback period for the wind farm.	A Peat Survey Report is provided in Technical Appendix 8.2 (EIA Report Volume 4) with an Outline Peat Management Plan provided in Technical Appendix 8.3 (EIA Report Volume 4). A carbon balance assessment is provided in Technical Appendix 2.2 (EIA Report Volume 4).
	Geology The EIAR should fully describe the likely significant effects of the development on the local geology including aspects such as borrow pits, earthworks, site restoration and the soil generally including direct effects and any indirect. Proposals should demonstrate construction practices that help to minimise the use of raw materials and maximise the use of secondary aggregates and recycled or renewable materials. Where borrow pits are proposed the EIAR should include information regarding the location, size and nature of these borrow pits including information on the depth of the borrow pit floor and the borrow pit final reinstated profile. This can avoid the need for further applications.	A Borrow Pit assessment is provided in Technical Appendix 8.8 (EIA Report Volume 4).
	Hydrology and Hydrogeology The EIAR needs to address the nature of the hydrology and hydrogeology of the site, and of the potential impacts on water courses, water supplies including private supplies, water quality, water quantity and on aquatic flora and fauna. Impacts on watercourses, lochs, groundwater, other water features and sensitive receptors, such as water supplies, need to be assessed. Measures to prevent erosion, sedimentation or discolouration will be required, along with monitoring proposals and contingency plans. Assessment will need to recognise periods of high rainfall which will impact on any calculations of run-off, high flow in watercourses and hydrogeological matters. You are strongly advised at an early stage to consult SEPA as the regulatory body responsible for the implementation of the Controlled Activities (Scotland) Regulations 2005 (CAR), to identify if a CAR license is necessary and the extent of the	A Watercourse Crossing Inventory and Inventory of Infrastructure within 50 m of a Water Feature is presented in Technical Appendix 8.7 (EIA Report Volume 4).

Consultee and Date	Consultation Response	Applicant Response
	information required by SEPA to assess any license application. If culverting should be proposed, either in relation to new or upgraded tracks, then it should be noted that SEPA has a general presumption against modification, diversion or culverting of watercourses. Schemes should be designed to avoid crossing watercourses, and to bridge watercourses where this cannot be avoided. The EIAR will be expected to identify all water crossings and include a systematic table of watercourse crossings or channelising, with detailed justification for any such elements and design to minimise impact. The table should be accompanied by photography of each watercourse affected and include dimensions of the watercourse. It may be useful for the applicant to demonstrate choice of watercourse crossing by means of a decision tree, taking into account factors including catchment size (resultant flows), natural habitat and environmental concerns. Further guidance on the design and implementation of crossings can be found on SEPA's Construction of River Crossings Good Practice Guide. We recommend that surface waterbodies and the way these are to be managed during construction, are included within the EIA Report, specifically in context to potential impacts to the River Oykel SAC. At the very least, this should be included within the shadow HRA. Deep groundwater and flood risk are outwith our remit.	Good Practice Methods are provided in Technical Appendix 8.1 (EIA Report Volume 4).
	<i>Private Water Supplies</i> The need for, and information on, abstractions of water supplies for concrete works or other operations should also be identified. The EIAR should identify whether a public or private source is to be utilised. If a private source is to be utilised, full details on the source and details of abstraction need to be provided. The applicant will be required to carry out an investigation to identify any private water supplies, including pipework, which may be adversely affected by the development and to submit details of the measures proposed to prevent contamination or physical disruption. Highland Council has some information on known supplies but it is not definitive. An on Site survey will be required.	A Private Water Supply Assessment is presented in Technical Appendix 8.6 (EIA Report Volume 4).
	<i>Flood Risk, Watercourses and Waterbodies</i> The Council's Flood Risk Management Team had no comments to make at this stage. However, there are a number of watercourses and waterbodies on the site therefore the following applies: – A minimum of a 50m buffer of all watercourses / bodies and turbines/crane hard-standings, which should be shown on a suitably scaled drawing; – All tracks should be kept a minimum 10m away from any waterbody except water crossings; – Access tracks not acting as preferential pathways for runoff and efforts being made to retain existing natural drainage wherever possible; – Natural flood management techniques should be applied to reduce the rate of runoff where possible; use of SuDS to achieve pre-development runoff rates and to minimise erosion on existing watercourses; – Water crossings in the form of culverts or bridges, or upgrades to existing crossing must be designed to accommodate to 1 in 200 year flood event, plus climate change; – Land rising within any floodplain to be avoided; if ultimately required, compensatory storage must be provided; and, – The EIAR should be informed by the Council's Flood Risk and Drainage Impact Assessment. It is anticipated that detailed comments will be provided on impacts on the water environment, in particular on buffers to watercourses, by SEPA.	A Watercourse Crossing Inventory and Inventory of Infrastructure within 50m of a Water Feature is presented in Technical Appendix 8.7 (EIA Report Volume 4). Watercourse crossing locations are provided on Figure 8.6 (EIA Report Volume 3a)

Consultee and Date	Consultation Response	Applicant Response
SEPA Response to Scoping 12/8/2024	The proposals should demonstrate how impacts on local hydrology have been minimised and the site layout designed to minimise watercourse crossings and avoid other direct impacts on water features. Measures should be put in place to protect any downstream sensitive receptors. The submission must include a set of drawings showing: – All proposed temporary or permanent infrastructure overlain with all lochs and watercourses; – A minimum buffer of 50m around each loch or watercourse. If this minimum buffer cannot be achieved each breach must be numbered on a plan with an associated photograph of the location, dimensions of the loch or watercourse and drawings of what is proposed in terms of engineering works; – A map showing the location, size, depths and dimensions of all borrow pits overlain with all lochs and watercourses within 250m and showing a sitespecific buffer around each loch or watercourse proportionate to the depth of excavations. The information provided needs to demonstrate that a site specific proportionate buffer can be achieved. Further advice and our best practice guidance are available within the water engineering section of our website. Guidance on the design of water crossings can be found in our Construction of River Crossings Good Practice Guide	Borrow Pit location with loch and watercourse buffers are shown on Figure 8.6 (EIA Report Volume 3a). A Borrow Pit Assessment is detailed in Technical Appendix 8.8 (EIA, Volume 4).
	Advice on flood risk is available at Flood Risk Standing Advice and reference should also be made to Controlled Activities Regulations (CAR) Flood Risk Standing Advice for Engineering, Discharge and Impoundment Activities.	No new infrastructure is located within a flood risk zone.
	Crossings must be designed to accommodate the 0.5% annual exceedance probability flows (with an appropriate allowance for climate change), or information provided to justify smaller structures. If it is considered the development could result in an increased risk of flooding to a nearby receptor, then a flood risk assessment (FRA) must be submitted. Our Technical Flood Risk Guidance for Stakeholders outlines the information we require to be submitted in an FRA	Agreed, see Watercourse Crossing Inventory in Technical Appendix 8.6 (EIA Report Volume 4).
Energy Consents Unit (ECU) Response to Scoping 01/10/2024	The presence of any private water supplies which may be impacted by the development should be investigated. The EIA report should include details of any supplies identified by this investigation, and if any supplies are identified, the Company should provide an assessment of the potential impacts, risks, and any mitigation which would be provided.	A private water supplies assessment is provided in Technical Appendix 8.6 (EIA Report Volume 4).
	The assessment of the impact on peat must include peat probing for all areas where development is proposed. This assessment should include probing not just at the locations of infrastructure but also covering the areas of ground which would be subject to micro siting limits. A Peat Management Plan should also be prepared, as well as an Outline Habitat Management Plan.	Areas of peat probing are presented in Figure 8.9 and Figure 8.10 (EIA Report Volume 3a). An Outline Peat Management Plan (OPMP) is presented in Technical Appendix 8.3 (EIA Report Volume 4).
	Where borrow pits are proposed as a source of on-site aggregate they should be considered as part of the EIA process. It would be necessary to provide details of the proposed depth of the excavation compared to the actual topography and water table, proposed drainage and settlement traps, turf and overburden removal and storage for reinstatement, and details of the proposed restoration profile. The impact of such facilities (including dust, blasting and impact on water) should be appraised as part of the overall impact of the working	A Borrow Pit Assessment is provided in Technical Appendix 8.8 (EIA Report Volume 4).
Scottish Water Response to Scoping 25/7/2024	Scottish Water has no objection to this proposal. Please read the following carefully as there may be further action required. Scottish Water would advise the following: <i>Drinking Water Protected Areas</i> A review of our records indicates that there are no Scottish Water drinking water catchments or water abstraction sources, which are designated as Drinking Water Protected Areas under the Water Framework Directive, in the area that may be affected by the proposed activity.	Noted.

Consultee and Date	Consultation Response	Applicant Response
	<i>Surface Water</i> For reasons of sustainability and to protect our customers from potential future sewer flooding, Scottish Water will not accept any surface water connections into our combined sewer system.	
The Highland Council (THC) Post Scoping Consultation 11/3/2025	<i>Private Water Supplies</i> Please find attached spreadsheet on known water source and supplies in The Highland Council Area – the sources (in red) have grid references and hopefully will help. Whilst the water source is identified, the water catchment area is often unknown, and this information is also not recorded on the register. The attached properties (properties taking water from the source) are in black. Some supplies don't have attached properties due to the properties not being recorded but if there were a supply, I would assume that there will be properties attached to it. Other supplies have not been designated header or linked – this is historic information and confirmation is required on these supplies/attached properties. The register contains details of the private water supplies we have been made aware of however there is likely to be a number of water supplies that have not been notified to the Council.	A Private Water Supply (PWS) assessment is provided in Technical Appendix 8.6 (EIA Report Volume 4).

8.5 Assessment Methodology and Significance Criteria

Study Area

- 8.5.1 The Site is defined by the red line boundary with the Study Area including the Site plus a buffer zone of 2 km.
- 8.5.2 Only the western access track option is being considered in this assessment as this represents the worst-case scenario for geology, hydrology and peat. It is noted that much of the western access track has been consented as part of the Meall Buidhe Wind Farm planning permission³⁵.
- 8.5.3 For hydrological receptors, impacts downstream up to 5 km from the Site will also be considered, as impacts such as pollution events can be transmitted downstream for greater distances.

Desk Study

- 8.5.4 The assessment was predominantly based on a desk study with site visits for verification. The desk study involved collating and assessing the relevant information, from the following sources:
- Centre for Ecology and Hydrology (CEH): National River Flow Archive (NRFA) website for river flow data³⁶;
 - Meteorological Office website for rainfall data³⁷;
 - Ordnance Survey Mapping 1:25,000 map 68 and 1:50,000 map 356;
 - Google Earth and Bing map aerial imagery (accessed July 2024);
 - British Geological Survey Mapping 1:50,000 Solid and Drift (1996) BGS Map Portal³⁸;
 - British Geological Society GeoIndex Boreholes database, 1:50,000³⁹;
 - British Geological Society Geology Viewer⁴⁰;
 - National Soil Map of Scotland⁴¹;
 - SNH Carbon and Peatland Map 2016⁴²;
 - SEPA Water Classification Hub⁴³;
 - Hydrogeological Map of Scotland (Scale 1:625,000, Institute of Geological Sciences, 1988);
 - Groundwater Vulnerability Map of Scotland⁴⁴;
 - SEPA Indicative River and Coastal Flood Map⁴⁵;

³⁵<https://www.dpea.scotland.gov.uk/CaseDetails.aspx?ID=122688>

³⁶ (accessed July 2024, <http://www.ceh.ac.uk/data/nrfa/data/search.html>)

³⁷ (accessed July 2024, <https://www.metoffice.gov.uk/research/climate/maps-and-data>)

³⁸ (Accessed May 2025, <https://webapps.bgs.ac.uk/data/MapsPortal/map.html?id=10954300010954>)

³⁹ (accessed April 2025, <https://mapapps2.bgs.ac.uk/geoindex/home.html>)

⁴⁰ (accessed April 2025, <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/>)

⁴¹ (Accessed May 2025, https://map.environment.gov.scot/Soil_maps/?layer=1)

⁴² (accessed May 2025 <https://opendata.nature.scot/datasets/carbon-and-peatland-2016-map/explore?location=55.392037%2C-3.017924%2C8.94>)

⁴³ (accessed May 2025, <https://www.sepa.org.uk/data-visualisation/water-classification-hub/>)

⁴⁴ (accessed July 2024) <https://nora.nerc.ac.uk/id/eprint/17084/1/OR11064.pdf>

⁴⁵ (accessed April 2025, <https://map.sepa.org.uk/floodmaps>)

- Scottish Drinking Water Protected Area for surface water, Scottish Government Website Maps⁴⁶; and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website⁴⁷.

Field Surveys

Peat Surveys

8.5.5 The following peat surveys were undertaken on the Site:

- Phase 1: a 100 m grid was completed across the main Site during 15-19 July 2024, 22-24 July 2024 and 29-30 August 2024;
- Phase 2: detailed probing of layout during 17-21 February and 4-6 March 2025;
- Phase 3: further detailed probing following infrastructure adjustments and across proposed borrow pit area during 2 April and 7-11 April 2025; and,
- Phase 4: further detailed probing along the westerly access track following further infrastructure adjustments during 5 - 8 May 2025.

Hydrology Walkover

8.5.6 A hydrology walkover for baseline and design inspection including assessment of final infrastructure locations was completed between 25 - 27 March 2025 and between 5 - 8 May 2025. These visits inspected the overall Site water features including groundwater dependent terrestrial ecosystems (GWDTES) and watercourse crossings (see **Technical Appendix 8.5** (EIA Report Volume 4) and **Technical Appendix 8.7** (EIA Report Volume 4)).

Private Water Supplies (PWS) Site Visit

8.5.7 Private Water Supplies potentially connected to the Proposed Development were assessed through a combination of review of information from the local authority, questionnaires and site visits completed between 25 - 26 March 2025 (see **Technical Appendix 8.6** (EIA Report Volume 4)).

Assessment of Potential Effect Significance

8.5.8 There are no published guidelines or criteria for assessing and evaluating effects on geology, hydrology, or peat within the context of an EIA. The assessment is based on a methodology derived from EIA guidance, IEMA guidance, the SNH publication⁴⁸, and professional judgement and expertise. The methodology is also based upon relevant SEPA guidance⁴⁹. The methodology sets a list of criteria for evaluating the environmental effects, as follows:

- The type of effect (i.e. whether it is strongly positive, positive, strongly negative, negative, neutral, or uncertain);
- The likelihood of the effect occurring based on the scale of certainty, likely or unlikely;
- Sensitivity criteria are based on both the likely effect on a receptor due to a particular activity, as well as the importance of the resource under consideration or designated value of the receptor; and
- The magnitude of change is the potential effect in relation to the resource that has been evaluated and quantified using the scale high, medium or low, and included the consideration of timing, scale, size, and duration of a potential impact.

8.5.9 The sensitivity and magnitude of impact criteria described in this section and set out in the tables below are considered appropriate for the conditions and environments prevailing at the Site.

Sensitivity Criteria

8.5.10 The sensitivity criteria is based on both the ability of a receptor to accommodate the anticipated impact of the likely changes, as well as the importance of the resource under consideration or designated value of the receptor (e.g. a designated area of international or national importance has a higher value and therefore higher sensitivity than other areas of lower status). Evaluation of the sensitivity of geology, hydrology, and peat receptors requires a considerable degree of judgement, based on defined characteristics, values, and professional experience.

8.5.11 The sensitivity criteria used in this assessment is presented in **Table 8.3**.

⁴⁶ (accessed July 2024, <https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/>)

⁴⁷ (accessed July 2024, <http://magic.defra.gov.uk/>)

⁴⁸ A Handbook on Environmental Impact Assessment (SNH (now Nature Scot) 2018)

⁴⁹ Assigning Groundwater Assessment Criteria for Pollutant Inputs (SEPA 2010)

Table 8.3 - Criteria for Assessing Sensitivity of Receptor

Sensitivity of Environment	Definitions
Very High	– PWS abstraction for human or stock consumption (surface water or groundwater). – Public drinking water supply abstraction (surface water or groundwater). – Surface water classified under the WFD as 'high' (or equivalent older chemical or biological monitoring designation). – Groundwater classified under the WFD as 'good'. – Watercourse designated under the Freshwater Fish Directive or known to have fish spawning grounds. – Groundwater vulnerability to pollution Class 5. – Internationally or nationally designated sites (e.g., Ramsar, SPA, SAC, SSSI, National Nature Reserves, Marine Nature Reserves). – Habitats listed in Regional Biodiversity Action Plans or Annex I habitats that are groundwater dependent. – Internationally important species sensitive to hydrological change. – >25 % of the infrastructure is located on peat >2 m in open terrain or >3 m in forestry, densely drained, eroded, or gullied open terrain.
High	– PWS abstraction not for human or stock consumption (surface water or groundwater). – Public non-drinking water supply abstraction (surface water or groundwater). – Surface water classified under the WFD as 'good' (or equivalent older chemical or biological monitoring designation). – Watercourse known to support important fishery population. – Groundwater vulnerability to pollution Class 4. – Sites designated at a regional level. – >25% of infrastructure is located on peat with depth between 1 m – 2 m in open and undegraded terrain or >2 m in forestry, densely drained, eroded or gullied open terrain. – Other water dependent habitats.
Medium	– Surface water classified under the WFD as 'moderate' (or equivalent older chemical or biological monitoring designation). – Sites designated at a local level. – >25% of infrastructure located on peat with depth between 0.5 m – 1 m in open and undegraded terrain or with depth between 1 m – 2 m in forestry, densely drained, eroded or gullied open terrain. – Groundwater vulnerability to pollution Class 3 or 2.
Low	– Surface water classified under the WFD as 'poor or bad' (or equivalent older chemical or biological monitoring designation). – Groundwater classified under the WFD as 'poor'. – Groundwater vulnerability to pollution Class 1. – >75% of the infrastructure is located on non-peat or peaty/organic rich soils less than <0.5 m in depth, or peat <1 m in depth that is in forestry, densely drained, eroded or gullied open terrain.

8.5.12 Any assessment regarding peat resource considers peat as a carbon store and the following forms the basis for the assessment of sensitivity.

8.5.13 Assessment of sensitivity of peat is based on the degree by which the peatland in its baseline condition has been degraded by natural or man-made activities. Uneroded, open peatland without evidence of drainage is considered to be of highest sensitivity, while peatlands degraded by forestry, drainage or erosion are considered to have a poorer baseline condition. A depth criterion is also applied, in which deeper peats are considered to hold more carbon (for which peat volume is a proxy) and more likely to exhibit a functional hydrological system, with associated flood regulation benefits. **Plate 8.1**, developed jointly by Fluid and OWC, illustrates this approach with the sensitivity for each degradation and depth combination provided, coloured using a RAG (Red-Amber-Green) approach. The approach is based in part on the latest Peat guidance, UCN National Committee United Kingdom Peatland Programme Peatland Code Guidance v 2.1 (2024)⁵⁰. The assessment of sensitivity does not take into account vegetation, which is assumed to be considered within the ecological impact assessment in **Chapter 6** (EIA Report Volume 2).

⁵⁰ IUCN National Committee United Kingdom Peatland Programme Peatland Code Field Protocol: Assessing Eligibility, Determining Baseline Condition Category and Monitoring Change v 1.1 2017 <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot/document/Guidance+on+developments+on+peatland+-+peatland+survey+-+2017.pdf>

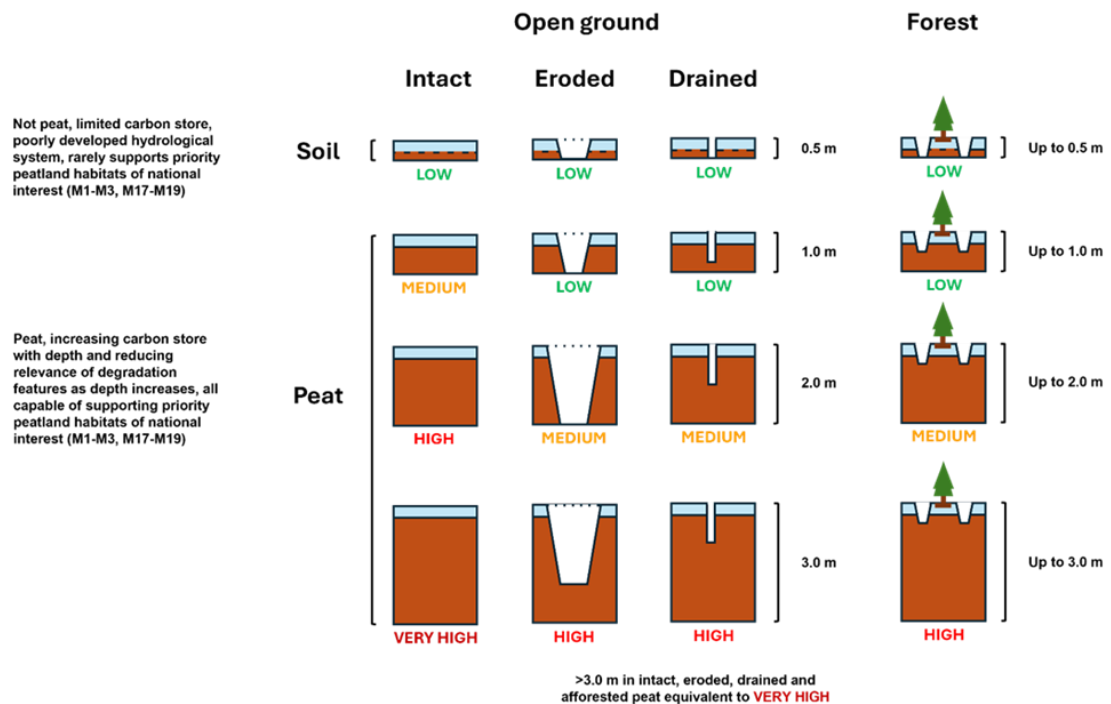


Plate 8.1 - Peat Sensitivity

Criteria for Assessing Magnitude of Impact

- 8.5.14 Magnitude of impact is the potential impact in relation to the resource that has been quantified using the scale high, medium, or low, and includes the consideration of timing, scale, size, and duration of a potential impact.
- 8.5.15 The magnitude of the impact criteria is presented in **Table 8.3**.

Table 8.3 - Magnitude of Impact Criteria

Magnitude of Impact Criteria	Definitions
Very High	- Impact resulting in loss of feature or use. - Fundamental (long-term or permanent) changes to surface water, groundwater, and geology (in terms of quantity, quality, and morphology). - Excavated peat volume associated with the infrastructure footprint and associated earthworks is >10% of the peat volume across the peat survey area within the Site.
High	- Impact resulting in loss of part (<10%) of feature or use. - Substantial but non-fundamental and short to medium term changes to the surface water, groundwater, and geology (in terms of quantity, quality, and morphology). - Excavated peat volume associated with the infrastructure footprint and associated earthworks is >5% but <10% of the peat volume across the peat survey area within the Site.
Medium	- Impact on feature or use. - Detectable but non-fundamental and temporary changes to the surface water, groundwater, and geology (in terms of quantity, quality and morphology). - Excavated peat volume associated with the infrastructure footprint and associated earthworks is >2% and <5% of the peat volume across the peat survey area within the Site.
Low	- Impact but of insufficient magnitude to affect feature or use. - No perceptible changes to the surface water, groundwater, and geology (in terms of quantity, quality, and morphology). - Excavated peat volume associated with the infrastructure footprint and associated earthworks is <2% of the peat volume across the peat survey area within the Site.

- 8.5.16 The magnitude of the impact has been assessed based on the criteria in the above tables, taking into consideration the location of the receptor and the proximity of operational infrastructure, or construction activity taking place. The magnitude of impact considers the good practice and standard embedded mitigation methods described in this Chapter and **Technical Appendix 8.1** (EIA Report Volume 4).
- 8.5.17 The assessment of magnitude of impact in relation to peat disturbance is based on the absolute volume of peat calculated to be disturbed by the Proposed Development as a proportion of the total Site resource,

this latter value is based on the full volume of peat calculated across the surveyed peat area. The threshold values (2%, 5% and 10%) reflect increasing magnitudes of impact. Importantly, for the assessment to be upheld, the assumption is that any excavated peat has an appropriate reuse specified within the OPMP (**Technical Appendix 8.3** (EIA Report Volume 4)) and Outline Nature Enhancement Management Plan (NEMP), (**Technical Appendix 6.5** (EIA Report Volume 4)).

Criteria for Assessing Significance

- 8.5.18 The predicted significance of the effect is determined through a standard method of assessment based on professional judgement while considering sensitivity and magnitude of impact as detailed in **Table 8.4**.
- 8.5.19 The combination of the sensitivity and magnitude of impact, provide a matrix categorisation of significance (Major, Moderate, and Minor), subject to professional judgement.
- 8.5.20 Major and Moderate effects are significant in the context of the EIA Regulations. Where the significance of effect is assessed as being moderate or above, additional site-specific mitigation is required.

Table 8.4 - Significance Criteria

Magnitude of Impact Criteria	Sensitivity of Environment Definitions			
	Very High	High	Medium	Low
Very High	Major	Major	Moderate	Moderate
High	Major	Moderate	Moderate	Minor
Medium	Moderate	Moderate	Minor	Minor
Low	Minor	Minor	Minor	Minor

Nature of Effect

- 8.5.21 In addition to determining the significance of the effect, the assessment process also includes a qualitative description regarding the nature of the effect, as outlined in **Table 8.5**. These terms add information about how the effect would affect receptors. Unless otherwise stated, identified potential effects are considered to be adverse.

Table 8.5 - Nature of Effect

Term	Nature of Effect Descriptors
Adverse	An effect which has the potential to decrease receptor value or status relative to baseline conditions.
Beneficial	An effect which has the potential to increase receptor value or status relative to baseline conditions.
Short-term	Effects that persist only for a short time, e.g. during the construction (or decommissioning) phase only; includes reversible effects.
Medium-term	Effects that may persist until additional mitigation measures have been implemented and become effective.
Long-term	Effects that persist for a much longer time, e.g., for the duration of the operational phase (essentially until the development ceases or is removed/ reinstated); includes effects which are permanent (irreversible) or which may decline over longer timescales.
Temporary	A reversible effect where recovery is possible and for which effects would persist only for a short or medium-term.
Frequent	Refers to a recurring effect that occurs repeatedly; in some cases a lower level of impact may occur with sufficient frequency to reduce the ability of a receptor to recover effectively.

Requirements for Mitigation

- 8.5.22 Details of proposed good practice are presented in **Technical Appendix 8.1** (EIA Report Volume 4) and enhancement measures are outlined in **Section 8.12**.

Assessment of Residual Effect Significance

- 8.5.23 Where the significance of an effect is assessed as being moderate or above with good practice and standard mitigation applied, further site-specific mitigation is required. An assessment of the subsequent residual effect, with site-specific mitigation applied, is then concluded.

Cumulative Assessment

- 8.5.24 This Chapter also assesses cumulative effects as arising from the addition of the Proposed Development to other developments. Operational, under construction, consented developments, as well as those which have a live but yet to be determined planning application, are considered as part of the baseline. Developments close to the end of their operational life will be included as part of the baseline to present 'worst case scenario'.

Limitations to Assessment

- 8.5.25 The nature of some hydrological features means that some may not manifest themselves at all times and may or may not be present as a result of extreme weather conditions. Fieldwork was undertaken in a range of weather conditions; however, it is possible that some small, minor features may have been missed because of their ephemeral or temporary nature.

8.5.26 Private water supply survey questionnaires were issued to all properties potentially reliant on private water supplies within the catchments of the original survey area based on data supplied by THC. Not all properties responded to the questionnaires, therefore site visits were undertaken to fill in data gaps. Any data gaps are considered acceptable and all potential private water supplies within the catchment of the Proposed Development have been adequately identified and assessed as presented in **Technical Appendix 8.6** (EIA Report, Volume 4).

8.5.27 Overall, it is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on geology, hydrology, and peat.

Assumptions

8.5.28 In regard to hydrology, management of water-borne pollution and protection of natural heritage areas, SEPA has statutory obligations for the management and control of pollution of water resources in Scotland. Where careful design has avoided sensitive receptors, it is reasonable to assume that the adoption of SEPA's Best Practice Guidelines will, in general, prevent pollution to acceptable standards and make the majority of any 'significant' effects unlikely. Good practice assumed to be in place during construction, and which has been considered in the assessment of effects, is set out in **Technical Appendix 8.1** (EIA Report Volume 4). Specific mitigation measures may be required in certain areas or at certain times during construction, and these are set out in the assessment where relevant.

8.6 Baseline Conditions

Current Baseline

8.6.1 The following section describes the baseline hydrological, hydrogeological, and geological conditions contained within the Study Area. This includes the physical characteristics as well as designated water bodies, water dependent habitats and their quality and use.

8.6.2 The hydrological context of the Site is shown in **Figure 8.1** and **Figure 8.6** (EIA Report Volume 3a).

Topography and Land Use

8.6.3 The Site is located 18 km southwest of Lairg in Sutherland, Scotland, and covers an area of approximately 1,306 ha (inclusive of both access options). The Site is characterised by hilly terrain covered with commercial forestry plantations with some open grassy areas area of open moor in the west.

8.6.4 The Site is distributed across a series of north facing slopes that form a basin facing towards Strath Oykel and the River Oykel north of the Site. The altitude of the Site ranges from around 390 m Above Ordnance Datum (AOD) in the south to around 32 m AOD in the northwest near the River Einig and River Oykel confluence. The Site is mostly located on the northern slopes of the ridge crest from west to east from Cnoc nan Con (335 m AOD) via Cnoc nan Caorach (387 m AOD) to Carn na Bo Maoile (387 m AOD) and then an unnamed ridge (438 m AOD) to the north of Beinn Ulbahidh in the south of the Site.

8.6.5 Slopes fall fairly continuously from the southern ridge line to the north, dissected by numerous largely parallel watercourses that are confluent in a smaller number of main watercourses (named tributaries to the River Oykel). Slopes are locally moderate (5-10°) to steep (>10°) along parts of the southern ridge, along watercourse margins and in the north of the Site and western access route.

8.6.6 Land use comprises mostly of commercial forestry, with some open moorland used for rough grazing along the southern boundary plateau area and in the northwestern section of the Site proposed for the western access track.

Meteorological Summary

8.6.7 There are no known rainfall gauges or meteorological stations within the Site. The Einig Wood SEPA Rainfall gauge (Station number 492363)⁵¹, located approximately 2.5 km west of the Site within the lower reaches of the River Einig valley, recorded an average rainfall of 1,312 mm between 2016 and 2024.

8.6.8 The standard average annual rainfall (SAAR) for the Site has been derived from the Centre of Ecology and Hydrology (CEH)⁵² National River Flow Archive (NRFA) website (Station 3003 Oykel at Easter Turnaig) as approximately 1,900 mm.

8.6.9 Loch Glascarnoch Met Office Station climate station is 30.5 km south of the Site. The average annual rainfall at Loch Glascarnoch was 1,742.94 mm between 1991-2020. The average annual rainfall across Scotland is 1,570.9 mm, therefore the Site is considered to have above average annual rainfall compared to the rest of Scotland.

⁵¹ <https://www2.sepa.org.uk/rainfall>

⁵² Centre for Ecology and Hydrology (CEH): National River Flow Archive (NRFA) website for river flow data (accessed July 2024, <http://www.ceh.ac.uk/data/nrfa/data/search.html>); <https://nrfa.ceh.ac.uk/data/station/spatial/3003>

8.6.10 The rainfall at Loch Glascarnoch is greatest in January and lowest in July, being on average 225.71 mm and 83.37 mm, respectively. Rainfall across the other months of the year is seasonal, ranging from around 85 mm during the summer to above 180 mm during the winter.

8.6.11 The yearly average temperature at Loch Glascarnoch is 10.9°C, with maximum temperatures ranging, on average, from around 5.3°C in January to 17.2°C in July. The Site is located at 60-387 m elevation, Loch Glascarnoch sits at 265 m and therefore temperature ranges are expected to be similar.

Soils

8.6.12 The distribution of soils over the Site is generally controlled by the underlying geology, the topography, and the drainage regime. A review of the National Soil Map of Scotland⁵³ (see **Figure 8.2** (EIA Report Volume 3a)) shows the majority of the Site to be underlain by peaty gleys with peat in the southern upland area of the Site.

Peat

8.6.13 The SNH Carbon and Peatland 2016 map⁵⁴ (see **Figure 8.3** (EIA Report volume 3a)) shows the majority of the Site to have Class 5 peat soil (carbon-rich soils and deep peat, no peatland vegetation), areas of Class 2 peatland in the centre north and northwest of the Site, Class 1 peatland (carbon-rich soils and deep peat, priority peatland vegetation) along the southern Site boundary, and localised areas of Class 3 peatland (not priority peatland habitat type) in the west of the Site.

8.6.14 The mapping is a broad approach to peat across Scotland and is superseded by the site-specific habitat mapping and detailed peat probing surveys.

8.6.15 The spatial occurrence and depth distribution of peat across the Site has been examined extensively based on high-density probing at all infrastructure locations in accordance with guidance⁵⁵ to determine peat depth and appropriate and accurate avoidance where possible.

8.6.16 Peat probing and peat coring investigations confirmed the peat distribution, peat depth, peat characteristics and underlying geological conditions within the Site. Full results of the peat surveys are provided in **Technical Appendix 8.2** (EIA Report Volume 4) and **Figures 8.8** and **Figures 8.9** (EIA Report Volume 3a) show the peat depth distribution across the Site.

8.6.17 The following tasks have been completed to obtain a detailed understanding of the distribution and properties of peat at the Site:

- Phase I Habitat Survey and National Vegetation Classification (NVC) ecological habitat mapping (see **Chapter 6** (EIA Report Volume 2)).
- Probing on a 100 m grid across the Site, at 50 m intervals with 10 m offset probes along the proposed western access track option and all internal access tracks. Probing on a 10 m grid across the footprint of all infrastructure including earthworks and within a 50 m buffer area, on a 20 m grid.
- Examination of the variability of the depth of the acrotelm, the thickness of the catotelm and peat characteristics including Von Post testing.

8.6.18 The data collected has been used to produce an interpreted maximum depth of peat contour map, see **Figure 8.9** (EIA Report, Volume 3a). The key findings of the peat survey include;

- Peat >0.5m depth is present across 48.5% of the Site; and no peat (0 - 0.5m depth) is present across 51.5% of the Site. Peat >1.0m depth is present at 24.1% of the Site .
- Peat is present on the Site up to a depth of 3.8 m with the majority of peat in the southern area where an almost continuous, but variable depth, of peat has been identified.
- Peat is confined to pockets in all other parts of the Site, although some are quite large, with the number of pockets decreasing with proximity to the River Oykel in the north of the Site.
- A distinct acrotelm layer was identified in 10 of the 12 cores and averaged 0.16 m in thickness. Coring verified the peat depth and indicated that some peat depth were overestimated due to soft substrate below the peat in places.
- No amorphous peat (Von Post value of H9 or above) was identified on-site.

8.6.19 The ecological surveys (**Chapter 6** (EIA Report Volume 2)) demonstrate that whilst there are some minor areas of qualifying priority habitat in clearances and forestry rides, the vast majority of the peat on the Site is of modified or poor peatland habitat within the forestry. The peatland in the open moorland in the south of the Site is of better quality but modified by drainage.

8.6.20 The peat present shows little vegetation or acrotelm as much of the Site is covered by commercial

⁵³ National Soil Map of Scotland (Accessed May 2025, https://map.environment.gov.scot/Soil_maps/?layer=1);

⁵⁴ SNH Carbon and Peatland Map 2016 (accessed May 2025 <https://opendata.nature.scot/datasets/carbon-and-peatland-2016-map/explore?location=55.392037%2C-3.017924%2C8.94>);

⁵⁵ Developments on Peatland: Site Surveys guidance (SNH, SEPA, Scottish Government and The James Hutton Institute) (2017)

forestry and is heavily drained as part of the forestry plantations.

- 8.6.21 The deepest peat has been avoided by proposed infrastructure. The majority of the proposed turbines are located entirely, or at least partially in afforested areas (the exceptions being Turbines T2 and T7).

Peat Geomorphology

- 8.6.22 The Site is dominated by afforested peatland within which the peat surface has been ploughed into ridges and furrows to enable tree planting and encourage tree growth through dewatering the shallowest horizons.
- 8.6.23 In some locations, areas of checked growth also indicate wetter conditions, and on occasion, residual areas of pre-forestry hydrological pathways are visible (e.g. gullies and flushes).
- 8.6.24 Under forest coupes, natural geomorphological features are generally absent, and the ground surface is dominated by ridge and furrow microtopography. Dependent on the root systems extending from root plates, localised furrow blocking has occurred naturally over roots spanning furrow floors, and this has enabled pools and deep hummocks of bog mosses to form.
- 8.6.25 Under forest coupes, natural geomorphological features are generally absent.
- 8.6.26 Rides between forest coupes still retain vegetation that might have been typical of the pre-forestry conditions, but are present only intermittently, typically around watercourses. In the upper slopes, outside the forest, linear and dendritic gully networks drain the upper slopes and converge to supply water to the numerous parallel watercourses that drain to the north. Surrounding the watercourses and gullies, peat is planar and intact, rather than showing signs of erosion. There is occasional evidence of patterned ground / anastomosing drainage in the central section of the Site.
- 8.6.27 In the lower slopes, as peat thins to soil, rock outcrops are close to surface and terracing is visible on some of the steeper slopes, though not indicative of slope instability.
- 8.6.28 Site walkovers indicated no evidence of incipient instability (cracks, ridges, quaking ground) or previous peat landslides.
- 8.6.29 There is a small area of peat cuttings on steeper slopes away from infrastructure in the north of the Site.

Peat Slide

- 8.6.30 Construction work on peat has the potential to cause peat instability, which may affect peat soils (and their inherent carbon stores), peatland habitats and nearby watercourses, infrastructure or land uses. A Peat Landslide Hazard and Risk Assessment (PLHRA) has been undertaken and is documented in **Technical Appendix 8.4** (EIA Report, Volume 4). The PLHRA includes detailed site mapping verified by field walkover survey, qualitative and quantitative assessments of peat stability, identification of on and off-site receptors and calculation of risks associated with peat landslides through a combination of likelihood and consequence.
- 8.6.31 There was no evidence of previous peat landslides or incipient failure, mainly because the peatland is heavily altered and covered by commercial forestry.
- 8.6.32 The landslide susceptibility approach for peat landslide likelihood results (see **Technical Appendix 8.4** (EIA Report, Volume 4)) indicate that the majority of the Site has a 'Low' or 'Negligible' likelihood of peat slide under natural conditions. Small areas of moderate likelihood are present along the ridge margins in the southeast of the Site and in scattered localities in the middle of the Site.

Geology

- 8.6.33 Digital solid and drift geological maps⁵⁶ were sourced from the British Geological Survey Digimap (1:50,000 scale) and reviewed to provide geological information on the Site. Geology was further reviewed using the British Geological Survey Bedrock and Superficial Deposits Map 114 E (2001)⁵⁷ 1:50,000 scale.
- 8.6.34 The superficial deposits (**Figure 8.4**, EIA Report Volume 3a) across much of the Site are shown by BGS mapping to be peat and glacial till⁴⁶. There are extensive deposits of alluvium along the River Oykel to the north of the Site, and substantial areas where no superficial deposits are present. There are small areas of hummocky glacial deposits in the centre, north and northwest of the Site.
- 8.6.35 The majority of the Site is underlain by Altnaharra Psammite Formation metamorphic bedrock **Figure 8.5** (EIA Report Volume 3a). A small area in the southwestern part of the Site is underlain by Glen Achall Psammite and Semipelite Member.
- 8.6.36 There are two faults that transect the Site on a southwest to northeast orientation as shown on **Figure**

⁵⁶ British Geological Survey Mapping 1:50,000 Solid and Drift (1996) BGS Map Portal (Accessed May 2025, <https://webapps.bgs.ac.uk/data/MapsPortal/map.html?id=10954300010954>);

⁵⁷ <https://largeimages.bgs.ac.uk/iip/mapsportal.html?id=1002508>

8.5 (EIA Report Volume 3a).

- 8.6.37 There are no known borehole records available online within the Site, however borehole records are available for Oykel Bridge Hotel, 2.4 km west of the Site. The records suggest that here psammite rock is present from 9-170 m deep, with sand and gravel for the first two metres before hitting the unspecified rock head.
- 8.6.38 Existing borrow pits were observed at approximately NGR NH 40610, 99320 and NGR NH 38767 99906 along the western access track in between the Allt na Mna Bain watercourse and its unnamed tributary.
- 8.6.39 Example photos of the outcropping bedrock are presented within **Technical Appendix 8.8** (EIA Report, Volume 4).

Hydrogeology

- 8.6.40 The SEPA Groundwater Classification map⁵⁸ shows that the Morar Group bedrock under the Site is a low productivity aquifer, class 2C, producing small amounts of groundwater in the near surface weathered zone and secondary fractures.
- 8.6.41 A search of the SEPA Water Environment Hub⁵⁹ and River Basin Management Plan (RBMP) GIS Database⁶⁰ was undertaken to provide information on the groundwater body in the region of the Site. The database indicates that majority of the Site is underlain by the Northern Highlands groundwater (ID: 150701), 9382.3 km² in area). This groundwater body is classified as “Good” quality by SEPA.
- 8.6.42 To the north of the Site the River Oykel is underlain by Oykel Sand and Gravel groundwater (ID: 150743, 9.2 km² in area) which is also classified as “Good” quality by SEPA.
- 8.6.43 The groundwater bodies beneath the Site are all considered to be a groundwater drinking water protection area (DWPA) as is all groundwater across Scotland, and as indicated on the SEPA Drinking Water Protected Areas map⁴⁷.

Groundwater Dependent Terrestrial Ecosystems (GWDTEs)

- 8.6.44 The Study Area has been mapped based on the National Vegetation Classification (NVC) presented within **Technical Appendix 6.1** (EIA Report, Volume 4) and on **Figure 6.3** (EIA Report, Volume 3a). A total of 287 NVC polygons and 98 Target Notes have been identified and classified across the Site. The NVC categories determine which habitats SEPA considers to be potentially GWDTE so they can be further considered in the context of their hydrogeological setting in accordance with SEPA Guidance (2024)²⁶ and SEPA LUPs Guidance GU31 (2017)²⁷. The methodology and assessment are presented in **Technical Appendix 8.5** (EIA Report Volume 4) and based on the guidance 41 habitats are potentially groundwater dependent as well as two Target Notes and a further five notes of groundwater upwelling or seepage.
- 8.6.45 Once appropriate buffers are incorporated to the infrastructure layout the total potential GWDTE connected to the proposed infrastructure reduces to 24 polygons and one target note.
- 8.6.46 Since the Site is largely underlain by relatively impermeable till and peat over a low productivity aquifer the majority of these GWDTE are not considered to be groundwater dependent.
- 8.6.47 Only two NVC polygons, A41 and A50, shown on **Figure 8.5.1 (EIA Report Volume 3a)**, on the lower slopes in the northwestern section of the Site are considered to have a substantial groundwater component. These two habitat areas are associated with shallow perched groundwater upwelling of limited extent located within 100 m downslope from the proposed western access track option. It is considered that both habitats have partial groundwater and surface water inputs. Although the access track is located upgradient any reduction in groundwater flow to these habitats is unlikely assuming appropriate best practice methods and drainage management are employed to allow surface water and shallow groundwater flow to continue downstream. It is noted that M15 is not a significant or high value ecological habitat in context with this Site, it is of local importance and is common across the Site.

Hydrology

- 8.6.48 The majority of the Site drains north and northeast to the River Oykel, via the numerous tributaries of Allt a' Bhraigh, which joins the River Oykel at Brae at the northeastern section of the Site boundary (**Figure 8.6** (EIA Report Volume 3a)). Other areas within the Site boundary drain directly to the River Oykel via numerous unnamed watercourses as well as via the Allt an Fhithich, Allt an Ruadh, Allt na Nna Baine, and Allt Lochan Phail along the north western boundary.
- 8.6.49 A small area of the Site, along the southern boundary, drains southwest to Abhainn an t-Srath 'Chuilleannaich via Allt a' Ghuail and several other tributaries. Abhainn an t-Srath 'Chuilleannaich joins the River Carron downstream which discharges to the Kyle of Sutherland at Bonar Bridge.

⁵⁸ <https://map.environment.gov.scot/sewebmap/>

⁵⁹ <https://www.sepa.org.uk/data-visualisation/water-environment-hub/> (accessed April 2025)

⁶⁰ <https://informatics.sepa.org.uk/RBMP3/>

8.6.50 The main surface water catchments and subcatchments are presented in **Table 8.6**.

Table 8.6 – Main Catchments and Subcatchments associated with the Site

Main Catchment	Main Catchment	Subcatchment
Kyle Of Sutherland	River Oykel	Allt a Bhraigh
		Allt an Easain Duibh
		River Einig
	River Carron	Abhainn an t-Strath Chuileanriach

8.6.51 In the upper slopes, outside the forest, linear and dendritic gully networks drain the upper slopes and converge to supply water to the numerous parallel watercourses that drain to the north. These watercourses become incised further north within the Site. Surrounding the watercourses and gullies, peat is planar and intact, rather than showing signs of erosion.

8.6.52 In the centre of the Site slopes are open and there is occasional evidence of patterned ground / anastomosing drainage. The watercourses show strong evidence of bedrock control, incising around protruding bedrock exposures.

8.6.53 Example photographs of the watercourses on-site are shown in **Technical Appendix 8.7** (EIA Report Volume 4).

8.6.54 OS mapping shows two named lochans on-site; Lochan Phail in the west and Loch Mhic-Mharsaill adjacent to the eastern access track and three unnamed small lochans in the north of the Site.

8.6.55 A spring was observed at approximately NGR NH 38595 98830 to the west of the western access track option and some localised shallow groundwater seepage was observed downgradient of the western access track option.

River Flows

8.6.56 There are flow records available for the River Oykel from the Centre of Ecology and Hydrology National River Flow Archive (NRFA) website⁶¹ for the NRFA daily flow monitoring station 3003 - Oykel at Easter Turnaig approximately 500 m northwest of the Site. The mean flow between 1977 and 2022, at this 405 m wide section, is 16.25 m³/s. The maximum recorded flow is 447.4 m³/s recorded in 1982. The base flow index (BFI) of the catchment is 0.22 indicating there is little groundwater influence on this catchment. The River Oykel is described as a catchment covering 330.7 km² characterised by a typical highland mix of rough grazing and moorland with some afforestation in middle reaches. It is described by the NRFA as having mountainous headwaters, often snowy in winter, and impermeable bedrock overlain by superficial deposits with minimal floodplains.

8.6.57 The size, topography, land use, and geology of the area suggest that the catchments onsite will be flashy. This means that stream flows will respond rapidly to rainfall and flood conditions could potentially occur with very little, or no, warning. Baseflow in the watercourses may dry up during drought periods, however the peatlands upgradient will likely sustain them with steady seepage from the low permeability deposits. There may also be some potential for shallow localised groundwater influence to the baseflow at the River Oykel where there is a band of alluvium deposits.

Flooding

8.6.58 A review of the SEPA Flood Risk Management Mapping⁶² indicates that the majority of the Site is not located within or in close proximity to a known flood risk area. Areas of high and medium likelihood river flooding are located to the north of the Site close to the River Oykel. This includes a floodplain of 400 m to the south of the main river channel. Additionally, there is a high risk of flooding along the Alt a' Bhraigh, however this is highly constrained to the watercourse and reduces in extent further south.

8.6.59 In the northwest of the Site, and in the east (associated with the easterly access track option), there are numerous small areas of high likelihood surface water flooding.

8.6.60 SEPA mapping does not include any mapping of catchments of less than 3 km² and as such there may be potential for some minor localised flooding to occur around these small watercourses, particularly in areas where there are confluences with other drainage.

8.6.61 Any upgrade of the existing watercourse crossings will be undertaken in accordance with SEPA guidance and allow the conveyance of a 0.5% AP (200 year) flow event.

8.6.62 The Proposed Development is unlikely to materially increase the probability of flooding elsewhere or significantly increase surface runoff rates. The proportion of land take for the sub-catchment is approximately 3% taking account of the Proposed Development footprint within the sub catchment.

⁶¹ <https://nrfa.ceh.ac.uk/data/search>

⁶² <http://map.sepa.org.uk/floodmap/map.htm>

Additionally, the majority of the land take will be semi-permeable hard standing for crane pads and laydown areas.

- 8.6.63 Flood risk sensitivity is considered low as the Proposed Development infrastructure is not positioned within or near a SEPA flood plain. The Proposed Development design has minimised the amount of land take and hard surfacing. Watercourse crossings will be designed to allow the conveyance of a 0.5% AP (200 year) flow event. Additionally, mitigation will put in place to control and attenuate runoff during all phases of the Proposed Development.

Water Quality

- 8.6.64 SEPA has established a water monitoring programme that provides data to inform its classification decisions in alignment with of the WFD (2000/60/EC). This also supports the goal of the River Basin Management Plan (RBMP) for Scotland 2021 – 2027: 81% of the water environment to be in good or better condition by 2027.
- 8.6.65 The classification system covers all rivers, lochs, transitional, coastal, and groundwater bodies, and is based on an ecological classification system with five quality classes (High, Good, Moderate, Poor, and Bad). The classification system has been devised following EU and UK guidance and is underpinned by a range of biological quality elements, supported by measurements of chemistry, hydrology (changes to levels and flows) and morphology (changes to the shape and function of water bodies). Small water bodies (rivers with <10 km² catchment, lochs <0.5 km²) are not classified under the WFD and, therefore, do not have target objectives under the River Basin Management Plan. SEPA's River Basin Management Plan (RBMP) Interactive Map was consulted to identify the status of the waters within the Study Area.
- 8.6.66 SEPA has classified the River Oykel - Dornoch Firth to Loch Craggie (ID20116, 18.3 km in length) as Moderate Overall Status. The Allt a Bhraigh is a river (ID: 20120, 6 km in length) and the Abhainn a Gharbhraigh is a river (ID: 20182, 19.4 km in length) as Good Overall Status.

Public Water Supplies

- 8.6.67 There are no Scottish Water drinking surface water catchments or known water abstraction sources, which are designated as Drinking Water Protected Areas (DWPAs) under the Water Framework Directive, in the Study Area that may be affected by the Proposed Development.

Licensed Abstractions

- 8.6.68 An information request was submitted to SEPA on 23rd February 2025 and response received 15th March 2025 detailing two licensed water abstractions within 5 km of the Site. One abstraction is within a separate hydrological catchment to the Site and the other is associated with the SEPA Easter Turnaig gauge station. The gauging station relates to a 330.7 km² catchment area and is located on a 40 m wide river section to the northwest and upgradient of all Site infrastructure with the exception of the western access track option. Due to the distance downstream, the size of the River Einig and the River Oykel and the dilution factor, it is highly unlikely that the that the western access track would have any effect on the abstraction.

Private Water Supplies (PWSs)

- 8.6.69 Consultation with THC was undertaken on 23rd February 2024 to gather PWS information and a review of their database identified three active PWSs within 1 km of the Site which are potentially connected to the Site.
- 8.6.70 The PWS assessment is presented in **Technical Appendix 8.6** (EIA Report Volume 4). The assessment concluded there are no PWS sources within the Site and one PWS source within 250 m downgradient of the Site. Further assessment indicates that although within 250 m of the Site the PWS (PWS 1 borehole) is located over 250 m from the nearest proposed infrastructure (the western access track option).
- 8.6.71 As all PWS sources are located at least 250 m from any Proposed Development infrastructure, there is considered to be no hydrologically or hydrogeologically connectivity with the Proposed Development and therefore further assessment is scoped out and no additional mitigation beyond standard mitigation is required.

Designated Sites

- 8.6.72 There are no geological SSSIs or Geological Conservation Review Sites within the Site.
- 8.6.73 The following designated sites⁶³ are located within 5 km of the Site:
- River Oykel Special Area of Conservation (SAC) (which includes the River Einig) is downstream of the Site and the infrastructure of the western access track option is adjacent where it approaches

⁶³ Nature Scot: <https://sitelink.nature.scot/map accessed February 2024>

the existing crossing. The River Oykel SAC is designated for the presence of Atlantic salmon and freshwater pearl mussel (FWPM).

- Oykel Gorge Site of Special Scientific Interest (SSSI), designated for earth sciences and Oykel Bridge Geological Conservation Review (GCR) site, designated for Moine Psammite mullion structures is located approximately 400 m northwest and upstream of the Site. This is scoped out of further assessment as not hydrologically connected to the Site.
- Abhainn an t-Srath 'Chuileannaich Geological Conservation Review Site, located downstream, 1.3 km south of the Site and designated for fluvial geomorphology. This is scoped out of further assessment as it is a significant distance downstream and there is a very low likelihood that it will be affected by the Proposed Development.
- The Kyle of Sutherland Marshes (SSSI), approximately 3.5 km from the Site, downstream along the River Oykel, designated for flood-plain fen, wet woodland and vascular plant assemblage.

Fish and Other Water Dependent Species

- 8.6.74 A review of the Kyle of Sutherland Fisheries website⁶⁴ indicates that there is salmon present in the River Oykel. Fishing in the River Oykel is described as *one of the most famous and productive salmon fisheries in the Scottish Highlands and it is naturally split into two parts by the Falls* with spring fishing only being viable downstream of the falls. The two falls limiting fishing are located at Oykel Bridge, northwest of the Site and at Einig, further upstream.
- 8.6.75 The western access route option crosses over the River Einig (which is part of the River Oykel SAC) by passing over an existing bridge.
- 8.6.76 The fisheries habitat survey **Technical Appendix 6.4** (EIA Report Volume 4) identified some potentially suitable watercourses which could support FWPM however none of these are connected to the Site. The survey also concluded that the watercourses on-site offer limited (if any) habitat for low numbers of fish). Bankside habitat is either bare or dominated by commercial conifer forestry over almost the entire watercourse stretches within the Site resulting in a lack of cover for fish fauna or overshadowing.
- 8.6.77 **Chapter 6** (EIA Report Volume 2) noted that no evidence of otter was recorded within the Site itself, but otter signs were recorded along the River Oykel.

General Site Conceptualisation

- 8.6.78 The Site is characterised predominantly by low permeability superficial deposits (extensive areas of peat and glacial till) over low permeability bedrock. The low permeability of both the superficial deposits and the low permeability of the bedrock will allow limited infiltration of rainfall and relatively high runoff rates. Groundwater movement within the superficial deposits is therefore also low, however there may be some groundwater flow in the very localised areas of hummocky glacial deposits and alluvial superficial deposits.
- 8.6.79 Based on the assessment criteria defined in **Table 8.5**, a summary of the Site sensitivities is presented in **Table 8.7**.

Table 8.7 – Sensitive Receptors

Sensitive Receptors	Description	Sensitivity	Justification of sensitivity
Peat	Non peaty or peaty / organic rich soils <0.5 m in depth	Low	Guidance on Developments on Peatland Site Surveys ⁶⁵ .
	Peat <1 m in depth in forestry or in densely drained, eroded or gullied open terrain		
	Peat >0.5 m to 1 m in depth in open terrain Peat >1 m to 2 m in depth in forestry or in densely drained, eroded or gullied open terrain	Medium	
	Peat >1 m in depth in open terrain Peat >2 m in depth in forestry or in densely drained, eroded or gullied open terrain	High	
Groundwater	Shallow	Medium	Maintains water dependent habitats and peat saturation, on this basis sensitivity of this receptor is regarded as medium.

⁶⁴ <https://kylefisheries.org/rivers/oykel/> accessed February 2024

• ⁶⁵ Peatland Survey. Guidance on Developments on Peatland. Scottish Government, Scottish Natural Heritage (SEPA, 2017)

Sensitive Receptors	Description	Sensitivity	Justification of sensitivity
	Bedrock	Low	SEPA aquifer classification is 2C, low productivity aquifer with limited resource.
Surface Water Features downstream of Site	River Oykel and River Einig	Very High	The River Oykel (and tributary, River Einig) downstream of the Site are designated an SAC for FWPM and Atlantic salmon and with a SEPA water quality status of Good.
	Abhainn an t-Srath Chuileannaich	High	Watercourse downstream of the Site is classified as having a good water quality status by SEPA and designated as a GCR for fluvial geomorphology.
Surface Features on-site	Allt a Bhraigh	High	Allt a Bhraigh is classified as having a good status by SEPA, and potential to support FWPM and Atlantic salmon.
	Numerous named watercourses including: Allt a Choire Bhuidhe, Allt an Fhithich, Allt an Ruadh, Allt na Mna Baine, Allt Lochan Phail, Allt Linne a Ghiubhais, In addition to many other un-named minor watercourses directly draining to the River Oykel. Or River Einig Upper reaches of Allt a Bhraigh above the significant waterfall and its tributaries: Allt Mor Allt a'Phris Mhor Meur an da Sgoiltein Allt an Sgeireach Allt Badam Uilleim Allt Fliuich Bhadaín Allt Lon a Bhadaín Bhig Meior Leathan A small area of the Site, along the southern site boundary: Allt a Ghuaill	Medium	These watercourses have a lower / limited capacity for supporting fish. The majority of watercourses onsite discharge into the River Oykel, a very high sensitivity waterbody. While this connection elevates their importance, the potential for significant impact is mitigated by the distance of these watercourses and other factors, such as dilution, from the Proposed Development. These watercourses likely have a lower capacity to support fish migration due to their size, flow regime, or other physical barriers. This reduces their sensitivity compared to watercourses that support direct migration or spawning activities. The watercourses' limited flow and size suggest they have a reduced capacity to transport pollutants or sediment, which lowers their overall sensitivity despite their hydrological connectivity.
	Upper reaches and headwaters of named tributaries and unnamed tributaries listed a Medium sensitivity. Loch Phail	Low	Where watercourses are minor and not much more than a natural drainage line in soil and vegetation substrate, which no potential for fish suitability.

Note: Receptors not potentially connected to the Proposed Development have been scoped out and therefore not included in this table

Future Baseline

8.6.80 The predicted environmental conditions and potential changes which may occur in the absence of the Proposed Development are outlined below. This includes natural changes, including climate change, land use practices and future developments:

- Continued deterioration of the peatland habitats through erosion, artificial drainage and drying out from ongoing commercial forestry activities.
- Continuation of rough grazing in open moorland areas increasing erosion, drying and ground poaching.
- Continued impediment of natural water flows and fish migration by the use of culverted watercourse crossings within the catchments.
- Continuation of commercial forestry activities and new commercial forestry activities including tracking, borrow pits, drainage alteration, watercourse crossings, felling, ground disturbance and risks for sediment release and acidification of watercourses.

8.7 Embedded Mitigation

8.7.1 A number of embedded mitigation measures have already been applied as part of the iterative design process, to avoid the higher value areas of blanket bog, waterbodies and watercourses.

Design Considerations

8.7.2 Where possible, the following principles have been adhered to in the design of the Proposed Development:

- All infrastructure including earthworks associated with the Proposed Development has been sited with an objective to maintain at least a 50 m 'buffer zone' from natural watercourses and water bodies (including bog pools) shown on 1:50,000 scale and 1:25,000 scale Ordnance Survey mapping. Infrastructure, where possible, is located outside of flood zones, with the exception of watercourse crossings.
- Infrastructure was designed to minimise the number of new watercourse crossings (as detailed in **Technical Appendix 8.5**, EIA Report Volume 4) and existing access tracks have been utilised where possible. A total of 11 new watercourse crossings will be constructed on-site for the Proposed Development. Of these, ten are watercourse crossings shown on the 1:25,000 scale OS mapping. Potential further crossings of minor, man-made or ephemeral drain crossings may also be required. A further 14 existing watercourse crossings are culverted crossings along a section of the existing forestry track. These existing watercourse crossings will either be re-used, extended, or replaced as determined later in the design process depending on specific engineering requirements and opportunities for habitat improvement.
- Watercourse crossings will be subject to appropriate SEPA CAR licencing and will be designed to allow the conveyance of a 0.5% AP (Annual Probability 200 year) flow event plus an allowance for climate change and freeboard. Additionally, mitigation will be put in place to control and attenuate runoff during all phases of the development and crossings will be regularly checked and maintained during operation. Where required designs appropriate for fish migration and otter passage will be used.
- Careful design to avoid watercourses and minimise peat disturbance within the catchment. The Proposed Development has undergone numerous design iterations (see **Chapter 3**, EIA Report Volume 2) to optimise the layout and reduce environmental impact.
- All infrastructure has been designed to avoid, where possible, peatland and deeper peat, as well as potential peat slide hazard risk areas, taking into consideration other constraints. Peat deposits were identified across 48.5 % of the peat survey area. The majority of the peat across the Site where infrastructure is proposed is heavily modified by commercial forestry activities. Avoidance of peat, particularly unmodified peatland habitat on depths > 1 m, and >2 m depth within forestry due to the carbon store being compromised, led the design process, though cognisance was required to be paid to other environmental considerations. To optimise locations of infrastructure against holistic environmental constraints, it was necessary to site infrastructure in areas of modified peatland habitat. In instances (see **Chapter 2**, EIA Report Volume 2) it was necessary to locate infrastructure on peat deeper than >1 m within forestry as this was optimal when considering impacts across several environmental receptors. In these cases, further design steps were applied to microsite and reduce environmental impacts, such as the optimisation of the orientations of hardstandings to reduce excavation volumes and to allow reinstatement of impacted areas following their usage during construction (i.e. siting of temporary over permanent infrastructure). Additionally, further investigation following consent on the ground conditions, and micro-siting of the tracks and turbines will be undertaken to ensure the minimal amount of peat is disturbed.
- All infrastructure has been designed, where possible, to avoid potential peat landslide hazard risk areas, and further investigation to identify detailed peat landslide mitigation will be undertaken post consent.
- Floating track is proposed to be used where track is located on peat >0.5 m depth for greater than 50 m in length to reduce peat excavation, where feasible considering other constraints, in particular slope gradient.
- Where possible, extracted peat will be appropriately reused and restored concurrently without storage, however where this is not feasible it will be stored appropriately in proximity to its reuse location.
- During the detailed design and construction phase, sections of track will be surveyed and micro-sited to optimise the distance from water bodies, check for otter evidence, minimise peat disturbance, and peat slide hazard.
- Concrete batching to be undertaken on-site will require a water supply either from a water body on-site or imported in tankers and stored at the batching site. Following confirmation of water supply arrangements, and completion of supporting investigations, the necessary licence will be obtained from SEPA.

- All areas of forest to bog peatland restoration will be located at least 50 m from watercourses, these are shown on **Figure 8.10** (EIA Report Volume 3a).

Good Practice Measures

- 8.7.3 **Technical Appendix 8.1** (EIA Report, Volume 4), details the good practice techniques that will be employed during construction and operation. These techniques are assumed to be in place for the purposes of the assessment, thus they are not considered as mitigation but as an inherent part of the construction process. **Technical Appendix 8.1** (EIA Report, Volume 4) is not exhaustive and the latest guidance and good practice literature will be used when construction commences. Where required, additional mitigation measures will be identified which are specific to the source-pathway-receptor at risk to address likely significant effects.
- 8.7.4 To ensure all reasonable precautions are taken to avoid negative effects on habitats, protected species and aquatic interests, a suitably qualified ECoW will be appointed prior to the commencement of construction, and they will advise the Applicant and the Principal Contractor on all ecological and hydrological matters. A Drainage Management Plan (DMP), Pollution Prevention Plan (PPP) and Water Quality Management Plan (WQMP) will also be implemented as part of the Construction Environmental Management Plan (CEMP) to minimise effects to the water environment.
- 8.7.5 The risk of peat slide can be mitigated through good engineering practice prior to construction, during construction and post construction as set out in **Technical Appendix 8.4** (EIA Report, Volume 4). All construction activities and operational decisions that involve disturbance to peat deposits should be overseen by an appropriately qualified geotechnical engineer with experience of construction on peat sites.
- 8.7.6 Further good practice and enhancement measures in relation to peat re-use and further avoidance of deep peat are discussed in the assessment below.
- Micrositing
- 8.7.7 Micrositing of infrastructure up to 100 m may be required to take account of local conditions. In the event that this is required, consideration will be given to the potential effects on geology, hydrology and peat, including proximity to watercourses, water features, the presence of peat and peat slide risk. A variation in indicated positions over 100 m, would also require to be approved in writing in consultation with THC as planning authority, and other consultees as appropriate.
- 8.7.8 Where micrositing is required, where possible, this will not increase proximity to the sensitive hydrological, hydrogeological, geological, and peat features identified.
- 8.7.9 A suitably qualified ECoW and Geotechnical Engineer will be present on-site during the construction period to provide initial onsite advice for micrositing.

8.8 Effects Scoped In

- 8.8.1 The assessment concentrates on the effects of construction and operation of the Proposed Development upon those receptors identified during the review of desk-based information and field surveys for which a significant effect could occur. Effects upon the following features are assessed:
- Direct effects during construction on the peat resource, such as dewatering of peat due to excavation or pumping, as well as the removal of peat, and a change in the peat landslide risk;
 - Direct effects during operation on the peat resource following forest to bog and peat translocation restoration measures;
 - Direct effects during construction on the recharge and flow within shallow and deep groundwater systems;
 - Direct effects during construction on local solid and superficial geology, including through direct removal or from erosion due to the infrastructure changing the hydrological environment;
 - Direct effects during construction to surface or groundwater quality due to oil and fuel spills or leaks, other chemicals stored onsite and sediment release;
 - Direct effects of sedimentation on surface water quality as a result of forestry felling to enable construction;
 - Indirect effects during construction on the water environment including watercourses through drainage management, watercourse crossings, the alteration of flow rates, geomorphology, sediment loading and pollution; and
 - Cumulative effects on geology, hydrogeology, and hydrology as a result of other developments (either at the planning application stage, consented or under construction) that share the same catchments as the Proposed Development.

8.9 Effects Scoped Out

- 8.9.1 On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects, policy guidance or standards, and feedback received from consultees, the following effects have been 'scoped out' of detailed assessment:
- Effects during the construction and operational period on PWS, licensed and public water supply abstractions as none are hydrologically connected to the Site, with the exception of one licensed water abstraction downstream of the western track option, as discussed in **Technical Appendix 8.6** (EIA Report, Volume 4).
 - Effects during the construction and operational period on GWDTEs as none have been identified within the Study Area with the exception of the western access track option which is considered to be of local importance and not significant as discussed in **Technical Appendix 8.5** (EIA Report, Volume 4).
 - Effects during construction and operation on the bedrock geology resource.
 - Effects during construction and operation on the fluvial geomorphology of the Abhainn an t-Srath 'Chuilleannaich Geological Conservation Review (GCR) Site.
 - Effects during the operational period for peat and hydrology, with the exception of drainage management, watercourse crossing and restoration management and monitoring. Although it is recognised that effects will occur, these will be substantially less than during the construction period which represents a worst-case scenario; and
 - Effects during the decommissioning phase as these will be similar, but of lower magnitude, to that of construction phase, and detailed plans and requirements will be agreed when required.

8.10 Assessment of Likely Significant Effects

- 8.10.1 The assessment of effects is based on the project description as outlined in **Chapter 2** (EIA Report Volume 2).
- 8.10.2 The following section describes the potential effects of the Proposed Development during the construction phase in relation to the sensitive receptors of the Site highlighted in **Table 8.7**, prior to additional mitigation and management, but assuming that all embedded mitigation and good practice methods are employed. The purpose of this assessment is to identify areas of the Proposed Development infrastructure where specific mitigation and management measures are required to mitigate any significant (Major or Moderate) effects. The assessment of effect significance has been undertaken based on the assessment of baseline conditions across the Site and with reference to the significance criteria in **Table 8.4**.
- 8.10.3 Where the significance of effect is assessed as being moderate (significant) or above with good practice and standard mitigation applied, further site-specific (additional) mitigation is required. Where applicable, the additional mitigation and the residual significance of effects are summarised and discussed below.

8.11 Assessment of Potential Effects

Construction

- 8.11.1 Possible effects on geology, hydrology and peat, resulting from the construction of the Proposed Development are related to five main factors as detailed below:
- Erosion and Sedimentation Effects;
 - Alteration of Flow, Natural Drainage Patterns/Runoff Volumes and Rates;
 - Increase in the Magnitude or Frequency of Flooding Events;
 - Potential Pollution events affecting Groundwater and Surface Water Quality; and
 - Alteration of Geology, including impacts on peat resource.

Erosion and Sedimentation

- 8.11.2 Construction may result in increased sediment loads observed in watercourses and waterbodies. Potential effects may occur from the following:
- Construction of the excavated tracks (approximately 15.6 km of new tracks will be excavated, approximately 3.6 km of existing track will be widened and approximately 3.9 km of tracks will be floated). The majority of new and upgraded site tracks will be constructed using a standard cut and fill method which will involve stripping and stockpiling of material to expose underlying soils or bedrock, potentially increasing runoff and the potential for transportation of sediment. Floating tracks will involve building the track on the existing surface vegetation mat with geotextile layers, minimising excavation of peat, however side slopes will be required.

- Construction of 11 new watercourse crossings and reuse or replacement of 14 watercourse crossings (within the Site) increasing the potential for increased runoff of silt and debris and erosion.
 - Removal and stockpiling of material for each turbine foundation base and crane hardstanding, could result in increased silt run-off.
 - Dewatering of shallow groundwater and direct rainfall into excavations (potentially containing silt and other debris), may result in transportation of fine sediments into watercourses. This could be compounded by increased movement over and around these disturbed environments.
 - Extreme rainfall events which could result in the overflowing of existing onsite drainage and resulting erosion and sediment transport, as well as the potential failure of pollution prevention measures to operate under high runoff flow conditions.
 - Vehicle movements around the Site transporting silt off Site.
 - Storage of rock, topsoil and peat and their reuse.
 - Forest felling runoff.
 - Peat slide of materials into watercourses.
- 8.11.3 Infrastructure within the Site and Site Access has been located in so far as possible over 50 m from watercourses or waterbodies (shown on 1:50,000 scale and 1:25,000 scale OS mapping), with the exception of where tracks approach watercourse crossings at the locations presented in **Technical Appendix 8.7** (EIA Report, Volume 4). Where existing or new infrastructure encroaches the 50 m buffer of a watercourse (see **Figure 8.6** (EIA Report Volume 3a) and **Appendix 8.7** (EIA Report Volume 4)), these are all considered to be of Low to Medium sensitivity. Sections of new infrastructure within 50 m of Low to Medium sensitivity watercourses include:
- Turbine T11 associated earthworks (628 m²), closest point 42 m from Allt a Choire Bhuidhe (Medium sensitivity) and (991 m²) closest point 30 m from Unnamed tributary (Medium Sensitivity).
 - Western access track: approximately 215 m new track along unnamed (1:50,000 scale OS mapped) tributary of River Einig (Low sensitivity as very minor watercourse in peaty substrate, almost diffuse) and approximately 195 m along unnamed tributary (1:10,000 to 1:25,000 scale OS mapped watercourse) of Allt na Mna Baine (Low sensitivity as very minor watercourse in peaty substrate, becomes diffuse downgradient) that drains into the River Einig.
- 8.11.4 Forestry felling is also proposed within 50 m of watercourses:
- Turbine T1 BEA (Allt Mor – Medium sensitivity), turbine T4 BEA (upper reach of unnamed Allt Mor tributary – Low sensitivity), turbine T5 BEA (upper reach of unnamed tributary to Allt a' Phris Mhoir – Low sensitivity) and turbine T6 BEA (upper reach of unnamed tributary to Allt a' Phris Mhoir – Low sensitivity). These are shown on **Figure 8.10** (EIA Report Volume 3a) and adverse effects will be **Minor** (not significant) on watercourses.
- 8.11.5 The sensitivities of the watercourses and waterbodies within the catchments on the Site are Low to High as defined in **Table 8.7**. Those downstream of the Site where protected fish and FWPM may be present are High, and Very High sensitivity when designated i.e. River Oykel SAC.
- 8.11.6 There is no infrastructure adjacent or within 50 m of Very High or High sensitivity watercourses or waterbody receptors within the Site. However, the western access route crosses over the River Einig (which is part of the River Oykel SAC) by passing over an existing watercourse crossing bridge.
- 8.11.7 It is noted that aside from T11 the only other infrastructure located within watercourse buffers is associated with the western access track option. Any widening of the existing access track sections will be undertaken on the side of the track further from the watercourse using embedded water management and monitoring, as outlined in **Technical Appendix 8.1** (EIA Report, Volume 4).
- 8.11.8 There may be additional minor ephemeral drains that require diversion or culverting, however these drains would be of low sensitivity.
- 8.11.9 The magnitude of impact is assessed as Low for the majority of infrastructure locations due to there being plenty of space and distance to allow implementation of drainage management and good practice methodologies. Where infrastructure is in close proximity to a watercourse or steep ground that will require careful, water management and monitoring, the magnitude of impact is considered to be Medium, e.g. the western access track adjacent to watercourses.
- 8.11.10 The likelihood of significant sedimentation and erosion effects occurring is considered to be Low (unlikely) due to the careful design of the Proposed Development and the implementation of robust good practice measures. Drainage design will incorporate appropriate sediment control features to manage runoff and prevent excessive sediment transport.
- 8.11.11 Any short-term impact from sediment or peaty debris entering the River Oykel or River Einig from one of the hill tributaries would have negligible impacts on the water quality due to the distance and dilution factor.

- 8.11.12 Infrastructure within 50 m of Low to Medium sensitivity watercourses will have Low to Medium magnitude of impact and therefore will result in **Minor** (not significant) effect.

Alteration of Flow, Natural Drainage Patterns/Runoff Volumes and Rates

- 8.11.13 The development of tracks and cable trenches has the potential to alter natural drainage on the Site by the creation of altered preferential flow pathways. If constructed against the topographic gradient, roads could act as barriers to run-off resulting in the ponding of water. If constructed in line with the gradient, the development of preferential flow down the roadway could occur. This has been considered in the design, where possible with other constraints.
- 8.11.14 Changes to the natural drainage and runoff rates could affect sensitive water dependent habitats, such as bog habitats, as well as fish and protected species habitats (e.g. otter and water vole) or increase erosional rates.
- 8.11.15 The watercourses on-site range in sensitivity from Low to High as presented in **Table 8.7**. Infrastructure has avoided all water features shown on 1:50,000 scale, 1:25,000 scale, and 1:10,000 scale mapping, with the exception of watercourse crossings, therefore the magnitude of impact is Low. There may be additional minor ephemeral drains that require diversion or culverting for the Proposed Development, however these drains would be of low sensitivity and therefore any alteration would have at most a minor significant effect on the larger receiving watercourse.
- 8.11.16 Groundwater levels in peat could potentially be reduced in the immediate vicinity of Site infrastructure. For turbine bases and cable trenches this water level reduction will be temporary during excavation and concrete pouring/cable installation. For excavated tracks the effects will be permanent as a seepage face will develop at the peat – track interface although this is unlikely to extend much further than the 2 in 1 gradient side slopes.
- 8.11.17 The likely effect from alteration of flow, natural drainage patterns, runoff volumes and rates, prior to mitigation and management, is assessed as **Minor** (not significant) and therefore no site-specific mitigation is required other than good practice outlined in **Technical Appendix 8.1** (EIA Report, Volume 4).

Increase in the Magnitude and Frequency of Flood Events

- 8.11.18 Impermeable areas of the Proposed Development could increase the runoff rates from the Site and drainage management is required to attenuate runoff.
- 8.11.19 The track network and turbine layout has been designed to avoid, as far as is practicable, areas that have been identified as at risk of flooding, with the exception of watercourse crossings. Therefore, flood hazard has been assessed to be low sensitivity for the majority of the Site.
- 8.11.20 The amount of infrastructure present in each catchment is a low percentage of the overall catchment's area; no greater than 2.9% of the main catchments of which 0.4% is impermeable (turbine foundations) and with the good practice methods employed for flow attenuation and SUDs along with the infrastructure having semi permeable surfaces, the magnitude of impact on runoff rates and flooding is assessed as Low and therefore the significance of effect will be **Minor**.
- 8.11.21 The extent of forest being felled for the Proposed Development in each catchment has the potential to increase runoff rates and drainage management is required to attenuate runoff. When forestry is felled the roots will be left insitu, forestry drainage ditches blocked and forest to bog restoration will be undertaken to assist attenuating runoff. The magnitude of impact on flooding from forest felling is assessed as Low and therefore the significance of effect will be **Minor**.

Potential Pollution Events Affecting Groundwater and Surface Water Quality

- 8.11.22 Pollution of watercourses could potentially occur through the following pathways:
- Oil and chemical spills from:
 - Oil leakages during vehicle movements or when on standby;
 - Refuelling areas such as the compound; and/or
 - Chemical/fuel storage areas.
 - Leakage of cement powder or liquid concrete during batching, transportation or pouring (concrete is highly alkaline (high pH) and changes in the pH balance could affect the water quality and the species that depend on baseline conditions);
 - Improper management of onsite waste;
 - Poor sanitary plumbing;
 - Poor water storage; and
 - Sedimentation and erosion (as previously discussed).
- 8.11.23 The sensitivities of the watercourses and waterbodies within the catchments on the Site are Low to Very

High.

- 8.11.24 The construction compounds will be constructed with an impermeable membrane and any surface water runoff along with any pollutants will be routed through an oil/water separator as part of good practice procedures.
- 8.11.25 The concrete batching plant will also be located on an impermeable membrane within the construction compound, both for the area where batching occurs and the washout area.
- 8.11.26 Even taking into account the application of good practice there is still a small risk of potential fuel spillage onsite due to the number of vehicles, and the potential for leaks or accidents. The magnitude of impact of potential pollution from the above pathways is Low. The sensitivity of onsite receptors is assessed as being Medium to High. Therefore, the likely effect on surface water from pollution is assessed as **Minor** (not significant) and no additional mitigation above good practice methods are likely to be required.

Effects on Peat

Peat Landslide Hazard Risk Assessment (PLHRA)

- 8.11.27 Results of the PLHRA are provided in **Technical Appendix 8.4** (EIA Report, Volume 4).
- 8.11.28 Key receptors identified were areas near watercourses which were assigned a Low to Medium sensitivity on-site.
- 8.11.29 In total, 13 source zones were identified where proposed infrastructure overlapped with Moderate or higher likelihood or Factors of Safety <1.4 (there are no areas of floating track associated with Unstable or Marginally Stable cells from the crane-loaded undrained assessment). This resulted in 10 runout pathways from the 13 source zones as two zone clusters where source zones occur in close proximity. The 10 Source Zones resulted in the following runout analysis:
- Runout zones 1 (track near western construction compound option), 2 (western construction compound option) and 4 (track by western substation option) terminate in the headwater tributaries of Allt Mor.
 - Runout zone 11 (track near turbine T8) terminates in the headwater tributary of Allt a Phris Mhoir.
 - Nine of the 10 source zones have a baseline low-negligible risk, reducing to negligible for seven source zones.
 - One runout zone is identified with a baseline medium risk, zone 11 (track near turbine T8).
- 8.11.30 All of these source zones have a baseline risk range of Low-Negligible with the exception of the runout pathway originating from source zone 11 which has a baseline risk range of Medium-Low and could terminate in a watercourse. The majority of the watercourse will be shielded by forestry while the track is under construction and the runout is supply limited (depth constrained) after 100 m due to a smaller source volume. Based on this, the revised risk is calculated to be Low and risks reduce to Negligible further down the runout pathway.
- 8.11.31 A number of mitigation opportunities exist to further reduce the risk levels identified at the Site. These range from infrastructure specific measures (which may act to reduce peat landslide likelihood, and, in turn, risk) to general good practice that should be applied across the site to engender awareness of peat instability and enable early identification of potential displacement and opportunities for mitigation.
- 8.11.32 Risks may be mitigated by:
- Post-consent site specific review of the ground conditions contributing to Moderate likelihoods which may result in a reduced likelihood, and in turn, further reduction in risk.
 - Precautionary construction measures - including use of monitoring, good practice and a geotechnical risk register relevant to all locations.
- 8.11.33 Based on the analysis presented in **Technical Appendix 8.4** (EIA Report, Volume 4), the risks are calculated to be of "Low" significance across the Site.
- 8.11.34 Therefore, the effect would be **Minor** (not significant) and site-specific mitigation is not required to reduce risks pre-consent. An outline of general best practice in relation to peat landslide hazard risk is presented in **Technical Appendix 8.4** (EIA Report, Volume 4).

Peat Resource

- 8.11.35 Infrastructure is mostly located on forestry or modified habitat with only turbines turbine T3, T5 and T7 as well as some sections of access track being located on unmodified peat in open moorland in the southern section of the Site.
- 8.11.36 While overlap with peat occurs across the Site, extensive efforts have been made to minimise overlap with the deepest peat deposits, locating turbines away from carbon-rich soils where possible, or on shallower depths if this cannot be achieved.

- 8.11.37 Further attempts to prevent peat excavation have been made by making use of the existing forest road network within the forestry and consented wind farm access tracks, utilising built tracks as the principal accesses with short spur roads to individual turbines.
- 8.11.38 Where new roads are required, opportunities to use floating track (and therefore avoid peat excavation) have been used wherever possible. An important constraint on floating track construction is gradient, which must not exceed 5% (or 2.86°).
- 8.11.39 Just over 25% of the infrastructure is on peat >1 m depth, none of the areas within the open moorland are on peat >1 m depth and the infrastructure on peat >2 m is only 4%. Therefore, the sensitivity for the infrastructure as a whole is Medium based on the matrix set out in **Table 8.3** and **Plate 8.1**.
- 8.11.40 The Peat Survey Area totals 11,869,359 m² with 5,754,367 m² of peat (probe depths >0.5 m) identified across the Peat Survey Area. The construction of the Proposed Development will require the excavation of 232,294 m³ of peat (34,237 m³ of acrotelm and 198,057 m³ of catotelm), including the addition of a bulking factor, which is equivalent to 2.65 % of the total peat volume within the Peat Survey Area, 6,444.891 m³. As the excavated peat is between 2 and 5 percent of the total peat onsite, the magnitude of impact on peat is assessed as Medium in accordance with **Table 8.4**.
- 8.11.41 A Medium magnitude of impact on a Medium sensitivity receptor is assessed as being a **Minor** (not significant) effect if the excavated peat from the Proposed Development can be appropriately re-used as presented in **Technical Appendix 8.3** (EIA Report, Volume 4).
- 8.11.42 The Minor adverse effect on peat resource has the potential to become a **Minor** beneficial effect depending on the degree of success of both the translocation for the restoration of BEAs peat for forest to bog (FTB) restoration proposals detailed **Technical Appendix 6.5** (EIA Report Volume 4). The translocated peat aims to recover the currently compromised, and essentially devoid of carbon, upper layer of peat and the forest to bog proposals aims to restore and enhance peatland habitat.

Operation

- 8.11.43 Effects during the operational phase for all sensitive receptors, with the exception of drainage management and watercourse crossing management have been scoped out, as although it is recognised that effects will occur, these will be substantially less than during the construction phase which represents a worst-case scenario.

Decommissioning

- 8.11.44 Effects during the decommissioning phase will be similar, but of lower magnitude, to that of the construction phase, and detailed plans and requirements will be agreed when required.

8.12 Additional Mitigation and Enhancement

Mitigation during Construction

- 8.12.1 There are no significant effects on geology, hydrology and peat requiring additional mitigation beyond the embedded mitigation incorporated into the project design and the good practice measures outlined in **Technical Appendix 8.1** (EIA Report Volume 4) and some additional site specific measures related to peat as outlined in **Technical Appendix 8.4** and **Technical Appendix 6.8** (EIA Report, Volume 4). These measures are sufficient to manage potential effects, ensuring all impacts remain **Minor** and not significant.
- 8.12.2 There are no significant effects on hydrology and peat requiring additional mitigation, however the following enhancement measures will be employed to reduce effects where possible

GWDTE

- 8.12.3 The western access track option will not be micrositied to the east closer to the areas of groundwater upwelling or seepage as discussed in **Technical Appendix 8.5** (EIA Report Volume 4).

Peat Resource

- 8.12.4 Where possible, following further detailed ground investigations and subsequent detailed infrastructure specification and design post consent, micrositied infrastructure to further reduce the amount of peat being disturbed will be undertaken. This is to be a particular focus on the infrastructure with larger volumes of peat disturbance (turbines T6, T8, and T8). Micrositing will have cognisance of other sensitive hydrological, hydrogeological, geological and peat features identified.
- 8.12.5 The total volume of peat predicted to be excavated does not exceed the intended peat reuse volume onsite for infrastructure reinstatement and peat translocation for BEAs and FTB restoration, so no disposal of excess peat offsite is expected. Peat translocation for FTB restoration is a relatively novel approach for peat restoration and will require careful management and monitoring (see **Technical Appendix 8.3** (EIA Report Volume 4).

- 8.12.6 All excavated peat volumes have been demonstrated to be able to be appropriately re-used on-site. The peat restoration and reuse strategy for the excavated peat is focused on immediate reinstatement of peat around infrastructure and BEA and FTB restoration through the translocation of peat to felled areas. This reduces potential degradation of peat through storage, continued forestry activity and links areas of peat together.
- 8.12.7 The restoration of the BEAs and FTB areas and the reinstatement around the infrastructure would be a positive enhancement to the current peatland conditions onsite, reduce the impact on peat resource, and complement the additional peatland restoration measures proposed across the Site as a means of biodiversity enhancement (see **Technical Appendix 6.5**, EIA Report Volume 4).
- 8.12.8 Full details of these measures will be provided in a CEMP and updated PMP which will be prepared and agreed with SEPA and THC post consent as part of a planning condition.

Mitigation during Operation

- 8.12.9 There are no relevant mitigation measures for Geology, Hydrology and Peat.

Mitigation during Decommissioning

- 8.12.10 There are no relevant mitigation measures for Geology, Hydrology and Peat.

Further Survey Requirements and Monitoring

- 8.12.11 The following monitoring will be undertaken post consent:
- A geotechnical risk register and further peat landslide hazard risk assessment (PLHRA) will be undertaken following the review of further ground investigation information. Geotechnical monitoring will be undertaken in accordance with further detailed assessments as discussed in **Technical Appendix 8.4** (EIA Report Volume 4).
 - Watercourse crossing and drainage system conditions will be regularly monitored for blockages or signs of erosion - see **Technical Appendix 8.1** (EIA Report Volume 4).
 - Peat excavation volumes for the PMP will be revised using the data collected during the construction period. The ECoW and / or Geotechnical engineer will be responsible for monitoring and ensuring peat excavations, peat storage and peat reuse is in accordance with best practice and **Technical Appendix 8.3** (EIA Report Volume 4).
 - A Water Quality Monitoring Plan (WQMP) will be produced and implemented as part of the CEMP and approved by THC as part of the planning conditions post consent. Water Quality Monitoring will be undertaken before, during and after construction of sensitive watercourses with infrastructure within their catchments (such as River Oykel, River Einig, Allt a Bhraigh, Allt Mor, Allt a'Phris Mhor, Meur an da Sgoiltein, Allt an Sgeireach, Allt Badam Uilleim, Allt Fliuich Bhadaid, Allt Lon a Bhadaid Bhig, Meior Leathan, western access track unnamed tributaries). A similar control catchment with no infrastructure will be monitored for comparison.
 - During the construction phase, an Environmental Clerk of Works (ECoW) (or Hydrological Clerk of Works (HCoW)) will undertake observations and monitoring regarding drainage management during construction workings.
 - Further ecological surveys will be undertaken by an ECoW prior to earthworks in each area to check for protected species etc. Peat reinstatement, restoration and enhancements will be monitored during the lifetime of the development, with a higher frequency of monitoring during the construction and immediate period following this to ensure good peatland recovery. This monitoring is further detailed with **Chapter 6** (EIA Report Volume 2) and **Technical Appendix 8.3** (EIA Report Volume 4).
 - Peat restoration monitoring will be carried out for a minimum of five years after construction and reinstatement works have concluded and if required, further mitigation will be undertaken.
 - Monitoring of the long-term mitigation for the construction effects - habitat restoration BEA and the translocation of peat for FB. A long-term monitoring programme will be initiated once restoration and peat reinstatement works have been completed.
 - Key to the success of the strategy for peat management will be careful monitoring of the post-construction works and any restoration activities. A monitoring programme will be initiated once restoration and peat reinstatement works have been completed, and will include:
 - Review of percentage vegetation cover and vegetation composition in areas of bare peat that have been reinstated or restored, or in any areas that have been seeded (due to a lack of available turfed material or harvested bog mosses).
 - Review of stability of deposits in their new locations by inspection and fixed point photography.

- Fixed point photography of vegetation change in order to aid review over a series of monitoring intervals. All turbine locations and all translocation areas should be subject to a detailed monitoring programme until they are well established on a trajectory of recovery.
- If required, mitigation recommendations should follow from the monitoring and include:
 - Specification of seeding appropriate to the target vegetation or stabilisation with geotextile if revegetation is not occurring naturally (which will assist re-wetting and retention of moisture contents).
 - Construction of wood dams (or equivalent) if any creep of peat soils is evident at any restored or translocated location.
 - Monitoring should be carried out for a minimum of five years after construction and reinstatement works have concluded.
 - Restoration monitoring will be carried out for a minimum of five years after construction and reinstatement works have concluded.

8.13 Residual Effects

Construction

8.13.1 The assessment anticipates there are no significant residual effects from the following assessed potential effects from:

- Erosion and sedimentation effects;
- Alteration of flow, natural drainage patterns/runoff volumes and rates;
- Increase in the magnitude or frequency of flooding events;
- Potential pollution events affecting groundwater and surface water quality; and
- Effects on peat: Peat Landslide Hazard Risk Assessment and Peat Resource.

Operation

8.13.2 Following the application of mitigation (embedded and additional) and good practice, there is no change to the level of effect. There are no significant residual operational effects.

Decommissioning

8.13.3 Following the application of mitigation (embedded and additional) and good practice, there is no change to the level of effect. There are no significant residual operational effects.

8.14 Cumulative Assessment

8.14.1 This section considers the potential effects of the Proposed Development on the geology, hydrology and peat in combination with other wind farm developments. The assessment considers operational, consented (including under construction), and in application wind farms within the same catchments and within 10 km of the Proposed Development. All of the listed schemes are within THC planning authority boundary.

8.14.2 There is one operational wind farm within 10 km of the Proposed Development:

- Rosehall Wind Farm (ref: 05/00429/FULSU), a 19-turbine scheme, 9.4 km northeast of the Site boundary.

8.14.3 There are two consented wind farms within 10 km of the Proposed Development:

- Strath Oykel Wind Farm (ref: 22/02717/S36 - ECU00003246 - WIN-270-18), an 11-turbine scheme, 2.26 km east of the Site boundary.
- Meall Buidhe Wind Farm (ref: 20/02659/FUL), an 8-turbine scheme, 3.78 km southeast of the Site boundary.

8.14.4 There is one in application wind farm within 10 km of the Proposed Development:

- Allt an Tuir Wind Farm (ref: 23/06043/SCOP - ECU00005008), a 9-turbine scheme, 6.59 km north of the Site boundary.

8.14.5 Cumulative construction effects are only considered for those other wind farms (that may have construction phases which coincide with that of the Proposed Development) within 5 km of the Proposed Development which represents a realistic zone of influence for cumulative effects to occur and within the same hydrological catchment.

8.14.6 The consented Strath Oykel and Meall Buidhe wind farms have infrastructure within the same regional hydrological catchment as the Proposed Development. There were no significant residual impacts on

embedded mitigation, and additional mitigations measures proposed, the cumulative effect with Strath Oykel on geology, hydrology, and peat are likely to be **Minor** (not significant).

- 8.14.7 Both the Strath Oykel and Meall Buidhe wind farms report excavation of peat (modified bog; peatland) habitat. For Strath Oykel, a negligible non-significant effect is predicted and for Meall Buidhe, a minor adverse non-significant effect is predicted, in terms of losses of peatland. Both schemes also provide commitments to reuse all peat excavated onsite and restore bog (peatland) habitat. Habitat mitigation measures detailed above for the Proposed Development, and enhancement measures proposed under the **Technical Appendix 8.4** and **Technical Appendix 6.5** (EIA Report Volume 4) and **Figure 6.8** and **Figure 8.10** (EIA Report Volume 3a) would appropriately reused excavated peat around infrastructure and for peatland restoration and result in an increase in the extent of better-quality peatland onsite.
- 8.14.8 Based on the above, it is predicted that cumulative adverse effects on peat during the construction phase will be **Minor** (not significant) in the context of the EIA Regulations, subject to planning conditions.

8.15 Summary

- 8.15.1 This Chapter considers the potential significant effects on important geological, hydrological and peat features associated with the construction, operation, and decommissioning of the Proposed Development.
- 8.15.2 The assessment is based upon comprehensive baseline data, comprising desk study information, hydrological field surveys, peat depth surveys, peat landslide hazard risk assessment, outline peat management plan, watercourse crossing assessment, groundwater dependent terrestrial ecosystem assessment, private water supply assessment, and borrow pit assessment. The assessment of important and legally protected soil and water features is based on standard Environmental Impact Assessment (EIA) guidance.
- 8.15.3 The Site supports the following sensitive receptors: extensive areas of commercial forestry on heavily modified peat, open moorland with good peat conditions in the southern section of the Site, some watercourses that have the potential support fish. Downstream of the Site and immediately adjacent to the existing crossing the River Oykel and River Einig is an SAC for FWPM and Atlantic salmon and the southern catchment has a GCR considerable distance downstream.
- 8.15.4 Embedded mitigation measures, including adherence to good practice guidelines, have been taken into account when undertaking the assessments.
- 8.15.5 The Proposed Development has been designed to minimise impacts on peat resource, alongside the need to take into account other environmental effects and technical design constraints, but it has not been possible to avoid peat altogether. Construction techniques to reduce peat excavation, such as the use of floating tracks, are proposed where engineering requirements allow. Areas of unmodified peat, i.e. areas which have avoided the effects of afforestation, have been avoided, where possible, by design. Where infrastructure is required in these areas it has been positioned to be on shallower peat and floating tracks used to minimize peat disturbance.
- 8.15.6 Standard good practice measures to be adopted will include the production of a DMP, a WQMP, appointment of an (ECOW) to oversee the implementation of the ecological and hydrological best practice, and a Geotechnical Engineer the implementation of the Geotechnical risk register and PMP, including appropriate reuse of peat onsite to reinstate temporary infrastructure and concurrent translocation of peat for the restoration of peatland (see **Technical Appendix 8.3** (EIA Report Volume 4) and **Technical Appendix 6.8** (EIA Report Volume 4). Additional specific good practice mitigation includes microsilting where possible and following further detailed ground investigations and subsequent detailed infrastructure specification and design post consent.
- 8.15.7 Alterations to natural drainage and runoff patterns could temporarily affect sensitive bog habitats and aquatic ecosystems, though these changes are assessed as **Minor** (not significant). Pollution risks from oil spills, chemical leaks, concrete washout, and waste mismanagement exist but are minimized through embedded mitigation, resulting in a low likelihood of significant impact on water quality. Flood risk is also assessed as **Minor** (not significant) due to effective drainage management and limited impermeable surfaces. Peat disturbance will be carefully managed, with minimal excavation (only 2-5% of Site peat volume) and plans to reuse excavated peat for restoration, potentially turning this into a minor beneficial effect if restoration succeeds.
- 8.15.8 The infrastructure, and associated construction activities, will result in an effect that is **Minor** (not significant) for erosion/sedimentation of watercourses, for alteration of natural drainage patterns, runoff volumes and rates, pollution and disturbance of geology and peat.
- 8.15.9 Following the application of the proposed standard good practice measures and embedded mitigation, no significant adverse direct and/or indirect effects on soil or water features as a result of the Proposed Development are anticipated. Overall, the effects from the Proposed Development to the water and soil environment are assessed to be **Minor** (not significant) and are summarised in **Table 8.9**.

Table 8.8 - Summary of Potential Significant Effects of the Proposed Development

Potential Effect	Additional Mitigation Proposed	Means of Implementation	Outcome/ Residual Effect
Construction			
Erosion and sedimentation effects	Not required; standard, embedded mitigation applied	ECoW on-site, DMP	Not significant
Alteration of flow, natural drainage patterns/runoff volumes and rates	Not required; standard, embedded mitigation applied	ECoW on-site, DMP	Not significant
Increase in the magnitude or frequency of flooding events	Not required; standard, embedded mitigation applied	ECoW on-site, DMP	Not significant
Potential pollution events affecting groundwater and surface water quality	Not required; standard, embedded mitigation applied	ECoW on-site, DMP and WQMP	Not significant
Effects on Peat: Peat Landslide Hazard Risk Assessment Peat Resource	Not required; embedded mitigation applied and with additional BEAs and FTB all excavated peat can be appropriately used.	Further ground investigation detailed PMP, geotechnical risk register and peat reuse around infrastructure and restoration around BEAs and FTB (enhancement measures detailed in the ONEMP)	Not significant (Compensation restoration Beneficial / Not significant)
Operation			
Erosion and sedimentation effects	Not required; standard, embedded mitigation applied	DMP	Not significant
Alteration of flow, natural drainage patterns/runoff volumes and rates	Not required; standard, embedded mitigation applied	DMP	Not significant
Increase in the magnitude or frequency of flooding events	Not required; standard, embedded mitigation applied	DMP	Not significant
Potential pollution events affecting groundwater and surface water quality	Not required; standard, embedded mitigation applied	DMP	Not significant
Effects on Peat: Peat Landslide Hazard Risk Assessment Peat Resource	Not required; embedded mitigation applied	Long term monitoring plan and mitigation if required	Not Significant
Decommissioning			
Erosion and sedimentation effects	Not required; standard, embedded mitigation applied	DMP	Not significant
Alteration of flow, natural drainage patterns/runoff volumes and rates	Not required; standard, embedded mitigation applied	DMP	Not significant
Increase in the magnitude or frequency of flooding events	Not required; standard, embedded mitigation applied	DMP	Not significant
Potential pollution events affecting groundwater and surface water quality	Not required; standard, embedded mitigation applied	DMP	Not significant
Effects on Peat: Peat Landslide Hazard Risk Assessment Peat Resource	Not required; embedded mitigation applied		Not Significant
Cumulative Construction			
As above with respect to the outcome of the Proposed Development (alone) potential effects and mitigation at the construction phase.	Not required; standard, embedded mitigation applied As a precautionary measure construction of the wind farms should not occur during the same time	As above	As above
Cumulative Operation			
As above with respect to the outcome of the Proposed Development (alone) potential effects and mitigation at the operation phase.	Not required; standard, embedded mitigation applied	As above	As above
Cummulative Decommissioning			
As above with respect to the outcome of the Proposed Development (alone) potential effects and mitigation at the decommissioning phase.	As above	As above	As above

8.16 Glossary and Abbreviations

Term	Abbreviation	Definition
The Highland Council	THC	The Highland Council
British Geological Society	BGS	British Geological Society
BAT Exclusion Area	BAT	BAT Exclusion Area for peatland restoration
Biodiversity Action Plan	BAP	Biodiversity Action Plan sets out over priority conservation projects being implemented to help assess, maintain and enhance a wide range of habitats and species across the Council area.
Biodiversity Enhancement Strategy	BES	This is a practical guide, outlining key principals and actions to be implemented to protect sensitive ecological features and delivering mitigation and enhancement measures to increase biodiversity
Construction Environmental Management Plan	CEMP	An outline Construction Environmental Management Plan provides a framework from which a final Construction Environmental Management Plan (CEMP) will be developed to avoid, minimise or mitigate any construction effects on the environment.
Construction Method Statements	CMS	A series of instructions that describe in a logical sequence exactly how a job is to be carried out in a way that secures health and safety and includes all the control measures required.
Drainage Management Plan	DMP	An outline of the drainage arrangements, including sediment control structures, around the proposed infrastructure in order to prevent pollution and control the water runoff from working areas.
Environmental Clerk of Works	ECoW	A suitably experienced individual tasked with monitoring the management of the environmental risks on construction sites.
Hydrological Clerk of Works	HCoW	A suitably experienced individual tasked with monitoring the management of the environmental risks in relation to hydrology and drainage management on construction sites.
Environmental Impact Assessment	EIA	The process of identifying, quantifying and evaluating potential effects of development-related or other proposed actions on the environment
Forest to Bog	FTB	Forest to Bog Peatland restoration
Geological Conservation Review Area	GCR	Geological Conservation Review Area
Guidelines on Pollution Prevention	GPP	SEPA's standard suite of pollution prevention guidance documents
Ground Water Dependent Ecosystems	GWDTE	Plant communities that are, at least in part, dependent on an input of nutrients via groundwater for their composition and continuing presence.
Outline Nature Enhancement Management Plan	ONEMP	Outline Nature Enhancement Management Plan (Technical Appendix 6.8)
Outline Peat Management Plan	OPMP	Summarises and assesses the Project Development design in relation to the potential volumes of peat excavated, peat reuse, peat restoration and good practice measures to ensure peat is handled and stored correctly.
National Biodiversity Network Atlas	NBN Atlas	An online tool that provides a platform to host biological records for education and research.
National Nature Reserves	NNR	Areas of land set aside for nature, to promote their conservation and enjoyment, selected and designated under the National Parks and Access to the Countryside Act 1949 (as amended).
National Vegetation Classification	NVC	A standard method of assessing and classifying plant communities in accordance with a published classification system.
Pollution Prevention Plan	PPP	A series of plans that provide details of the measures required to reduce or eliminate risk of pollution at source.
Peat Landslide Hazard Risk Assessment	PLHRA	Characterises peatland geomorphology, determines the likelihood of peat landslide, identifies potential receptors that might be affected, should they occur, and quantifies the associated risks to provide appropriate mitigation and control measures to reduce risks to acceptable levels such that the Proposed Development is developed safely and with minimal risks to the environment.
Private Water Supply	PWS	A water source for a home or business that doesn't come from the public water main. Private water supplies can come from boreholes, springs, wells, streams, lakes, or ponds.
Special Areas of Conservation	SAC	A site that is designated for the protection of one or more special habitats and/or species – terrestrial or marine – listed in the Habitats Directive.

Term	Abbreviation	Definition
Scottish Environment Protection Agency	SEPA	The principal environmental regulator.
Scottish National Heritage	SNH	Scottish National Heritage, now NatureScot.
Special Protection Areas	SPA	A site that is selected to protect one or more rare, threatened or vulnerable bird species listed in Annex I of the Birds Directive, or certain regularly occurring migratory species.
Site of Special Scientific Interest	SSSI	Those areas of land and water that are considered to best represent Scotland's natural heritage in terms of their flora, fauna, geology and/or geomorphology.
Water Protection Plan	WPP	An action plan which identifies activities or projects needed to mitigate existing and future threats to source water quality and to improve the resilience of the water supply
Water Quality Monitoring Plan	WQMP	An action plan which identifies activities that need to be monitored downstream to monitor potential pathways to sensitive receptors downstream

Chapter 9: Transport

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9 Transport

9.1 Executive Summary

- 9.1.1 The Proposed Development will lead to temporary increased traffic volumes on a number of roads in the vicinity of the Site during the construction phase.
- 9.1.2 Two potential access options for the Proposed Development are currently under consideration, which are as follows and have been included within the assessment:
- Eastern Access Option (joining the Strath Oykel Wind Farm access tracks) from the C1136 via the A837; and
 - Western Access Option (joining the Meall Buidhe Wind Farm access tracks) from Oykel Bridge Road (U3581) via the A837.
- 9.1.3 The peak of construction activity is expected to occur in month seven for the Proposed Development, regardless of which access option is progressed.
- 9.1.4 In the scenario whereby the Eastern Access Option is progressed, there will be a total of 4,596 vehicle movements per month, which equates to 210 vehicle movements per day, comprising 150 two-way HGV movements and 60 two-way car / LGV movements. This would equate to approximately 18 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.
- 9.1.5 In the scenario whereby the Western Access Option is progressed, there will be a total of 4,556 vehicle movements, which equates to 208 vehicle movements per day, comprising 148 two-way HGV movements and 60 two-way car / LGV movements. This would equate to approximately 16 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.
- 9.1.6 A review of the theoretical road capacity has been undertaken for the Study Area which shows that with the addition of construction traffic associated with the Proposed Development, there is significant spare capacity within the road network.
- 9.1.7 A combined sensitivity review has been undertaken to inform The Highland Council (THC) of possible issues with other relevant schemes in the area, whose construction traffic would impact the Study Area, should they be constructed concurrently. The review found that there would be more than sufficient spare road capacity to accommodate all schemes being constructed at the same time. It is proposed that any effects of all the sites being constructed at the same time would be mitigated through the use of an overarching Traffic Management and Monitoring Plan, which can be co-ordinated with THC.
- 9.1.8 With the implementation of appropriate mitigation, **no significant** residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be minor and will occur during the construction phase only, they are temporary and reversible.
- 9.1.9 Traffic levels during the operational phase of Proposed Development will be up to two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements are likely be left in situ and others broken up on-site.
- 9.1.10 The movement of Abnormal Indivisible Load (AIL) traffic will require small scale and temporary remedial works at a number of locations along identified delivery route.

9.2 Introduction

- 9.2.1 This Chapter provides an assessment of the potential effects of the Proposed Development on receptors along the transport routes resulting from vehicle movements required by the construction, operation, and decommissioning of the Proposed Development.
- 9.2.2 The specific objectives of the Chapter are to:
- review the relevant policy and legislative framework;
 - describe the baseline transport conditions;
 - describe the assessment methodology and significance criteria used in undertaking the assessment;
 - describe the potential effects, including direct, indirect, and cumulative effects;
 - describe the mitigation measures proposed to avoid, reduce and offset likely potential significant adverse effects; and
 - assess the significance of residual effects remaining following the implementation of mitigation.

- 9.2.3 The assessment has been carried out in accordance with the Institute of Environmental Assessment (now Institute of Environmental Management and Assessment (IEMA)) Guidelines for the Environmental Assessment of Traffic and Movement (2023). The document is referred to as the IEMA Guidelines in this Chapter.
- 9.2.4 The author of this Chapter is Stephen Cochrane, an Associate Director within the Traffic and Transport team at Pell Frischmann. He has over 22 years' experience in the traffic and transportation industry and over 17 years' experience in the production of EIA transport chapters (and associated studies) for onshore wind farms and other energy generation and distribution projects in Scotland. Stephen is a Chartered Member of the Chartered Institute of Logistics and Transport (CMILT) and a Member of the Chartered Institution of Highways and Transportation (MCIHT).
- 9.2.5 The technical reviewer of the traffic and transport assessment is Gordon Buchan BEng (Hons), MSC, CMILT, FCILT, Sector Director - Energy of Pell Frischmann. He has over 28 years of undertaking the transport assessments associated with new developments and has worked on renewable energy and energy distribution projects across the UK, Ireland, and Northern Europe.
- 9.2.6 This Chapter is supported by the following figures and technical appendices:
- Volume 3a: Figures
 - **Figure 9.1: Study Area;**
 - **Figure 9.2: Traffic Count Locations;**
 - **Figure 9.3: Personal Injury Accident Plan;** and
 - **Figure 9.4: Abnormal Indivisible Load Route Plan.**
 - Volume 4: Technical Appendices
 - **Technical Appendix 9.1: Transport Assessment.**
- 9.2.7 Figures and technical appendices are referenced in the text where relevant.

9.3 Legislation, Policy and Guidelines

Legislation

- 9.3.1 The assessment has been undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017¹. There is no legislation which is specific to transport that is required to be considered as part of this assessment.

Planning Policy

- 9.3.2 The following policy has been considered in the assessment:
- National Planning Framework 4 (NPF4) (2023)²;
 - The Highland Council, Highland-wide Local Development Plan (LDP) (2012)³;
 - The Highland Council, Caithness and Sutherland LDP⁴;

Guidance

- 9.3.3 Cognisance has been taken of the following technical guidance in the preparation of the Chapter:
- Institute of Environmental Management and Assessment, Environmental Assessment of Traffic and Movement (2023)⁵;
 - Institute of Environmental Assessment, Guidelines for the Environmental Assessment of Road Traffic (1993)⁶;
 - Institution of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment' (2005)⁷;

¹ Scottish Government (2017), Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents>

² Scottish Government (2023), National Planning Framework 4. Available at: <https://www.transformingplanning.scot/national-planning-framework/approved-npf4/>

³ The Highland Council (2012), Highland-wide Local Development Plan (2012). Available at: https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan

⁴ The Highland Council (2012), Highland-wide Local Development Plan (2012). Available at: https://www.highland.gov.uk/info/178/development_plans/283/caithness_and_sutherland_local_development_plan

⁵ Institute of Environmental Assessment (2023), Environmental Assessment of Traffic and Movement.

⁶ The Institution of Environmental Management and Assessment (1993), Guidelines for the Environmental Assessment of Road Traffic.

⁷ The Institution of Environmental Management and Assessment (2005), Guidelines for Environmental Impact Assessment.

- LA104, Environmental assessment and monitoring, the Design Manual for Roads and Bridges (DMRB) (2020)⁸;
- Table 2.2 of Volume 11, Section 2, Part 5 of the Design Manual for Roads and Bridges (DMRB) (2008)⁹;
- Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual” (2013)¹⁰;
- Transport Scotland, Transport Assessment Guidance (2012)¹¹;
- Scottish Government, Planning Advice Note 75 – Planning for Transport (2005)¹²;
- Scottish Government, Onshore Wind Turbines, Online Renewables Planning Advice (2014)¹³;
- Guidance on the Preparation on Transport Assessments (2024)¹⁴ ; and
- Roads and Transport Guidelines for New Developments (2013)¹⁵ .

9.4 Consultation

- 9.4.1 In undertaking the assessment, a request for a Scoping Opinion was issued to transport agencies that have an interest in the surrounding road network, which includes The Highland Council (THC) as local roads agency and Transport Scotland (TS) as the trunk road agency.
- 9.4.2 **Table 9.1** summarises the consultation responses received regarding Transport and provides information on where and / or how they have been addressed in this assessment.
- 9.4.3 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 9.1 – Consultation

Consultee and Date	Consultation Response	Applicant Response
THC Response to Scoping 11 September 2024	A Transport Assessment (TA), Construction Traffic Management Plan (CTMP) and an Abnormal Load Assessment will be required within the EIAR.	A TA is provided in Technical Appendix 9.1 (EIA Report, Volume 4), which includes a framework CTMP. In addition an AIL Route survey report forms an annex to Technical Appendix 9.1 (EIA Report, Volume 4).
	Transport Planning would expect a Transport Assessment to be submitted with any future planning application and a High National Traffic Forecast be applied	A High National Road Traffic Forecast (NRTF) has been applied to THC road network within the assessment undertaken in this Chapter.
	Identify all public roads affected by the development. In addition to transportation of all abnormal loads & vehicles (delivery of components) this should also include routes to be used by local suppliers and staff. It is expected that the developer submits a preferred access route for the development. All other access route options should be provided, having been investigated in order to establish their feasibility. This should clearly identify the pros and cons of all the route options and therefore provide a logical selection process to arrive at a preferred route.	All routes likely to be used and impacted significantly by the Proposed Development have been included within this assessment. The proposed AIL delivery route is presented as part of the Route Survey Report (RSR) in Technical Appendix 9.1 (EIA Report, Volume 4).
	Establish current condition of the roads. This work which should be undertaken by a consulting engineer acceptable to the Council and will involve an engineering appraisal of the routes including the following: – assessment of structural strength of carriageway including construction depths and road formation where this is likely to be significant in respect of proposed impacts, including non-destructive testing and sampling as required; – road surface condition and profile;	The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition.

⁸ Highways England, Transport Scotland, Welsh Government & Department for Infrastructure (2020), LA104, Environmental assessment and monitoring, the Design Manual for Roads and Bridges (DMRB).

⁹ Highways England, Transport Scotland, Welsh Government & Department for Infrastructure (2008), Volume 11, Section 2, Part 5 of the DMRB.

¹⁰ Department for Transport (2013), Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual”.

¹¹ Transport Scotland (2012), Transport Assessment Guidance. Available at: https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management_dpmtag_ref_17_-_transport_assessment_guidance_final_-_june_2012.pdf

¹² Scottish Government (2005), Planning Advice Note (PAN) 75. Available at: <https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/>

¹³ Scottish Government (2014), Onshore Wind Turbines; Renewables Planning Advice. Available at: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/>

¹⁴ The Highland Council (2024), Guidance on the Preparation of Transport Assessments. Available at: https://www.highland.gov.uk/downloads/file/12194/guidelines_for_transport_assessments

¹⁵ The Highland Council (2013), Roads and Transport Guidelines for New Developments. Available at: https://www.highland.gov.uk/downloads/file/527/road_guidelines_for_new_developments

Consultee and Date	Consultation Response	Applicant Response
	- assessment of structures and any weight restrictions; - road widths, vertical and horizontal alignment and provision of passing places; and - details of adjacent communities.	
	Determine the traffic generation and distribution of the proposals throughout the construction and operation periods to provide accurate data resulting from the Proposed Development including: - nos. of light and heavy vehicles including staff travel; - abnormal loads; and - duration of works.	The relevant information in relation to traffic generation is included in Technical Appendix 9.1 (EIA Report, Volume 4).
	Current traffic flows including use by public transport services, school buses, refuse vehicles, commercial users, pedestrians, cyclists and equestrians.	Where relevant, information on current traffic flows have been obtained from the DfT, TS traffic database and from Automatic Traffic Counts (ATCs).
	Impacts of proposed traffic including: - impacts on carriageway, structures, verges etc.; - impacts on other road users; - impacts on adjacent communities; - swept path and gradient analysis where it is envisaged that transportation of traffic could be problematic; and - provision of Trial Runs to be carried out in order to prove the route is achievable and/or to establish the extent of works required to facilitate transportation.	The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition. The assessment has been undertaken in line with the outlined methodology included within the Scoping Report and detailed within Section 9.6, relating to assessing potential impacts on traffic and transport. A RSR is included in Technical Appendix 9.1, which includes an Electronic Service Delivery for Abnormal Loads (ESDAL) review in relation to structures on the proposed access route. Swept path analysis of pinch points along the proposed AIL delivery route are also provided in Technical Appendix 9.1 (EIA Report, Volume 4). A trial run will be undertaken at the appropriate time following consent and following confirmation of the selected turbine manufacturer and haulage contractor. The requirement of this can be secured via an appropriately worded planning condition.
	Cumulative impacts with other developments in progress and committed developments including other Renewable Energy projects.	A review of other consented developments is included within Technical Appendix 9.1 (EIA Report, Volume 4) and where relevant those schemes have been included within a cumulative assessment sensitivity review in Section 9.10.
	Proposed mitigation measures to address impacts identified in 5 above, including: - carriageway strengthening; - strengthening of bridges and culverts; - carriageway widening and/or edge strengthening; - provision of passing places; - road safety measures; and - traffic management including measures to be taken to ensure that development traffic does not use routes other than the approved routes.	Proposed mitigation measures to facilitate the delivery of AILs to Site are included within the RSR within Technical Appendix 9.1 (EIA Report, Volume 4). A framework CTMP is included within Section 9.11 and within Technical Appendix 9.1 (EIA Report, Volume 4). It is considered that the requirement for a full CTMP can be secured by an appropriately worded condition.
	Details of residual effects.	Details of potential residual effects are included within Section 9.12.
	The TA should include an Abnormal Load Assessment of the roads utilised to convert abnormal loads to the Site. The assessment will need to confirm the proposed port of entry for AIL components and justify the adequacy of the route for transporting them to the Site. Early discussion with the Council's abnormal loads team (the contact is abnormal.loads@highland.gov.uk) and the Council's structures team (the contact is structures@highland.gov.uk) is recommended.	A RSR is included in Technical Appendix 9.1 (EIA Report, Volume 4), which includes an ESDAL review in relation to structures on the proposed access route.

Consultee and Date	Consultation Response	Applicant Response
	THC Transport Planning will require any application for planning permission associated with this proposal to submit a CTMP for the approval of the Planning Authority. A CTMP will normally detail the following issues, however this is not an exhaustive list and the CTMP should be tailored to reflect the issues pertinent to this development: – Identification of all Council maintained roads likely to be affected by the various stages of the development, – Predicted volume, type and duration of construction traffic. – Location of Site compound, staff parking and visitor parking. – Proposed measures to mitigate the impact of general construction traffic and abnormal loads on the local road network following detailed assessment of relevant roads. – Details of any traffic management signage required for the duration of the construction period. – Measures to ensure that all affected public roads are kept free of mud and debris arising from the development. – The developer may also be requested to enter into a Section 96 agreement with the Highland Council to cover any abnormal wear and tear to the Council roads. This will include a requirement for pre and post construction surveys to be undertaken and agreed with the Council and for the provision of a suitable bond. – If the development involves any abnormal loads a detailed protocol, route and delivery programme will be required and agreed with any interested parties such as Highland Council, the Police, Transport Scotland, and community representatives. The protocol shall identify any requirement for convoy working and/or escorting of vehicles and include arrangements to provide advance notice of abnormal load movements in the local media.	A framework CTMP is included within Section 9.11 and within Technical Appendix 9.1 (EIA Report, Volume 4). It is considered that the requirement for a full CTMP can be secured by an appropriately worded condition. The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition. A RSR is included in Technical Appendix 9.1 (EIA Report, Volume 4), which includes an ESDAL review in relation to structures on the proposed access route.
	Details of any new Site access should be clearly set out on dimensioned drawings related to OS data and include confirmation of geometry, construction form, drainage details to prevent water running out onto the public road and evidence that appropriate visibility splays can be achieved. Vehicle swept paths should also be provided to evidence that the proposed junction form will be suitable for its intended use. Details of reinstatement of any temporary Site access at its junction with the public road, post construction is also required. Appropriate junction arrangements and visibility splay information can be found in our published Roads and Transport Guidelines for New Developments.	Drawings for the indicative Site access junction (Eastern Access) are included in Technical Appendix 9.1 (EIA Report, Volume 4). Western access, the point at which the route leaves the public road, does not require a junction.
THC – Additional Scoping Information 15 th August 2024	We note the proposal to use the methodology set out in the Environmental Assessment of Traffic Movement (IEMA 2023) to assess the impact of traffic associated with this development. Whilst we recognise the importance of the environmental impacts, this methodology does not include any requirement to assess the condition of the existing local public road network and its capability to physically and safely accommodate the predicted traffic impacts whilst remaining safe for other road users. Regarding quantifying the scale of traffic impacts we will require any single track roads with passing places to be identified as high sensitivity as defined by Rule 2 in the IEMA methodology. This reflects the sensitivity of such routes in the volume and nature of traffic that currently uses them.	The assessment has been undertaken in line with the relevant guidance for EIA assessment and the sensitivity of those routes highlighted by THC have been assigned as 'High'. The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition.
	The TA must set out all of the Council roads likely to be affected by the various stages of the development including routes for abnormal loads.	All routes likely to be used and impacted significantly by the Proposed Development have been included within the assessment. The proposed AIL delivery route is shown in Figure 9.4 (EIA Report, Volume 3a) and reviewed as part of the RSR in Technical Appendix 9.1 (EIA Report, Volume 4).

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	The C1136 is not a designed road and will be extremely vulnerable to damage by construction traffic and abnormal loads. The road (and others like it) is substandard in terms of construction and geometry being an evolved road rather than designed to modern day standards. It is highly likely that extensive mitigation works will be required on the C1136 to support construction traffic on this route. The required mitigation may include but not be limited to: new or improved infrastructure such as road widening and edge strengthening, junction and forward visibility improvements and new or improved passing places.	The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition.
	The C1136 is also classed as a Consultation Route on the Timber Transport Agreed Routes Map which means that the route is key to timber extraction but issues relating to timing and allowable tonnage must be agreed with the Council before it can be used. This designation reflects the vulnerable nature of the construction of the road.	Any requirements in relation to restriction on the use of any specific road and potential cumulative impacts with timber related traffic can be secured by an appropriately worded planning condition.
	The assessment must also consider the impacts of traffic from any significant timber extraction in connection with the development and consider routes to the Site from local quarries and other material sources.	Timber extraction in relation to the Proposed Development has been included within this assessment. Consultation with the relevant parties relating to timber extraction from neighbouring sites will be undertaken post consent and form part of the detailed CTMP.
	We welcome the applicants' confirmation that a Construction Traffic Management Plan and Abnormal Load Transport Management Plan are to be included within the TA. A swept path assessment for abnormal loads on the preferred route from the port of entry must be undertaken and consider any structures along the route. A trial run to demonstrate the suitability of the route will also be required.	Technical Appendix 9.1 (EIA Report, Volume 4) includes a CTMP. In addition, an AIL Route survey report forms an annex to Technical Appendix 9.1 (EIA Report, Volume 4).
	Prior to the preparation of the TA, the developer should first carry out a detailed scoping exercise in consultation with the Council and Transport Scotland to ensure that all roads affected by construction traffic and abnormal loads are included in the Study Area.	The assessment has been undertaken in line with the outlined methodology included within the Scoping Report and detailed within Section 9.6 , relating to assessing potential impacts on traffic and transport.
	The junction into the Site from the public road must be designed as per the standards set out in the Council guidance document 'Roads and Transport Guidelines for New Developments' including the required visibility splays, junction radii, surfacing and drainage measures.	Noted. Drawing for the proposed Site access junction is included in Technical Appendix 9.1 (EIA Report, Volume 4).
	The Transport Planning Team have no objection to DfT data being used to assess traffic Flows.	Comment noted.
	The use of a high growth factor to forecast future traffic flows is acceptable.	Comment noted.
	Any single track roads within the Study Area should be regarded as a receptor due to their fragile nature and unsuitability for the levels of construction traffic associated with this development.	The assessment has been undertaken in line with the relevant guidance for EIA assessment and the sensitivity of single track roads have been assigned as 'High'.
	The potential impacts on the safety of pedestrians and cyclists should also be included. The A836 and the C1136 are part of the National Cycle Network.	Comment noted and the safety of vulnerable road users has been considered within the assessment.
	It is proposed not to include operational or decommissioning traffic in the scope of the TA. Although the Transport Planning Team have no objection to this approach, we would advise that should permission be granted, we will recommend a condition requiring notification and approval of the planning authority in consultation with the respective roads' authorities and communities for any significant HGV or abnormal load movements required during the lifespan or decommissioning of the windfarm.	Comment noted.
	Grid Connection Works - Should related grid connection and/or substation works be likely to impact on any of the local roads forming the access routes to the Site, it would	Noted. The assessment in relation to the grid connection, if necessary, would be undertaken as part of a separate application.

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	be desirable to consider the impact of these works and the mitigation required in conjunction with the proposed windfarm and BESS.	
	Battery Energy Storage System (BESS) - with regards to the proposal for a BESS, it is our understanding that specific Scottish guidance is being prepared in relation to their design. Until this guidance is available, the applicant should refer to the National Fire Chiefs Council guidance on Grid Scale Battery Energy Storage with regards to the design of the access to the Site.	A BESS is not proposed as part of the Proposed Development.
	Maintenance Agreement and Bond – Notwithstanding the above requirements, there will remain a risk of damage to Council maintained roads from development traffic. In order to protect the interests of the Council as roads authority, a suitable agreement relating to Section 96 of the Roads (Scotland) Act and appropriate planning legislation – including the provision of an appropriate Road Bond or similar security will therefore be required.	The Applicant is willing to enter into a formal Wear & Tear agreement. This will form a suitably worded planning condition.
Transport Scotland Response to Scoping 16 August 2024	Chapter 10 of the Scoping Report (SR) presents the proposed methodology for the assessment of Access Traffic and Transport. This states that the Institute of Environmental Management and Assessment (IEMA) Guidance (2023) will be used as the guide for the assessment of potential environmental effects associated with increased traffic during the construction phase of the development. These Guidelines specify that road links should be taken forward for further assessment where the following two rules are breached: – Rule 1: Include road links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%) – Rule 2: Include road links of high sensitivity where traffic flows have increased by 10% or more. Transport Scotland considers the proposed approach acceptable.	Comment Noted. The assessment has been undertaken in line with the outlined methodology.
	Chapter 10 states that the Study Area will be defined by the preferred abnormal load and general construction traffic routes to the Site. We note that the likely port of entry is identified as Nigg, therefore, the construction traffic routes will include the A9(T). Consequently, Transport Scotland would request that the Study Area include the A9(T) to determine any associated potential trunk road traffic and environmental impacts.	Comment noted. The assessment has been undertaken in line with the outlined methodology and the relevant Trunk Roads have been included.
	We note that base traffic will be sourced using “historic data sources that will include the UK Department of Transport (DfT) traffic survey database, Traffic Scotland database, and other public datasets that are available.” Transport Scotland considers this acceptable, however, we would ask that “estimated” data from the DfT Site is not used.	No estimated traffic flows for the Trunk Road network have been used in the assessment.
	Transport Scotland would request that trunk road flows be factored using NRTF Low Growth to provide a robust assessment.	Comment noted, Low NRTF growth factors have been used for the Trunk Road network.
	We note that no detailed assessment of the operational phase is proposed. This is considered acceptable in this instance	Comment noted.
	The SR states that a Route Survey Report (RSR) for Abnormal Indivisible Loads (AIL) will be provided, and that detailed swept path analysis will be undertaken for the main constraint points on the route from the port of entry) through to the Site access junction. This is considered appropriate, and we would add that Transport Scotland will require to be satisfied that the size of turbines proposed can negotiate the selected route and that transportation will not have any detrimental effect on structures within the trunk road route path.	The proposed AIL delivery route (Access Route) is presented as part of the RSR Technical Appendix 9.1 (EIA Report, Volume 4).

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	The RSR should identify key pinch points on the trunk road network. Swept path analysis should be undertaken and details provided with regard to any required changes to street furniture or structures along the route. Any proposed changes to the trunk road network must be discussed and approved (via a technical approval process) by the appropriate Area Manager(s).	
The British Horse Society Response to Scoping 7 August 2024	The EIA Scoping Report notes there are no core paths within the Site boundary. However, there is an established network of tracks and paths that may be used by walkers, cyclists and equestrians. Forestry tracks, like those within this Site, are often ideal routes for equestrians. There is also significant, untapped, potential for wind farm developments of all sizes to improve access provision via their networks of tracks, especially if consideration is given to laying out tracks to provide circular loops.	Comment noted. Consideration to horse riders has been given within the assessment and mitigation measures are set out within Section 9.11 and Technical Appendix 9.1 (EIA Report, Volume 4).

9.5 Scope of Assessment

Effects Assessed in Full

- 9.5.1 The assessment focusses on the effects of the construction phase of the Proposed Development, upon those receptors identified during the review of desk-based information and field surveys (the extents of the Study Area is set out below).
- 9.5.2 The following potential effects were identified at the Scoping Stage for consideration in this assessment:
- Direct effects on road / path users during construction due to changes in traffic flows and transport of AILs in the surrounding Study Area; and
 - Direct effects on local residents as a result of increased traffic during construction.
- 9.5.3 The assessment scenarios used for this topic are as follows:
- Future Baseline Flows (2031) – which are estimated by applying a combination of NRTF low and high growth factors to existing traffic flow information;
 - Future Baseline + Development Flows (2031) – which are estimated by applying the distributed development trips to the future baseline traffic flow information; and
 - Future Baseline + Committed Development Flows + Development Flows (2031) – which are estimated by applying the distributed development trips, plus committed development trips to the future baseline traffic flow information.

Effects Scoped Out

- 9.5.4 On the basis of the desk and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects, policy guidance or standards, and feedback received from consultees, the following topic areas have been 'scoped out' of detailed assessment, as proposed in the Scoping Report:
- Operational Phase: Once operational, it is envisaged that the level of traffic associated with the Proposed Development will be minimal. Regular visits would be made to the wind farm for maintenance checks, in the order of two per week. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the wind farm for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed. As such, the effects during the operational phase are scoped out of the assessment.
 - Decommissioning Phase: The traffic effects during the decommissioning phase can only be fully assessed closer to that period, 50 years on from the completion of the Site. As elements of the Proposed Development are likely to remain in-situ, the traffic flows associated with the decommissioning works will be lower than those associated with the construction phase. The construction phase therefore represents a worst-case assessment and as such, no further assessment of the decommissioning phase has been considered and has been scoped out of the assessment. Furthermore, it is not possible to estimate future year baseline traffic flows for the time periods proposed for the operational life of the Proposed Development and as such no assessment can be undertaken.

9.6 Assessment Methods and Significance Criteria

9.6.1 The methodology adopted in this assessment involved the following key stages:

- determine the baseline for traffic and transport;
- review and identify potential impacts related to the construction of the Proposed Development;
- evaluate significance of effects on receptors;
- identify mitigation; and
- assess residual effects.

Study Area

9.6.2 The Study Area has been based on those roads that are expected to experience increased traffic flows associated with the construction of the Proposed Development. The geographic scope was determined through a review of the other developments in the area, Ordnance Survey (OS) plans, and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

9.6.3 Locally sourced material will be used where feasible, and traffic will avoid impacting on local communities as far as is possible.

9.6.4 Two access options are currently under review for the Proposed Development, to the northeast of the Site and from the northwest of the Site. In the case of both options, the access from the strategic road network will be taken from the A9 to the southeast. The two options under consideration are detailed below:

- Eastern Access Option (joining the Strath Oykel Wind Farm access tracks) from the C1136 via the A837; and
- Western Access Option (joining the Meall Buidhe Wind Farm access tracks) from Oykel Bridge Road (U3581) via the A837.

9.6.5 The Eastern Access Option would be directly off the C1136 to the northeast of the Site, making use of the proposed access tracks for the consented Strath Oykel Wind Farm, with an extension of these tracks continuing into the eastern extents of the Site. Strath Oykel Wind Farm which was consented in January 2025 comprises 11 wind turbines and is located immediately to the east of the Proposed Development.

9.6.6 As per Strath Oykel Wind Farm, this access option will require the formation of a new bridge across the River Oykel, to the south of the A837. This access option would provide access to the Site for all AILs associated with the turbine deliveries, as well as access for heavy goods vehicles (HGVs) delivering construction materials and general Site traffic.

9.6.7 The Western Access Option would be directly off Oykel Bridge Road (U3581) to the northwest of the Site boundary, making use of the proposed access tracks for the consented Meall Buidhe Wind Farm, with a branch taken off of these tracks south of Loch Phail, before continuing into the western extents of the Site. Meall Buidhe Wind Farm, which was consented in June 2023 at appeal, comprises eight wind turbines and is located immediately to the southeast of the Proposed Development.

9.6.8 As per Meall Buidhe Wind Farm, this access option will make use of the existing bridge crossing over the River Einig, to the south of the A837 and accessed via Oykel Bridge Road (U3581). This access option would provide access to the Site for all AILs associated with the turbine deliveries, as well as access for HGVs delivering construction materials and general Site traffic.

9.6.9 All vehicular traffic for both the construction and operational phases will use the selected access, including AILs.

9.6.10 Until such time as the access proposals have been finalised, both access options have been considered in full within this assessment and are therefore both included within the Study Area.

9.6.11 Strategic access to the Site will be taken from the A9, which forms part of the trunk road network, accessed via the A837 and A839. Construction vehicles delivering loads to and from the Site are likely to originate from quarries to the south of Bonar Bridge, utilising the A836 and the B9176, and quarries along the A9 south of the Mound.

9.6.12 The likely PoE used for the discharging of wind turbine components will be the Port of Nigg to the southeast, routing along the B9175, A9, A839, A836, A837, U2126 and C1136 or Oykel Bridge Road (U3581), depending on the preferred access option. Full details of the AIL routes are provided in **Technical Appendix 9.1** (EIA Report, Volume 4).

9.6.13 Based on the above, the Study Area for this assessment is as follows:

- The A9 (between Dornoch Bridge and The Mound);
- The A836 (from Ardgay to Lairg);

- The A839 (between the A9 at The Mound and Rosehall);
- The A837 (Between its junction with the A839 at Rosehall and Oykel Bridge);
- The B9176 (to the south of its junction with the A836 and Achandunie);
- The C1136 (from its junction with the A837 to the Site access); and
- Oykel Bridge Road (U3581).

9.6.14 Note that the Study Area chosen relates to those roads likely to be subject to the biggest increase in construction traffic i.e., those closest to the Site for which their users could experience significant effects and does not include all roads used in the movement of construction materials and AIL traffic.

9.6.15 Effects associated with construction traffic generated by the Proposed Development would be most pronounced in close proximity to the Site and on the final approaches to the Site. As vehicles travel away from the Proposed Development, they would disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to construction traffic are unlikely to be significant beyond the Study Area identified above.

9.6.16 The Study Area is presented in **Figure 9.1** (EIA Report, Volume 3a).

Desk Study

9.6.17 To inform the baseline assessment and to establish the nature of the surrounding road and footway infrastructure, the following desktop reviews have been undertaken:

- review of relevant transport planning policy;
- consideration of potential origin locations of construction staff and potential supply locations for construction materials to inform extent of local area roads network to be considered in the assessment;
- collection of existing traffic flow information;
- review of the relevant roads hierarchy;
- review of personal injury accident (PIA) data;
- identification of sensitive locations within Study Area (as defined by IEMA such as settlements, schools, tourist attractions etc.) using freely available online mapping;
- identification of any other traffic sensitive receptors in the area (Core Paths, routes, communities, etc.) using freely available online mapping and relevant agency websites;
- review of OS plans;
- review of cumulative development information – THC planning portal and the Scottish Government's Energy Consents Unit (ECU) portal; and
- identification of constraints to the movement of AILs through a Route Survey including swept path assessments – OS plans, video footage and Google Streetview.

Field Survey

9.6.18 Detailed Site visits were undertaken in 2021 and 2025 to review the proposed access route and potential constraints for both general construction traffic and AILs.

Assessment of Potential Effect Significance

9.6.19 The IEMA 'Guidelines for Environmental Impact Assessment' (2005)¹⁶ notes that the separate IEMA Guidelines should be used for characterising the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. More recent guidance published by the IEMA, namely 'Environmental Assessment of Traffic and Movement' (2023)¹⁷ provides an update to the previously used guidance, 'Guidelines for the Environmental Assessment of Road Traffic' (1993)¹⁸ document, which should be used to characterise the environmental traffic and transport effects (off-site effects) and the assessment of significance of major new developments. The guidelines intend to complement professional judgement and the experience of trained assessors.

Criteria for Assessing Sensitivity of Receptors

9.6.20 In terms of traffic and transport impacts, the receptors are the users of the roads within the Study Area and the locations through which those roads pass.

¹⁶ The Institution of Environmental Management and Assessment (2005), Guidelines for Environmental Impact Assessment.

¹⁷ Institute of Environmental Assessment (2023), Environmental Assessment of Traffic and Movement.

¹⁸ The Institution of Environmental Management and Assessment (1993), Guidelines for the Environmental Assessment of Road Traffic.

- 9.6.21 The IEMA Guidelines include guidance on how the sensitivity of receptors should be assessed. Using that as a base, professional judgement was used to develop a classification of sensitivity for users based on the characteristics of roads and locations. This is summarised in **Table 9.2**.

Table 9.2 – Classification of Receptor Sensitivity

Receptor	Sensitivity			
	High	Medium	Low	Negligible
Users of Roads	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, and traffic calming measures	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 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 roads have no adjacent settlements. Includes new strategic trunk roads that would be little affected by additional traffic and suitable for AILs and new strategic trunk road junctions capable of accommodating AILs.
Users/ Residents of Locations	Where a location is a large rural settlement containing a high number of community and public services and facilities	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services	Where a location is a small rural settlement, containing a few community or public facilities or services	Where a location includes individual dwellings or scattered settlements with no facilities

- 9.6.22 It is acknowledged that there will be locations both in terms of users of roads or users / residents of locations that may not fit within one of the sensitivity classifications highlighted in **Table 9.2**. In these situations, professional judgement has been applied and justification for any changes provided.

- 9.6.23 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or the location characteristics.

Criteria for Assessing Magnitude of Change

- 9.6.24 Magnitude of change has been assessed in accordance with the following rules which are outlined in the IEMA Guidelines, and are used to inform a screening exercise to determine which links within the Study Area are to be considered for detailed analysis in the assessment:

- Rule 1 – Include highway links where traffic flows will increase by more than 30% (or where the number of heavy goods vehicles (HGVs) is predicted to increase by more than 30%); and
- Rule 2 – Include any other specifically sensitive areas where total traffic flows are predicted to increase by 10% or more.

- 9.6.25 Examples of sensitive areas are presented in the IEMA Guidelines as hospitals, churches, schools, historical buildings, and tourist attractions etc. These locations are to be assessed in relation to “Rule 2”.

- 9.6.26 The IEMA Guidelines identify the key impacts that are most important when assessing the magnitude of traffic impacts from an individual development; the impacts and levels of magnitude are discussed below:

- Severance – the IEMA Guidance advises that, “*The Department for Transport has historically set out a range of indicators for determining the significance of severance. Changes in traffic flow of 30 %, 60 % and 90 % are regarded as producing ‘slight’, ‘moderate’ and ‘substantial’ changes in severance respectively. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law. However, caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic.*” (Para 3.16). The Guidelines acknowledge that changes in traffic flows should be used cautiously, stating that “*the assessment of severance should pay full regard to specific local conditions, e.g. sensitivity of adjacent land uses, prevalence of vulnerable people, whether or not crossing facilities are provided, traffic signal settings, etc.*” (Para 3.17).
- Driver delay – the IEMA Guidelines note that these delays are only likely to be “*significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system*” (Para 3.20).
- Pedestrian delay (incorporating delay to all non-motorised users) – the IEMA Guidance advises that “*pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to crossroads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site.*” (Para 3.24). Furthermore, the guidance advises that “*...it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and*

movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect.” (Para 3.26).

- Non-motorised user amenity - the IEMA Guidance advises that, “*The 1993 Guidelines suggest that a tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled. Although these thresholds no longer appear in Department for Transport guidance, they have not been superseded by subsequent changes to guidance and are established through planning case law.*” (Para 3.30).
- Fear and intimidation – there are no commonly agreed thresholds for estimating levels of fear and intimidation, from known traffic and physical conditions. However, as the impact is considered to be sensitive to traffic flow, changes in traffic flow of 30 %, 60 % and 90 % are regarded as producing minor, moderate, and substantial changes respectively in the guidelines. (Para 2.19). As such, this has been used to assess the potential impacts associated with construction activities around fear and intimidation on people in close proximity to the Proposed Development.
- Road safety – professional judgement would be used to assess the implications of local circumstances, or factors which may elevate or lessen risks of accidents. In line with the IEMA Guidance, those areas of collision clusters would be subject to detailed review.
- Road safety audits – It would be proposed to undertake any necessary Road Safety Audits (RSA) post consent, and it is considered that this can be secured via a planning condition.
- Large loads – The movement of the AILs associated with the construction of the Proposed Development have been considered in full, within a separate route survey assessment (see **Technical Appendix 9.1** (EIA Report, Volume 4)), which identifies physical mitigation measures required to accommodate the predicted loads. Additional mitigation in terms of addressing potential impacts on sensitive receptors are included as standard within the Mitigation During Construction sub-section.

9.6.27 While not specifically identified, as more vulnerable road user, cyclists are considered in similar terms to pedestrians.

Criteria for Assessing Significance

9.6.28 Table 3.7 of LA104 Environmental Assessment Methodology of the Design Manual for Roads and Bridges (DMRB) sets out four levels against which the magnitude of these impacts should be assessed – major, moderate, minor, and negligible. The impacts and levels of magnitude are discussed below in **Table 9.3**.

Table 9.3 – Magnitude of Impacts

Magnitude	Description
Major	These effects are considered to be material in the decision-making process.
Moderate	These effects may be important but are not likely to be material factors in decision making. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a receptor.
Minor	These effects 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 effects or those that are imperceptible.

9.6.29 The predicted significance of the effect was determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 9.4**.

Table 9.4 – Significance Criteria

Receptor Sensitivity	Magnitude of Change			
	Major	Moderate	Minor	Negligible
High	Major	Major / Moderate	Moderate / Minor	Minor
Medium	Major / Moderate	Moderate	Minor	Minor / Negligible
Low	Moderate / Major	Minor	Minor	Minor / Negligible
Negligible	Minor	Minor	Minor / Negligible	Negligible

9.6.30 Effect significance is categorised as major, moderate, minor or negligible. Effects judged to be of **major** or **moderate** significance are considered to be significant in the context of the EIA Regulations and require mitigation.

- 9.6.31 Where an effect could be one of **major / moderate** or **moderate / minor** significance, professional judgement is used to determine which option should be applicable. Effects judged to be of **minor** or **negligible** significance are considered not significant in the context of EIA Regulations

Requirements for Mitigation

- 9.6.32 If significant likely potential effects are identified, appropriate mitigation will be implemented to remove or reduce the significance of the effects where possible.

Assessment of Residual Effect Significance

- 9.6.33 Residual effects will be assessed following the methodology described above, taking into consideration the identified mitigation.

Cumulative Assessment

Onshore Wind Farm and Energy Related Planning Applications

- 9.6.34 A review of THC's online planning portal and Scottish Government's ECU portal was undertaken to identify any consented developments within the vicinity of the Proposed Development which would generate significant traffic within the same Study Area and should be included within the assessment.
- 9.6.35 Transport Assessment Guidance advises that only those projects with extant planning permission or local development plan allocations within an adopted or approved plan require to be included in any assessment. Those projects in scoping or at the application stage should not be included in cumulative assessments as they have yet to be determined. When considering traffic impacts specifically in relation to the construction phase of a project, the potential traffic impact is highly speculative and as such, cannot be included in the assessment.
- 9.6.36 **Technical Appendix 9.1** (EIA Report, Volume 4) includes a full review of consented schemes in the area which required consideration, including justification on whether these should be included within the cumulative assessment. Those included within **Table 9.5** are those schemes deemed applicable for inclusion within the assessment.

Table 9.5 – Consented Developments

Planning Reference	Scheme Name	Status	Included as Committed Development
22/02717/S36	Strath Oykel Wind Farm and BESS	Consented in January 2025 – Commencement of development no later than five years from the date of consent.	Yes – Potential for construction phases to overlap if construction commences at the end of the commencement period and the Proposed Development is consented and begins construction in 2031.
21/01921/S36	Garvary Wind Farm	Consented in February 2025 – Commencement of development no later than five years from the date of consent.	Yes – Potential for construction phases to overlap if construction commences at the end of the commencement period and the Proposed Development is consented and begins construction in 2031.
ECU00004487 / 23/02936/S36	Creag Riabhach Wind Farm Extension	Consented in July 2024 – Commencement of development no later than five years from the date of consent.	Yes – Potential for construction phases to overlap if construction commences at the end of the commencement period and the Proposed Development is consented and begins construction in 2031.
24/04118/S42	Sallachy Wind Farm	Consented after a successful application under section 42 in March– Commencement of development no later than five years from the date of consent.	Yes – Potential for construction phases to overlap if construction commences at the end of the commencement period and the Proposed Development is consented and begins construction in 2031.

- 9.6.37 The review did not identify any other significant traffic generating developments in the Study Area that may occur during the peak construction phase associated with the Proposed Development, which should be considered as part of the cumulative assessment of construction effects within this Chapter.

Other Planning Applications

- 9.6.38 A review of the THC online planning portal was also undertaken for other developments with planning consent, which should be considered within this assessment. The review examined consented developments whose trips are considered significant in scale (i.e., has associated traffic impact of over 30%).
- 9.6.39 The review did not identify any other significant traffic generating developments in the Study Area that may occur during the construction phase associated with the Proposed Development.
- 9.6.40 It should be noted that the use of NRTF growth assumptions has provided a basis for general local development growth within the Study Area

Assessment Assumptions

- 9.6.41 The following main assumptions have informed the assessment of effects in this Chapter:
- A construction programme of 18 months has been assumed.
 - The year of construction is assumed to be 2031 and has been used for the basis of the assessment.
 - While it is anticipated that 70% of the aggregate requirements will be sourced from the on-site borrow pit and 30% of aggregate material will be import, as a worst-case assessment, it has been assumed that 50% of the aggregate material requirements will be imported to the Site.
 - Concrete will be batched on-site meaning only raw materials to prepare the concrete i.e. cement powder, water and sand / aggregates will be imported.

Limitations to Assessment

- 9.6.42 Limitations to the assessment are as follows:
- The assessment is based upon average traffic flows in one-month periods. During the month, activities at the Site may fluctuate between one day and another. It is not possible to fully develop a day-by-day traffic flow estimate as no Balance of Plant (BoP) contractor has been appointed and external factors can impact upon activities on a day-by-day basis (weather conditions, availability of materials, time of year, etc).
 - Assumptions on the original points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on the Study Area may alter to those presented in the assessment.
 - Construction material estimates set out in **Technical Appendix 9.1** (EIA Report Volume 4) are based on what is likely to be required for a project of this size and are considered to be appropriate for enabling a robust assessment of effects to be made.
 - There will be a requirement for timber felling and extraction associated with the construction of the Proposed Development. It is currently estimated that there will be in the order of 50,000 tonnes of timber to be felled. It has been assumed that the felling will commence in month one of the construction programme and will occur over a period of seven months. Note this is subject to change following the preparation of a detailed felling plan.
- 9.6.43 It is considered that there is sufficient information to enable an informed decision to be taken in relation to the identification and assessment of likely significant environmental effects on traffic and transport.

Interrelationship Between Effects

- 9.6.44 The IEMA guidelines also refer to interrelationships with traffic and transport effects in relation to amenity including visual effects, noise and hazardous loads. Visual effects and noise are addressed in **Chapter 4** and **Chapter 10** (EIA Report, Volume 2), respectively.

9.7 Baseline Conditions

Current Baseline

Active Travel Network

- 9.7.1 There are no dedicated pedestrian facilities in the immediate vicinity of the Site, reflecting its rural setting. Further away from the Site, in the wider Study Area, there are pedestrian facilities within the larger settlements of Lairg, Pittentrail, Bonar Bridge, and Ardgay.
- 9.7.2 The level of pedestrian infrastructure in the immediate vicinity of the Site is commensurate with the scale of the local settlements and their rural setting.
- 9.7.3 A review of THC's Core Path network indicates that there are a number of Core Paths in the vicinity of the Site and within the Site.
- 9.7.4 The Core Paths located within the Site are as follows:
- SU21.10 Oykel Bridge - Glen Einig, which is 8.85 km in length and falls within the Site to the northwest, should the Western Access Option be progressed. The Core Path is signposted from the row of cottages on Oykel Bridge Road (U3581), with the path following the proposed route into the Site, across the River Einig, before heading west and continuing along the private road. The Core Path is an on-road track and there are no segregated facilities in the vicinity of the Site; and
 - SU08.04 Loch Mhic Mharsail, which is 3.14 km in length and falls within the Site to the northeast, should the Eastern Access Option be progressed. The Core Path is not signposted from where it joins the C1136 at the proposed access junction location. The Core Path follows the existing tracks

at this location which are used for timber extraction and there are no segregated facilities in the vicinity of the Site.

- 9.7.5 A number of additional Core Paths intersect or are located close to the A837 and A839 which will be used by construction vehicles to access the Proposed Development. This includes paths SU21.03, SU21.09, SU21.07, SU21.02, SU21.08, SU16.08, and SU16.9.
- 9.7.6 A review of the Sustrans Map of the National Cycle Network (NCN) shows that the closest cycling route to the Proposed Development is the Far North Way: Inverness to John O'Groats route which follows sections of the A9 and A836 within the Study Area. The route is an on-road route and includes sections that are not part of the NCN. There are no NCN routes in the vicinity of the proposed Site access locations.
- 9.7.7 The Core Path Network and the Far North Way within the vicinity of the Site can be seen in **Technical Appendix 9.1** (EIA Report, Volume 4).

Road Access

A9

- 9.7.8 The A9 is the main trunk road in the area which links Perth to Scrabster. The road is subject to a speed limit of 60 miles per hour (mph) within the Study Area, however, sections of dual carriageway are signed as 70 mph. Within the Study Area, the road is operated by BEAR Scotland on behalf of Transport Scotland and appears to be generally in good condition.

A837

- 9.7.9 The A837 is a single carriageway road, which has a variable width of 4 m to 6 m, ranging from sections of narrow single-track road with passing places to single two-way carriageway. The A837 is approximately 72 km in length and routes from Lochinver to Inveran. The A837 is mainly subject to a speed limit of 60 mph within the Study Area, reducing to 40 mph within Rosehall / Invercassley. The A837 is maintained by THC and appears to be in a generally reasonable condition.

A836

- 9.7.10 The A836 is a district distributor road that provides connections between Tain and Thurso, passing through Lairg. The A836 is approximately 196 km in length and varies between 6 m and 7 m in width. The A836 is mainly subject to a speed limit of 60 mph within the Study Area, reducing to 30 mph within Lairg, Bonar Bridge, and Ardgay. The A836 is maintained by THC and appears to be in a generally reasonable condition.

A839

- 9.7.11 A839 is approximately 36 km in length and provides a connection from the A9 at The Mound to Rosehall, passing through Lairg. The road to the east of Lairg has two lanes and is of good standard. To the west of Lairg, the road width varies between two lanes and long sections of single track with passing places. The A839 is mainly subject to a speed limit of 60 mph within the Study Area, reducing to 30 mph within Lairg and Pittentrail. The A839 is maintained by THC.

B9176

- 9.7.12 The B9176 is a single carriageway road, approximately 24 km in length, which runs from the A9 at Skiach to Eastern Fern on the Dornoch Firth. The road is subject to a speed limit of 60 mph within the Study Area, reducing to 40 mph within the small village of Dalnavie for goods vehicles in excess of 7.5 tonnes. The road is maintained by THC and appears to be in a generally reasonable condition.

C1136

- 9.7.13 The C1136 for the most part is a narrow single carriageway road with passing places which routes from Ardgay in the south to Brae in the north. The road is subject to the national speed limit of 60 mph. There is a short section of the C1136 that branches off the main route, tying in with the A837 to the north, crossing the River Oykel. The short section leading through to the A837 has a number of cattle grids in place and signage advising of flooding occurring on the road. The C1136 is maintained by THC.

Oykel Bridge Road (U3581)

- 9.7.14 Oykel Bridge Road (U3581) is a single carriageway road, approximately 850 m in length, running from the A837 at Oykel Bridge to 170 m west of the row of cottages on the road between the River Oykel and River Einig. Beyond this the road is privately owned. The road section within the adopted road network is a single carriageway road with passing places and is subject to the national speed limit. The private section of the road beyond the cottages crosses the River Einig and follows the path of the river in an east / west direction.

General Road Suitability

- 9.7.15 The Agreed Timber Route Map has been developed by The Timber Transport Forum who are a partnership of the forestry and timber industries, local government, national government agencies, timber hauliers and road and freight associations. One of the key aims of the forum is to minimise the impact of timber transport on the public road network, on local communities and the environment and a way of achieving this is to categorise the roads leading to forest areas in terms of their capacity to sustain the likely level of timber haulage vehicles i.e. HGVs. The routes are categorised into four groups, namely; 'Agreed Routes', 'Consultation Routes', 'Severely Restricted Routes' and 'Excluded Routes'.
- 9.7.16 'Agreed Routes' are categorised as routes used for timber haulage without restriction as regulated by the Road Traffic Act 1988. A-roads are classified as 'Agreed Routes' by default unless covered by one of the other road classifications. Those links classed as 'Consultation Routes' are categorised as a route which is key to timber extraction, but which are not up to 'Agreed Route' standard. Consultation with the local authority is required, and it may be necessary to agree limits of timing, allowable tonnage etc. before the route can be used. B-roads are classified as 'Consultation Routes' by default unless covered by one of the other classifications. 'Severely Restricted Routes' are not normally to be used for timber transport in their present condition. These routes are close to being Excluded Routes. Consultation with the local authority is required prior to use. Finally, 'Excluded Routes' should not be used for timber transport in their present condition. These routes are either formally restricted, or are close to being formally restricted, to protect the network from damaging loads.
- 9.7.17 Roads within the Study Area form part of the route network used for the extraction of timber and are therefore regularly used by HGV traffic. This includes the A9, A836, B9176, and a section of the A839 west of Lairg which are 'Agreed Routes' and the A837, C1136, A839 east of Lairg and Oykel Bridge Road (U3581) east of Lairg which are 'Consultation Routes'.

Existing Traffic Conditions

- 9.7.18 In order to assess the impact of the Proposed Development construction traffic on the Study Area, traffic data was obtained from publicly available information from THC planning portal from Automatic Traffic Counters (ATC) that were deployed at the following locations in 2021:
- C1136, near the Eastern Access Option;
 - C1136, to the south of its junction with the A837; and
 - A837, at Invercassley.
- 9.7.19 The ATCs were deployed over a 7-day period, to collect vehicle volumes, composition and speed per direction per hour.
- 9.7.20 To compliment the ATC survey information obtained from THC, existing traffic count data was obtained from the Department for Transport (DfT) database and the TS database, with 2023 data utilised from the DfT database, with the exception of the B9176 which utilises data from 2019, and 2024 data utilised from the TS database.
- 9.7.21 DfT Annual Average Daily Traffic (AADT) data was obtained for the following locations:
- A837, Oykel Bridge (site reference: 10937);
 - A839, between its junction with the A837 and the A836 (site reference: 50934);
 - A836, west of Lairg (site reference: 40936);
 - A839, between its junction with the A9 and the A836 (site reference: 20935);
 - A836, between its junction with the A837 and the A839 (site reference: 20934);
 - A836, between its junction with the A949 and the A837 (site reference: 50937);
 - A836, Ardgay (site reference: 80005); and
 - B9176, south of Dalnavie (site reference: 979064).
- 9.7.22 TS AADT data was obtained for the following locations:
- A9, between Poles and The Mound (site reference: ATC01334);
 - A9, between its junction with the A949 and the B9168 (site reference: ATC01023); and
 - A9, south of its junction with the A949 (site reference: ATC01020).
- 9.7.23 The traffic counters allowed the traffic flows to be split into vehicle classes and the data has been summarised into cars / LGVs and HGVs (all goods vehicles >3.5 tonnes gross maximum weight).

- 9.7.24 NRTF high and low growth factors were applied to the traffic flows in order to estimate the 2025 baseline year flows. NRTF high growth factors were applied to the 2021 flows obtained from ATC surveys and the 2019 and 2023 flows obtained from the DfT database. The NRTF high growth factors utilised are as follows:
- 2019 to 2025 is 1.081;
 - 2021 to 2025 is 1.049; and
 - 2023 to 2025 is 1.024.
- 9.7.25 Low growth factors were applied to the 2024 flows obtained from the TS database. The NRTF low growth from 2024 to 2025 is 1.005.
- 9.7.26 These sites were identified as being areas where sensitive receptors on the access route would be located. The locations of the traffic sites are illustrated in **Figure 9.2** (EIA Report, Volume 3a), while **Table 9.6** summarises the AADT traffic data collected and used in the assessment.

Table 9.6 – 24-Hour Two-Way Average Traffic Data (2025)

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	C1136 Eastern Access Option Site access	31	17	47
2	C1136 south of A837 junction	21	13	35
3	A837 Invercassley	153	119	273
4	A837 Oykel Bridge	219	17	237
5	A839 between the A837 and A836	231	8	240
6	A836 west of Lairg	1,731	154	1,884
7	A839 between the A9 and A836	807	37	844
8	A836 between A837 and A839	955	82	1,037
9	A836 between the A949 and A837	1,621	113	1,734
10	A836 Ardgay	1,667	137	1,804
11	B9176 south of Dalnavie	1,751	152	1,904
12	A9 between Poles and The Mound	4,199	974	5,173
13	A9 between the A949 and B9168	3,352	880	4,232
14	A9 south of A949 junction	6,368	962	7,329

Please note minor variances due to rounding may occur.

- 9.7.27 The ATC survey locations and the TS database which provided traffic volume data was also used to obtain speed statistics (DfT counts do not provide speed data). The two-way seven-day average and 85th percentile speeds observed at two of the count sites are summarised in **Table 9.7**.

Table 9.7 – Speed Summary Table

Site ID	Survey Location	Mean Speed (mph)	85% Percentile (mph)	Speed Limit (mph)
1	C1136 Eastern Access Option Site access	17.0	24.6	60
2	C1136 south of A837 junction	27.3	35.7	60
3	A837 at Invercassley	28.3	35.2	40
12	A9 between Poles and The Mound	55.2	63.3	60
13	A9 between the A949 and B9168	56.0	63.3	60
14	A9 south of A949 junction	49.0	55.8	60

Speed data obtained 2021 and 2024

- 9.7.28 The speed information indicates that for the most part, speed limits are being adhered to within the Study Area, with the exception of the 85th percentile on the A9 between Poles and the Mound, and the A9 between the A949 and B9168 junctions. On these road links, the 85th percentile speed exceeds the speed limit by approximately 5%. The average (mean) speeds on all sites are below the speed limit of 60 mph.

Personal Injury Accident Review

- 9.7.29 PIA data for the five-year period commencing 01 January 2019 through to the 31 December 2023 was obtained from the online resource CrashMap¹⁹ which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.
- 9.7.30 Transport Assessment Guidance requires an analysis of the accident data on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period, or preferably

¹⁹ <https://www.crashmap.co.uk>

a five-year period, particularly if the Site has been identified as being within a high accident area. The statistics are categorised into three categories, namely “Slight” for damage only incidents, “Serious” for injury accidents, and “Fatal” for accidents that result in a death.

9.7.31 The review included the following road sections within the vicinity of the Site:

- C1136, from its junction with the A837 to the Eastern Access Option;
- Oykel Bridge Road (U3581) to the Western Access Option;
- A837, between its junction with the A839 at Rosehall and Oykel Bridge;
- A836, between Lairg and Ardgay; and
- A839, between the A9 at The Mound and Rosehall.

9.7.32 The locations and severity of the recorded accidents within the Study Area are summarised in **Table 9.8** while **Figure 9.3** (EIA Report Volume 3a), shows their locations.

Table 9.8 – Personal Injury Accident Summary

Road Link	Slight	Serious	Fatal	HGV
C1136	0	0	0	0
Oykel Bridge Road (U3581)	0	0	0	0
A837	0	0	0	0
A836	1	2	3	0
A839	1	4	0	0
Total	2	6	3	0
Percentage of total accidents	18%	55%	27%	0%

9.7.33 A general summary of the accidents is as follows:

C1136

- There were no accidents recorded on the C1136 within the five-year period between 2019 and 2023.

Oykel Bridge Road (U3581)

- There were no accidents recorded on Oykel Bridge Road (U3581) within the five-year period between 2019 and 2023.

A837

- There were no accidents recorded on the A837 within the five-year period between 2019 and 2023.

A836

- There was a total of six accidents recorded on the A836 within the five-year period between 2019 and 2023. Of these, one was classified as being “slight”, two were “serious”, and there were three accidents resulting in fatalities.
- The first fatality occurred to the south of Lairg, in the vicinity of Lairg rail station and was a single vehicle (car) accident resulting in two fatalities. The accident occurred during daylight hours, with the vehicle leaving the road.
- The second fatality occurred to the west of Balblair and involved a motorcycle hitting a pedestrian, resulting in a fatality. The section of road where the accident occurred does not have any pedestrian facilities in place. The accident occurred during daylight hours and at a bend on the carriageway.
- The third fatality occurred between Ardgay and Bonar Bridge and involved a car striking a pedestrian, resulting in a fatality.
- A total of two accidents recorded on the A836 involved a motorcycle, one which was “serious” and one resulting in a fatality.
- A total of two accidents recorded on the A836 involved a pedestrian, both of which were fatalities.
- Two accidents occurred at the A836 junction with the A837 and were both single car accidents. One accident was “slight” and one was “serious”. The “serious” accident involved a young driver (under 25).
- All accidents recorded on the A836 were single vehicle accidents.
- There were no accidents on the A836 involving an HGV, bus, or cyclist.
- There were no accidents on the A836 resulting in a child casualty.

- There were two accidents on the A836 occurring during Winter months (November – March) when poor weather conditions may have exacerbated the risk of an accident occurring.
- There was a total of one accident on the A836 involving a young driver.
- There were no clusters of accidents recorded at any location on the A836. Two separate single vehicle accidents were recorded at the A837 / A836 priority junction.

A839

- There was a total of five accidents recorded on the A839 within the five-year period between 2019 and 2023. Of these, one was classified as being “slight”, four were “serious”, and there were no accidents resulting in a fatality recorded.
- Of the five accidents, two involved a motorcycle, both of which were classified as “serious”.
- There were no accidents on the A839 involving an HGV, bus, or cyclist.
- There were no accidents on the A839 resulting in a pedestrian or child casualty.
- There was one accident on the A839 occurring during Winter months (November – March) when poor weather conditions may have exacerbated the risk of an accident occurring.
- There was a total of three single vehicle accidents recorded on the A839, two of which involved a young driver (under 25).
- There was a total of two accidents involving a young driver on the A839.
- There were no clusters of accidents recorded at any location on the A839.

PIA Summary

- 9.7.34 The analysis indicates that there are a total of 11 PIAs recorded along the assessed links within the most recent five-year period. Most recorded accidents were categorised as being “slight” (18%), with 55% of incidents recorded as “serious”, and three resulting in a fatality (27%).
- 9.7.35 There are no clusters of PIAs at any location in the assessed area and there were no accidents recorded involving an HGV.
- 9.7.36 Based on the information available, it has been established that there are no specific road safety issues within the immediate vicinity of the Proposed Development that currently require to be addressed or would be exacerbated by construction activities associated with the Proposed Development.

Future Baseline

- 9.7.37 Construction of the Proposed Development is anticipated to commence in 2031 if consent is granted and is expected to last approximately 18-months depending on weather conditions and ecological considerations.
- 9.7.38 To assess the likely effects during the construction phase, base year traffic flows were determined by applying a NRTF high and low growth factors to the surveyed traffic flows. The NRTF low growth factor, applied to trunk roads, for 2025 to 2031 is 1.030 and the high growth factor, applied to all other roads, for 2025 to 2031 is 1.074. These factors were applied to the 2025 traffic data presented in **Table 9.6** to estimate the 2031 Base traffic flows presented in **Table 9.9**.

Table 9.9 – 24-Hour Two-Way Average Traffic Data (2031)

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	C1136 Eastern Access Option Site access	33	18	51
2	C1136 south of A837 junction	23	14	37
3	A837 Invercassley	165	128	293
4	A837 Oykel Bridge	235	19	254
5	A839 between the A837 and A836	249	9	257
6	A836 west of Lairg	1,859	165	2,024
7	A839 between the A9 and A836	867	40	906
8	A836 between A837 and A839	1,026	88	1,114
9	A836 between the A949 and A837	1,741	121	1,862
10	A836 Ardgay	1,790	147	1,938
11	B9176 south of Dalnavie	1,881	164	2,045
12	A9 between Poles and The Mound	4,325	1,003	5,328
13	A9 between the A949 and B9168	3,452	907	4,359
14	A9 south of A949 junction	6,559	991	7,549

Please note minor variances due to rounding may occur.

Future Baseline in the Absence of the Proposed Development

- 9.7.39 As noted above, the assessment has been undertaken on the basis of a future baseline of conditions in 2031, with growth factors applied. In the absence of the Proposed Development, it is anticipated that traffic growth will occur throughout the Study Area as a result of other development pressures, tourism and population flows.

9.8 Receptors Brought Forward for Assessment

- 9.8.1 A review of sensitive receptors has been undertaken within the Study Area. **Table 9.10** details the receptors and their sensitivities for use within the following assessment. A justification for the sensitivity has been provided, based upon the details contained in **Table 9.2**.

Table 9.10 – Receptor Sensitivity Summary

Receptor	Sensitivity	Justification
Oykel Bridge Road (U3581) Users	High	Minor rural road, not constructed to accommodate frequent use by HGVs
C1136 Users	High	Minor rural road, not constructed to accommodate frequent use by HGVs
A837 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
A839 Users West of Lairg	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
A839 Users East of Lairg	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
A836 Users	Medium	Where the road is a local A or B class road, capable of regular use by HGV traffic.
A9 Users	Low	A class road that can accommodate HGV traffic with no traffic calming facilities present
Residents along Oykel Bridge Road (U3581)	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along C1136	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along A837	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along A839 West of Lairg	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along A839 East of Lairg	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along A836	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Residents along A9	Negligible	Where a location includes individual dwellings or scattered settlements with no facilities
Rosehall & Invercassley Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Lairg Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Bonar Bridge Residents	Medium	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.
Pittentrail Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Ardgay Residents	Low	Where a location is a small rural settlement, few community or public facilities or services.
Core Path / Path Network	High	Minor paths used by walkers and cyclists, not constructed to accommodate HGV traffic flows

- 9.8.2 As previously noted in **Section 9.6**, examples of sensitive areas are presented in the IEMA Guidelines as locations which include hospitals, churches, schools, historical buildings tourist attractions for example. Based on these indicators which are stated within the IEMA Guidelines, the following locations within the Study Area have been identified as sensitive areas in this assessment:

- Lairg (church, schools, tourist attractions, community centre and health centre);
- Bonar Bridge / Ardgay (church, schools, tourist attractions, community centre and health centre); and
- Invercassley / Rosehall (church, schools, tourist attractions and village hall).

- 9.8.3 These locations are therefore subject to 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the locations are subject to a total traffic increase of 10% or more. All other locations within

the Study Area are subject to 'Rule 1' and are assessed if total traffic flows (or HGV flows) on highway links increase by more than 30%.

9.9 Embedded Mitigation

- 9.9.1 The Proposed Development includes the use of one on-site borrow pit to provide material for the creation of the access tracks, hardstandings and compound bases etc. It is estimated that the volume of material suitable from the borrow pit to be used on-site will provide approximately 70% of the required material.
- 9.9.2 Batching of concrete for use on-site is considered feasible and economic and facilities to enable this are being provided at the Proposed Development. The assessment, has, however, taken into consideration the importation of concrete batching materials, including cement, water, and aggregates.

9.10 Assessment of Effects

Potential Construction Effects

- 9.10.1 The assessment is based upon the construction effects that may occur within the Study Area during the 18-month construction phase. To assess the effects, it is necessary to determine the likely traffic generation associated with the Proposed Development during the peak construction month.
- 9.10.2 During the 18-month construction phase, the following traffic will require access to the Site:
- Staff transport, in either cars or staff minibuses;
 - Construction equipment and materials, deliveries of machinery and supplies such as concrete materials and crushed rock;
 - Components relating to the substation and associated infrastructure;
 - AILs consisting of the turbine sections and heavy lift cranes; and
 - Escort vehicles for AIL deliveries.
- 9.10.3 Average monthly traffic flow data was used to establish the construction trips associated with the Proposed Development, and these are detailed in **Technical Appendix 9.1** (EIA Report, Volume 4). The trip estimates have been based upon first principle estimates of traffic movements to and from the Site, having established the likely volumes of construction materials, resources, and components.
- 9.10.4 As previously discussed, two potential access options for the Proposed Development are currently under consideration, which are detailed below:
- Eastern Access Option (joining the Strath Oykel Wind Farm access tracks) from the C1136 via the A837; and
 - Western Access Option (joining the Meall Buidhe Wind Farm access tracks) from Oykel Bridge Road (U3581) via the A837.
- 9.10.5 Depending on the final access option that is progressed, there will be small differences in the construction trip generation between the two.
- 9.10.6 Except for the turbine components, most traffic will be HGVs and normal construction plant, including grading tractors, excavators, high-capacity cranes, forklifts, and dumper trucks. Most will arrive at the Site access on low loaders.
- 9.10.7 The turbines are delivered in component sections for transport and will be assembled within the turbine array. The nacelle, hub, drive train, blade, tower sections are classified as AILs due to their weight and/or length, width, and height when loaded. The components can be delivered on a variety of transport platforms with typical examples illustrated in **Technical Appendix 9.1** (EIA Report Volume 4).
- 9.10.8 In addition to the turbine deliveries, up to two high-capacity erection cranes will be needed to offload components and erect the turbines. The cranes are likely to be mobile cranes with a capacity up to 1,000 tonnes that will be escorted by boom and ballast trucks to allow full mobilisation on-site. A smaller erector / assist crane will also be present to allow the assembly of the main cranes and to ease overall erection of the turbines.
- 9.10.9 The resulting traffic generation profile is presented in **Technical Appendix 9.1** (EIA Report, Volume 4).
- 9.10.10 The peak of construction activity is expected to occur in month seven for the Proposed Development, regardless of which access option is progressed.
- 9.10.11 In the scenario whereby the Eastern Access Option is progressed, there will be a total of 4,490 vehicle movements per month, which equates to 204 vehicle movements per day, comprising 144 two-way HGV movements and 60 two-way car / LGV movements.

- 9.10.12 This would equate to approximately 16 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.
- 9.10.13 In the scenario whereby the Western Access Option is progressed, there will be a total of 4,450 vehicle movements, which equates to 202 vehicle movements per day, comprising 142 two-way HGV movements and 60 two-way car / LGV movements.
- 9.10.14 This would equate to approximately 16 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.
- 9.10.15 The distribution of development traffic on the network will vary depending on the types of loads being transported. Strategic access to the Site will be taken from the A9, which forms part of the trunk road network, accessed via the A837 and A839. Construction vehicles delivering loads to and from the Site are likely to originate from quarries to the south of Bonar Bridge, utilising the A836 and the B9176, and quarries along the A9 south of the Mound. The assumptions for the distribution of construction traffic during the peak month are presented in **Technical Appendix 9.1** (EIA Report, Volume 4).
- 9.10.16 All AIL traffic will access from the PoE at Port of Nigg to the southeast, utilising sections of proven AIL routes used during the construction of other wind farms in the area. For the purposes of preparing this assessment and **Technical Appendix 9.1** (EIA Report, Volume 4), it has been assumed that all AIL traffic will access the Site via the following routes:
- Loads will exit the Port of Nigg and turn left onto the B9175 and continue north;
 - Loads will continue north onto the A9;
 - At The Mound, loads will turn left onto the A839 and will proceed westbound to Lairg;
 - In Lairg, loads will turn left and will continue southbound on the A836;
 - Loads would continue west on the A839;
 - Loads would turn right onto the A837 and continue through Invercassley and Rosehall; and
 - Depending on the final access option, either:
 - Eastern Access Option: Loads would turn left onto the U2126 and continue south to the C1136 via a new proposed crossing over the River Oykel, before joining the C1136 and heading west to the proposed Site access junction; or
 - Western Access Option: Loads would cross the Oykel Bridge and turn left onto Oykel Bridge Road (U3581) continuing south to the existing bridge crossing over the River Einig, before continuing through to the Site on new access tracks
- 9.10.17 The above AIL route is shown in **Figure 9.4** (EIA Report, Volume 3a).
- 9.10.18 Following the distribution and assignment of traffic flows to the Study Area network, the resultant daily traffic during the peak of construction in month seven, is summarised in **Table 9.11** for the Eastern Access Option, while **Table 9.12** illustrates the scenario for the Western Access Option.

Table 9.11 – Peak Construction Traffic (Month seven) – Eastern Access Option

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	C1136 Eastern Access Option Site access	60	150	210
2	C1136 south of A837 junction	60	150	210
3	A837 Invercassley	60	150	210
4	A837 Oykel Bridge	0	0	0
5	A839 between the A837 and A836	60	150	210
6	A836 west of Lairg	36	150	186
7	A839 between the A9 and A836	12	4	16
8	A836 between A837 and A839	24	148	172
9	A836 between the A949 and A837	24	148	172
10	A836 Ardgay	24	148	172
11	B9176 south of Dalnavie	24	0	24
12	A9 between Poles and The Mound	12	4	16
13	A9 between the A949 and B9168	12	4	16
14	A9 south of A949 junction	12	4	16

Please note minor variances due to rounding may occur.

Table 9.12 – Peak Construction Traffic (Month seven) – Western Access Option

Site ID	Survey Location	Cars & LGVs	HGVs	Total
1	C1136 Eastern Access Option Site access	0	0	0
2	C1136 south of A837 junction	0	0	0
3	A837 Invercassley	60	148	208
4	A837 Oykel Bridge	60	148	208
5	A839 between the A837 and A836	60	148	208
6	A836 west of Lairg	36	148	184
7	A839 between the A9 and A836	12	4	16
8	A836 between A837 and A839	24	144	168
9	A836 between the A949 and A837	24	144	168
10	A836 Ardgay	24	144	168
11	B9176 south of Dalnavie	24	0	24
12	A9 between Poles and The Mound	12	4	16
13	A9 between the A949 and B9168	12	4	16
14	A9 south of A949 junction	12	4	16

Please note minor variances due to rounding may occur.

- 9.10.19 Note, where road links show no construction traffic, this is due to those road links not being used during the peak month of construction activity or not being used due to the access option being considered.

Predicted Construction Effects – Eastern Access Option

- 9.10.20 The peak month (month seven) traffic data was combined with the future year (2031) traffic data to allow a comparison between the baseline results to be made for the scenario where the Eastern Access Option is progressed. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in **Table 9.13**.

Table 9.13 – Eastern Access Options - 2031 Baseline + Construction Development – Flows and Impact

Site ID	Survey Location	Cars & LGVs	HGV	Total Traffic	% Increase Cars & LGVs	% Increase HGV	% Increase Total Traffic
1	C1136 Eastern Access Option Site access	93	168	261	182.7%	839.6%	414.2%
2	C1136 south of A837 junction	83	164	247	264.4%	1,035.5%	564.8%
3	A837 Invercassley	225	278	503	36.4%	117.1%	71.7%
4	A837 Oykel Bridge	235	19	254	0.0%	0.0%	0.0%
5	A839 between the A837 and A836	309	159	467	24.1%	1,704.9%	81.6%
6	A836 west of Lairg	1,895	315	2,210	1.9%	90.9%	9.2%
7	A839 between the A9 and A836	879	44	922	1.4%	10.1%	1.8%
8	A836 between A837 and A839	1,050	236	1,286	2.3%	168.2%	15.4%
9	A836 between the A949 and A837	1,765	269	2,034	1.4%	122.3%	9.2%
10	A836 Ardgay	1,814	295	2,110	1.3%	100.4%	8.9%
11	B9176 south of Dalnavie	1,905	164	2,069	1.3%	0.0%	1.2%
12	A9 between Poles and The Mound	4,337	1,007	5,344	0.3%	0.4%	0.3%
13	A9 between the A949 and B9168	3,464	911	4,375	0.3%	0.4%	0.4%
14	A9 south of A949 junction	6,571	995	7,565	0.2%	0.4%	0.2%

Please note minor variances due to rounding may occur.

Where road links show no increase, this is due to those road links not being used during the peak month of construction activity or not being used due to the access option being considered.

- 9.10.21 The total traffic movements are predicted to increase by a maximum of 564.8% on the C1136 south of the A837 junction, which would be used by all construction traffic should the Eastern Access Option be progressed. Whilst this increase could be considered significant, it is caused by the low level of vehicles using the road. To put the increase into perspective, the road will see an additional 210 total vehicle movements per day or approximately 18 vehicle movements per hour over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.
- 9.10.22 **Table 9.13** shows that highest HGV traffic movements increase will also occur on the C1136 south of the A837 junction, which would be used by all construction traffic should the Eastern Access Option be progressed. At this location it is estimated to increase by 1,035.5%. Whilst this increase could be considered statistically high, this is due to the extremely low level of HGVs currently using this road (13 HGVs per day). To put the increase into perspective, the road will see an additional 150 HGV movements per day or on average of 12 HGV movements per hour, over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.

- 9.10.23 A review of existing theoretical road capacity has been undertaken using The NESAs Manual²⁰, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the Study Area. The results are summarised in **Table 9.14**.

Table 9.14 – Eastern Access Option - 2031 Peak Traffic Flow Capacity Review

Site ID	Survey Location	2031 Baseline Flow	2031 Base + Development Flows	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C1136 Eastern Access Option Site access	51	261	3,360	92.2%
2	C1136 south of A837 junction	37	247	3,360	92.6%
3	A837 Invercassley	293	503	19,200	97.4%
4	A837 Oykel Bridge	254	254	3,360	92.4%
5	A839 between the A837 and A836	257	467	21,600	97.8%
6	A836 west of Lairg	2,024	2,210	21,600	89.8%
7	A839 between the A9 and A836	906	922	21,600	95.7%
8	A836 between A837 and A839	1,114	1,286	19,200	93.3%
9	A836 between the A949 and A837	1,862	2,034	19,200	89.4%
10	A836 Ardgay	1,938	2,110	19,200	89.0%
11	B9176 south of Dalnavie	2,045	2,069	21,600	90.4%
12	A9 between Poles and The Mound	5,328	5,344	28,800	81.4%
13	A9 between the A949 and B9168	4,359	4,375	28,800	84.8%
14	A9 south of A949 junction	7,549	7,565	28,800	73.7%

Please note minor variances due to rounding may occur.

- 9.10.24 The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.
- 9.10.25 Based on the information provided in **Table 9.13** for the Eastern Access Option, and in accordance with the IEMA Guidelines Rules 1 and 2, the following receptors have been taken forward for detailed assessment:
- C1136 Users (High Sensitivity);
 - A837 Users (Medium Sensitivity);
 - A839 Users West of Lairg (Medium Sensitivity);
 - A836 Users (Medium Sensitivity);
 - Residents along C1136 (Negligible Sensitivity);
 - Residents along A837 (Negligible Sensitivity);
 - Residents along A839 West of Lairg (Negligible Sensitivity);
 - Residents along A836 (Negligible Sensitivity);
 - Rosehall & Invercassley Residents (Low Sensitivity);
 - Lairg Residents (Medium Sensitivity);
 - Bonar Bridge Residents (Medium Sensitivity);
 - Pittentrail Residents (Low Sensitivity);
 - Ardgay Residents (Low Sensitivity); and
 - Core Path / Path Network (High Sensitivity).
- 9.10.26 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Criteria for Assessing Significance. **Table 9.15** summarises the significance of the effect on the receptors for the construction phase.
- 9.10.27 Note, for the purposes of undertaking the assessment, where both the users of a road and residents in the vicinity of the road require to be assessed, these have been done together to avoid repetition. In this scenario, the higher of the two sensitivities has been used for the assessment. Professional judgement is also applied to take account of all factors at each location, which can move the classification both up and down.

²⁰ Department for Transport (2013), Design Manual for Roads and Bridges, Volume 15, Part 5 "The NESAs Manual".

Table 9.15 – Overall Construction Phase Effects Assessment – Eastern Access Option

Receptor	Severance	Driver Delay	Pedestrian Delay	Non-motorised user Amenity	Fear & Intimidation	Road Safety	Large Loads
C1136 Users / Residents	Major	Moderate / Minor	Moderate / Minor	Major	Major	Moderate / Minor	Major
A837 Users / Residents	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
A839 Users / Residents West of Lairg	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
A836 Users / Residents	Minor	Minor	Minor	Moderate	Minor	Minor	N/A
Rosehall & Invercassley Residents	Minor	Minor	Minor	Minor	Minor	Minor	Major
Lairg Residents	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
Bonar Bridge Residents	Minor	Minor	Minor	Moderate	Minor	Minor	N/A
Pittentrail Residents	Minor / Negligible	Minor / Negligible	Minor / Negligible	Minor	Minor / Negligible	Minor	Major
Ardgay Residents	Minor	Minor	Minor	Minor	Minor	Minor	N/A
Core Path / Path Network	Major / Moderate	N/A	Major / Moderate	Major / Moderate	Major	Minor	Major

9.10.28 The assessment of significance for the proposed Eastern Access Option suggests that the following receptors are considered likely to experience significant effects in accordance with the EIA Regulations, prior to the application of mitigation measures:

- C1136 Users;
- A837 Users;
- A839 Users West of Lairg;
- A836 Users;
- Residents along C1136;
- Residents along A837;
- Residents along A839 West of Lairg;
- Residents along A836;
- Rosehall & Invercassley Residents;
- Lairg Residents;
- Bonar Bridge Residents;
- Pittentrail Residents; and
- Core Path / Path Network.

9.10.29 It should be noted that the impacts relate solely to the peak of construction activities and that the construction phase is short lived (18 months) and the effects are temporary in nature. Whilst it is acknowledged that other months within the construction programme may cause significant effects, these would be less than those assessed and for which mitigation measures have been proposed.

Predicted Construction Effects – Western Access Option

9.10.30 The peak month (month seven) traffic data was combined with the future year (2031) traffic data to allow a comparison between the baseline results to be made, for the scenario where the Western Access Option is progressed. The increase in traffic volumes is illustrated in percentage increases for each class of vehicle. This is illustrated in **Table 9.16**.

Table 9.16 – Western Access Options - 2031 Baseline + Construction Development – Flows and Impact

Site ID	Survey Location	Cars & LGVs	HGV	Total Traffic	% Increase Cars & LGVs	% Increase HGV	% Increase Total Traffic
1	C1136 Eastern Access Option Site access	33	18	51	0.0%	0.0%	0.0%
2	C1136 south of A837 junction	23	14	37	0.0%	0.0%	0.0%
3	A837 Invercassley	225	276	501	36.4%	115.5%	71.0%
4	A837 Oykel Bridge	295	167	462	25.5%	791.6%	81.9%
5	A839 between the A837 and A836	309	157	465	24.1%	1,682.2%	80.8%
6	A836 west of Lairg	1,895	313	2,208	1.9%	89.7%	9.1%
7	A839 between the A9 and A836	879	44	922	1.4%	10.1%	1.8%
8	A836 between A837 and A839	1,050	232	1,282	2.3%	164.0%	15.1%
9	A836 between the A949 and A837	1,765	265	2,030	1.4%	119.3%	9.0%
10	A836 Ardgay	1,814	292	2,106	1.3%	97.9%	8.7%
11	B9176 south of Dalnavie	1,905	164	2,069	1.3%	0.0%	1.2%
12	A9 between Poles and The Mound	4,337	1,007	5,344	0.3%	0.4%	0.3%
13	A9 between the A949 and B9168	3,464	911	4,375	0.3%	0.4%	0.4%
14	A9 south of A949 junction	6,571	995	7,565	0.2%	0.4%	0.2%

Please note minor variances due to rounding may occur.

Where road links show no increase, this is due to those road links not being used during the peak month of construction activity or not being used due to the access option being considered.

- 9.10.31 The total traffic movements are predicted to increase by a maximum of 81.9% on the A837 at Oykel Bridge, which would be used by all construction traffic should the Western Access Option be progressed. Whilst this increase could be considered significant, it is caused by the low level of vehicles using the road. To put the increase into perspective, the road will see an additional 208 total vehicle movements per day or approximately 16 vehicle movements per hour over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows.
- 9.10.32 It is also assumed that the total traffic increase on Oykel Bridge Road (U3581) that leads through to the Site should the Western Access Option be progressed will be significantly in excess of 100% for total traffic due to the extremely low levels of existing traffic using it.
- 9.10.33 **Table 9.16** shows that highest HGV traffic movements increase will occur on the A839 between the A837 and A836, which would be used by a significant number of HGV traffic associated with the movement of bulk materials. At this location it is estimated to increase by 1,682.2%. Whilst this increase could be considered statistically high, this is due to the relatively low level of HGVs currently using this road (nine HGVs per day). To put the increase into perspective, the road will see an additional 148 HGV movements per day or on average of 12 HGV movements per hour, over the course of a typical 12-hour shift. This is not considered significant in terms of overall traffic flows
- 9.10.34 Similar to the total traffic increase, it is assumed that the HGV increase on Oykel Bridge Road (U3581) that leads through to the Site should the Western Access Option be progressed will be significantly in excess of 100% for HGV traffic movements due to the extremely low levels of existing HGV traffic using it.
- 9.10.35 A review of existing theoretical road capacity has been undertaken using The NESA Manual ²¹, formerly part of the Design Manual for Roads and Bridges, Volume 15, Part 5. The theoretical road capacity has been estimated for each of the road links for a 12-hour period that makes up the Study Area. The results are summarised in **Table 9.17**.

Table 9.17 – Western Access Option - 2031 Peak Traffic Flow Capacity Review

Site ID	Survey Location	2031 Baseline Flow	2031 Base + Development Flows	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C1136 Eastern Access Option Site access	51	51	3,360	98.5%
2	C1136 south of A837 junction	37	37	3,360	98.9%
3	A837 Invercassley	293	501	19,200	97.4%
4	A837 Oykel Bridge	254	462	3,360	86.2%
5	A839 between the A837 and A836	257	465	21,600	97.8%
6	A836 west of Lairg	2,024	2,208	21,600	89.8%
7	A839 between the A9 and A836	906	922	21,600	95.7%
8	A836 between A837 and A839	1,114	1,282	19,200	93.3%
9	A836 between the A949 and A837	1,862	2,030	19,200	89.4%
10	A836 Ardgay	1,938	2,106	19,200	89.0%
11	B9176 south of Dalnavie	2,045	2,069	21,600	90.4%
12	A9 between Poles and The Mound	5,328	5,344	28,800	81.4%
13	A9 between the A949 and B9168	4,359	4,375	28,800	84.8%
14	A9 south of A949 junction	7,549	7,565	28,800	73.7%

Please note minor variances due to rounding may occur.

- 9.10.36 The results indicate there are no road capacity issues with the addition of construction traffic associated with the Proposed Development and significant spare capacity exists within the trunk and local road network to accommodate all construction phase traffic.
- 9.10.37 Based on the information provided in **Table 9.16** for the Western Access Option, and in accordance with the IEMA Guidelines Rules 1 and 2, the following receptors have been taken forward for detailed assessment:
- Oykel Bridge Road (U3581) Users (High Sensitivity);
 - A837 Users (Medium Sensitivity);
 - A839 Users West of Lairg (Medium Sensitivity);
 - A836 Users (Medium Sensitivity);
 - Residents along Oykel Bridge Road (U3581) (Negligible Sensitivity);
 - Residents along A837 (Negligible Sensitivity);

²¹ Department for Transport (2013), Design Manual for Roads and Bridges, Volume 15, Part 5 "The NESA Manual".

- Residents along A839 West of Lairg (Negligible Sensitivity);
- Residents along A836 (Negligible Sensitivity);
- Rosehall & Invercassley Residents (Low Sensitivity);
- Lairg Residents (Medium Sensitivity);
- Bonar Bridge Residents (Medium Sensitivity);
- Pittentrail Residents (Low Sensitivity);
- Ardgay Residents (Low Sensitivity); and
- Core Path / Path Network (High Sensitivity).

9.10.38 The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Criteria for Assessing Significance. **Table 9.18** summarises the significance of the effect on the receptors for the construction phase.

9.10.39 Note, for the purposes of undertaking the assessment, where both the users of a road and residents in the vicinity of the road require to be assessed, these have been done together to avoid repetition. When the higher of the two sensitivities has been used for the assessment. Professional judgement is also applied to take account of all factors at each location, which can move the classification both up and down.

Table 9.18 – Overall Construction Phase Effects Assessment – Western Access Option

Receptor	Severance	Driver Delay	Pedestrian Delay	Non-motorised user Amenities	Fear & Intimidation	Road Safety	Large Loads
Oykel Bridge Road (U3581) Users / Residents	Major	Moderate / Minor	Moderate / Minor	Major	Major	Moderate / Minor	Major
A837 Users / Residents	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
A839 Users / Residents West of Lairg	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
A836 Users / Residents	Minor	Minor	Minor	Moderate	Minor	Minor	N/A
Rosehall & Invercassley Residents	Minor	Minor	Minor	Minor	Minor	Minor	Major
Lairg Residents	Moderate	Minor	Minor	Moderate	Moderate	Minor	Major
Bonar Bridge Residents	Minor	Minor	Minor	Moderate	Minor	Minor	N/A
Pittentrail Residents	Minor / Negligible	Minor / Negligible	Minor / Negligible	Minor	Minor / Negligible	Minor	Major
Ardgay Residents	Minor	Minor	Minor	Minor	Minor	Minor	N/A
Core Path / Path Network	Major / Moderate	N/A	Major / Moderate	Major / Moderate	Major	Minor	Major

9.10.40 The assessment of significance for the proposed Western Access Option suggests that the following receptors are considered likely to experience significant effects in accordance with the EIA Regulations, prior to the application of mitigation measures:

- Oykel Bridge Road (U3581) Users;
- A837 Users;
- A839 Users West of Lairg;
- A836 Users;
- Residents along Oykel Bridge Road (U3581);
- Residents along A837;
- Residents along A839 West of Lairg;
- Residents along A836;
- Rosehall & Invercassley Residents;
- Lairg Residents;
- Bonar Bridge Residents;
- Pittentrail Residents; and
- Core Path / Path Network.

9.10.41 It should be noted that the impacts relate solely to the peak of construction activities and that the construction phase is short lived (18 months) and the effects are temporary in nature. Whilst it is acknowledged that other months within the construction programme may cause significant effects, these would be less than those assessed and for which mitigation measures have been proposed.

9.11 Additional Mitigation

Construction Traffic Management Plan (CTMP)

9.11.1 The following measures will be implemented during the construction phase through the CTMP, secured via a deemed planning permission condition:

- Agree AIL route modifications and improvements with THC, TS, and other relevant stakeholders. Works which will be required to facilitate turbine deliveries are outlined in the RSR presented in **Technical Appendix 9.1** (EIA Report, Volume 4);
- Where possible, the detailed design process will minimise the volume of material to be imported to Site to help reduce HGV numbers;
- A Staff Travel Plan, including transport modes to and from the worksite (including pick up and drop off times);
- A Transport Management Plan for AIL deliveries;
- All materials delivery lorries (dry materials) should be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures should be established to ensure the highest standards are maintained to prevent construction vehicles from carrying mud and debris onto the carriageway;
- Wheel cleaning facilities may be established at the Site entrance, depending on the views of THC and TS;
- Normal Site working hours will be limited to between 0700 and 1900 Monday to Friday and 0700 and 1300 on Saturdays though component delivery and turbine erection may take place outside these hours i.e. depending on when police escort is available;
- Appropriate traffic management measures will be put in place on the A837 and either the C1136 or Oykel Bridge Road (U3581), depending on the selected access location, to avoid conflict with general traffic, subject to the agreement of THC. Typical measures will include HGV turning and crossing signs and / or banksmen at the Site access and warning signs;
- Provide construction updates on the project website, social media feeds, and a newsletter to be distributed to residents within an agreed distance of the Site;
- Adoption of a voluntary reduced speed limits, for example on the A837 and either the C1136 or Oykel Bridge Road (U3581), depending on the selected access location and at other locations to be agreed with THC;
- All drivers will be required to attend an induction to include:
 - A toolbox talk safety briefing;
 - The need for appropriate care and speed control;
 - A briefing on driver speed reduction agreements (to slow Site traffic at sensitive locations through the villages); and
 - Identification of the required access routes and the controls to ensure no departure from these routes.

Off-site Mitigation

9.11.2 As part of the CTMP which will be provided post consent and secured by condition, an agreement to cover the cost of abnormal wear on the local road network will be required by THC. Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route will be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline will inform any change in the road condition during the construction phase. Any necessary repairs will be coordinated with THC's roads team. Any damage caused by traffic associated with the Proposed Development during the construction phase that would be hazardous to public traffic will be repaired immediately.

9.11.3 Damage to road infrastructure caused directly by construction traffic will be repaired and street furniture that is removed on a temporary basis will be fully reinstated.

9.11.4 There will be a regular road review, and any debris and mud will be removed from the carriageway using an on-site road sweeper to ensure road safety for all road users.

Specific AIL Mitigation

9.11.5 There are a number of traffic management measures that can help reduce the effect of abnormal load convoys. All AIL deliveries will be undertaken at appropriate times (to be discussed and agreed with THC, TS, and Police Scotland) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys would travel in the early morning periods, before peak times while general construction traffic would generally avoid the morning and evening peak periods.

- 9.11.6 The majority of potential conflicts between construction traffic and other road users will occur with abnormal load traffic. General construction traffic is not likely to come into conflict with other road users as the vehicles are smaller and road users are generally more accustomed to them.
- 9.11.7 Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances.
- On sections of single carriageway road or narrow road sections, for example on the A837 and either the C1136 or Oykel Bridge Road (U3581);
 - At locations where there are significant changes in the horizontal alignment of the carriageway, requiring the loads to use the full carriageway width;
 - Where traffic turns at a road junctions, requiring other traffic to be restrained on other approach arms; and
 - In locations where high speeds of general traffic are predicted.
- 9.11.8 Advance warning signs will be installed on the approaches to the affected road network. Information signage could be installed to help improve driver information and allow other road users to consider alternative routes or times for their journey (where such options exist).
- 9.11.9 The location and numbers of signs will be agreed post consent and would form part of the wider traffic management proposals for the Proposed Development.
- 9.11.10 Information on the wind turbine convoys will be provided to local media outlets such as local papers and local radio to help assist the public. Information will relate to expected vehicle movements from the port of entry through to the Site access. This will assist residents becoming aware of the convoy movements and may help reduce any potential conflicts.

AIL Transport Management Plan

- 9.11.11 An AIL Transport Management Plan will be prepared to cater for all movements to and from the Site. This will include:
- Procedures for liaising with the emergency services to ensure that police, fire and ambulance vehicles are not impeded by the loads. This is normally undertaken by informing the emergency services of delivery times and dates, and agreeing communication protocols and lay over areas to allow overtaking;
 - A diary of proposed delivery movements to liaise with the communities to avoid key dates such as local events;
 - A protocol for working with local businesses to ensure the construction traffic does not interfere with deliveries or normal business traffic; and
 - Proposals to establish a construction liaison group to ensure the smooth management of the project / public interface with the applicant, the construction contractors, the local community, and if appropriate, the police forming the committee. This committee would form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

Public Information

- 9.11.12 Information on the wind turbine convoys will be provided to local media outlets such as local papers and local radio to help assist the public.
- 9.11.13 Information will relate to expected vehicle movements from the PoE through to the Site access. This will assist residents in understanding the timing of the convoy movements and may help reduce any potential conflicts.

Convoy System

- 9.11.14 A police escort will be required to facilitate the delivery of the predicted AILs. The police escort will be further supplemented by a civilian pilot car to assist with the escort duty. It is proposed that an advance escort will warn oncoming vehicles ahead of the convoy, with one escort staying with the convoy at all times. The escorts and convoy will remain in radio contact at all times where possible.
- 9.11.15 The AIL convoys will be no more than three AILs vehicles long, or as advised by the police, to permit safe transit along the delivery route, and to allow limited overtaking opportunities for following traffic where it is safe to do so.
- 9.11.16 The times in which the convoys will travel will be agreed with Police Scotland who have sole discretion on when loads can be transported.

Staff Travel Plan

9.11.17 A Staff Travel Plan will be deployed where necessary, to manage the arrival and departure profile of staff and to encourage sustainable modes of transport, especially car-sharing. A package of measures could include:

- Appointment of a Travel Plan Coordinator (TPC);
- Provision of public transport information;
- Mini-bus service for transport of Site staff;
- Promotion of a car sharing scheme;
- Car parking management; and
- Restrictions on parking, for example on the public road network and verges in the vicinity of the Site entrance.

Outdoor Access Management Plan (OAMP)

9.11.18 Within the Site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of Core Paths / paths, cycle routes and public roads. An Outdoor Access Management Plan (OAMP) will be developed and secured via a planning condition.

9.11.19 Users of paths and Core Paths etc. will be separated from construction traffic wherever possible. Crossing points will be provided where required, with path users having right of way and temporary diversions will be provided where necessary. Appropriate Traffic Signs Manual Chapter 8 compliant temporary road signage will be provided to assist at these crossings for the benefit of all users.

9.11.20 The Contractor will ensure that speed limits are always adhered to by their drivers and associated subcontractors. This is particularly important within close proximity to the forest paths and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.

9.11.21 Signage will be installed on the Site exits that makes drivers aware of local speed limits and reminding drivers of the potential presence of pedestrians and cyclists in the area. This will also be emphasised in the weekly toolbox talks.

9.11.22 A scoping response has been received from The British Horse Society (BHS) and consideration has been given to measures implemented on similar schemes as part of the Proposed Development. These measures are predominantly focused around the interactions between HGV traffic and horses. Horses are normally nervous of large vehicles, particularly when they do not often meet them. Horses are flight animals and will run away in panic if really frightened. Riders will do all they can to prevent this but, should it happen, it could cause a serious accident for other road users, as well as for the horse and rider.

9.11.23 The main factors causing fear in horses in this situation are:

- something approaching them, which is unfamiliar and intimidating;
- a large moving object, especially if it is noisy;
- lack of space between the horse and the vehicle;
- the sound of air brakes; and
- anxiety on the part of the rider.

9.11.24 The BHS has recommended the following actions that will be included in the Site training for all HGV staff:

- on seeing riders approaching, drivers must slow down and stop, minimising the sound of air brakes, if possible;
- if the horse still shows signs of nervousness while approaching the vehicle, the engine should be shut down (if it is safe to do so);
- the vehicle should not move off until the riders are well clear of the back of the HGV;
- if drivers are wishing to overtake riders, please approach slowly or even stop in order to give riders time to find a gateway or lay by where they can take refuge and create sufficient space between the horse and the vehicle. Because of the position of their eyes, horses are very aware of things coming up behind them; and
- all drivers delivering to the Site must be patient. Riders will be doing their best to reassure their horses while often feeling a high degree of anxiety themselves.

9.12 Residual Effects

- 9.12.1 Following the implementation of a comprehensive CTMP, together with on-site route signage and an OAMP, all effects will be **minor** and not significant. The traffic effects are transitory in nature and appropriate mitigation measures are proposed to reduce the potential impacts. No long-term detrimental transport or access issues are associated with the construction phase of the Proposed Development.

9.13 Cumulative Assessment

- 9.13.1 As detailed in **Technical Appendix 9.1** (EIA Report, Volume 4) and **Section 9.6**, there are four consented onshore wind farms, which could potentially impact the roads within the Study Area in addition to the Proposed Development, namely Strath Oykel, Garvary, Creag Riabhach Extension and Sallachy.
- 9.13.2 The peak traffic flows for the four schemes were obtained from their respective planning application documents and then compared to the future baseline (2031). **Table 9.19** to **Table 9.21** provides the combined sensitivity review for the Eastern Access Option, while **Table 9.22** and **Table 9.24** provide it for the Western Access Option.

Table 9.19 – Eastern Access Option, Combined Scheme Sensitivity Review Peak Traffic Summary

Site ID	Survey Location	Proposed Development		Strath Oykel Wind Farm		Garvary Wind Farm		Creag Riabhach Wind Farm Extension		Sallachy Wind Farm	
		Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs
1	C1136 Eastern Access Option Site access	60	150	43	96	0	0	0	0	0	0
2	C1136 south of A837 junction	60	150	43	96	0	0	0	0	0	0
3	A837 Invercassley	60	150	43	96	0	0	0	0	0	0
4	A837 Oykel Bridge	0	0	0	0	0	0	0	0	0	0
5	A839 between the A837 and A836	60	150	43	96	0	0	0	0	0	0
6	A836 west of Lairg	36	150	11	22	15	0	16	6	24	50
7	A839 between the A9 and A836	12	4	0	22	4	0	6	4	24	2
8	A836 between A837 and A839	24	148	21	74	62	38	10	6	24	50
9	A836 between the A949 and A837	24	148	21	74	46	38	10	6	24	50
10	A836 Ardgay	24	148	0	74	46	38	0	6	12	50
11	B9176 south of Dalnavie	24	0	0	2	15	2	0	0	0	0
12	A9 between Poles and The Mound	12	4	0	22	0	0	0	4	0	2
13	A9 between the A949 and B9168	12	4	0	22	0	0	0	4	0	2
14	A9 south of A949 junction	12	4	0	22	0	0	0	4	0	2

Please note minor variances due to rounding may occur.

Table 9.20 – Eastern Access Option, 2031 Future Baseline Combined Scheme – Traffic Impact Summary

Site ID	Survey Location	Cars & LGVs	HGV	Total Traffic	% Increase Cars & LGVs	% Increase HGV	% Increase Total Traffic
1	C1136 Eastern Access Option Site access	136	264	400	313.7%	1,377.0%	688.4%
2	C1136 south of A837 junction	126	260	386	453.9%	1,698.3%	938.7%
3	A837 Invercassley	268	374	642	62.5%	192.0%	119.1%
4	A837 Oykel Bridge	235	19	254	0.0%	0.0%	0.0%
5	A839 between the A837 and A836	352	255	606	41.4%	2,796.0%	135.6%
6	A836 west of Lairg	1,961	393	2,354	5.5%	138.2%	16.3%
7	A839 between the A9 and A836	913	72	984	5.3%	80.8%	8.6%
8	A836 between A837 and A839	1,167	404	1,571	13.7%	359.2%	41.0%
9	A836 between the A949 and A837	1,866	437	2,303	7.2%	261.2%	23.7%
10	A836 Ardgay	1,872	463	2,336	4.6%	214.4%	20.5%
11	B9176 south of Dalnavie	1,920	168	2,088	2.1%	2.4%	2.1%
12	A9 between Poles and The Mound	4,337	1,035	5,372	0.3%	3.2%	0.8%
13	A9 between the A949 and B9168	3,464	939	4,403	0.3%	3.5%	1.0%
14	A9 south of A949 junction	6,571	1,023	7,593	0.2%	3.2%	0.6%

Please note minor variances due to rounding may occur.

Table 9.21 – Eastern Access Option, Combined Scheme – 2031 Daily Traffic (12hr) Capacity Review Summary

Site ID	Survey Location	2031 Baseline Flow	2031 Base + Development + Committed Developments	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C1136 Eastern Access Option Site access	51	400	3,360	88.1%
2	C1136 south of A837 junction	37	386	3,360	88.5%
3	A837 Invercassley	293	642	19,200	96.7%
4	A837 Oykel Bridge	254	254	3,360	92.4%
5	A839 between the A837 and A836	257	606	21,600	97.2%
6	A836 west of Lairg	2,024	2,354	21,600	89.1%
7	A839 between the A9 and A836	906	984	21,600	95.4%
8	A836 between A837 and A839	1,114	1,571	19,200	91.8%
9	A836 between the A949 and A837	1,862	2,303	19,200	88.0%
10	A836 Ardgay	1,938	2,336	19,200	87.8%
11	B9176 south of Dalnavie	2,045	2,088	21,600	90.3%
12	A9 between Poles and The Mound	5,328	5,372	28,800	81.3%
13	A9 between the A949 and B9168	4,359	4,403	28,800	84.7%
14	A9 south of A949 junction	7,549	7,593	28,800	73.6%

Please note minor variances due to rounding may occur.

9.13.3 **Table 9.20** shows that there are increases in total and HGV flows when considering all schemes being constructed concurrently compared to the percentage increases associated with the Proposed Development being constructed alone (see **Table 9.13**).

9.13.4 Based on the road capacity results shown in **Table 9.21** and comparing these to the capacity results for the Proposed Development only in **Table 9.14**, there would still be no road capacity issues should the Proposed Development and other schemes be constructed at the same time, with ample spare capacity within the Study Area road network to accommodate construction phase traffic.

Table 9.22 – Western Access Option, Combined Scheme Sensitivity Review Peak Traffic Summary

Site ID	Survey Location	Proposed Development		Strath Oykel Wind Farm		Garvary Wind Farm		Creag Riabhach Wind Farm Extension		Sallachy Wind Farm	
		Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs	Cars & LGVs	HGVs
1	C1136 Eastern Access Option Site access	0	0	0	96	0	0	0	0	0	0
2	C1136 south of A837 junction	0	0	0	96	0	0	0	0	0	0
3	A837 Invercassley	60	148	60	96	0	0	0	0	0	0
4	A837 Oykel Bridge	60	148	60	0	0	0	0	0	0	0
5	A839 between the A837 and A836	60	148	60	96	0	0	0	0	0	0
6	A836 west of Lairg	36	148	36	22	15	0	16	6	24	50
7	A839 between the A9 and A836	12	4	12	22	4	0	6	4	24	2
8	A836 between A837 and A839	24	144	24	74	62	38	10	6	24	50
9	A836 between the A949 and A837	24	144	24	74	46	38	10	6	24	50
10	A836 Ardgay	24	144	24	74	46	38	0	6	12	50
11	B9176 south of Dalnavie	24	0	24	2	15	2	0	0	0	0
12	A9 between Poles and The Mound	12	4	12	22	0	0	0	4	0	2
13	A9 between the A949 and B9168	12	4	12	22	0	0	0	4	0	2
14	A9 south of A949 junction	12	4	12	22	0	0	0	4	0	2

Please note minor variances due to rounding may occur.

Table 9.23 – Western Access Option, 2031 Future Baseline Combined Scheme – Traffic Impact Summary

Site ID	Survey Location	Cars & LGVs	HGV	Total Traffic	% Increase Cars & LGVs	% Increase HGV	% Increase Total Traffic
1	C1136 Eastern Access Option Site access	76	114	190	131.0%	537.4%	274.2%
2	C1136 south of A837 junction	66	110	176	189.5%	662.7%	373.9%
3	A837 Invercassley	268	372	640	62.5%	190.5%	118.5%
4	A837 Oykel Bridge	295	167	462	25.5%	791.6%	81.9%
5	A839 between the A837 and A836	352	253	604	41.4%	2,773.3%	134.8%
6	A836 west of Lairg	1,961	391	2,352	5.5%	137.0%	16.2%
7	A839 between the A9 and A836	913	72	984	5.3%	80.8%	8.6%
8	A836 between A837 and A839	1,167	400	1,567	13.7%	355.0%	40.7%
9	A836 between the A949 and A837	1,866	433	2,299	7.2%	258.2%	23.5%
10	A836 Ardgay	1,872	460	2,332	4.6%	211.9%	20.3%
11	B9176 south of Dalnavie	1,920	168	2,088	2.1%	2.4%	2.1%
12	A9 between Poles and The Mound	4,337	1,035	5,372	0.3%	3.2%	0.8%
13	A9 between the A949 and B9168	3,464	939	4,403	0.3%	3.5%	1.0%
14	A9 south of A949 junction	6,571	1,023	7,593	0.2%	3.2%	0.6%

Please note minor variances due to rounding may occur.

Table 9.24 – Western Access Option, Combined Scheme – 2031 Daily Traffic (12hr) Capacity Review Summary

Site ID	Survey Location	2031 Baseline Flow	2031 Base + Development + Committed Developments	Theoretical Road Capacity (12hr)	Spare Road Capacity %
1	C1136 Eastern Access Option Site access	51	190	3,360	94.35%
2	C1136 south of A837 junction	37	176	3,360	94.76%
3	A837 Invercassley	293	640	19,200	96.67%
4	A837 Oykel Bridge	254	462	3,360	86.25%
5	A839 between the A837 and A836	257	604	21,600	97.20%
6	A836 west of Lairg	2,024	2,352	21,600	89.11%
7	A839 between the A9 and A836	906	984	21,600	95.44%
8	A836 between A837 and A839	1,114	1,567	19,200	91.84%
9	A836 between the A949 and A837	1,862	2,299	19,200	88.02%
10	A836 Ardgay	1,938	2,332	19,200	87.85%
11	B9176 south of Dalnavie	2,045	2,088	21,600	90.34%
12	A9 between Poles and The Mound	5,328	5,372	28,800	81.35%
13	A9 between the A949 and B9168	4,359	4,403	28,800	84.71%
14	A9 south of A949 junction	7,549	7,593	28,800	73.63%

Please note minor variances due to rounding may occur.

- 9.13.5 **Table 9.23** shows that there are increases in total and HGV flows when considering all schemes being constructed concurrently compared to the percentage increases associated with the Proposed Development being constructed alone (see **Table 9.15**). This also includes an increase on the C1136 despite this not being used for the Proposed Development but would still be used by Strath Oykel Wind Farm.
- 9.13.6 Based on the road capacity results shown in **Table 9.24** and comparing these to the capacity results for the Proposed Development only in **Table 9.16**, there would still be no road capacity issues should the Proposed Development and other schemes be constructed at the same time, with ample spare capacity within the Study Area road network to accommodate construction phase traffic.
- 9.13.7 In both scenarios, cumulative traffic will dilute the impact of the Proposed Development traffic on the Study Area and as such no increase in the significance of effect is anticipated. Furthermore, it is not predicted that the potential traffic flow increases could ever occur within the Study Area for the following reasons:

- It is extremely unlikely that the peak traffic conditions would occur at the same time due to differences in construction programmes, material supplies, and developer resources; and
- All abnormal load deliveries cannot occur at four separate sites on the same day due to restrictions on the numbers of loads moving on the network at the same time set by Police Scotland.

9.13.8 Should the above or any other schemes be consented and constructed at the same time as the Proposed Development, the Applicant would welcome the opportunity to engage with other developers in consultation with THC to ensure appropriate traffic management measures would be implemented to minimise any cumulative impacts. In the unlikely event of all the sites being constructed at the same time it is suggested this would be mitigated through the use of an overarching TMMP for all of the schemes and by introducing a phased delivery plan which would be agreed with THC and Police Scotland.

9.13.9 Furthermore, it is not predicted that the potential traffic flow increases would ever occur on the Study Area, as it is extremely unlikely that the peak traffic conditions will occur at the same time due to differences in construction programmes, material supplies and developer resources. In addition, those schemes already consented will likely begin construction prior to the Proposed Development gaining planning consent.

9.14 Further Survey Requirements and Monitoring

9.14.1 The Site entrance road will be maintained and monitored during the construction phase and operational life of the Proposed Development. With regards to the construction phase, this will be done as part of the CTMP and will involve monitoring the Site access and public road network in the vicinity of the Site to ensure mud and debris from construction activities are not tracked on to the road network. Furthermore, monitoring of the public road network will be undertaken as part of the road conditions surveys, which will likely be required as part of the planning conditions attached to the consent.

9.14.2 During the operational life of the Proposed Development, regular maintenance will be undertaken to keep the Site access track drainage systems fully operational and to ensure there are no run-off issues onto the public road network.

9.15 Summary of Effects

9.15.1 The Proposed Development will lead to increased traffic volumes on a number of roads in the vicinity of the Site during the construction phase. These will be of a temporary timescale and transitory in nature.

9.15.2 Two potential access options for the Proposed Development are currently under consideration, which are as follows and have been included within the assessment:

- Eastern Access Option (joining the Strath Oykel Wind Farm access tracks) from the C1136 via the A837; and
- Western Access Option (joining the Meall Buidhe Wind Farm access tracks) from Oykel Bridge Road (U3581) via the A837.

9.15.3 The peak of construction activity is expected to occur in month seven for the Proposed Development, regardless of which access option is progressed.

9.15.4 In the scenario whereby the Eastern Access Option is progressed, there will be a total of 4,596 vehicle movements per month, which equates to 210 vehicle movements per day, comprising 150 two-way HGV movements and 60 two-way car / LGV movements. This would equate to approximately 18 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.

9.15.5 In the scenario whereby the Western Access Option is progressed, there will be a total of 4,556 vehicle movements, which equates to 208 vehicle movements per day, comprising 148 two-way HGV movements and 60 two-way car / LGV movements. This would equate to approximately 16 two-way total vehicles movements or 12 two-way HGV movements per hour, across a typical 12-hour day, assuming a flat traffic profile i.e. vehicles distributed evenly across the day.

9.15.6 In addition, a review of the theoretical road capacity was undertaken for the Study Area which showed that with the addition of construction traffic associated with the Proposed Development, there was significant spare capacity within the road network.

9.15.7 A combined sensitivity review was undertaken to inform THC of possible issues with other relevant schemes in the area, whose construction traffic would impact the Study Area, should they be constructed concurrently. The review found that there would be more than sufficient spare road capacity to accommodate all schemes being constructed at the same time. It is proposed that any effects of all the sites being constructed at the same time would be mitigated through the use of an overarching TMMP, which can be co-ordinated with THC.

- 9.15.8 With the implementation of appropriate mitigation, **no significant** residual effects are anticipated in respect of traffic and transport issues. The residual effects are all assessed to be minor and will occur during the construction phase only, they are temporary and reversible.
- 9.15.9 Traffic levels during the operational phase of Proposed Development will be up to two vehicles per week for maintenance purposes. Traffic levels during the decommissioning of the Proposed Development are expected to be lower than during the construction phase as some elements are likely be left in situ and others broken up on-site.
- 9.15.10 The movement of AIL traffic will require small scale and temporary remedial works at a number of locations along identified delivery route.
- 9.15.11 As required by any future consent or to address consultation responses to the EIA Report, the Applicant is committed to engaging with the relevant stakeholders to minimise disruption, and to explore delivery routes, timescales and means of delivery of AIL to the Proposed Development.

Table 9.25 – Summary of Significant Effects

Predicted Effects	Significance	Committed Additional Mitigation	Significance of Residual Effect
Construction - Eastern Access Option			
C1136 Users / Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor - Not Significant
A837 Users / Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor - Not Significant
A839 Users / Residents West of Lairg	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
A836 Users / Residents	Moderate - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
Lairg Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
Rosehall & Invercassley Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
Bonar Bridge Residents	Moderate - Significant	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Minor - Not Significant
Pittentrail Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Minor - Not Significant
Core Path / Path Network Users	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor - Not Significant
Construction - Western Access Option			
Oykel Bridge Road (U3581) Users / Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor - Not Significant
A837 Users / Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Minor - Not Significant
A839 Users / Residents West of Lairg	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
A836 Users / Residents	Moderate - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
Lairg Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant
Rosehall & Invercassley Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Minor - Not Significant

Predicted Effects	Significance	Committed Additional Mitigation	Significance of Residual Effect
Bonar Bridge Residents	Moderate - Significant	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Minor - Not Significant
Pittentrail Residents	Major - Significant	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Minor - Not Significant
Core Path / Path Network Users	Major - Significant	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Minor - Not Significant

9.16 Glossary and Abbreviations

Term in Full	Abbreviation	Meaning
Annual Average Daily Traffic	AADT	The average over a full year of the number of vehicles passing a point in the road network each day.
Abnormal Indivisible Load	AIL	A load that cannot be divided into smaller, more manageable parts.
Automatic Traffic Count	ATC	Data used to support transport planning and design.
Balance of Plant	BoP	Contractor responsible for all infrastructure and facilities of a project, excluding the main generating equipment itself.
Construction Environmental Management Plan	CEMP	Document which outlines environmental control measures to mitigate adverse impacts associated with construction activities.
Construction Traffic Management Plan	CTMP	Document which outlines traffic management measures to mitigate adverse impacts associated with construction related traffic.
Department for Transport	DfT	Government Agency
Design Manual for Roads and Bridges	DMRB	Details design criteria relating road and bridges in the UK and NI for the trunk road network.
Energy Consents Unit	ECU	Scottish Government agency that deals with certain energy related planning applications.
Environmental Impact Assessment Report	EIA Report	A document detailing the effects a project would have on the environment.
Electronic Service Delivery for Abnormal Loads	ESDAL	Government Agency for managing abnormal load movements.
Heavy Goods Vehicle	HGV	All goods vehicles > 3.5 tonnes gross maximum weight.
The Institution of Environmental Management and Assessment	IEMA	The Institution of Environmental Management and Assessment
Light Goods Vehicles	LGV / Lights	All commercial vehicles < 3.5 tonnes gross maximum weight
Miles Per Hour	MPH	Unit of measurement of speed.
National Cycle Network	NCN	Designated National Cycle Network Routes within the UK.
National Planning Framework 4	NPF4	National spatial planning strategy for Scotland.
National Road Traffic Forecast	NRTF	Factors used to apply future year growth to traffic flows.
Outdoor Access Management Plan	OAMP	Document which provides information on and management measures for outdoor access during the construction period.
Ordnance Survey	OS	Great Britain's national mapping agency.
Planning Advice Note 75	PAN 75	Document from the Scottish Government that provides guidance on managing the link between land use planning and transportation
Personal Injury Accident	PIA	Traffic accident which is recorded to have resulted in an injury.
Port of Entry	POE	Port from which AILs are to be delivered.
The Highland Council	THC	Local Authority
Travel Plan Coordinator	TPC	Person responsible for updating, promoting and implementing the Travel Plan
Transport Scotland	TS	National transport agency for Scotland, delivering the Scottish Government's vision for transport.
Traffic Management and Monitoring Plan	TTMP	Document which outlines traffic management measures to mitigate adverse impacts associated with construction related traffic for a number of projects.
Trunk Road	T	Strategic road

Chapter 10: Noise

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10 Noise

10.1 Executive Summary

- 10.1.1 This Chapter considers the likely noise effects associated with the construction, operation, and decommissioning of the Proposed Development.
- 10.1.2 The relevant Study Areas and receptors are identified and the baseline noise situation is described with reference to available measurement data.
- 10.1.3 Measured background noise levels are set out for each applicable measurement location for the daytime and night-time, respectively. Noise limits are defined based on background noise data.
- 10.1.4 Construction noise, including construction vehicles on access tracks and public roads with low traffic flows, is assessed with reference to the 'ABC' method described in BS 5228:2009+A1:2014 *Code of practice for noise and vibration control on construction and open sites, Part 1 Noise*, while noise from construction vehicles on public roads with moderate to large baseline traffic flows is assessed using the change in road traffic noise levels as determined using the methods in Calculation of Road Traffic Noise (CRTN). No significant construction noise effects are identified.
- 10.1.5 Operational noise (including cumulative noise from the Proposed Development and other wind farm developments) is assessed with reference to ETSU-R-97 *The Assessment and Rating of Noise from Wind Farms* and the Institute of Acoustics document *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*. No significant operational noise effects are identified.
- 10.1.6 No significant noise effects are identified and therefore no specific mitigation measures are required or proposed. The residual effects are also therefore not significant.

10.2 Introduction

- 10.2.1 This Chapter considers the likely significant effects of noise associated with the construction, operation, and decommissioning of the Proposed Development. The specific objectives of the Chapter are to:
- describe the baseline noise situation;
 - describe the assessment methodology and significance criteria used in completing the impact assessment;
 - describe the potential effects, including direct and cumulative effects;
 - describe the mitigation measures proposed to address likely significant effects; and
 - assess the residual effects remaining following the implementation of mitigation.
- 10.2.2 The assessment has been carried out by Conor Tickner, a Senior Consultant at Hayes McKenzie Partnership Ltd and a Corporate Member of the Institute of Acoustics, with over 10 years' experience conducting environmental noise assessments. The technical reviewer is Rob Shepherd, Director at Hayes McKenzie Partnership Ltd and a Corporate Member of the Institute of Acoustics, with over 20 years' experience conducting wind farm noise assessments.
- 10.2.3 This Chapter is supported by the following figures and technical appendices:
- Volume 3a: Figures
 - **Figure 10.1: Site Layout, Study Areas and Measurement Locations;**
 - **Figure 10.2: Proposed Development Noise Contours; and**
 - **Figure 10.3: Cumulative Noise Contours.**
 - Volume 4: Technical Appendices
 - **Technical Appendix 10.1: Legislation, Policy and Guidance;**
 - **Technical Appendix 10.2: Noise Modelling and Calculations; and**
 - **Technical Appendix 10.3: Baseline Noise Survey.**
- 10.2.4 Figures and technical appendices are referenced in the text where relevant.

10.3 Legislation, Policy and Guidelines

10.3.1 This section identifies the legislation and national and local policy of relevance to the noise assessment. Further details of these documents and their relevance to the assessment can be found in **Technical Appendix 10.1** (EIA Report, Volume 4).

Legislation

- Control of Pollution Act 1974¹; and
- Environmental Protection Act 1990².

National Policy

- National Planning Framework 4³;
- Onshore Wind Policy Statement 2022⁴;
- Planning Advice Note PAN1/2011: Planning and Noise⁵;
- Assessment of Noise: Technical Advice Note⁶;
- Onshore Wind Turbines: Planning Advice⁷; and
- Planning Advice Note PAN50⁸.

Local Policy

- Highland-wide Local Development Plan⁹; and
- Onshore Wind Energy Supplementary Guidance¹⁰.

Guidance

10.3.2 Recognisance has been taken of the following best practice guidelines/guidance etc:

- BS 5228:2009+A1:2014¹¹;
- ETSU-R-97¹²; and
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise¹³.

10.4 Consultation

Table 10.1 summarises the consultation responses received regarding noise and provides information on where and/or how they have been addressed in this assessment.

¹ Control of Pollution Act (1974). Part III, Noise. Available from: <https://www.legislation.gov.uk/ukpga/1974/40> [Accessed on 22/04/2025].

² Environmental Protection Act (1990). Part III, Statutory Nuisances and Clean Air. Available from: <https://www.legislation.gov.uk/ukpga/1990/43/part/III> [Accessed 22/04/2025]

³ Scottish Government (2023). National Planning Framework 4. Available from: <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed on 22/04/2025].

⁴ Scottish Government (2022). Onshore Wind Policy Statement 2022. Available from: <https://www.gov.scot/publications/onshore-wind-policy-statement-2022/> [Accessed on 22/04/2025].

⁵ Scottish Government (2011). Planning Advice Note PAN1/2011: Planning and noise. Available from: <https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/> [Accessed 22/04/2025].

⁶ Scottish Government (2011). Assessment of noise: technical advice note. Available from: <https://www.gov.scot/publications/technical-advice-note-assessment-noise/> [Accessed 22/04/2025].

⁷ Scottish Government (2014). Onshore wind turbines: planning advice. Available from: <https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/> [Accessed 22/04/2025].

⁸ Scottish Government (1996). Planning Advice Note 50: Controlling the environmental effects of surface mineral workings. Available from: <https://www.gov.scot/publications/planning-advice-note-pan-50-controlling-environmental-effects-surface-mineral/> [Accessed 22/04/2025]

⁹ The Highland Council (2012). Highland-wide Local Development Plan. Available at https://www.highland.gov.uk/info/178/development_plans/199/highland-wide_local_development_plan [Accessed 22/04/2025]

¹⁰ The Highland Council (2016). Onshore Wind Energy Supplementary Guidance. Available from: https://www.highland.gov.uk/downloads/file/16949/onshore_wind_energy_supplementary_guidance-nov_2016 [Accessed 22/04/2025].

¹¹ BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, Part 1 Noise. BSI.

¹² Department of Trade and Industry (1996). ETSU-R-97, The Assessment and Rating of Noise from Wind Farms. DTI. Available from: https://assets.publishing.service.gov.uk/media/5a798b42ed915d07d35b655a/ETSU_Full_copy_Searchable_.pdf [Accessed 22/04/2025].

¹³ Institute of Acoustics (IOA) (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise. IOA. ETSU-R-97, 1996. The Assessment and Rating of Noise from Wind Farms. IOA. Available from: <https://www.ioa.org.uk/publications/wind-turbine-noise> [Accessed 22/04/2025].

Table 10.1 – Consultation

Consultee and Date	Consultation Response	Applicant Response
The Highland Council (THC) Pre-Scoping 16/04/2024	Initial consultation was undertaken with THC regarding the proposed noise assessment methodology; including the following main points: – Baseline survey methodology; – Proposed assessment methodology, including methods for setting the Study Area, noise limits, and modelling prediction assumptions; and – Identified receptors and cumulative developments. The received response included the following: <i>"The methodology looks fine. I understand that for other developments, consented limits or predicted levels plus 3dB will be used, whichever is lower. As you have said, our preference is for lower limits of 35dB daytime and 38 dB night time where possible. If daytime limits are increased beyond that the assessment would need to include an argument in terms of the criteria listed in ETSU. These limits would apply to cumulative noise and the available limit applied to Coille Beith.</i> <i>Unfortunately, I'll not be able to attend the installation however, as long as the locations are documented and the assessment includes photographs of installation sites, that shouldn't be an issue. As you say, care will need to be taken to ensure that any site which is being used as a proxy location is representative of other sites in terms of other noise sources such as watercourses.</i> <i>For the cumulative assessment you've mentioned all the known wind farms that I am aware of i.e. existing, consented or in Planning. I don't know if there are any proposals for the sites of the former Caplich and Invercassley applications, but it might be worth checking with Planning.</i> <i>With regard to any financially involved properties, it would be for Planning to agree on that status. If required, limits can be extended to 45dB however, if not then we would prefer not to set limits that are significantly higher than required."</i>	– Baseline survey methodology was adopted based on the response received. – Assessment methodology and assumptions were developed and adopted based on the response received.
THC Response to Scoping September 2024	<u>Operational Noise</u> THC require a noise assessment to be carried out in accordance with ETSU-R-97 with target noise levels of 35 dB L_{A90} (daytime) and 38 dB L_{A90} (night-time) or up to 5 dB above background noise levels during relevant time periods (whichever is higher) at up to 12 ms⁻¹. <u>Cumulative Noise</u> The noise assessment must take into account the potential cumulative effect from any other existing or consented or, in some cases, proposed wind turbine developments, accounting for predicted and consented levels from such developments. Where existing developments have consented limits higher than suggested above, the applicant should agree appropriate limits with the Council's Environmental Health Officer. The assessment should include a map showing all wind farm developments which may have a cumulative impact and all noise sensitive properties including any for which a financial involvement relaxation is being claimed. The assessment should also include the following: – The predicted noise levels from this and each cumulative developments at each noise sensitive receptor location at wind speeds up to 12 ms⁻¹. – The maximum levels based on consented limits from each existing or consented wind farm development at each relevant receptor location. – The cumulative noise levels based on consented and predicted levels at each relevant receptor. The assessment should also include a mitigation scheme to be implemented should noise levels from the development be subsequently found to exceed consented levels.	– Noise assessment conducted in accordance with ETSU-R-97 using target noise levels of 35 dB L_{A90} (daytime) and 38 dB L_{A90} (night-time) or 5 dB above background noise levels. – Cumulative noise levels, including evaluation of the potential for noise limits to be exceeded, are assessed in Section 10.11 for wind speeds up to 12 ms⁻¹. – Cumulative noise levels were further consulted on with THC, with 37 dB or 5 dB above background noise levels agreed to be adopted as cumulative daytime noise limits (see communication dated 11 April 2025). – Predicted noise levels, maximum noise levels, and cumulative noise levels for the Proposed Development and identified cumulative development are outlined in Section 10.8 and Section 10.11. – Individual cumulative development predicted noise levels are given in Technical Appendix 10.2 (EIA Report, Volume 4).

Consultee and Date	Consultation Response	Applicant Response
	<u>Noise Exposure</u> 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. <u>Background Noise Measurements</u> If background noise surveys are required, these should be undertaken in accordance with ETSU-R-97 and the Good Practice Guide. It is recommended that monitoring locations be agreed with the Council's Environmental Health Officer. <u>Amplitude Modulation</u> Research has been carried out in recent years on the phenomenon of amplitude modulation arising from some wind turbine developments. However at this time, the Good Practice guide does not provide definitive Planning guidance on this subject. That being the case, any complaints linked to amplitude modulation would be investigated in terms of the Statutory Nuisance provisions of the Environmental Protection Act 1990. <u>Scoping Response – Construction Noise</u> Given the location, construction noise at the turbines sites is unlikely to be an issue at any noise sensitive properties, however, consideration will need to be given to construction traffic. Planning conditions are not used to control the impact of construction noise as similar powers are available to the Local Authority under Section 60 of the Control of Pollution Act 1974. Generally, people are tolerant of construction noise during typical working hours which are taken to be 8am to 7pm Monday to Friday and 8am to 1pm on Saturdays. Works for which noise is inaudible at the curtilage of any noise sensitive property could still be carried out out-with these times. Regardless of whether a construction noise assessment is required, it is expected that the developer/contractor will employ the best practicable means to reduce the impact of noise from construction activities. The applicant will be required to submit a scheme demonstrating how this will be implemented. Particular attention should be given to the use of tonal reversing alarms and ground compaction plant which are often the most intrusive noise generating elements of a large construction project. <u>Substations and Battery Energy Storage Systems</u> If the application includes a proposal for a sub-station or battery storage site, a separate noise assessment may be required to demonstrate that noise will meet the following standards: – Noise arising from within the operational land of the sub-station, when measured and/or calculated as an LZeq, 5min, in the 100Hz one third octave frequency band must not exceed 30 dB, at noise sensitive premises The Rating Level of noise arising from the use of plant, machinery or equipment installed or operated within the operational land of the sub-station, must not exceed the current background noise levels at noise sensitive premises. The Rating Level should be calculated in accordance with BS 4142: 2014+A1:2019 Methods for rating and assessing industrial and commercial sound.	– Noise exposure is discussed in Section 10.8. – Background noise measurement methodology was agreed with THC. – Amplitude modulation is scoped out of detailed assessment and is discussed in Section 10.8. – A detailed construction assessment is scoped out, see Section 10.8. Specified construction working hours will be adhered to unless otherwise agreed, and are set out in Chapter 2. – Construction traffic is assessed in Section 10.8. – A qualitative assessment of noise from the substation is included Section 10.8. The Proposed Development does not include a Battery Energy Storage System.

Consultee and Date	Consultation Response	Applicant Response
THC Post Scoping April 2025	Further consultation was undertaken with THC regarding the proposed noise assessment methodology, including the following main points: - Derivation of noise limits using Inveroykel Lodge data from Strath Oykel EIA Report¹⁴ for the Doune, Strathoykel, and Inveroykel village areas. - Adopting a lower limiting value for daytime noise limits of 35 dB for the Proposed Development in isolation. - Adopting a lower limiting value for night-time noise limits of 38 dB for the Proposed Development and cumulative assessments. - Adopting a lower limiting value for noise limits of 37 dB for the cumulative noise assessment. - Adopting a lower limiting value for daytime and night-time noise limits of 45 dB for the Proposed Development and cumulative noise levels for financially involved properties. - Defining receptors to be included within the assessment. - Defining cumulative developments to be included within the assessment. THC responded with: <i>"my understanding is that you are seeking advice on whether a cumulative limit of 37dB could be applied for Coillie Beith in conjunction with other developments such as Strath Oykel. I understand that development has been consented with limits at some locations exceeding 35dB already. That being the case, I agree a cumulative limit of 37dB would appear reasonable. The rest of the proposed methodology looks fine."</i>	A daytime cumulative noise limit of 37 dB or 5 dB above background noise levels (whichever is higher) has been adopted, following THC agreement, alongside the other methodological points agreed, including the adoption of noise limits at 38 dB or 5 dB above background noise levels (whichever is higher) at night.

10.5 Assessment Methodology and Significance Criteria

Study Area

Construction Noise Study Area

- 10.5.1 The Study Area for the construction noise assessment comprises all noise-sensitive receptors within 500 m of main construction work areas, including the turbine locations, borrow pits, construction compounds and ancillary installations, and within 300 m of new or modified access tracks (including those consented, via other wind farm applications¹⁵, but not yet built). Nine receptors are found within these areas.

Table 10.2 – Receptor Locations

Receptor ID	Address	Easting, Northing	Distance to Nearest Construction Work Area
CR1	Oape, Ardgay, IV24 3DP	245302, 900726	204 m
CR2	River House, Strathoykel, Ardgay, IV24 3DP	245499, 900883	53 m
CR3	Creagan Cottage, Strathoykel, Ardgay, IV24 3DP	245731, 900906	225 m
CR4	1 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238929, 900418	74 m
CR5	2 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238922, 900410	62 m
CR6	3 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238914, 900398	50 m
CR7	4 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238909, 900391	42 m
CR8	5 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238901, 900380	30 m
CR9	6 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238897, 900373	23 m

- 10.5.2 At noise-sensitive receptor locations outside of the Study Area, construction noise effects from the Proposed Development will be negligible.

¹⁴ Wood, 2022. Chapter 12: Noise. In: Energiekontor UK Ltd, *Strath Oykel Wind Farm Environmental Impact Assessment Report: Volume 1*. Prepared by Wood, April 2022. Available from: https://her.hIGHLAND.gov.uk/api/LibraryLink5WebServiceProxy/FetchResourceFromStub/1-3-1-3-1-0_b6f5fade247f2e7-131310_2e47face1b58853.pdf [Accessed 22/04/2025]

¹⁵ Strath Oykel Wind Farm and Meall Buidhe Wind Farm

Construction Traffic Noise Study Area

- 10.5.3 There is the potential for road traffic noise on public roads to increase due to the addition of noise from construction vehicles associated with the Proposed Development. The properties potentially affected by such changes are those within 50 m of public roads along the Proposed Development access route where a significant change in noise is identified.
- 10.5.4 Where this potential effect is identified, the assessment Study Area has been expanded to identify and include the affected noise-sensitive receptors. Contextual considerations, including the number of affected properties and the magnitude of the noise change is considered, to determine whether such effects are significant.

Operational Noise Study Area

- 10.5.5 The operational noise Study Area comprises the nearest noise-sensitive receptors, which are all dwellings in this case (R10 is both a dwelling and a hotel premises, is assessed as a dwelling as a worst-case assumption). The identified receptors have been selected due to having predicted noise levels from the Proposed Development of no lower than 25 dB, which is 10 dB below the lowest applicable noise limit of 35 dB (the agreed lowest cumulative noise limit is 37 dB, so this selection is worst-case) and are set out in **Table 10.3** and shown in **Figure 10.1** (EIA Report, Volume 3a). Where predicted noise levels from the Proposed Development are below 27 dB, the contribution to cumulative noise levels at such receptors is negligible and those receptors can be excluded from the cumulative noise assessment.

Table 10.3 – Receptor Locations

Receptor ID	Address	Easting, Northing	Distance to Nearest Turbine
R1	Langwell Beag, Scree Road, Ardgay, IV24 3DP	243459, 900708	2.3 km
R2	The Cottage, Langwell, Lairg, IV27 4HE	241582, 901064	2.5 km
R3	Langwell Lodge, Langwell, Lairg, IV27 4HE	241644, 901013	2.5 km
R4	Lubachoinnich, Croik Manse Road, Ardgay, IV24 3 BS	241481, 895426	1.5 km
R5	Lower Brae, Ardgay, IV24 3DP	243682, 901030	2.7 km
R6	Brae, Ardgay, IV24 3DP	243607, 900999	2.7 km
R7	Keepers Cottage, Oykel Bridge Road, Rosehall, IV27 4BQ	239067, 900004	1.8 km
R8	Amat Cottage, Oykel Bridge Road, Rosehall, IV27 4BH	239050, 900057	1.8 km
R9	1 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238929, 900418	2.2 km
R10	2 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238922, 900410	2.2 km
R11	3 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238914, 900398	2.2 km
R12	4 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238909, 900391	2.2 km
R13	5 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238901, 900380	2.2 km
R14	6 Oykel Terrace, Oykel Bridge Road, Rosehall, IV27 4BQ	238897, 900373	2.2 km
R15	Oykel Bridge Hotel, Lairg, IV27 4HE	238465, 900911	2.8 km
R16	Old Schoolhouse, Oykel Bridge, IV27 4HE	237055, 901312	4.0 km
R17	Tuiteam, A837, Lairg, IV27 4HE	243610, 901465	3.1 km
R18	Tutim Cottage, Lairg, IV27 4HE	243754, 901503	3.2 km
R19	Upper Doune, Strathoykel, Ardgay, IV24 3DP	244378, 900753	2.9 km
R20	Wester Doune, Strathoykel, Ardgay, IV24 3DP	244339, 900893	3.0 km
R21	Wester Doune Cottage, Strathoykel, Ardgay, IV24 3DP	244366, 900845	3.0 km
R22	Dr Malone's, Strathoykel, Ardgay, IV24 3DP	244404, 900852	3.0 km
R23	Doune Schoolhouse, Doune, Ardgay, IV24 3DP	244490, 900796	3.0 km
R24	Doune Mills, Strathoykel, Ardgay, IV24 3DP	244633, 900836	3.2 km
R25	Donackgill, Easter Oape, Ardgay, IV24 3DP	244855, 900715	3.3 km
R26	The Steading, Strathoykel, Ardgay, IV24 3DP	244914, 900764	3.3 km
R27	Moravia, Strathoykel, Ardgay, IV24 3DP	244953, 900777	3.4 km
R28	Ghillies View, Strathoykel, Ardgay, IV24 3DP	245079, 900781	3.5 km
R29	Carn Mholloch, Strathoykel, Ardgay, IV24 3DP	245118, 900739	3.5 km
R30	Bluepool Cottage, Strathoykel, Ardgay, IV24 3DP	245140, 900869	3.6 km

Receptor ID	Address	Easting, Northing	Distance to Nearest Turbine
R31	Oape, Ardgay, IV24 3DP	245302, 900726	3.6 km
R32	River House, Strathoykel, Ardgay, IV24 3DP	245499, 900883	3.9 km
R33	Creagan Cottage, Strathoykel, Ardgay, IV24 3DP	245731, 900906	4.1 km
R34	Tigh A Rhos, Strathoykel, Ardgay, IV24 3DP	245861, 900821	4.1 km
R35	Oykerview, Inveroykel, Ardgay, IV24 3DP	245954, 900852	4.2 km
R36	Inveroykel Lodge, Ardgay, IV24 3DP	246490, 900881	4.7 km

10.5.6 At noise-sensitive receptor locations outside of the Study Area, operational noise effects from the Proposed Development will be negligible.

Desk Study

10.5.7 A desktop review was conducted to inform the assessment. The review comprised the following:

- Relevant legislation, policy and guidance documents were reviewed for updates.
- THC wind farm application web-portal was reviewed to identify existing, consented, and in-planning wind farm applications in the vicinity of the Proposed Development, to inform the developments to be included in the cumulative operational noise assessment.
- Scoping responses from relevant stakeholders were reviewed, and relevant comments considered, as described in **Table 10.1**.
- Available planning application documents (EIA Report) for the Strath Oykel wind farm and Allt An Tuir wind farm (most recent wind farm applications in the vicinity) were reviewed to identify and consider relevant information, including baseline noise data captured.
- OpenStreetMap, OS, and AddressBase Plus data was reviewed to identify potential noise-sensitive receptors.
- Turbine manufacturer sound power level specifications were used to calculate noise predictions.
- The Proposed Development design (refer to **Chapter 2**) was used to inform the locations of noise sources and to define the Study Areas.

Baseline Survey Methodology

10.5.8 A baseline noise survey was conducted over the period 24th September to 5th November 2024, at five properties in the vicinity of the Proposed Development, comprising Langwell Beag (R1) The Cottage (R2), Lunachoinnich (R4), 4 Oykel Terrace (R12) and Carn Mholloch (R29), as shown in **Figure 10.1** (EIA Report, Volume 3a). Further details of these measurements can be seen in **Technical Appendix 10.3** (EIA Report, Volume 4).

Other Field Surveys

10.5.9 A baseline noise survey was conducted for the Strath Oykel EIA Report at Carn Mholloch (R29) and Inveroykel Lodge (R36) over the period 4th February to 1st March 2022. The measurement data at R29 were deemed to be unsuitable for use to set noise limits, while data from R36 were deemed to be sufficiently representative of baseline noise at all properties in the Langwell, Brae, Doune, Strathoykel, and Inveroykel areas so as to be suitable for setting noise limits for the purposes of the assessment.

Assessment Methodology

Construction Noise – Proposed Development Construction Works

10.5.10 Construction noise is generally assessed with reference to BS 5228-1¹⁶, which is also applicable to decommissioning noise.

10.5.11 Annex E of BS 5228-1 details several methods for the assessment of significance of construction noise effects in relation to ambient noise levels, including the '*ABC method*' set out in Table E.1, which sets a series of noise thresholds depending on the existing ambient sound levels and the applicable time period. The relevant details of Table E.1 are reproduced below as **Table 10.4**.

10.5.12 It is assumed, as a worst-case assumption, that all receptors experience the lowest ambient sound levels, and therefore the Category A thresholds set out in **Table 10.4** are set as the threshold above which potential significant effects could occur. Contextual factors, including the absolute noise levels, the number of receptors affected and the duration of the effect, would be reviewed to determine whether the effect is significant. Where these thresholds are exceeded for a short period (substantially less than one month), the effect is likely to be **minor**.

¹⁶ BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites, Part 1 Noise. BSI.

- 10.5.13 In the absence of specific noise-sensitive receptors within 300 m of the main construction areas, no quantitative construction noise assessment is conducted for the main construction activities, with assessment focused on noise from construction of access tracks.
- 10.5.14 Construction traffic noise is assessed separately. This assessment conducts a qualitative evaluation of the likely construction noise, mitigation measures, and potential effects.

Table 10.4 – BS 5228-1 Threshold of Potential Significant Effect at Dwellings

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23:00-07:00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07:00-19:00) and Saturdays (07:00-13:00)	65	70	75

^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
^{B)} Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.
^{C)} Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.
^{D)} 19:00-23:00 weekdays, 13:00-23:00 Saturdays, and 07:00-23:00 Sundays

Construction Noise – Construction Vehicles on Access Tracks and Low-Flow Public Roads

- 10.5.15 Construction traffic movements along access tracks and public roads during the construction period will cause a short-term increase in road traffic noise levels, particularly for dwellings located adjacent to the proposed routes to and from the Proposed Development.
- 10.5.16 At locations where nearby roads experience low traffic flows, below around 1,000 vehicles per day, the effect of noise from construction vehicles is likely to be experienced as an independent separate sound source and is assessed in terms of absolute noise levels resulting from construction vehicles.
- 10.5.17 Where construction traffic movements occur along access tracks, or on public roads with low traffic flows, indicative calculations are conducted for receptors using the method set out in BS 5228 Annex F *Estimating noise from sites, sub-clause F.2.5 Method for mobile plant using regular well-defined route (e.g. haul roads)* using the formula:

$$L_{Aeq,T} = L_{WA} - 33 + 10\log_{10}Q - 10\log_{10}V - 10\log_{10}d$$

where:
 L_{WA} is the sound power level of the plant, in decibels (dB);
 Q is the number of vehicles per hour;
 V is the average vehicle speed, in kilometres per hour (km/h);
 d is the distance of receiving position from the centre of haul road, in metres (m).

- 10.5.18 Resulting noise levels are assessed against the criteria in **Table 10.4**.

Construction Noise – Construction Vehicles on Public Roads

- 10.5.19 At locations close to roads with moderate or high baseline traffic flows (around 1,000 vehicles per day or more), the effect of noise from construction vehicles is likely to be experienced as a change in ambient road traffic noise levels.
- 10.5.20 The potential increase in road traffic noise at locations adjacent to public roads with moderate traffic flows is calculated using the prediction methods in Calculation of Road Traffic Noise¹⁷ (CRTN), based on construction traffic and future baseline traffic data. The predicted change in road traffic noise levels relative to the future baseline levels are assessed against the criteria set out in **Table 10.5**.

Table 10.5 – Significance Criteria for a Change in Road Traffic Noise

Noise Change, dB	Magnitude of Impact
0	No change
0.1 – 0.9	Negligible
1.0 – 2.9	Minor
3.0 – 4.9	Moderate
5.0+	Major

- 10.5.21 Where the increase in noise due to construction vehicles on the public road network is less than 3 dB (i.e. minor, negligible, or there is no change), the impact would not be significant. Where a noise change is 3 dB or more (i.e. major or moderate), the impact is considered to be potentially significant at receptors

¹⁷ Department of Transport and Welsh Office (1988). Calculation of Road Traffic Noise. Her Majesty's Stationary Office (HMSO).

within 50 m of the affected road links, depending on the context, including the number of properties effected, the magnitude of the change, and the set-back distances of properties.

Operational Noise – Wind Turbine Noise Predictions

- 10.5.22 Noise predictions are carried out following methodology in ISO 9613-2¹⁸ as referred to within the Institute of Acoustics (IOA) Good Practice Guide (GPG). The details of the prediction methodology are set out in **Technical Appendix 13.2** (EIA Report, Volume 4). The Proposed Development turbine locations and hub heights are presented in **Chapter 2**.
- 10.5.23 For the purposes of the assessment, a candidate turbine model is assumed, namely a Vestas V172 STE 7.2 Megawatt (MW) turbine. A turbine hub height of 114 m is assumed, based on a tip height of 200 m and a rotor diameter of 172 m.
- 10.5.24 The sound power levels for the candidate turbine are derived from Vestas Technical Document DMS no.: 0128-4336_01, dated 29th November 2024. Sound power levels are based on manufacturer supplied data for the turbine operating in power-optimised mode PO7200 and are given in **Table 10.6** with reference to standardised 10 m height wind speeds, with respect to the 114 m hub height. A +2 dB uncertainty factor has been added and is included in the specified levels.

Table 10.6 – Vestas V172 STE 7.2 MW Sound Power Levels (dB L_{WA}) at 114 m Hub Height

Standardised 10 m height wind speed, ms ⁻¹	Octave band centre frequency (Hz)								Total
	63	125	250	500	1000	2000	4000	8000	
3	90.7	93.7	92.4	90.8	91.6	90.2	82.4	69.6	99.6
4	92.0	94.8	93.5	92.0	94.1	92.7	85.2	70.9	101.2
5	93.1	97.1	97.1	96.3	98.7	97.7	92.5	78.8	105.0
6	90.4	97.3	101.0	100.4	102.7	102.5	96.8	83.7	108.5
7	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8
8	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8
9	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8
10	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8
11	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8
12	91.8	98.8	103.4	102.4	103.0	101.9	100.3	87.5	109.8

- 10.5.25 ETSU-R-97¹⁹ specifies that a penalty should be added to the predicted noise levels where any tonal component is present. The level of this penalty is related to the level by which any tonal components exceed the threshold of audibility. It is proposed that tonal noise is controlled by a suitably worded planning condition should permission be granted, which is standard practice. No penalty has therefore been added to the predicted noise levels.
- 10.5.26 Where topographical features are present between source and receiver, there is the potential for barrier effects, whereby the line-of-sight between source and receiver is obscured resulting in reduced sound propagation, and for 'concave ground profile' effects (for example across a valley) resulting in higher levels of sound propagation. An analysis of the ground profiles between the proposed turbines and the neighbouring dwellings has been carried out. The resulting corrections incorporated into the prediction calculations are set out in **Technical Appendix 13.2** (EIA Report, Volume 4), alongside further explanation of these effects.

Operational Noise – Derivation of Wind Turbine Noise Limits

- 10.5.27 Background noise measurements are used to inform the ETSU-R-97 noise limits. It is often possible to re-use previous baseline noise monitoring, providing the noise data is suitably robust and the acoustic environment is unlikely to have changed since the noise monitoring campaign. In this instance, suitable historic data obtained for the Strath Oykel wind farm noise assessment, obtained in 2022, is representative of some relevant noise-sensitive receptors. This data is supplemented by noise measurements undertaken for the Proposed Development. Both sets of data are used to derive applicable noise limits for the assessment.
- 10.5.28 The assessment has been conducted on the basis that where noise levels meet or are below the noise limits, the noise impacts would not be significant.

¹⁸ International Organization for Standardization (ISO) (2024). ISO 9613-2, Acoustics - Attenuation of Sound During Propagation Outdoors, Part 2: Engineering Method for the Prediction of Sound Pressure Levels Outdoors. ISO.

¹⁹ Department of Trade and Industry (1996). ETSU-R-97, The Assessment and Rating of Noise from Wind Farms. DTI. Available from: https://assets.publishing.service.gov.uk/media/5a798b42ed915d07d35b655a/ETSU_Full_copy_Searchable_.pdf [Accessed 22/04/2025].

- 10.5.29 With regard to the daytime noise limits, the IOA GPG states:
- 10.5.30 *“The day amenity noise limits have been set in ETSU-R-97 on the basis of protecting the amenity of residents whilst outside their dwellings in garden areas. The daytime amenity noise limits are formed in two parts: Part 1 is a simple relationship between the prevailing background noise level (with wind speed) with an allowance of +5 dB; Part 2 is a fixed limit during periods of quiet. ETSU-R-97 describes three criteria to consider when determining the fixed part of the limit in the range of 35 dB to 40 dB L_{A90} , all of which should be considered. They are:*
- 1) *The number of noise-affected properties;*
 - 2) *The potential impact on the power output of the wind farm; and*
 - 3) *The likely duration and level of exposure”*
- 10.5.31 The scoping response from THC in **Table 10.1**, indicates that due to the remoteness and low background noise levels in this area, a lower limiting value of 35 dB would be appropriate during the daytime. It is noted that the lower limiting values of 35 dB applies to the Proposed Development acting alone, but an increased lower limiting value is applied in respect of cumulative noise as discussed below.
- 10.5.32 With regard to the night-time noise limits, the THC scoping response indicates that a night-time lower limiting value of 38 dB is suitable for assessment of noise effects in this area, rather than the 43 dB lower limiting value specified in ETSU-R-97.
- 10.5.33 On a precautionary basis, a daytime noise limit of 5 dB above background noise levels or 35 dB L_{A90} (whichever is higher) is adopted, while a night-time noise limit of 5 dB above background noise levels or 38 dB (whichever is higher) is adopted. It is noted that the daytime noise limits are therefore the minimum recommended by ETSU-R-97 and that higher noise limits could be adopted if justified by contextual considerations. The night-time noise limits are 5 dB below the limits recommended by ETSU-R-97, and therefore constitute a substantially worst-case approach.
- 10.5.34 Receptor R1 is financially involved with the Proposed Development. As such, the lower-limiting value of 45 dB is adopted for the purpose of setting noise limits at this property for both daytime and night-time.
- 10.5.35 Background noise data are available for R1, R2, R4, R12, and R29 (from 2024) and for R29 and R36 (from 2022). Noise levels at R1 are generally the lowest of these measurements.
- 10.5.36 Data from R1 is considered to be representative of location R1 only. Data from R2 is considered to be representative of locations R2, R3, R5, R6, R7, R8, R17 and R18. Data from R4 is considered to be representative of location R4 only. Data from R12 is considered to be representative of locations R9, R10, R11, R12, R13, R14, R15 and R16. Data from both R29 and R36 are considered to be in principle representative of all other identified receptor locations (R19 through to R36).
- Operational Noise – Cumulative Wind Turbine Noise
- 10.5.37 This Chapter also assesses cumulative effects arising from the addition of the Proposed Development to other cumulative developments which are the subject of a valid planning application.
- 10.5.38 The following potential cumulative wind farm developments >50 kW capacity have been identified, and noise levels predicted. Also shown is the status of each wind farm, some basic details, whether the predicted noise levels are negligible or not, and whether the wind farm is included within the cumulative noise assessment.

Table 10.7 – Cumulative Wind Farm Developments

Wind Farm Name	Status	No. of Turbines	Distance to Closest Relevant Receptor	Predicted Noise Levels	Included in Cumulative Assessment
Achany	Operational	19	5.0 km	<27 dB at all relevant receptors	No
Achany Extension	Consented	18	6.0 km	<27 dB at all relevant receptors	No
Allt An Tuir	Submitted Application	9	2.5 km	≥27 dB at one or more relevant receptors	Yes
Braelangwell	Scoping	17	6.9 km	<27 dB at all relevant receptors	No
Inveroykel	Scoping	29	1.9 km	Insufficient detail available to undertake noise predictions	No
Meall Buidhe	Consented	8	3.0 km	<27 dB at all relevant receptors	No
Rosehall	Operational	18	3.8 km	≥27 dB at one or more relevant receptors	Yes
Strath Oykel	Consented	11	1.4 km	≥27 dB at one or more relevant receptors	Yes

- 10.5.39 There are three wind farm developments which have been considered in the cumulative operational noise assessment. Other wind farm developments in the surrounding area are identified to contribute negligible noise levels at all relevant receptor locations or are at scoping stage and therefore do not require detailed cumulative noise consideration. Details of the cumulative developments are provided in **Table 10.7**.
- 10.5.40 Further details of the assumed turbine models for each wind farm alongside sound power levels, turbine locations and dimensions, and other relevant noise calculation assumptions, are provided in **Technical Appendix 13.2** (EIA Report, Volume 4).
- 10.5.41 Where cumulative noise levels are predicted, the standard uncertainty uplift of +2 dB is adopted for Rosehall wind farm as the development is operational and the turbine type is known. An increased uncertainty of 3.7 dB is applied for Strath Oykel wind farm as the development is not yet constructed and the turbine type may differ from the model(s) assumed for these calculations. Sound power levels are limited by the relevant consented noise levels for Strath Oykel at key receptors. The Allt An Tuir wind farm is an application that has not reached determination (and may not be consented). Predicted noise levels are conducted applying the standard uncertainty uplift of +2 dB in order to match the predicted noise levels presented within the Allt An Tuir EIA Report.
- 10.5.42 Ordinarily, the same ETSU-R-97 noise limits would be applicable to both individual and cumulative noise levels. However, given that Strath Oykel consented noise limits already exceed 35 dB at some locations, cumulative noise limits of 5 dB above background noise levels or 37 dB (whichever is higher) have been agreed to be adopted for the cumulative daytime noise assessment, following consultation with THC (see **Table 10.1**).

Effects of the Development on Quiet Respite Periods

- 10.5.43 Potential effects on quiet respite periods are assessed qualitatively. The potential for noise from cumulative developments to occur under different wind conditions, and the likely resultant effect on quiet respite periods is discussed. There are no specific criteria for quiet respite periods, but where assessment conclusions are marginal, contextual consideration of the potential or lack of potential for quiet respite periods to be affected may affect the acceptability of noise from the Proposed Development.

Determination of Significance

- 10.5.44 Significance is determined in accordance with acceptable thresholds in line with the assessment method in ETSU-R-97. Noise levels are considered to be acceptable where they do not exceed the specified noise limits. Such noise levels are therefore considered to be 'not significant', whilst noise levels exceeding the noise limit are considered to be 'significant'.

Requirements for Mitigation

- 10.5.45 Where noise limits are exceeded, noise mitigation in the form of a noise curtailment strategy would be required, in order to bring noise levels down to within noise limits. Where the cumulative noise limits are exceeded, this would require reduction of the Proposed Development's noise contributions so that the cumulative noise limit is met, or the Proposed Development noise levels contribute negligibly (i.e. the Proposed Development noise levels are at least 10 dB below the noise limits).

Limitations to Assessment

Representativeness of Baseline Noise Data

- 10.5.46 The baseline noise data was gathered from a limited number of measurement locations, which cannot fully represent the diversity of noise environments across all receptor locations. Variations in local conditions, such as topography, weather, vegetation, and proximity to noise sources, can influence the extent to which these measurements are representative. As a result, while efforts have been made to exclude periods of unrepresentative data and to apply reasonable worst-case assumptions, the baseline data cannot perfectly reflect all potential noise conditions at all locations, leading to a degree of uncertainty when setting noise limits. Nevertheless, the application of noise limits from the available data has been applied in a conservative manner to minimise the likelihood of overestimating existing background sound levels.

Uncertainties in Turbine Manufacturer Sound Power Level Specifications

- 10.5.47 The sound power level data provided by the turbine manufacturer, which serves as a critical input for noise calculations, contains some degree of uncertainty. Manufacturer specifications are typically based on idealised or controlled conditions, and actual operational noise levels could vary. This introduces uncertainty in the predicted noise levels, particularly in the case of operational turbines. While an uplift of +2 dB has been applied as a reasonable worst-case assumption, in part to account for sound power level uncertainties, there remains the potential for discrepancies between predicted and actual noise emissions. Given the turbine type is known for Rosehall wind farm, uncertainty for this development is lower. The Strath Oykel wind farm predictions have a higher inherent uncertainty but are the maximum

noise levels that could be achieved without exceeding its consented noise limits, representing a worst-case scenario.

- 10.5.48 If the Proposed Development is consented, noise limits will be applied at noise sensitive receptor locations which must be met for the duration of the operation of the wind farm.

Calculation Uncertainties

- 10.5.49 The noise calculations used in the assessment are based on standard modelling techniques and established methodologies, such as ISO 9613-2²⁰, which provides general guidance on noise propagation. However, these methods rely on a range of assumptions, including uniform ground conditions and standard atmospheric conditions. Furthermore, the calculation methods do not account for other real-world complexities, such as dynamic changes in wind direction or turbine performance over time, which could introduce additional uncertainties into the noise predictions. Downwind propagation is assumed for all calculations, as a worst-case assumption. While an uplift of +2 dB has been applied as a reasonable worst-case assumption, in part to account for noise propagation uncertainties, there remains the potential for discrepancies between predicted and actual noise emissions. However, if the Proposed Development is consented, noise limits will be applied at noise sensitive receptor locations which must be met for the duration of operation.

Cumulative Uncertainties Related to Other Developments

- 10.5.50 The cumulative noise effects from nearby wind farm developments are another source of uncertainty. While the assessment considers operational, consented, and in planning developments, the specific noise levels resulting from these developments can be difficult to predict. The noise impacts from future developments are particularly difficult to predict accurately, as their precise development details are not yet fully determined. Predictions therefore rely on submitted application details and consented noise limits as indicative estimates, including for the likely noise emissions of the developments. Worst-case assumptions are adopted with regards to the noise emissions of sites where their predicted noise levels are below the noise limits. A further uncertainty uplift is applied, as described above.

10.6 Baseline Conditions

Background Noise Levels

- 10.6.1 Seven sets of background noise levels have been considered in the assessment, comprising a 2024 noise survey at R1, R2, R4, R12 and R29, and a 2022 noise survey at R29 and R36.
- 10.6.2 Survey data at R29, in both 2022 and 2024, were found to contain substantial banding in the data, whereby there are periods of low and high constant sound levels which appear to be independent of wind speed. Investigation into the detailed data available for the 2024 survey concluded that the likely cause of this effect is extended periods of water noise from local watercourses, which was not observed during installation, interim maintenance visits, or at collection. Ordinarily, it would be anticipated that elevated watercourse noise may occur for 24-48 hours following heavy rainfall, depending on the tributaries to the local watercourse. However, in this case elevated noise levels were found to occur for up to seven days following relatively short periods of heavy rain.
- 10.6.3 While there are many small watercourses in the vicinity and many receptor locations could experience a similar sound environment, noise data from R29 was notably higher than at R36, and a reliable relationship between wind speed and background noise levels was not able to be determined for this location. The noise data at R29 was therefore considered not to be sufficiently representative of all locations in the surrounding area. A similar conclusion was reached in the Strath Oykel EIA Report.
- 10.6.4 The background noise levels relative to wind speeds are given for each survey location (except at R29) in **Table 10.8** and **Table 10.9** for the daytime and night-time respectively.

²⁰ International Organization for Standardization (ISO) (2024). ISO 9613-2, Acoustics - Attenuation of Sound During Propagation Outdoors, Part 2: Engineering Method for the Prediction of Sound Pressure Levels Outdoors. ISO.

Table 10.8 – Daytime Background Noise Levels, dB L_{A90}

Location and Year	Standardised 10 m height wind speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1 2024	24.7	25.2	26.0	27.0	28.1	29.4	30.8	32.3	33.9	35.5
R2 2024	25.6	26.6	27.9	29.6	31.5	33.6	35.9	38.3	40.9	43.5
R4 2024	29.0	29.8	31.3	33.3	35.7	38.2	40.7	43.0	44.8	46.0
R12 2024	27.3	28.3	29.7	31.4	33.2	35.2	37.2	39.3	41.2	43.0
R36 2022	28.0	28.0	28.6	29.4	30.4	31.8	33.4	35.3	37.5	40.1

Table 10.9 – Night-time Background Noise Levels, dB L_{A90}

Location and Year	Standardised 10 m height wind speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1 2024	24.6	25.5	26.5	27.8	29.1	30.7	32.4	34.2	36.2	38.2
R2 2024	27.3	27.8	28.5	29.6	31.3	33.6	36.7	40.6	45.6	51.7
R4 2024	29.2	29.6	30.7	32.4	34.4	36.7	39.1	41.4	43.5	45.3
R12 2024	27.8	28.7	30.1	31.9	33.9	36.1	38.1	39.9	41.3	42.2
R36 2022	28.2	28.2	28.4	28.9	29.7	30.9	32.5	34.6	37.0	39.9

Traffic Flows

- 10.6.5 Baseline traffic flows have been obtained from **Chapter 9**. Representative data are given in **Table 10.10** for the future baseline scenario, split into light vehicles and heavy goods vehicles (HGVs). Further information about traffic flows can be found in **Chapter 9**.

Table 10.10 – Future Baseline Traffic Data

Road Link	Baseline Traffic (24-hour Two-Way Average Traffic)		
	Light Vehicles	HGVs	All Traffic
C1136 Eastern Access Option Site access	33	18 (35%)	51
C1136 south of A837 junction	23	14 (38%)	37
A837 Invercassley	165	128 (44%)	293
A837 Oykel Bridge	235	19 (7%)	254
A839 between the A837 and A836	249	9 (4%)	257
A836 west of Lairg	1,859	165 (8%)	2024
A839 between the A9 and A836	867	40 (4%)	906
A836 between A837 and A839	1,026	88 (8%)	1114
A836 between the A949 and A837	1,741	121 (6%)	1862
A836 Ardgay	1,790	147 (8%)	1938
B9176 south of Dalnavie	1,881	164 (8%)	2045
A9 between Poles and The Mound	4,325	1003 (19%)	5328
A9 between the A949 and B9168	3,452	907 (21%)	4359
A9 south of A949 junction	6,559	991 (13%)	7549

Future Baseline

- 10.6.6 No notable changes in baseline noise conditions are anticipated in relation to operational noise or construction activities. Wind farm noise is excluded from the baseline as defined for the purposes of the assessment. However, wind farm noise would be anticipated to increase following the construction and commissioning of the Strath Oykel and/or Allt An Tuir wind farms.
- 10.6.7 Minor increases in road traffic flows may be anticipated to occur in future, which is likely to result in greater levels of road traffic noise. Road traffic noise was observed during baseline surveys not to be the dominant sound source at receptor locations, and therefore such changes are likely to be negligible at receptor locations.

10.7 Embedded Mitigation

- 10.7.1 Predicted operational noise levels were reviewed and taken into consideration during the iterative design process.
- 10.7.2 Furthermore, the candidate turbine model selected for the Proposed Development (Vestas V172 STE 7.2 MW) has a serrated trailing edge (STE) design which has an inherent reduction effect on noise emissions compared to equivalent non-STE turbines. This is incorporated into the sound power specification provided by the manufacturer.

10.8 Potential Effects

Construction

Construction of the Proposed Development

- 10.8.1 The construction of the Proposed Development, including turbines and all ancillary infrastructure, will occur at distances that are unlikely to breach typical construction noise limits prescribed within BS 5228 at the nearest noise sensitive receptors. This, combined with the short-term nature of the works, means that a detailed assessment of the construction noise impacts is not considered necessary.
- 10.8.2 All residential locations are at least 1 km from the nearest turbine hardstanding area, construction compound, substation, and the borrow pit.
- 10.8.3 Nonetheless, construction noise has the potential to be audible and is subject to Best Practicable Means (BPM), which will be detailed within the CEMP, secured via planning condition. Some examples of BPM include switching off vehicles when not in use, the use of broadband reversing alarms instead of tonal alarms, placing materials on the ground instead of dropping them, and maximising separation distances between noise sources and noise-sensitive receptors.
- 10.8.4 Access track construction and modification may occur at closer distances than for the main works described above. There is a minimum separation distance of 22 m between CR9 and the access track widening areas of the western access track, and 53 m between CR2 and the northern tip of the Strath Oykel consented eastern access track, which may need to be built as part of the Proposed Development if Strath Oykel is not constructed and the eastern access track is required. Access track construction works would remain subject to BPM.
- 10.8.5 Predicted noise levels are presented in **Table 10.11** based on worst-case new track construction noise levels for CR1-CR3, and on averaged widening works noise levels over an anticipated 3-week works stage for CR4-CR9. Further details of the construction noise calculations can be seen in **Technical Appendix 10.2** (EIA Report Volume 4).

Table 10.11 –Construction Noise Predictions

Receptor ID	Predicted Free-field Construction Noise Levels, dB(A)
CR1	51
CR2	64
CR3	50
CR4	53
CR5	54
CR6	56
CR7	57
CR8	62
CR9	63

- 10.8.6 Noise levels are predicted to not exceed 65 dB. As widening works calculations are based on a 3-week works average, short-duration works at closest approach distances may exceed 65 dB for short periods. The highest predicted noise levels are 74 dB for the closest works, which would be anticipated to last for approximately two days. Such works would not occur for a long enough period of time for significant noise effects to be anticipated. Predicted noise effects are therefore **minor**, subject to the appropriate adoption of BPM mitigation measures.
- 10.8.7 Other construction noise levels will meet relevant construction noise criteria and construction noise effects will be **negligible**, subject to the appropriate adoption of BPM mitigation measures.

Construction Vehicles on Access Tracks and Low-Flow Public Roads

- 10.8.8 Indicative calculations are conducted for receptors using the method set out in BS 5228 Annex F *Estimating noise from sites, sub-clause F.2.5 Method for mobile plant using regular well-defined route (e.g. haul roads)*.
- 10.8.9 The construction vehicle sound power level, L_{WA} , is assumed to be 104 dB, based on BS 5228 Annex C Table C.6 Item 19 for the drive-by maximum sound pressure level (L_{Amax}) of a Road Lorry at 10 m (76 dB), and a +28 dB adjustment to derive a sound power level, based on assumed hemispherical propagation from a point source. It is assumed that construction noise from light vehicles would be at least 10 dB lower than that from heavy vehicles and would therefore be negligible. Light vehicles are therefore not included in the calculations. The number of HGV construction vehicles per hour, Q , is calculated as 12 vehicles per hour based on 144 vehicles per 12-hour period during the worst-case month of construction (the worst-case construction traffic flows for the eastern access route is 144 HGVs per day, while the worst-case construction traffic flows for the western access route is 142 HGVs per day). The average vehicle speed, V , is assumed to be 32 km/h (equivalent to 20 mph; slow speeds are worst-case for the purposes of this calculation). The receiving distance, d , is assumed to be 10 m, assumed to be representative of the closest receptors to the access route.
- 10.8.10 The noise from construction vehicles during the busiest period of construction movements is predicted to be 57 dB. Even in combination with noise from access track construction or widening works, overall construction noise levels are predicted to remain below the significance threshold of 65 dB. This result is also applicable to public roads with low baseline traffic flows (notably below 1000 vehicles per day).
- 10.8.11 Construction traffic noise effects on access tracks and low-flow public roads are therefore not significant.

Construction Vehicles on Public Roads Excluding Low-Flow Roads

- 10.8.12 Based on the traffic data in **Table 10.12** and **Table 10.13**, the change in road traffic noise levels is calculated, to identify whether there is a potentially significant increase in road traffic noise. Descriptions of the subsequent effects are also given.
- 10.8.13 It is assumed that the 24-hour annual average traffic flows are sufficiently representative of the 18-hour (06:00-00:00) annual average weekday traffic flows that indicative noise change calculations can be conducted.

Table 10.12 – Change in Road Traffic Noise Levels – Eastern Access Route Option

Road Link	Future (2031) Baseline Traffic Flow		Baseline + Construction Traffic Flow		Change in Traffic Noise Level, dB(A)	Impact Significance
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
C1136 Eastern Access Option Site access	51	18 (35%)	261	168 (64%)	Noise levels cannot be reliably calculated due to low flows.	
C1136 south of A837 junction	37	14 (38%)	247	164 (66%)		
A837 Invercassley	293	128 (44%)	503	278 (55%)		
A837 Oykel Bridge	254	19 (7%)	254	19 (7%)		
A839 between the A837 and A836	257	9 (4%)	467	159 (34%)		
A836 west of Lairg	2024	165 (8%)	2210	315 (14%)	+1.8 dB(A)	Minor
A839 between the A9 and A836	906	40 (4%)	922	44 (5%)	+0.2 dB(A)	Negligible
A836 between A837 and A839	1114	88 (8%)	1286	236 (18%)	+3.0 dB(A)	Moderate
A836 between the A949 and A837	1862	121 (6%)	2034	269 (13%)	+2.0 dB(A)	Minor
A836 Ardgay	1938	147 (8%)	2110	295 (14%)	+1.8 dB(A)	Minor
B9176 south of Dalnavie	2045	164 (8%)	2069	164 (8%)	0.0 dB(A)	Negligible
A9 between Poles and The Mound	5328	1003 (19%)	5344	1007 (19%)	0.0 dB(A)	Negligible
A9 between the A949 and B9168	4359	907 (21%)	4375	911 (21%)	0.0 dB(A)	Negligible
A9 south of A949 junction	7549	991 (13%)	7565	995 (13%)	0.0 dB(A)	Negligible

Table 10.13 – Change in Road Traffic Noise Levels – Western Access Route Option

Road Link	Future (2031) Baseline Traffic Flow		Baseline + Construction Traffic Flow		Change in Traffic Noise Level, dB(A)	Impact Significance
	Total Traffic Flow	Total HGV	Total Traffic Flow	Total HGV		
C1136 Eastern Access Option Site access	51	18 (35%)	51	18 (35%)	Noise levels cannot be reliably calculated due to low flows.	
C1136 south of A837 junction	37	14 (38%)	37	14 (38%)		
A837 Invercassley	293	128 (44%)	501	276 (55%)		
A837 Oykel Bridge	254	19 (7%)	462	167 (36%)		
A839 between the A837 and A836	257	9 (4%)	465	157 (34%)		
A836 west of Lairg	2024	165 (8%)	2208	313 (14%)	+1.7 dB(A)	Minor
A839 between the A9 and A836	906	40 (4%)	922	44 (5%)	+0.2 dB(A)	Negligible
A836 between A837 and A839	1114	88 (8%)	1282	232 (18%)	+2.9 dB(A)	Minor
A836 between the A949 and A837	1862	121 (6%)	2030	265 (13%)	+2.0 dB(A)	Minor
A836 Ardgay	1938	147 (8%)	2106	291 (14%)	+1.8 dB(A)	Minor
B9176 south of Dalnavie	2045	164 (8%)	2069	164 (8%)	0.0 dB(A)	Negligible
A9 between Poles and The Mound	5328	1003 (19%)	5344	1007 (19%)	0.0 dB(A)	Negligible
A9 between the A949 and B9168	4359	907 (21%)	4375	911 (21%)	0.0 dB(A)	Negligible
A9 south of A949 junction	7549	991 (13%)	7565	995 (13%)	0.0 dB(A)	Negligible

10.8.14 Where there are changes in road traffic noise levels, such changes are **negligible** or **minor** for all relevant road links for the western access route option. For the eastern access route option, predicted temporary changes in noise levels are **negligible** or **minor** for all relevant road links except the A836 between A837 and A839, where a +3.0 dB (**moderate**) change is identified.

10.8.15 This potentially significant effect would be anticipated to occur at 25 properties located within 50 m of this road link. This assessment represents a worst-case temporary noise increase in the peak construction period (overall construction phase estimated at 18 months), with a lower noise change occurring in other periods, and only if the eastern access route were selected. This assessment also assumes that road traffic noise is the dominant sound source at these properties.

10.8.16 While properties adjacent to this section of the A836 may experience a noticeable temporary increase in road traffic noise for either western or eastern access route option scenarios, in practice, given the set-back distances of properties of around 25-40 m in most cases, a noise change of 3.0 dB is unlikely to occur. Construction traffic noise effects on public roads are therefore considered to be not significant.

Operation

Derivation of Noise Limits

10.8.17 Operational noise is assessed against derived daytime and night-time noise limits, which vary with wind speed between 3 and 12 ms⁻¹. The noise limits for the daytime are derived on the basis of, daytime noise limits of 5 dB above background noise levels (see **Table 10.8**) or 35 dB L_{A90} (whichever is higher) and night-time noise limits of 5 dB above background noise levels (see **Table 10.9**) or 38 dB (whichever is higher).

10.8.18 An exception is made for receptor R1 which is financially involved in the Proposed Development and therefore noise limits for that location are derived on the basis of 5 dB above background noise levels or 45 dB L_{A90} (whichever is higher) for both daytime and night-time. Adopted noise limits for each receptor are shown in **Table 10.14** and **Table 10.15** for the daytime and night-time respectively. Where multiple consecutively numbered receptors have the same noise limits, these have been collated together for the avoidance of repetition.

Table 10.14 – Daytime Operational Noise Limits, dB L_{A90}

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
R2-R3	35.0	35.0	35.0	35.0	36.5	38.6	40.9	43.3	45.9	48.5
R4	35.0	35.0	36.3	38.3	40.7	43.2	45.7	48.0	49.8	51.0
R5-R8	35.0	35.0	35.0	35.0	36.5	38.6	40.9	43.3	45.9	48.5
R9-R16	35.0	35.0	35.0	36.4	38.2	40.2	42.2	44.3	46.2	48.0
R17-R18	35.0	35.0	35.0	35.0	36.5	38.6	40.9	43.3	45.9	48.5
R19-R36	35.0	35.0	36.4	36.4	36.4	36.8	38.4	40.3	42.5	45.1

Table 10.15 – Night-time Operational Noise Limits, dB L_{A90}

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
R2-R3	38.0	38.0	38.0	38.0	38.0	38.6	41.7	45.6	50.6	56.7
R4	38.0	38.0	38.0	38.0	39.4	41.7	44.1	46.4	48.5	50.3
R5-R8	38.0	38.0	38.0	38.0	38.0	38.6	41.7	45.6	50.6	56.7
R9-R16	38.0	38.0	38.0	38.0	38.9	41.1	43.1	44.9	46.3	47.2
R17-R18	38.0	38.0	38.0	38.0	38.0	38.6	41.7	45.6	50.6	56.7
R19-R36	38.0	38.0	38.0	38.0	38.0	38.0	38.0	39.6	42.0	44.9

Proposed Development Predicted Noise Levels

- 10.8.19 Operational noise predictions have been carried out for the candidate wind turbine under consideration for the Proposed Development, in line with the methodology set out in the IOA GPG. Full details of the prediction methodology are set out in **Technical Appendix 13.2** (EIA Report Volume 4), with the main assumptions described below:
- Receiver height of 4 m;
 - Ground effect ground coefficient $G = 0.5$;
 - Atmospheric attenuation corresponding to a temperature of 10 °C and a relative humidity of 70%;
 - Topographical barriers and concave ground profile corrections have been applied according to the IOA GPG;
 - Downwind propagation is assumed for all receptors; and
 - The manufacturer's sound power level data is uplifted by +2 dB to account for sound power and propagation uncertainties.
- 10.8.20 The results of the operational noise predictions at identified receptors are shown in **Table 10.16**. The results are also presented as a noise contour plot valid for standardised 10 m height wind speeds of 7-12 ms⁻¹ in **Figure 13.2** (EIA Report Volume 3a), representing the wind speeds with the highest predicted operational noise levels.

Table 10.16 – Predicted Downwind Operational Noise Levels, dB L_{A90}

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	23.9	25.1	27.6	29.2	31.1	31.1	31.1	31.1	31.1	31.1
R2	24.2	25.4	27.9	29.7	31.5	31.5	31.5	31.5	31.5	31.5
R3	24.0	25.2	27.7	29.4	31.3	31.3	31.3	31.3	31.3	31.3
R4	25.9	27.2	29.9	32.1	33.8	33.8	33.8	33.8	33.8	33.8
R5	22.8	24.1	26.4	27.9	29.7	29.7	29.7	29.7	29.7	29.7
R6	22.9	24.1	26.5	28.0	29.9	29.9	29.9	29.9	29.9	29.9
R7	25.8	27.0	29.7	31.8	33.5	33.5	33.5	33.5	33.5	33.5
R8	25.6	26.8	29.4	31.5	33.3	33.3	33.3	33.3	33.3	33.3
R9	24.3	25.5	28.0	29.9	31.7	31.7	31.7	31.7	31.7	31.7
R10	24.3	25.5	28.0	29.9	31.7	31.7	31.7	31.7	31.7	31.7
R11	24.3	25.5	28.0	29.9	31.7	31.7	31.7	31.7	31.7	31.7
R12	24.3	25.5	28.1	29.9	31.7	31.7	31.7	31.7	31.7	31.7
R13	24.3	25.5	28.1	29.9	31.7	31.7	31.7	31.7	31.7	31.7
R14	24.3	25.6	28.1	30.0	31.8	31.8	31.8	31.8	31.8	31.8
R15	22.7	23.9	26.2	27.7	29.5	29.5	29.5	29.5	29.5	29.5
R16	19.9	21.1	23.2	24.0	25.9	25.9	25.9	25.9	25.9	25.9
R17	22.0	23.2	25.5	26.8	28.7	28.7	28.7	28.7	28.7	28.7
R18	21.8	23.0	25.2	26.5	28.3	28.3	28.3	28.3	28.3	28.3
R19	22.3	23.5	25.8	27.2	29.1	29.1	29.1	29.1	29.1	29.1
R20	21.4	22.6	24.9	26.3	28.2	28.2	28.2	28.2	28.2	28.2
R21	22.1	23.4	25.6	27.0	28.9	28.9	28.9	28.9	28.9	28.9
R22	21.5	22.7	25.0	26.4	28.3	28.3	28.3	28.3	28.3	28.3
R23	21.9	23.1	25.4	26.7	28.6	28.6	28.6	28.6	28.6	28.6
R24	20.4	21.6	23.8	25.0	26.9	26.9	26.9	26.9	26.9	26.9
R25	20.8	22.0	24.3	25.5	27.4	27.4	27.4	27.4	27.4	27.4
R26	19.6	20.8	23.0	24.2	26.1	26.1	26.1	26.1	26.1	26.1
R27	19.3	20.5	22.7	23.9	25.7	25.7	25.7	25.7	25.7	25.7
R28	20.7	21.9	24.2	25.3	27.2	27.2	27.2	27.2	27.2	27.2
R29	20.8	22.1	24.3	25.4	27.3	27.3	27.3	27.3	27.3	27.3
R30	20.5	21.7	23.9	24.9	26.8	26.8	26.8	26.8	26.8	26.8
R31	20.8	22.0	24.2	25.2	27.1	27.1	27.1	27.1	27.1	27.1
R32	20.3	21.5	23.6	24.6	26.5	26.5	26.5	26.5	26.5	26.5
R33	19.9	21.1	23.2	24.1	26.0	26.0	26.0	26.0	26.0	26.0
R34	19.8	21.0	23.1	23.9	25.8	25.8	25.8	25.8	25.8	25.8
R35	19.6	20.9	22.9	23.7	25.6	25.6	25.6	25.6	25.6	25.6
R36	18.8	20.0	22.1	22.7	24.5	24.5	24.5	24.5	24.5	24.5

Operational Noise Assessment

- 10.8.21 The highest predicted noise levels are at R4, with predicted levels of up to 33.8 dB for wind speeds of 7-12 ms⁻¹. The lowest operational noise limits are 35 dB during the daytime at low wind speeds.
- 10.8.22 Therefore, at all identified receptors, the operational noise levels from the Proposed Development meet the applicable noise limits. The operational noise effects of the Proposed Development acting alone are therefore not significant.

Infrasound

- 10.8.23 Infrasound is noise occurring at frequencies below that at which sound is normally audible, i.e. at less than about 20 Hz, due to the significantly reduced sensitivity of the ear at such frequencies. In this frequency range, for sound to be perceptible, it has to be at a very high amplitude, and it is generally considered that when such sounds are perceptible then they can cause considerable annoyance.
- 10.8.24 Wind turbines have been cited by some as producers of infrasound. This has, however, been due to the high levels of such noise, as well as audible low-frequency thumping noise, occurring on older 'downwind' turbines of which many were installed in the USA prior to the large scale take up of wind power production in the UK. Downwind turbines are configured with the blades downwind of the tower such that the blades pass through the wake left in the wind stream by the tower resulting in a regular audible thump, with infrasonic components, each time a blade passes the tower. Virtually all modern large turbines are of the upwind design, such that this effect is eliminated.

- 10.8.25 A 2006 low frequency noise study²¹ concluded that “*infrasound noise emissions from wind turbines are significantly below the recognised threshold of perception for acoustic energy within this frequency range. Even assuming that the most sensitive members of the population have a hearing threshold which is 12 dB lower than the median hearing threshold, measured infrasound levels are well below this criterion*”. It goes on to state that, based on information from the World Health Organisation, “*there is no reliable evidence that infrasound below the hearing threshold produce physiological or psychological effects*” and that “*it may therefore be concluded that infrasound associated with modern wind turbines is not a source which may be injurious to the health of a wind farm neighbour*”.
- 10.8.26 A considerable amount of research has been conducted into the levels of infrasound that wind turbines emit^{22 23 24}. Available reliable evidence consistently suggests that at typical residential distances (e.g. at 500 m or more), the levels of infrasound from a wind farm are below accepted thresholds of perception. Even when measured in close proximity to a wind turbine, the measured levels of infrasound are below accepted thresholds of perception. This suggests that infrasound is not an issue for neighbours in the vicinity of wind turbines.
- Low Frequency Noise
- 10.8.27 Noise from modern wind turbines is essentially broadband in nature, containing similar amounts of noise energy in all frequency bands. Noise levels decrease with distance due to the spreading out of the sound energy and due to air absorption. The air absorption effect is greater with increasing sound frequency. This means that, although the energy across the whole frequency range is reduced, higher frequencies are reduced more than lower frequencies with the effect that as distance from the site increases the ratio of low to high frequencies also increases. This effect may be observed with road traffic noise or natural sources, such as the sea, where higher frequency components are diminished relative to lower frequency components at long distances. At such distances, however, the overall noise level is so low, such that any bias in the frequency spectrum is likely to be insignificant.
- Amplitude Modulation
- 10.8.28 The variation in noise level associated with turbine operation, at the rate at which turbine blades pass any fixed point of their rotation (the blade passing frequency), is often referred to as blade swish and amplitude or aerodynamic modulation (AM). This affect is identified within ETSU-R-97 where it is envisaged that “*... modulation of blade noise may result in variation of the overall A-weighted noise level by as much as 3 dB(A) (peak to trough) when measured close to a wind turbine...*” and that at distances further from the turbine where there are “*... more than two hard, reflective surfaces, then the increase in modulation depth may be as much as 6 dB(A) (peak to trough)*”. It is stated that this effect tends to be associated with trailing edge noise radiated from the outer portion of a turbine blade and is normally centred around the 800-1000 Hz region.
- 10.8.29 It has been noted that complaints about wind farm noise have, in many cases, been specifically concerned with amplitude modulation. This is also apparent from ETSU-R-97, where it is noted that “*it is the regular variation of the noise with time that, in some circumstances, enables the listener to distinguish the noise of the turbines from the surrounding noise*”. The modulation of noise may affect perceived annoyance for sounds with the same overall sound pressure level.
- 10.8.30 The previously mentioned 2006 low frequency noise study concluded that “*the common cause of complaints associated with noise at all three wind farms is not associated with low frequency noise, but is the audible modulation of the aerodynamic noise, especially at night*”. As a result, Salford University carried out a study²⁵ to investigate modulation effects which concluded that AM was only considered to be a definite contributing factor in reported complaints at four, and only a possible factor at a further eight, of the 133 sites operational sites in the UK at the time of the study.
- 10.8.31 Further research carried out by various authors since the time of this research has, however, confirmed AM to be an ongoing issue but has identified that where the spectrum of the modulated noise moves from the 800-1000 Hz identified in ETSU-R-97 to lower frequencies, where the noise is less likely to be masked by higher frequency background noise such as wind in the trees, and the modulated noise increases in depth, perceived effects become more pronounced.

²¹ Department of Trade and Industry, 2006. The Measurement of Low Frequency Noise at Three UK Windfarms. (W/45/00656/00/00). DTI.

²² ETSU W/13/00392/REP, 1997. Low Frequency Noise and Vibrations Measurement at a Modern Wind Farm. ETSU.

²³ Turnbull et al, April 2012. Measurement and Level of Infrasound from Wind Farms and Other Sources. 40(1). Acoustics Australia.

²⁴ British Standards Institution, 2008. Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting. BS 6472-1:2008. BSI.

²⁵ Moorhouse, A. T. et al, 2007. Research into Aerodynamic Modulation of Wind Turbine Noise: Final Report. Department for Business, Enterprise and Regulatory Reform.

10.8.32 As a result, in December 2013 Renewable UK, the main renewable energy trade association in the UK, completed research into the causes and subjective effects of these higher levels of AM^{26 27 28 29}. This has concluded that the predominant cause is likely to be from individual blades going in and out of stall as they pass through regions of higher wind speed at the top of their rotation under high wind shear conditions.

10.8.33 It is noted that THC's position, as set out in their scoping response, is that any complaints linked to amplitude modulation would be investigated in terms of the Statutory Nuisance provisions of the Environmental Protection Act 1990, and would therefore not be subject to specific planning conditions or rating penalties.

Decommissioning

10.8.34 Decommissioning activities are anticipated to result in noise levels that are the same or lower than those for construction activities. Therefore, where construction noise is considered to be acceptable, the same can be assumed for decommissioning noise. Decommissioning noise effects are therefore not significant.

10.9 Additional Mitigation

10.9.1 No mitigation is required as there are no significant effects as a result of the construction, operation, or decommissioning of the Proposed Development.

10.10 Residual Effects

10.10.1 All residual noise effects as a result of the construction, operation, or decommissioning of the Proposed Development are not significant.

10.11 Cumulative Assessment

Construction

10.11.1 There is the potential for the consented Strath Oykel wind farm or other developments to be constructed at a similar or overlapping time period to the Proposed Development. However, due to the remote nature of the area and the large separation distances involved, the combined effect of noise from simultaneous construction activities is considered likely to be negligible and thus would not be significant.

10.11.2 Even during the most intensive periods of deliveries to multiple development construction sites, and at receptors relatively close to the access tracks, it is unlikely that noise thresholds in **Table 10.4** would be exceeded for a significant duration, due to the sporadic and intermittent nature of the noise from vehicles passing the neighbouring dwellings and the slow speeds at which construction vehicles will pass. Cumulative traffic noise effects are therefore considered to be not significant.

Operation

Cumulative Noise Limits

10.11.3 Cumulative noise limits for the daytime period are 5 dB above background noise levels or 37 dB, whichever is higher, as agreed with THC. The night-time cumulative noise limits are 5 dB above background noise levels or 38 dB, whichever is higher. The revised cumulative daytime noise limits are given in **Table 10.17**. Night-time noise limits are the same as given in **Table 10.15**. Where multiple consecutively numbered receptors have the same noise limits, these have been collated together for the avoidance of repetition.

Table 10.17 – Cumulative Daytime Operational Noise Limits, dB L_{A90}

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
R2-R3	37.0	37.0	37.0	37.0	37.0	38.6	40.9	43.3	45.9	48.5
R4	37.0	37.0	37.0	38.3	40.7	43.2	45.7	48.0	49.8	51.0
R5-R8	37.0	37.0	37.0	37.0	37.0	38.6	40.9	43.3	45.9	48.5
R9-R16	37.0	37.0	37.0	37.0	38.2	40.2	42.2	44.3	46.2	48.0
R17-R18	37.0	37.0	37.0	37.0	37.0	38.6	40.9	43.3	45.9	48.5
R19-R36	37.0	37.0	37.0	37.0	37.0	37.0	38.4	40.3	42.5	45.1

²⁶ RenewableUK, December 2013. Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effect.

²⁷ RenewableUK, December 2013. Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effects - Brief Summary.

²⁸ Temple Group, December 2013. Review of RenewableUK's Research into Amplitude Modulation. RenewableUK.

²⁹ Temple Group, December 2013. Summary of Research into Amplitude Modulation of Aerodynamic Noise from Wind Turbines. RenewableUK.

Predicted Cumulative Noise Levels

- 10.11.4 At receptors where the predicted noise levels from the Proposed Development are 10 dB or more below the lowest cumulative noise limit of 37 dB (applicable to R16, R24, R26, R27, R30, R32, R33, R34, R35 and R36 – see **Table 10.16**), the Proposed Development will have a negligible contribution to cumulative noise levels. For the remainder of the receptors, cumulative operational noise levels are predicted using the methods described in **Section 10.5** and **Technical Appendix 13.2**. The cumulative predicted noise levels are set out in **Table 10.18**. The results are also presented as a noise contour plot valid for standardised 10 m height wind speeds of 10-12 ms⁻¹ in **Figure 10.3** (EIA Report, Volume 3a), representing the wind speed with the highest cumulative noise levels.

Table 10.18 – Predicted Downwind Cumulative Operational Noise Levels, dB L_{A90}

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	27.7	30.8	34.8	36.8	37.3	37.3	37.4	37.4	37.4	37.4
R2	25.6	27.3	30.5	32.5	33.7	33.7	33.8	33.8	33.8	33.8
R3	25.5	27.3	30.4	32.5	33.6	33.7	33.7	33.7	33.7	33.7
R4	26.3	27.7	30.6	32.8	34.3	34.3	34.3	34.3	34.3	34.3
R5	27.0	29.8	33.7	35.8	36.4	36.4	36.4	36.5	36.5	36.5
R6	27.0	29.9	33.8	35.9	36.4	36.5	36.5	36.5	36.5	36.5
R7	26.3	27.6	30.4	32.6	34.1	34.1	34.1	34.2	34.2	34.2
R8	26.1	27.4	30.2	32.3	33.9	33.9	33.9	33.9	33.9	33.9
R9	24.8	26.1	28.8	30.8	32.4	32.4	32.4	32.4	32.4	32.4
R10	24.8	26.1	28.8	30.8	32.4	32.4	32.4	32.4	32.4	32.4
R11	24.8	26.1	28.9	30.8	32.4	32.4	32.4	32.4	32.4	32.4
R12	24.8	26.2	28.9	30.8	32.4	32.4	32.4	32.5	32.5	32.5
R13	24.8	26.2	28.9	30.9	32.4	32.5	32.5	32.5	32.5	32.5
R14	24.8	26.2	28.9	30.9	32.5	32.5	32.5	32.5	32.5	32.5
R15	23.3	24.7	27.3	29.1	30.6	30.6	30.6	30.6	30.6	30.6
R17	26.0	28.5	32.2	34.3	34.9	35.0	35.0	35.1	35.1	35.1
R18	26.0	28.5	32.1	34.3	34.9	34.9	35.0	35.1	35.1	35.1
R19	27.7	31.0	35.2	37.1	37.5	37.5	37.5	37.6	37.6	37.6
R20	27.1	30.4	34.5	36.5	36.9	36.9	36.9	37.0	37.0	37.0
R21	27.5	30.7	34.8	36.8	37.2	37.2	37.2	37.3	37.3	37.3
R22	27.2	30.4	34.5	36.5	36.9	36.9	36.9	37.0	37.0	37.0
R23	27.3	30.4	34.4	36.4	36.8	36.8	36.9	36.9	36.9	36.9
R25	27.7	31.0	35.1	37.1	37.3	37.4	37.4	37.5	37.5	37.5
R28	27.5	30.6	34.6	36.5	36.8	36.8	36.9	37.0	37.0	37.0
R29	27.7	30.8	34.7	36.6	36.9	37.0	37.0	37.1	37.1	37.1
R31	27.8	30.7	34.5	36.4	36.7	36.8	36.9	37.0	37.0	37.0

Cumulative Operational Noise Assessment

- 10.11.5 The difference between predicted cumulative noise levels and cumulative noise limits is given in **Table 10.19**. Note that a negative value or zero indicates that the noise limit is met, while a positive value indicates the margin by which the noise limit is exceeded.

Table 10.19 – Difference Between Predicted Cumulative Noise Levels and Noise Limits, dB

Location	Standardised 10 m Height Wind Speed (ms ⁻¹)									
	3	4	5	6	7	8	9	10	11	12
R1	-17.3	-14.2	-10.2	-8.2	-7.7	-7.7	-7.6	-7.6	-7.6	-7.6
R2	-11.4	-9.7	-6.5	-4.5	-3.3	-4.9	-7.1	-9.5	-12.1	-14.7
R3	-11.5	-9.7	-6.6	-4.5	-3.4	-4.9	-7.2	-9.6	-12.2	-14.8
R4	-10.7	-9.3	-6.4	-5.5	-6.4	-8.9	-11.4	-13.7	-15.5	-16.7
R5	-10.0	-7.2	-3.3	-1.2	-0.6	-2.2	-4.5	-6.8	-9.4	-12.0
R6	-10.0	-7.1	-3.2	-1.1	-0.6	-2.1	-4.4	-6.8	-9.4	-12.0
R7	-10.7	-9.4	-6.6	-4.4	-2.9	-4.5	-6.8	-9.1	-11.7	-14.3
R8	-10.9	-9.6	-6.8	-4.7	-3.1	-4.7	-7.0	-9.4	-12.0	-14.6
R9	-12.2	-10.9	-8.2	-6.2	-5.8	-7.8	-9.8	-11.9	-13.8	-15.6
R10	-12.2	-10.9	-8.2	-6.2	-5.8	-7.8	-9.8	-11.9	-13.8	-15.6
R11	-12.2	-10.9	-8.1	-6.2	-5.8	-7.8	-9.8	-11.9	-13.8	-15.6
R12	-12.2	-10.8	-8.1	-6.2	-5.8	-7.8	-9.8	-11.8	-13.7	-15.5
R13	-12.2	-10.8	-8.1	-6.1	-5.8	-7.7	-9.7	-11.8	-13.7	-15.5
R14	-12.2	-10.8	-8.1	-6.1	-5.7	-7.7	-9.7	-11.8	-13.7	-15.5
R15	-13.7	-12.3	-9.7	-7.9	-7.6	-9.6	-11.6	-13.7	-15.6	-17.4
R17	-11.0	-8.5	-4.8	-2.7	-2.1	-3.6	-5.9	-8.2	-10.8	-13.4
R18	-11.0	-8.5	-4.9	-2.7	-2.1	-3.7	-5.9	-8.2	-10.8	-13.4
R19	-9.3	-6.0	-1.8	0.1	0.5	0.5	-0.9	-2.7	-4.9	-7.5
R20	-9.9	-6.6	-2.5	-0.5	-0.1	-0.1	-1.5	-3.3	-5.5	-8.1
R21	-9.5	-6.3	-2.2	-0.2	0.2	0.2	-1.2	-3.0	-5.2	-7.8
R22	-9.8	-6.6	-2.5	-0.5	-0.1	-0.1	-1.5	-3.3	-5.5	-8.1
R23	-9.7	-6.6	-2.6	-0.6	-0.2	-0.2	-1.5	-3.4	-5.6	-8.2
R25	-9.3	-6.0	-1.9	0.1	0.3	0.4	-1.0	-2.8	-5.0	-7.6
R28	-9.5	-6.4	-2.4	-0.5	-0.2	-0.2	-1.5	-3.3	-5.5	-8.1
R29	-9.3	-6.2	-2.3	-0.4	-0.1	0.0	-1.4	-3.2	-5.4	-8.0
R31	-9.2	-6.3	-2.5	-0.6	-0.3	-0.2	-1.5	-3.3	-5.5	-8.1

- 10.11.6 Noise limits are predicted to be exceeded by up to 0.5 dB at R19, by up to 0.2 dB at R21 and by up to 0.4 dB at R25. It is noted that in each case, the Proposed Development is the third most contributing development, with lower predicted noise contributions than both the consented Strath Oykel or proposed Allt An Tuir wind farms. In practice, these receptor locations could not be downwind of all three developments simultaneously. The cumulative noise limit would therefore not be exceeded for any given wind direction. Additionally, Allt An Tuir wind farm has not been consented, which makes these predictions a worst-case scenario. In the absence of Allt An Tuir wind farm, cumulative noise limits would be met.
- 10.11.7 Predicted noise levels adopt several other worst-case assumptions, including conservative noise propagation assumptions and assuming that the Strath Oykel wind farm will fully utilise its consented noise limits.
- 10.11.8 Overall, cumulative noise levels in practice would not exceed the specified noise limits. The cumulative operational noise effects are therefore anticipated to be not significant. However, consideration should be given to the context of the development and the potential effect of the Proposed Development on quiet respite periods.

Effects of the Proposed Development on Quiet Respite Periods

- 10.11.9 With reference to the Doune and Strathoykel village areas where the most affected receptors are located, the operational Rosehall wind farm is located to the northeast, while the consented Strath Oykel wind farm is located to the south / southwest, the proposed Allt An Tuir wind farm is to the north / northwest, while the Proposed Development is to the southwest.
- 10.11.10 In the existing situation, quiet respite periods would be anticipated to occur for most wind directions other than from the northeast. Given the introduction of the consented Strath Oykel wind farm, quiet respite periods would still occur when the wind direction is from the southeast, west or northwest. The introduction of the Allt An Tuir wind farm, if consented, would be anticipated to reduce quiet respite periods to occur only when the wind is from the southeast.
- 10.11.11 If Allt An Tuir wind farm is consented, the introduction of the Proposed Development would not be anticipated to have a notable further effect on quiet respite periods. However, if Allt An Tuir wind farm is not consented, the Proposed Development would be anticipated to result in a minor decrease in quiet respite periods at worst-affected receptors, due to there being a smaller range of westerly wind conditions

resulting in receptors being downwind from no wind farm developments. Northwesterly and southeasterly wind conditions would be anticipated to remain as quiet respite periods for these receptors.

- 10.11.12 Regardless of whether Allt An Tuir wind farm is consented, noise from the Proposed Development would not be anticipated to be the dominant noise source in the worst-affected areas for any wind direction.
- 10.11.13 In other receptor areas to the northeast, north, and south of the Proposed Development, there are no notable cumulative noise effects whereby a loss of quiet respite periods would be a notable consideration.
- 10.11.14 The noise modelling presented assumes downwind propagation, and therefore once wind direction is taken into account, worst-case operational noise levels will be lower.
- 10.11.15 The potential effect of the Proposed Development on quiet respite periods would therefore be not significant.

Decommissioning

- 10.11.16 Decommissioning activities are anticipated to result in noise levels that are the same or lower than those for construction activities. Therefore, where cumulative construction noise is considered to be acceptable, the same can be assumed for cumulative decommissioning noise. Cumulative decommissioning noise effects are therefore not significant.

10.12 Summary

- 10.12.1 This Chapter considers the likely noise effects associated with the construction, operation, and decommissioning of the Proposed Development.
- 10.12.2 Relevant Study Areas and receptors are identified for the assessment of noise from the construction of the Proposed Development, noise from construction vehicles, and noise from the operation of the Proposed Development. Three receptors are identified for the construction assessment, and 36 receptors are identified for the operational assessment.
- 10.12.3 The baseline noise situation is described, with reference to measurement data from background noise surveys conducted in 2024 at five locations and a survey conducted in 2022 at two locations for the Strath Oykel wind farm noise assessment. At one location, where measurements were undertaken in both 2022 and 2024, noise data are not considered to be suitable for use in the assessment. Background noise levels relative to wind speeds are set out for each of the other measurement locations for the daytime and night-time, respectively.
- 10.12.4 The assessment methodology and significance criteria used in completing the impact assessment are described, including the relevant legislation, policy, guidance documents, consultation responses, and other sources of information used to inform the assessment methods.
- 10.12.5 Construction noise is assessed with reference to the 'ABC' method described in BS 5228, while noise from construction vehicles is assessed with reference to the 'ABC' method in BS 5228 for access tracks and public roads with low traffic flows, or for public roads with moderate to large baseline traffic flows, by assessing the change in road traffic noise levels as determined using the methods in CRTN and assessing against noise-change criteria.
- 10.12.6 Operational noise is assessed with reference to ETSU-R-97 and the IOA GPG. Noise limits are derived based on background noise levels, at background noise levels plus 5 dB, for each integer wind speed from 3 to 12 ms⁻¹, subject to minimum noise limits of 35 dB during the daytime, 38 dB during the night-time, or 45 dB for the daytime and night-time for properties that are financially involved with the Proposed Development.
- 10.12.7 Decommissioning noise is assessed in general terms, with reference to the same criteria as for construction noise.
- 10.12.8 Cumulative noise levels are assessed against the same noise limits for the operational night-time. However, daytime cumulative noise limits were agreed with THC at background noise levels plus 5 dB or 37 dB (whichever is higher), since the nearby Strath Oykel wind farm has consented noise limits greater than 35 dB already.
- 10.12.9 The embedded mitigation measures are described, including the adoption of BPM for construction activities, the iterative design process for the Proposed Development, for which noise was one of several constraints considered, and the adoption of STE turbine blades.
- 10.12.10 Noise effects from the construction of the Proposed Development would not be significant, due to the large separation distances between noise-sensitive receptors and construction areas, and the resulting low noise levels likely to occur.
- 10.12.11 Potentially significant noise levels may occur during construction and modification of access tracks, particularly in combination with noise from construction vehicles on public roads. However, these effects

Chapter 11: Aviation

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11 Aviation

11.1 Executive Summary

- 11.1.1 This Chapter describes the likely effects of the Proposed Development on aviation stakeholder interests and reports on consultation and potential mitigation solutions. It shows that the only aviation issue that will need to be addressed is the design of a suitable aviation obstruction lighting scheme.

11.2 Introduction

- 11.2.1 This Chapter presents the findings of the assessment of effects of the Proposed Development in relation to aviation and defence. The assessment considers potential effects on the aviation and air defence activities of the Ministry of Defence (MOD) as safeguarded by the Defence Infrastructure Organisation (DIO). It also considers the possible effects of wind turbines upon the National Air Traffic Services En Route Ltd (NERL) communications, navigation, and surveillance (CNS) systems which consist of a network of primary and secondary radars and navigation facilities around the country. Finally, it considers the possible effects on airport radars and any other aviation stakeholder interests.
- 11.2.2 As well as examining the technical impact of wind turbines on Air Traffic Control (ATC) facilities, it is also necessary to consider the physical safeguarding of ATC operations to determine whether a development will breach obstacle clearance criteria.
- 11.2.3 This assessment should be read in conjunction with **Appendix 11.1: Wind Farm Aviation Lighting and Mitigation Report** (EIA Report Volume 4).
- 11.2.4 Wind turbines have the potential to affect civil and military aviation. This Chapter presents the methodology used to undertake the aviation safeguarding assessment, lists the aviation references used, and describes the aviation baseline condition, consultation requirements, and mitigations to be applied, if required.
- 11.2.5 The assessment has been written by Cdr John Taylor RN (Ret) of Wind Power Aviation Consultants Ltd (WPAC). John has over 35 years of experience as an Air Traffic Controller, Fighter Controller, and Aviation Regulator; John was head of Air Traffic Control for the Royal Navy. His responsibilities included responding to wind farm consultations on and offshore. Since 2008, WPAC has provided advice on the interaction between wind turbines and aviation, including assessing over 3000 wind turbine proposals and has given evidence at over 20 Public Inquiries and appeals in England and Scotland. He has also advised a number of Local Authorities on aviation related issues. WPAC has expertise in a number of areas including radar propagation and modelling, general aviation operations, turbine induced turbulence, aviation lighting, and low flying operations.
- 11.2.6 This Chapter is supported by the following Technical Appendix:
- Volume 4: Technical Appendices
 - **Technical Appendix 11.1: Aviation Lighting and Mitigation Report**

11.3 Legislation, Policy and Guidelines

- 11.3.1 There are a number of aviation publications relevant to the interaction of wind turbines and aviation containing guidance and legislation, which cover the complete spectrum of aviation activity in the UK, as listed below:
- Civil Aviation Authority (2020). Safeguarding of Aerodromes, Version 3, CAP738 CAA;
 - Civil Aviation Authority (2010). Safe Operating Practices at Unlicensed Aerodromes, Ed 1, CAP 793 CAA;
 - Civil Aviation Authority (2016) Policy and Guidance on Wind Turbines Version 6, CAP764 CAA;
 - Civil Aviation Authority (2017). CAA Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level CAA;
 - Civil Aviation Authority (2023). Manual of Air Traffic Services, Part 1, Ed 11.0, CAP 493 CAA;
 - Civil Aviation Authority (2021). UK Flight Information Services, Ed 4, CAP 774 CAA;
 - Civil Aviation Authority (2019). ATS Safety Requirements, Version 3, CAP 670 CAA;
 - Civil Aviation Authority (2022). Licensing of Aerodromes, Version 12, CAP 168 CAA;
 - Civil Aviation Authority (2020). Parachuting, Ed 5, CAP660 CAA;
 - Civil Aviation Authority (2022). Implementation of Safeguarding of Instrument Flight Procedures (IFPs) in the UK, Ed 2, Version 2, CAP 785B CAA;

- Civil Aviation Authority (2021) 'Guidance to crane users on aviation lighting and notification' CAP 1096 CAA;
- Ministry of Defence (MoD) (2022). Military Aviation Authority Regulatory Article 2330 (Low Flying);
- Ministry of Defence (MOD) (2020) Obstruction Lighting Guidance; and
- NatureScot Guidance on Aviation Lighting Impact Assessment, November 2024.

11.3.2 The above noted publications have also been considered in the aviation lighting assessment.

11.4 Consultation

11.4.1 **Table 11.1** summarises the consultation responses received regarding Aviation and provides information on where and/or how they have been addressed in this assessment.

11.4.2 Full details on the consultation responses can be reviewed in **Technical Appendix 1.1** (EIA Report Volume 4).

Table 11.1 – Consultation with Aviation Stakeholders

Consultee, Reference, and Date	Consultation Response	Applicant Response
MOD DIO10063721 21 August 2024	The MOD has concerns with this proposal due to the potential to create a physical obstruction to air traffic movements. <i>'As a minimum the MOD would require that the perimeter turbines are fitted with infra-red (IR) lighting'</i>	This issue is fully addressed in Technical Appendix 11.1 (EIA Report, Volume 4).
Highlands and Islands Airports Ltd (HIAL) 2024/198/INV 31 July 2024	<i>'The proposed development does not impact our safeguarding criteria and operations of Inverness Airport. Therefore HIAL has no objection to this current proposal'</i>	No action required except to confirm the finalised layout and turbine dimensions.
NATS Safeguarding SG37863 24 July 2024	<i>'The proposed development has been examined from a technical safeguarding aspect and does not conflict with our safeguarding criteria. Accordingly, NATS (En Route) Public Limited Company ("NERL") has no safeguarding objection to the proposal'</i>	No further action required except to confirm the finalised layout and turbine dimensions.

11.5 Assessment Methodology and Significance Criteria

Study Area

11.5.1 The assessment of effects of the proposed turbines is based upon the guidance outlined in CAP 764. Consultation criteria for aviation stakeholders is defined in Chapter 4 of CAP 764. The following distances inform the size of the Study Area and have been adopted in undertaking this assessment which comprise:

- Airfield with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1100 metres – 17 km;
- Non radar licensed aerodrome with a runway of less than 1100 metres – 5 km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Unlicensed aerodromes with runways of more than 800 metres – 4 km;
- Unlicensed aerodromes with runways of less than 800 metres – 3 km;
- Gliding sites – 10 km; and
- Other aviation activity such as parachute sites and microlight sites within 3 km – in such instances developers are referred to appropriate organisations.

11.5.2 CAP 764 further states that these distances are for guidance purposes only and do not represent ranges beyond which all wind turbine developments will be approved, or within which they will always be objected to. These ranges are intended as a prompt for further discussion between developers and aviation stakeholders, which are reported upon in this chapter. For example, Inverness Airport have stated a requirement to be consulted in relation to wind farms out to the maximum range of their radar and IFPs.

11.5.3 The assessment is desk-based which draws largely on published guidance and data.

11.5.4 It is necessary to take into account the aviation and air defence activities of the MOD as safeguarded by the DIO.

11.5.5 It is also necessary to take into account the possible effects of wind turbines upon the NERL communications, navigation, and surveillance (CNS) systems – a network of primary and secondary radars and navigation facilities around the country.

- 11.5.6 In addition to examining the technical impact of wind turbines on ATC facilities, it is also necessary to consider the physical safeguarding of ATC operations, using the criteria laid down in CAP 168 Licensing of Aerodromes, to determine whether a proposed development will breach obstacle clearance criteria. In this case, there are no physical safeguarding issues associated with the Proposed Development.

Radar Modelling Methodology

- 11.5.7 The radar calculation results referred to in this Chapter were produced using specialist propagation prediction software (RView Version 5). Developed over a number of years by WPAC, it has been designed and refined specifically for the task. RView is used to identify potential aviation effects of the Proposed Development. The results are then used as a basis for consultation and liaison with relevant aviation bodies, as detailed below. RView models terrain using the Ordnance Survey (OS) Terrain 50 digital terrain model, which has a post spacing of 50 m and has a root mean square (RMS) error of 4 m. The results are verified using the Shuttle Radar Topography Mission (SRTM) dataset, a separate smoothed digital terrain model with data spacing of 3 arc seconds. By using two separate and independently generated digital terrain models, anomalies are identified and consistent results assured. Rview models the refractive effects of the atmosphere on radio waves and the First Fresnel Zone. A feature of RView is that as well as performing calculations in the manner believed to be most appropriate, it also allows comparison with results from simpler models. For example, RView can perform calculations using the true Earth Radius at the midpoint between the radar and the wind turbine or the simplified 4/3 Earth Radius model. If needed, Rview is also capable of modelling a range of atmospheric refractive conditions. RView models the trajectory of radar signals at different elevations allowing modelling of both volume surveillance and pencil beam radars as well as the effects of angular sterilisation as applied, for example, in Met Office radars.

Assessing Significance

- 11.5.8 There is no agreed or mandated definition of significance when assessing development proposals for wind farms in relation to aviation. Whilst technical effects on CNS systems are simple to identify and evaluate, operational and flight safety effects can be subjective and are often challenged by third parties. It is sufficient in this context to identify any technical effects and then, taking into account the statements in CAP 764 regarding the status of aviation stakeholders, in general to accept the judgement of those stakeholders in assessing the significance of the effects. For example, CAP 764 states:

"Where an ANSP determines that it is likely that a planned wind turbine development would result in any of the above effects on their CNS infrastructure, this may not, in itself, be sufficient reason to justify grounds for rejection of the planning application. The ANSP must determine whether the effect on the CNS infrastructure has a negative impact on the provision of the ATS. The developer should pay for an assessment of appropriate mitigating actions that could be taken by the ANSP and/or wind energy developer to deal with the negative impact. The position of an ANSP at inquiry would be significantly degraded if they had not considered all potentially appropriate mitigations."

- 11.5.9 Therefore, it is not considered to be appropriate to make an assessment of the significance of an effect in relation to aviation interests. Also, it is often the case that different Air Navigation Service Providers (ANSP) take a different view of the same scenario and may disagree with the assessment findings; this can require further post submission consultation, to confirm the findings of the assessment and/or agree to the need for and extent of mitigation. Therefore, this assessment does not make a judgement of significance but is focussed on identifying potential impacts and agreeing mitigation with aviation stakeholders as required.

11.6 Baseline Conditions

Current Baseline

- 11.6.1 The Proposed Development is located approximately 60 km to the northwest of Inverness Airport and approximately 85 km to the west northwest of RAF Lossiemouth. In airspace terms it is within Class G unregulated airspace which extends up to 19500 ft. The Proposed Development is located within R610A, also known as Highlands Restricted Airspace (HRA) which was established to protect tactical low flying in the area, which extends across virtually the whole of Northern Scotland. From an aviation perspective this is a remote location likely to have no effects on the provision of ATC services.

11.7 Potential Effects

Construction

- 11.7.1 There are no technical effects on aviation interests during construction. The only aviation issues likely to arise are those associated with the operation of large cranes, which will be the subject of standard conditions for crane operations as laid down in CAA CAP1096 'Guidance to crane users on aviation lighting and notification'.

Operation

- 11.7.2 The following section assesses the effect of the Proposed Development on both radar and non-radar facilities, in accordance with the guidance in CAP 764.

Radar Equipped CAA Licensed Aerodromes

- 11.7.3 There are no aerodromes within or close to consultation distance to the Proposed Development. The closest is Inverness Airport, approximately 60 km away. Radar modelling confirms that radar line of sight over the Proposed Development is in excess of 500 m above ground level (AGL) and there is no possibility of the turbines affecting the radars at Inverness.
- 11.7.4 Given the Proposed Development distance from Inverness Airport, there is no requirement for any proposed turbines to be assessed against IFPs.

Non-Radar Equipped CAA Licensed Aerodromes

- 11.7.5 There are no non-radar equipped licensed aerodromes within or even close to the recommended consultation distance. The closest is at Stornoway, over 100 km to the northwest. Consultation is not required and there will be no effect on Stornoway or any other CAA licensed aerodromes.

Unlicensed Aerodromes, Gliding and Micro-light Sites

- 11.7.6 There are no unlicensed aerodromes, gliding, or micro-light sites marked on aviation charts within or close to consultation distance to the Site.

NATS En Route (NERL) Communications, Navigation and Surveillance (CNS) Systems

- 11.7.7 The closest NATS radars are located at Alanshill, south of Banff and Perwinnes, adjacent to Aberdeen Airport. Radar modelling has been undertaken which demonstrates that radar line of sight is well in excess of 500 m AGL and there is no possibility of any NATS CNS systems being affected by the Proposed Development.

Ministry of Defence ATC Radars

- 11.7.8 The only military ATC radar in the region is located at RAF Lossiemouth, over 80 km to the east southeast. The radar has recently been replaced with a Thales Star 2000NG radar. Radar modelling has been undertaken with the results shown in **Table 11.2**. Five turbines have potential radar line of sight to the RAF Lossiemouth radar; however, these results are very similar to those from the Proposed Development layout at scoping stage which the MOD determined would not be an issue of concern in relation to radar, almost certainly due to the extreme distance from the airfield.

Table 11.2 - Radar Line of Sight Results RAF Lossiemouth

Turbine	Distance (km)	Radar Line of Sight (m AGL)
1	84.418	286.3
2	84.97	247.4
3	83.626	269.3
4	84.34	198.2
5	84.015	160.5
6	83.3	177.3
7	82.808	125.1
8	82.316	183.5
9	81.974	199.4
10	82.385	228.8
11	82.603	264.4

Ministry of Defence Low Flying

- 11.7.9 The Proposed Development is located within MOD Low Flying Area (LFA) 14, the more important Tactical Training Area (TTA) 14, and the Highland Restricted Area (HRA). At night this area converts to Night Allocated Region (NAR) 1BE, an area primarily reserved for fast jet low flying in the hours of darkness but is occasionally used by military helicopters. For this reason, the MOD have requested infra-red perimeter lighting. This issue is addressed in **Appendix 11.1** (EIA Report, Volume 4).

Decommissioning

- 11.7.10 There are no technical effects on aviation interests during decommissioning. The only aviation issues are those associated with the operation of large cranes which will be the subject of standard conditions for crane operations as laid down in CAA CAP1096 'Guidance to crane users on aviation lighting and notification.

11.8 Additional Mitigation and Enhancement

- 11.8.1 Wind turbines with a tip height in excess of 150 m are required to be illuminated with medium-intensity red aviation obstruction lights installed on the turbine hub in accordance with the CAA Policy Statement: 'Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150 m Above Ground Level'.
- 11.8.2 WPAC, on behalf of the Applicant, has prepared a reduced lighting scheme that fulfils the requirements for flight safety whilst minimising environmental (visual) effects which has gained approval from the CAA (see **Appendix 11.1**, EIA Report, Volume 4). **Appendix 11.1** (EIA Report, Volume 4) sets out the arrangement of the aviation lights and provides an estimate of the percentage of time that the lights will be at full power and at 10% intensity based on historical Met Office records of visibility and cloud base in the region. As noted above, each turbine will be fitted with MOD specification IR lighting to mitigate effects on military low flying. The implementation of the proposed lighting scheme (both visible and infra-red) will be subject to a suspensive planning condition to the consent if granted.
- 11.8.3 An assessment of the intensity of the visible lights at selected viewpoints is provided in **Chapter 4- LVIA** (EIA Report, Volume 2).

11.9 Residual Effects

- 11.9.1 With the exception of aviation lighting there are no residual effects.

11.10 Summary

- 11.10.1 An aviation assessment has been undertaken using the guidance laid down in CAP 764. It shows that with the exception of a requirement for aviation lighting, there will no effects on aviation stakeholders.

11.11 Glossary and Abbreviations

Abbreviation	Expanded Term
AGL	Above Ground Level
ANO	Air Navigation Order
ANSP	Air Navigation Service Provider
AMSL	Above Mean Sea Level
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CNS	Communications, Navigation and Surveillance Systems
CTA	Control Area
DIO	Defence Infrastructure Organisation
IFP	Instrument Flight Procedures
IR	Infra-Red
MOD	Ministry Of Defence
NATS	National Air Traffic Services
NERL	NATS En Route Ltd

Chapter 12: Summary and Mitigation

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12 Summary and Mitigation

12.1 Introduction

- 12.1.1 The purpose of this Chapter is to summarise the mitigation measures proposed in each of the technical Chapters to avoid, reduce or offset impacts which could otherwise give rise to significant residual environmental effects. In addition, some good practice environmental management measures and commitments have been proposed to further reduce environmental effects which are not considered to give rise to likely significant effects with or without mitigation. It is anticipated that the mitigation measures outlined in **Table 12.1** would be secured through appropriately worded conditions of consent.
- 12.1.2 The main aim of the design process was to 'design out' the potential for significant environmental effects as far as possible. Embedded mitigation in the form of design solutions is presented in **Chapter 3** (EIA Report Volume 2), in particular **Table 3.1** which provides a detailed review of mitigation achieved through design. As such these measures have not been replicated here.
- 12.1.3 Most of the pre-construction and construction phase mitigation would be delivered through a Construction Environmental Management Plan (CEMP). The outline content of the proposed CEMP is provided in **Technical Appendix 2.1** (EIA Report Volume 4). Further details on specific measures to be included in the final CEMP are contained in each of the technical chapters of the EIA Report, where relevant.

12.2 Summary of Likely Significant Effects

- 12.2.1 Throughout the EIA Report, technical disciplines have considered the likely significant effects of the Proposed Development with consideration of embedded mitigation and commitments. Where significant effects have been identified, additional mitigation is proposed to minimise these effects.
- 12.2.2 **Table 12.1** summarises the predicted likely significant effects of the Proposed Development. Note that the table only includes receptors where likely significant effects are predicted pre-additional mitigation. Where the assessment has identified that there would be no likely significant effects to receptors pertaining to a particular environmental topic during construction or operation, this technical topic has not been included in the table. Note that the table does describe the mitigation incorporated into the design ('embedded mitigation') for topics where potential significant effects are identified. It is anticipated that the mitigation measures outlined in this table would be secured through appropriately worded conditions of consent.

Table 12.1 – Summary of Residual Effects and Mitigation Measures

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Construction				
Landscape and Visual Amenity	Landscape Fabric effects	All working areas would be restricted as far as practicable to specified areas to prevent incursion of site plant into non-construction areas. Material storage and temporary stockpiles would be retained for the shortest possible duration and would be sited in accordance with the latest best practice guidance and to avoid visual intrusion to neighbouring visual receptors in accordance with the Outline Construction Environmental Management Plan (OCEMP) see Technical Appendix 2.1 (EIA Report Volume 4). The turbine array and access paths have been designed to limit effects on deep peat. Where peatland materials do need to be excavated or moved, they will be placed wherever practicable to avoid double handling, reduce the number of vehicle movements, and to reduce the potential drying out and oxidisation of the material. See the Outline Peatland Management Plan (OPMP) Technical Appendix 8.3 (EIA Report Volume 4).	Implementation and monitoring of mitigation measures and CEMP.	Not significant.
	Landscape effects on 'host' Landscape Character Type (LCT) 135: Rounded Hills -Caithness and Sutherland and adjacent LCT 142: Strath - Caithness and Sutherland.	As above.	Implementation and monitoring of mitigation measures and CEMP.	Not significant.
	Landscape effects on: – NSA: 36 – SLA:18 – WLA: 29; and – WLA 34.	As above.	As above.	Not significant.
	Visual Amenity effects on: – Settlements (Rosehall; Oykel Bridge; Achnahamat; Between Achintoul and Altass; and Oape, Doune and Brae); – Roads (A837; A836; Minor road between Altass and Rosehall; and A949); – Recreational Routes, Trails and Summits (Cape Wrath Trail, Croick Glen Einig, Rosehall Estate Trails; and Carn a Choin Deirg); and – VeiwPoints 1-24.	As above.	As above.	Not significant overall, but there is potential for temporary, localised significant effects according to the stage of construction and the area of focus.

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Cultural Heritage	Direct impacts to known heritage assets.	Demarcation and avoidance of heritage assets along western access where possible; where not possible, archaeological excavation and monitoring during construction works in order to preserve by record the assets.	Details of mitigation would be agreed with The Highland Council (THC) in consultation with the THC Historic Environment Team (HET) Archaeologist through a Written Scheme of Investigation (WSI) and undertaken as part of a planning condition.	Not significant.
Ecology	River Oykel SAC – Disturbance/Damage	Not required; standard, embedded mitigation, and good practice protocols (including pollution prevention and monitoring, as part of CEMP and sensitive design of essential watercourse crossings) applied.	Not applicable.	Not significant.
	Priority Peatland of Possible National Interest – Habitat loss.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Priority Peatland Not of Possible National Interest – Habitat loss.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Other notable habitat – Habitat loss.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Foraging/commuting bats – Habitat loss.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Foraging/commuting bats – Displacement/disturbance.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
Hydrology, Hydrogeology and Geology	Effects on Peat: Peat Landslide Hazard Risk Assessment; and Peat Resource.	Not required; embedded mitigation applied and with infrastructure reinstatement, additional Bat Exclusion Areas (BEAs), and Forest to Bog (FTB) all excavated peat can be appropriately used.	Further ground investigation detailed Peat Management Plan (PMP), geotechnical risk register and peat reuse around infrastructure, restoration around BEAs, and FTB (enhancement measures detailed in the ONEMP).	Not significant.
Traffic and Transport	<i>Eastern Access Option</i>			
	C1136 Users / Residents	Implementation of Construction Traffic Management Plan (CTMP), Staff Travel Plan, Abnormal Invisible Loads (AIL) Transport Management Plan (TMP), provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	A837 Users / Residents	As above	As above	Not significant.
	A839 Users / Residents West of Lairg	As above	As above	Not significant.
	A836 Users / Residents	As above	As above	Not significant.
	Lairg Residents	As above	As above	Not significant.
	Rosehall & Invercassley Residents	As above	As above	Not significant.

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	Bonar Bridge Residents	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	Pittentrail Residents	As above	As above	Not significant.
	Core Path / Path Network Users	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an Outdoor Access Management Plan (OAMP).	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	<i>Western Access Option</i>			
	Oykel Bridge Road (U3581) Users / Residents	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and provision of localised road improvement works.	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	A837 Users / Residents.	As above	As above	Not significant.
	A839 Users / Residents West of Lairg	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage and convoy escorts for AIL movements.	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	A836 Users / Residents	As above	As above	Not significant.
	Lairg Residents	As above	As above	Not significant.
	Rosehall & Invercassley Residents	As above	As above	Not significant.
	Bonar Bridge Residents	Implementation of CTMP, Staff Travel Plan and provision of construction traffic road signage	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
	Pittentrail Residents	As above	As above	Not significant.
	Core Path / Path Network Users - Major – Significant.	Implementation of CTMP, Staff Travel Plan, AIL Transport Management Plan, provision of construction traffic road signage, convoy escorts for AIL movements and implementation of an OAMP.	Via a condition of consent. Plans and proposals proposed to be agreed with THC and Transport Scotland (TS).	Not significant.
Operation				
Landscape and Visual Amenity	Landscape Fabric effects	No additional mitigation proposed during operation.	Ongoing monitoring of mitigation measures such as compensatory tree planting, habitat creation and or peat restoration	Not significant.

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	Landscape effects on: – LCT:135; – LCT:139; – LCT:142; – LCT: 328; – LCT: 329; – LCT: 330; and – LCT: 332	No additional mitigation proposed during operation.	Not applicable.	– Localised significant. – Localised significant – Localised significant. – Not significant. – Not significant. – Not significant. – Not significant.
	Landscape effects on: – NSA:36; – SLA:18; and – WLA: 29.	No additional mitigation proposed during operation.	Not applicable.	– Not significant. – Not significant. – Not significant.
	Visual Amenity effects on: Settlements: – Rosehall; – Oykel Bridge; – Achnahanat; – Between Achintoul and Altass; and – Oape, Doune and Brae. Roads – A837; – Minor road between Altass and Rosehall; and – A949. Recreational Routes, Trails and Summits – Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails. – Viewpoints 1-24	No additional mitigation proposed during operation.	Not applicable.	– Not significant. – Significant. – Not significant. – Not significant. – Not significant. – Significant (for short section). – Not significant. – Significant. – Not significant. – Not significant. – Not significant. Some temporary, and highly localised significant effects. The locations of these effects would vary according to the stage of

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
				construction and the area of focus.
Ecology	Habitat loss - Priority Peatland of Possible National Interest	Up to 94 ha of peatland will be restored or created, with 75 ha of this peatland representing mitigation/compensation. This signifies significant biodiversity benefits.	The restoration protocol would be implemented as additional mitigation and would be a condition of any consent. Enhancement measures (detailed in the NEMP) would also restore peatland on-site, and this is considered additional to the compensation to be implemented. Up to 94 ha peatland for restoration/creation is considered as appropriate additional mitigation (75 ha) and enhancement (19 ha).	Not significant.
	Habitat loss - Priority Peatland Not of Possible National Interest.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Collision mortality - Foraging/commuting bats.	Not required; standard, embedded mitigation applied. Although feathering of blades, when idling, to reduce rotation speeds below 2rpm and a programme of bat monitoring (including bat carcasses searches).	Through scheme design of the Proposed Development.	Not significant.
	Habitat loss/displacement/ disturbance - Foraging/commuting bats.	Not required; standard, embedded mitigation applied.	Not applicable	Not significant.
Decommissioning				
Landscape and Visual	Equivalent to Construction.	Equivalent to Construction.	Implementation and monitoring of mitigation measures and CEMP.	Not significant.
Ecology	Habitat loss - Priority Peatland of Possible National Interest.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Habitat loss - Priority Peatland Not of Possible National Interest.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Habitat loss - Other notable habitat.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Habitat loss - Foraging/commuting bats.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
	Displacement/disturbance - Foraging/commuting bats.	Not required; standard, embedded mitigation applied.	Not applicable.	Not significant.
Cumulative Construction				

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
Landscape and Visual Amenity	Landscape Fabric.	All working areas would be restricted as far as practicable to specified areas to prevent incursion of site plant into non-construction areas; Material storage and temporary stockpiles would be retained for the shortest possible duration and would be sited in accordance with the latest best practice guidance and to avoid visual intrusion to neighbouring visual receptors in accordance with the Outline Construction Environmental Management Plan (OCEMP) see Technical Appendix 2.1 (EIA Report Volume 4); and The turbine array and access paths have been designed to limit effects on deep peat. Where peatland materials do need to be excavated or moved, they will be placed wherever practicable to avoid double handling, reduce the number of vehicle movements and to reduce the potential drying out and oxidation of the material. See the Outline Peatland Management Plan (OPMP) Technical Appendix 8.3 (EIA Report Volume 4).	Implementation and monitoring of mitigation measures and CEMP.	Not significant.
	Landscape effects on: – LCT:135; – LCT:139; – LCT:142; – LCT: 328; – LCT: 329; – LCT: 330; and – LCT 332.	As above.	As above.	– Localised significant. – Localised significant. – Localised significant. – Not significant. – Not significant. – Not significant. – Not significant.
	Landscape effects on: – NSA:36; – SLA:18; and – WLA: 29.	As above.	As above.	– Not significant. – Localised significant. – Localised significant.
	Visual Amenity effects on: Settlements: – Rosehall;	As above.	As above.	– Localised significant. – Not significant.

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	- Oykel Bridge; - Achnahanat; - Between Achintoul and Altass; and - Oape, Doune and Brae. Roads - A837; - A836; - Minor road between Altass and Rosehall; and - A949. Recreational Routes, Trails and Summits - Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails.			- Localised significant. - Significant. - Significant. - Localised significant. - Not significant. - Significant. - Not significant. - Not significant.
Cumulative Operation				
Landscape and Visual Amenity	Landscape Fabric.	No additional mitigation proposed during operation.	Not applicable.	– Not significant.
	Landscape effects on: - LCT:135; - LCT:139; - LCT:142; - LCT: 328; - LCT: 329; - LCT: 330; and - LCT 332.	No additional mitigation proposed during operation.	Not applicable.	- Significant. - Localised significant. - Localised significant. - Localised significant. - Localised significant. - Localised significant. - Not significant. - Not significant.
	Landscape effects on: - NSA:36; - SLA:18; - WLA: 29	No additional mitigation proposed during operation.	Not applicable.	- Localised significant. - Localised significant. - Localised significant.

Topic	Potential Significant Effect (without Mitigation)	Mitigation Proposed	Means of Implementation	Outcome / Residual Effect
	Visual Amenity effects on: Settlements: – Rosehall; – Oykel Bridge; – Achnahanat; – Between Achintoul and Altass; and – Oape, Doune and Brae. Roads – A837; – Minor road between Altass and Rosehall; and – A949. Recreational Routes, Trails and Summits – Cape Wrath Trail, Croick Glen Einig, Rosejhall Estate Trails. – Viewpoints 1-24	No additional mitigation proposed during operation.	Not applicable.	– Significant. – Significant. – Significant. – Significant. – Significant. – Significant. – Localised significant. – Significant. – Not significant. – Significant effects are identified for VPs 5, 7, 8, 9, 14, 15, 16, 20, 21 and 23 (In-Addition). In-Combination significant effects have been identified for all other viewpoints excepting viewpoints 10, and 22.