Uisenis Wind Farm

Volume 2

Environmental Impact Assessment Report Chapters

August 2023

SLR

Uisenis Power Limited

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INTRODUCTION

1.1 Uisenis Power Limited (the applicant) proposes to install and operate up to 25 wind turbines with associated infrastructure (the proposed development) on land (the Site) within the Eisgein (Eishken) Estate on the Isle of Lewis (**Figure 1.1**). The Site application boundary is shown in **Figure 1.2**. The proposed development would be located within the administrative boundary of Comhairle nan Eilean Siar (CnES), Western Isles Council, approximately 20km south west of Stornoway, centred on National Grid Reference (NGR) NB 31366 12772 and would be known as Uisenis Wind Farm. The proposed development would have a generating capacity in the region of 165MW. The applicant is a wholly owned subsidiary of Eurowind Energy A/S.

1.2 The proposed development is being progressed with a shared ownership opportunity for communities in the local area, which are being offered the opportunity to acquire up to a 20% share of the proposed development. This would be explored in depth with CnES and the existing local development trusts should the proposed development receive consent.

1.3 For the purposes of the Environmental Impact Assessment (EIA), the height of the proposed turbines has been assessed as 200m to blade tip in an upright position for 22 of the proposed turbines, and 180m to blade tip in an upright position for three of the proposed turbines, with the proposed development as a whole resulting in giving a total installed capacity in the region of 165MW.

1.4 The proposed development would produce an average of approximately 578,160 Megawatt hours (MWh) of electricity annually (based on a site derived capacity factor of 40%). This equates to the power consumed by approximately 164,764 average UK households[1], which would be well above the energy requirements of the approximately 14,901 homes across the Western Isles[2]. This equates to an annual reduction in CO_2 emissions of approximately 249,765 tonnes, when compared to the amount of CO_2 emitted by fossil fuels to produce the same amount of electricity.

1.5 As the proposed development would have a generating capacity exceeding 50MW, the applicant is submitting an application under Section 36 of the Electricity Act 1989, and also seeking a direction that planning permission is deemed to be granted in terms of Section 57(2) of the Town and Country Planning (Scotland) Act 1997.

1.6 The precise grid connection route would be subject to a separate application, which would require consent under Section 37 of the Electricity Act 1989, which is the subject of a separate consenting process to this planning application. The Section 37 application would be progressed by the transmission network operator.

[1] Calculated using the most recent statistics from the Department of Business, Energy and Industrial Strategy (BEIS) showing that annual UK average domestic household consumption in 2022 was 3,509kWh

[2] https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2FS08000028

PURPOSE OF THE EIA REPORT

1.7 This EIA Report has been prepared in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, hereinafter referred to as the EIA Regulations 2017.

1.8 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 by virtue of factors such as the nature, size, or location of the development proposal, then an EIA Report 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."* It is considered that the proposed development meets the criteria necessary for an EIA Report to be required.

1.9 This EIA Report presents the findings of the EIA process by describing the proposed development, the current condition and future baseline condition at the Site, and the likely impacts which may result from the construction, operation, and decommissioning of the proposed development. Where appropriate, mitigation is proposed, and any residual impacts are reported.

THE APPLICANT

1.10 The applicant is Uisenis Power Limited, which is a wholly owned subsidiary of Eurowind Energy A/S. Established in 2006, Eurowind Energy A/S (EWE) is one of Europe's leading renewable energy companies. With a head office in Hobro Denmark, EWE employs approximately 400 staff across 14 countries. EWE is 50% owned by Holdings Aps and 50% by Norlys. Norlys is Denmark's largest integrated energy and telecom group with more than 700,000 shareholders and 2,500 employees.

1.11 EWE develop, construct, and operate wind, solar photovoltaic and 'Power to X' assets across Europe and in the USA. As of November 2022, EWE owned 857MW of operational renewable assets and held under asset management a portfolio of 1,616MW. The Company has a growing development pipeline of 25,500MW which is anticipated to deliver over 300MW per year into ownership and 550MW into asset management over the next few years. Currently the business is adding one new Country per year to its development business and is on target to meet a 2025 target of 2,000 operational MW in ownership and 4,000MW in asset management. EWE employs an experienced UK team based in Glasgow that was established in 2021. EWE UK has one operational wind farm in the UK, at Howpark in The Scottish Borders and has a growing development portfolio of over 500MW in addition to the Uisenis Wind Farm.

EIA PROJECT TEAM AND COMPETENCY

1.12 The coordination of this EIA has been led by SLR with assistance from other specialist technical and environmental consultants.

1.13 SLR is one of the UK's fastest growing multi-disciplinary environmental consultancies. Within the energy sector, SLR provides a wide range of planning, environmental and technical services relating to the design and development of wind farms and other renewable energy projects. The company becomes involved in all aspects of facility development, from initial concept design, through planning and permitting to the detailed design, construction management and closure stages.

1.14 SLR is a registered Environmental Impact Assessor, Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the IEMA EIA Quality Mark. The company has significant experience in the preparation of planning applications and undertaking EIA for a wide variety of projects, including renewable energy, minerals, waste and infrastructure developments.

1.15 Further information on SLR Consulting Limited can be found on its corporate website at www.slrconsulting.com.

1.16 For this project, SLR is responsible for the following technical disciplines:

- EIA and Planning;
- Hydrology, Hydrogeology and Soils;
- Ecology;
- Cultural Heritage and Archaeology;
- Socio-economics, Tourism, Recreation and Land Use;
- Other Environmental Issues (e.g. shadow flicker and telecommunications); and
- GIS.

1.17 SLR is supported by the following specialist consultancies:

- Land Use Consultants (LUC) - Landscape and Visual Amenity;
- MacArthur Green - Ornithology;
- Bow Acoustics - Noise and Vibration;
- Pell Frischmann - Site Access, Traffic and Transport; and
- Wind Business - Aviation.

1.18 SLR confirms that the technical experts that have carried out the EIA and produced the EIA Report have the skills and relevant competency, expertise and qualifications to undertake the EIA for the proposed development. **Table 1-1** demonstrates the relevant competency for each technical discipline covered in this EIA Report.

Table 1-1: EIA Team Competency

Discipline	Specialist Assessor	Qualifications	Years of Experience
Renewable Energy and Planning Policy	SLR: - Michael Fenny - Alastair Smith - Emma Quinn	 MA(Hons), MSc, MRTPI BSc (Hons), MSc, LRTPI BSc (Hons), MSc, AIEMA	 16 years 5 years 5 years
Landscape and Visual Amenity	LUC: - Dan Walker - Allison Palenske	 BSc (Hons), MLA, CMLI IMFA, BLA, Associate MLI, CMLI	 13 years 5 years
Ecology	SLR: - Duncan Watson - Sara Toule - Kirstie Hazelwood	 BSc (Hons) MSc CEnv MCIEEM BSc (Hons), MRes, ACIEEM BMus (Hons), MSc, PhD, ACIEEM	 20 years 13 years 8 years
Ornithology	MacArthur Green: - Rafe Dewar	 BSc (Hons), MSc	 17 years
Hydrology, Hydrogeology and Soils (including Peat Landslide Hazard Risk Assessment)	SLR: - Gordon Robb - Alan Huntridge - Ruari Watson - Katy Rainford	 BSc (Hons), MSc, MBA, FCIWEM, C.WEM BSc (Hons), MSc BSc (Hons) BSc (Hons), FGS, MCIWEM	 30 years 15 years 10 years 5 years
Cultural Heritage and Archaeology	SLR: - Chris Morley - Beth Gray	 BA (Hons), MPhil, MCIfA MA (Hons), ACIfA	 15 years 7 years
Noise and Vibration	Bow Acoustics: - Richard Carter	 CEng, BEng (Hons), MIOA	 18 years
Site Access, Traffic and Transport	Pell Frischmann: - Gordon Buchan - Stephen Cochrane - Cezary Noremberg	 BEng (Hons), MSc, FCIHT, CMILT BSc (Hons), HND, CMILT, MCIHT BEng (Hons)	 26 years 21 years 5 years
Socio-Economics, Tourism, Recreation and Land Use	SLR: - Anne Dugdale - Ben Wyper Development Economics: - Steve Lucas	 BSc, MA, FIQ, MRTPI BSc, MSc BSc, MSc	 35 years 2 years 32 years
Aviation	Wind Business: - Ian Fletcher	 B. Eng Mechanical Engineering	 21 years
Carbon Emissions	SLR: - Ruari Watson	 BSc (Hons)	 10 years
Infrastructure, Telecommunications and Broadcast Services	SLR: - Alastair Smith	 BSc (Hons), MSc, LRTPI	 5 years
Shadow Flicker	SLR: - Tim Doggett	 BSc, MSc	 15 years
GIS	SLR: - Jon Salter - Sophie Humphry	 BSc BSc, MSc	 8 years 6 years

STRUCTURE OF THE EIA REPORT

1.19 The EIA Report is presented in four volumes as follows:

- 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: Environmental Impact Assessment Report (EIA Report);

  The EIA Report as structured as follows:

  - Chapter 1: Introduction;
  - Chapter 2: Site Description and Design Evolution;
  - Chapter 3: Description of Development;
  - Chapter 4: Renewable Energy and Planning Policy;
  - Chapter 5: Environmental Impact Assessment;
  - Chapter 6: Scoping and Consultation;
  - Chapter 7: Landscape and Visual Amenity;
  - Chapter 8: Ecology;
  - Chapter 9: Ornithology;
  - Chapter 10: Hydrology, Hydrogeology and Geology;
  - Chapter 11: Cultural Heritage and Archaeology;
  - Chapter 12: Site Access, Traffic and Transport;
  - Chapter 13: Noise;
  - Chapter 14: Socio-economics, Tourism, Recreation and Land Use;
  - Chapter 15: Aviation;
  - Chapter 16: Other Issues; and
  - Chapter 17: Schedule of Commitments.

- Volume 3: EIA Report Figures;

  The EIA Report Figures are separated out into four sub-volumes as follows:

  - Volume 3a: Figures to support Chapters 1-7 of the EIA;
  - Volume 3b: Proposed development visualisations (NatureScot) – viewpoints 1 - 9;
  - Volume 3c: Proposed development visualisations (NatureScot) – viewpoints 10 - 18; and
  - Volume 3d: Figures to support Chapters 8-17 of the EIA.

- Volume 4a-b: EIA Report Technical Appendices.

1.20 The technical appendices that are referred to in each Chapter of the EIA Report are compiled separately in Volume 4a-b. They are numbered sequentially for each of the Chapters in which they are principally referred to.

1.21 A suite of additional supporting documents have been prepared to accompany the application. Included in this, a Planning Statement sets out an assessment of the Development in the context of national planning, energy policy, the local development plan, and emerging planning policies. It also considers the potential benefits and harm which may arise and concludes as to the overall acceptability of the proposal in relation to the planning context.

1.22 In addition to the Planning Statement, a Pre-Application Consultation Report (PAC Report) and a Project Comparison Report will be submitted to support the application. These additional documents do not form part of the EIA Report.

PUBLICITY OF THE EIA REPORT

1.23 The EIA Report will be publicised in accordance with Part 5 of the 2017 Regulations and the Electricity (Applications for Consent) Regulations 1990 (as amended).

1.24 Notice will be published as follows:

- on the project website: https://eurowindenergy.com/uk/our-projects/uisenis-wind-farm;
- in the Edinburgh Gazette;
- in The Scotsman; and
- in the Stornoway Gazette.

1.25 In addition to the statutory requirements for publicising the EIA Report, the applicant has advised the following local Community Councils of the EIA Report being available:

- Kinloch Community Council;
- Pairc Community Council;
- North Lochs Community Council; and
- North Harris County Council.

1.26 Hard copies of the EIA Report can be viewed at the following locations during their opening hours:

- Comhairle nan Eilean Siar Council Building, Sandwick Road, Stornoway, Isle of Lewis, HS1 2BW;
- Kinloch Historical Society, Community Hub, Balallan, Isle of Lewis, HS2 9PN;
- North Lochs Community Association, Leurbost, Isle of Lewis, HS2 9NU; and
- Ravenspoint Community Centre, Kershader, South Lochs, Isle of Lewis, HS2 9QA.

1.27 A copy of the EIA Report Volumes will be made available for download from the project website at: https://eurowindenergy.com/uk/our-projects/uisenis-wind-farm.

1.28 Paper copies of the NTS are available free of charge from:

SLR Consulting Limited,
Office 4.04,
Clockwise Offices,
Savoy Tower,
77 Renfrew St,
Glasgow,
G2 3BZT

Tel: 07718 482283

1.29 Paper copies of the EIA Report may be purchased by arrangement from the above address for £1,400 per copy, or £15 per disk/USB memory stick copy. The price of the paper copy reflects the cost of producing all of the Landscape and Visual photographs at the recommended size. As such, a CD/USB memory stick version is recommended.

REFERENCES

The Electricity Act 1989.

The Electricity (Applications for Consent) Regulations 1990 (as amended).

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

Town and Country Planning (Scotland) Act 1997 as amended.

Statistics.gov.scot (Scottish Government). Health Board Area Western Isles. Available at: https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2FS08000028 [Accessed on 22 March 2023].

Department for Business, Energy & Industrial Strategy (2022). Subnational Electricity and Gas Consumption Statistics. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1126284/subnational_electricity_and_gas_consumption_summary_report_2021.pdf

RenewableUK (2022). Wind Energy Statistics Explained. Available at: https://www.renewableuk.com/page/UKWEDExplained [Accessed on 07 March 2023].

CONTENTS

INTRODUCTION

2.1 This Chapter outlines the process undertaken in selecting the Site as a potential location for a wind farm, provides a description of the Site and surrounding area, and discusses the design evolution process.

2.2 The principles of the EIA process; that Site selection and project design should be an iterative constraint-led process, have been followed as part of the proposed development. This has ensured that potential adverse impacts on the environment, as a result of the proposed development, have been avoided or minimised as far as reasonably possible through the design process.

2.3 This Chapter draws on issues considered in more detail in the relevant technical chapters (**Chapters 7** to **16**). This Chapter does not pre-empt the conclusions of the latter chapters, but explains how potential environmental effects have informed the design of the proposed development.

2.4 The design for the proposed development is described in **Chapter 3: Description of Development** and is shown on **Figure 3.1**. This Chapter is supported by the **Design and Access Statement (DAS)** which is submitted separate from the EIA Report in support of the application.

SITE SELECTION AND CONSIDERATION OF ALTERNATIVES

2.5 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 encourages a large and rapid increase in electricity generation from renewable sources to meet Scotland's net zero emissions targets. It identifies that onshore renewable energy development proposals will be supported in principle, except for onshore wind farm developments in National Parks and National Scenic Areas.

2.6 As detailed in **Chapter 4: Policy Context**, NPF4 identifies that there are significant opportunities to capitalise on the natural assets of the North and West Coastal Area (which includes the proposed Site) to significantly reduce greenhouse gas emissions through increased renewable energy generation. In addition to tackling climate change, NPF4 identifies that such development also has the potential to bring opportunities to strengthen local communities, build community wealth and secure long-term sustainability in the region – all of which would support 'rural revitalisation', an aim cutting across various policies within NPF4 (page 18 of NPF4).

2.7 Regulation 5(2)(d) and Schedule 4, paragraph 2 of the EIA Regulations 2017 requires that an EIA report should include: *"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."*.

2.8 As the proposed development is a re-design of the consented Muaitheabhal Wind Farm (ECU ref. EC00005222) and its extensions, alternative sites have not been considered and so the matter is not considered further in the EIA Report. The rationale for the selection of the Uisenis Wind Farm

Site is set out in this Chapter.

2.9 The main alternatives including design, turbine specification, turbine location, size and scale have been considered for the Site. This Chapter explores these options and explains how the final design of the proposed development has evolved.

Site Selection

2.10 A number of factors were considered when selecting the Site as the location for the proposed development, including:

- the principle of wind energy development being acceptable at this location (as a result of the extant Muaitheabhal Wind Farm (ECU ref. EC00005222), Muaitheabhal Wind Farm Southern Extension (ECU ref. EC00002096) and Muaitheabhal Wind Farm Eastern Extension (ECU ref. EC00005223) consents). This demonstrates an established planning principle for an onshore wind farm in this location, and a legal fall-back position should consent not be granted for the proposed development;
- the Site is not located in a National Park or National Scenic Area (and therefore NPF4 is supportive of the location for renewable energy in principle);
- initial desk-based studies and wind monitoring on Site suggest that there is a very good wind resource and the Site is available for wind energy development;
- distance to settlements and residential properties (other than those associated with Eishken Lodge / Estate) minimising potential adverse effects on residential amenity;
- it has good opportunity for access from the public road network (A859) and also potentially by sea (a berthing facility at the south of the Site received planning permission in Ref. 12/00248/PPD);
- the Site does not support any international or national ecological or landscape designations; and
- viable route to the grid network due to an existing grid agreement and Ofgem's approval of the decision for a need for strategic electricity transmission reinforcements as part of their 'Accelerating Strategic Transmission Investment' (ASTI) framework[1]. Importantly, Ofgem approved a 1.8GW subsea HVDC Transmission Link between Arnish on the Western Isles to the National Grid near Beauly on the mainland as part of the accelerated delivery framework for 2030.

[1] https://www.ofgem.gov.uk/publications/decision-accelerating-onshore-electricity-transmission-investment

Technology, Size and Scale

2.11 In order to ensure the maximum energy yield from the Site (for project viability and to aid progress towards renewable energy targets), wind turbines up to 225m to tip height were considered. Turbines up to 225m were considered potentially viable in terms of delivery of components to Site.

2.12 During the period leading up to a consent and ultimately the construction of the proposed development, it is expected that the design and manufacture of commercial wind turbines will evolve and result in a wider choice of turbines than is currently available. The ability to maximise the potential yield from the Site through turbine choice at the point of procurement is important for the financial feasibility of the scheme in a time of increasing financial uncertainty. Without the ability to optimise the project in such circumstances, it may adversely affect the viability of the proposed development.

2.13 The supply of smaller turbines across Europe continues to reduce due to lack of demand as manufacturers are recognising that the world market is shifting to larger, more efficient machines and are focussing their development work on larger turbines which secure the highest yield.

2.14 Therefore, it is clear that larger turbines (tip heights and rotor diameters) need to be considered in order to ensure a scheme's viability and constructability. In addition to viability and constructability, fewer numbers of larger turbines can also result in less associated infrastructure, such as new access tracks, turbine foundations and crane pads, and in turn potentially result in less environmental impact. As a result of this, turbines with tip heights ranging from 180m to 225m, have been considered for this Site as part of initial feasibility studies.

2.15 Despite the continuing move towards larger turbines on the grounds of economic viability and available technology, it is also important to consider the Site and its surroundings in order to understand what size of turbine may be appropriate. The purpose of a wind farm development is to harness the wind to generate electricity and from a yield perspective only, the optimum design would locate wind farms in areas exposed to the highest wind speeds, with turbines placed in the most exposed locations. However, this may not account for the potential environmental effects of a wind farm. The design of a wind farm must therefore balance environmental effects and energy yield. In addition to these factors, the technical limitations of constructing a wind farm must also be considered in the design stage.

2.16 The design process is iterative and develops in tandem with environmental surveying to identify environmental sensitivities which are considered and taken into account within the design process. As environmental effects and sensitivities have been identified, the layout of the proposed development has undergone a series of modifications to avoid or reduce potential environmental effects through careful design. This process has resulted in the layout of the proposed development presented in this EIA Report. This layout represents the optimum fit within the technical and environmental parameters of the Site and its surroundings.

2.17 In addition to the wind turbine selection and design, the other elements of the proposed development which have been designed to minimise environmental effects include: the access tracks, proposed borrow pits, crane hardstanding areas (including bespoke crane hardstanding areas where necessary), temporary construction compounds, and the substation compound. The effects of these have been minimised through use of existing track infrastructure where possible, careful environmental surveying, design, siting, routeing and construction methods.

2.18 There were multiple elements of the Site and its surroundings that were looked at when considering the size of wind turbine that may be appropriate, these included:

- the proximity of nearby residential receptors and potential residential visual amenity and noise issues;
- the proximity to areas categorised as 'Wild Land';
- the proximity to National Scenic Areas;
- the proximity to key cultural heritage assets;
- local bird populations and species type (and how wind turbine size and configuration might affect these);
- the ability to get wind turbine components to Site;
- the scale of the topography of the Site itself, as well as surrounding hills and landscapes;
- the landscape character of the Site and its context, informed by the NatureScot landscape character types (LCTs) (as defined in NatureScot's siting and design guidance, 2017);
- the availability of a viable grid connection; and
- the sensitivity of the landscape to tall turbines.

2.19 Taking the above inputs and considering them alongside the desire to get the maximum energy yield from the Site, it was concluded that the Site could accommodate wind turbines up to 200m to tip height. Turbines over 200m to tip height were considered likely to have an increased visual impact on settlements to the north of the Site (e.g. increased visibility of turbine hubs with visible aviation lighting due to taller hub heights) and also an increased impact on White Tailed and Golden Eagle populations (bigger rotor diameters leading to higher predicted collision rates).

SITE LOCATION AND DESCRIPTION

2.20 The Site, centred on NGR NB 31366 12772, is located approximately 20km south west of Stornoway and approximately 17.9km north east of Tarbert, on the Isle of Lewis and within the Comhairle nan Eilean Siar (CnES) administrative boundary. The Site is located on moorland and grazing land which is also currently utilised recreationally for hunting, fishing and deer stalking, and measures approximately 1,420ha.

2.21 Access to the Site is expected to be from the A859, travelling south east along the public road towards Eishken Lodge. Consideration is being given to use of a berthing facility on the north shore of Loch Sealg, in order to bring large components e.g. turbine blades, on to Site. This would avoid the need to transport abnormal loads via the road network (A859) from the Port of Arnish. A separate planning application for the berthing facility is being considered and if deemed appropriate, a planning application (including any environmental assessment work deemed necessary) may be submitted in late 2023 or early 2024. It should be noted that there is a lapsed planning consent (Ref. 12/00248/PPD) for a dedicated berthing facility for the direct delivery of wind turbine components to Site (the berthing facility was considered as part of the Muaitheabhal Wind Farm access). The berthing facility was subject to a planning application submitted to CnES and Marine Scotland and was consented in 2012. The planning consent lapsed in 2015.

2.22 The Site is characterised by gently rolling open moorland with some areas of steep slopes and rocky outcrops, particularly in the west of the Site. There are numerous lochans and watercourses across the Site, draining to Loch Seaforth to the north and west and Loch Sealg to the south. The Site comprises numerous ridges and elevated landform, including the summits of Creag na Beirighe (236m AOD) and Cleit Catriona (139m AOD) in the south of the Site. Topography rises from sea level in the south, reaching a high point of approximately 270m AOD in the north west. The summits of Feiriosbhal (327m AOD), Cleit na Cerdaich (168m AOD) and Beinn Mheadhanach (288m AOD) are located outside of the Site boundary but are within close proximity to the north western site boundary.

2.23 There are no statutory environmental designations within the Site boundary.

SURROUNDING AREA

2.24 The immediate surrounding area is remote, and residential dwellings are restricted to the Eishken Lodge and inner estate. Beyond this, there are only isolated residential properties, typically isolated crofts located within the adjacent estate to the north and east (Pairc Estate).

2.25 The nearest settlements are to the north and east of the Site, where the Park (Pairc) peninsula adjoins the rest of the island: Arivruach (Airidh a Bhruaich) and Balallan (Baile Ailein) on the A859 road, as well as small crofting townships along the B8060 road to the north and east (between Habost and Orinsay). There are no core paths or Public Rights of Way (PRoW) for a significant distance, the closest located is approximately 9.7km west of the Site.

2.26 The underlying bedrock of the wider area is largely uniform across the region and comprises Outer Hebrides Thrust Zone Mylonite Complex with small pockets of Lewisian Complex amphibolite. Soils are derived from Mylonite and are indicated to be sand to sandy loam, of shallow to intermediate depth (can be dug to depths of more than 0.5m but less than 1m)[2].

2.27 The hydrogeology is homogenous across the entire region. The underlying aquifer is indicated to be unassigned fault zone rocks (Mylonite and fault breccia), which have an associated low yield of groundwater.

2.28 The Site lies within the wider Lewis and Harris Coastal Catchment which is shown to have dynamic morphology and associated unpredictable/rapid overland flows into rivers and tributaries. Hydrology is complex, partly due to mountainous terrain, active weathering and erosion (evident

[2] British Geological Survey, GeoIndex Onshore – Bedrock Geology

on scree slopes), the frequency of high magnitude storms, and prolonged rainfall, characteristic of the Outer Hebrides.

The only large operational (or consented) wind turbine within 15km of the Site boundary is the Lemreway Wind Turbine, which is located approximately 3.54km from the Site and consists of a single turbine of 42m to tip height.

2.29 The following environmental designations and protected areas lie within 10km of the Site boundary (see **Figure 2.1**):

- Wild Land Area 31: Eisgein – directly abuts the south western boundary of the Site;
- Loch Seaforth Marine Conservation Area – approximately 60m to the west of the Site at its nearest point;
- Wild Land Area 30: Harris-Uig Hills – approximately 1.2km to the west of the Site at its nearest point;
- Lewis Peatlands Special Protection Area (SPA) – approximately 954m to the north west of the Site at its nearest point;
- Lewis Peatlands RAMSAR site – approximately 954m to the north west of the Site at its nearest point;
- Lewis Peatlands Special Area of Conservation (SAC) – approximately 3.6km to the north west of the Site at its nearest point;
- South Lewis, Harris and North Uist National Scenic Area (NSA) – approximately 2.6km to the south of the Site at its nearest point;
- Inner Hebrides and the Minches SAC – approximately 5.5km to the south east of the Site at its nearest point;
- Loch nan Eilean Valley Bog Site of Special Scientific Interest (SSSI) – approximately 4.2km to the north west of the Site at its nearest point; and
- Achmore Bog SSSI – Approximately 8.3km to the north of the Site at its nearest point.

DESIGN CONCEPT AND APPROACH

Constraints Led

2.30 In EIA, constraint identification should continue throughout the design process in order to take cognisance of new, more detailed surveys revealing additional limitations to development. This allows the findings of technical and environmental studies to inform the design of a development and achieve a ‘best fit’ within the environment of the proposed development Site.

2.31 This approach has been adopted in respect of the proposed development; where potentially significant effects have been identified, efforts have been made to avoid these by evolving the design of the proposed development. This is referred to within this EIA Report as mitigation embedded in the proposed development layout and design, or simply 'embedded mitigation' (avoiding the potential for impacts to arise through proposed development design). Information on embedded mitigation is explained further within each technical chapter of this EIA Report as appropriate. Several design principles and environmental measures have also been incorporated into the proposed development as standard practice.

2.32 'Embedded mitigation' includes, but is not limited to:

- considering the size and scale of the proposed development appropriate to the location;
- design of the tracks to minimise cut and fill, reducing ecological effects, landscape and visual effects, as well as costs;
- sensitive siting of the proposed infrastructure incorporating appropriate buffer distances from environmental receptors (including nearby residential properties) to avoid or reduce effects;
- considering appearance, finish and colour of wind turbines and the control buildings in accordance with NatureScot (formerly Scottish Natural Heritage) Guidance 'Siting and Designing Wind Farms in the Landscape', V3a (SNH, 2017);
- inclusion and design of borrow pits to minimise the amount of the material required to be imported to Site; and
- potential for up to 75m micrositing of infrastructure during construction to ensure the best possible location is chosen based on site investigations.

Landscape and Visual

2.33 Throughout the design evolution of the proposed development layout, a key driver has been the consideration of potential landscape and visual effects and how the proposed development would relate to the existing landscape character of the Site and surrounding area. In particular, due attention was given to the scale and number of turbines proposed. The landscape and visual effects potentially caused by the proposed development have been considered extensively from key receptors. The resulting analysis has been an important input into the design evolution process of the proposed development and in particular to the layout design of proposed turbines and location of infrastructure on the Site.

2.34 In order to address any potential landscape and visual effects, good practice guidance such as Siting and Designing Wind Farms in the Landscape (Version 3) should be taken into consideration. The guidance helps to guide wind farms towards those landscapes best able to accommodate them and advises on how wind farms can be designed to best relate to their setting, and the setting of other wind farms and minimise landscape and visual impacts. This includes the following design aspirations:

- to select a turbine model which responds to the scale and key characteristics of the landscape in terms of tip height and proportion of blade length to tower height e.g. large scale turbines are best suited to more extensive, upland areas, and set back from the more sensitive upland fringes;
- to select a typical turbine specification (size/scale) which responds to other existing and consented wind farm development in the study area;
- relate the layout of the wind farm to the key characteristics of the landscape, e.g. a single row of turbines along a ridge would be appropriate in some settings; and
- aim to create a visually balanced, simple and cohesive layout when seen from key viewpoints, avoiding uneven visual densities, overlapping turbines, partial screening behind a skyline and outlying single turbines or groups of turbines, where possible.

2.35 Siting and Designing Wind Farms in the Landscape (Version 3a) NatureScot states that:

"In a wind farm, turbines can be arranged in many different layouts. The layout should relate to the specific characteristics of the landscape – this means that the most suitable layout for every development will be different. For a small wind farm, this might comprise a single row of wind turbines along a ridge; while, for a larger development, a grid of wind turbines is often taken as a starting point, with turbines spaced at minimum technical separation distances.".

2.36 Landscape and visual design objectives for the Site included the following:

- avoid siting of turbines on the Feiriosbhal and Beinn Mheadhanach ridge (located along the north western Site boundary) to avoid diminishing the scale and complexity of the underlying landscape, including in views from the South Lewis, Harris and North Uist NSA, Eisgein WLA 31 and settlements to the north west, north and east of the Site;
- seek to reduce the overall impacts on the wild land qualities of the Eisgein WLA by siting turbines away from the south western Site boundary;
- seek to reduce overall impacts on the special landscape qualities of the NSA by avoiding areas of higher elevation along the north western Site boundary;
- minimise, as far as possible, the horizontal extent of turbines and 'stacking' or overlapping of turbine blades; and
- minimise visibility of lit turbine hubs, as far as possible, in views from settlements to the north west, north and east of the Site.

2.37 The layout and design of the proposed development was considered as part of an iterative design process. An iterative design approach works in tandem with the EIA process and allows a receptive design process aimed at reducing the potential landscape and visual effects of the proposed development whilst taking into account other site constraints and commercial requirements. Several layouts were considered during the design process, with the layout evolving to respond to landscape and visual constraints such as views from the settlements to the north and east of the Site and also views from the South Lewis, Harris and North Uist NSA and Eisgein WLA.

2.38 It is considered that the proposed design respects the form of the underlying landscape and its scale, using different heights of turbine across the Site in order to respond to the topography and to avoid some turbines appearing more prominent (compared to others) from key viewpoints. Despite differing turbine tip heights being used across the Site, the proposed rotor diameter of all turbines is consistent. This is in order to reduce potentially negative visual effects associated with turbines of different size and scale.

2.39 The final layout has been optimised with regards to landscape and visual amenity as far as possible, on balance with other environmental constraints, technical constraints and commercial viability. The agreed representative viewpoints for the Landscape and Visual Impact Assessment (see **Chapter 7** for further information) represent key views experienced by receptors within the 45km LVIA study area. The modelling of the proposed development in views from these locations was used to inform the iterative refinement of the turbine layout.

2.40 Where possible, proposed excavation for access tracks and other infrastructure has been minimised. The location of the substation compound and temporary construction compounds have also been given consideration in relation to reducing potential landscape and visual effects. These have been located in areas where natural screening occurs via landform, helping to reduce their potential prominence.

Efficiency Modelling

2.41 Throughout the constraints led design process, wind and yield analysis was undertaken to ensure changes made to layouts did not adversely affect the output of the proposed development. The average prevailing wind direction experienced at the Site is from the south east and as such, the turbine separation distances are larger at this orientation.

Stakeholder Consultation

2.42 Public consultation events were undertaken in November 2022 and March 2023 which allowed members of the local community to comment on the design proposals. Feedback from both rounds of consultation events were incorporated into the design evolution process where possible. Further details of the public consultation process can be found in the **Pre-Application Consultation (PAC) Report** accompanying this application.

2.43 Statutory consultees were invited to become involved in and input to the design process for the proposed development via the EIA Scoping process (see **Chapter 6: Scoping and Consultation** for more detail), Gatecheck process and subsequent consultation.

CONSTRAINTS AND IDENTIFICATION MAPPING

2.44 The design of any wind farm is driven by the key objective of positioning turbines so that they capture the maximum energy possible within a suitable area, which is further informed by environmental and technical constraints.

2.45 The designations next to the Site and surrounding area were identified as the first part of the constraints mapping process. These are shown on **Figure 2.1**. The known environmental and technical constraints within the Site were also identified as part of this early stage constraints mapping. It is important to note that the identification of a constraint does not necessarily result in the exclusion of that area from the potential development envelope; rather it means that careful thought and attention was paid to the constraint and the design altered appropriately. The key constraints which were taken into account during the design process included:

- topography and ground conditions (including peat);
- environmental designations (including SSSI, SPA, SAC and NSA);
- proximity to Eisgein WLA;
- identified landscape and visual sensitivities;
- Eishken Lodge exclusion area (where wind farm infrastructure cannot be located);
- proximity to residential receptors (with regards visual amenity, shadow flicker and noise);
- presence of birds, protected habitats and species;
- presence of watercourses, private water supplies and related infrastructure;
- presence of cultural heritage features;
- aviation and Radar constraints;
- recreation resource (such as Core Paths);
- forestry; and
- fixed communications links.

2.46 The identification of constraints continued throughout the design evolution process as more detailed surveys refined the development envelope.

2.47 A description of how the various environmental and technical disciplines have contributed to the design through detailed assessment is described below. Information in respect of the survey work undertaken is provided in the technical chapters of this EIA Report.

Engineering

Topography and Ground Conditions

2.48 The steepest areas of the Site (greater than 14% slope gradient) have been avoided for the siting of wind turbines and other wind farm infrastructure. This is to facilitate the safe and efficient construction of the wind farm.

2.49 Slope stability has been taken into consideration to understand whether infrastructure could be located within certain areas of the Site. Where slope stability was identified as an issue, these areas were deemed to be unsuitable for infrastructure and have therefore been avoided due to the potential for slope instability and peat slide risk.

Landscape and Visual

Landscape Character and Visual Amenity

2.50 No international or national landscape designations occur within the Site. However, within the 45km LVIA[3] study area there are two national designations:

- South Lewis, Harris and North Uist NSA – approximately 2.6km south west of the Site at its nearest point; and
- Trotternish NSA – approximately 40.3km south of the Site at its nearest point.

2.51 There are no locally designated landscapes within the CnES administrative area, however the following locally-designated Highland Council Special Landscape Areas (SLA) are located within the 45km LVIA study area:

- Trotternish and Tianavaig SLA – approximately 26.8km to the south of the Site at its nearest point; and
- North West Skye SLA – approximately 42km to the south of the Site at its nearest point.

2.52 Given the intervening distance between the proposed development and these SLAs, locally designated landscapes did not form a key consideration during the design process.

2.53 There are also a number of wild land areas[4] within the 45km LVIA study area. WLA's that have been considered during the design process and include:

- Wild Land Area 31: Eisgein – directly abuts the south western boundary of the Site; and
- Wild Land Area 30: Harris-Uig Hills – approximately 1.2km to the west of the Site at its nearest point;

Ecology and Ornithology

2.54 Ecological surveys, including a UK Habitat Classification (UKHab) survey, a National Vegetation Classification (NVC) Survey and protected species surveys, were carried out across the Site during 2022, in order to identify broad areas of constraint to the proposed development. Constraints mapping included the identification of sensitive ecological features, including habitats present within the Site and species which use the Site.

[3] The study area for the LVIA was defined as a 45km radius from the outermost turbines of the proposed development in all directions, as recommended in current guidance (SNH (February 2017) Visual Representation of Wind Farms Guidance. Version 2.2) for turbines equal to or greater than 150m to blade tip, and in agreement with statutory consultees NatureScot and CnES.
[4] Wild Land Areas (WLA) are not designated but their importance is recognised in NPF4.

2.55 Areas with the potential to be Groundwater Dependent Terrestrial Ecosystems (GWDTEs) were found to be limited in extent within the Site. The design of the proposed development sought to minimise any effects on potential GWDTEs through taking account of NVC information, along with other Site constraints, in layout iterations.

2.56 A distance of at least 50m between turbine blade tip and the nearest woodland has been established, as per current bat guidance (SNH, 2019). However, other than the woodland habitat around Eishken Lodge (approximately 500m from the nearest turbine), there is limited appropriate habitat for bat roosting or foraging within the Site.

2.57 Ornithology surveys have been carried out across the Site between 2021 to 2023, including vantage point watches, moorland breeding wader surveys, breeding raptor surveys and diver lochan surveys. The surveys recorded flights from a number of priority species including: white-tailed eagle, golden eagle, black-throated diver, curlew, greenshank, hen harrier, merlin, peregrine falcon, red-throated diver, and whooper swan.

2.58 Ornithological features have been a key consideration at all stages of the proposed development design, from initial feasibility to final layout presented within this EIA Report. Where appropriate, suitable buffers were considered during the design evolution process and no turbines are proposed within 100m of any known nest sites.

2.59 Standard best practice measures will also be implemented during construction (including timing felling works outwith the breeding season) to ensure compliance with relevant legislation protecting all breeding wild birds. This has helped to avoid or greatly reduce impacts on ornithological features.

2.60 Ecology effects are assessed within **Chapter 8: Ecology** and an assessment of ornithological receptors is presented in **Chapter 9: Ornithology**.

Geology and Soils

Peat Depth

2.61 As defined on NatureScot's Carbon and Peatland 2016 Map (SNH, 2016), the majority of the Site is shown to be Class 2 Priority Peatland Habitat, with smaller areas of Class 1 and Class 5. Site visits have confirmed the presence of peat, of variable condition and depth across the Site, with deeper peat more likely to occur in the low lying areas with shallow slopes.

2.62 Peat probing was undertaken in November 2022 and February 2023 (in addition to peat probing data of the Site available from the Muaitheabhal Wind Farm Environmental Impact Assessments). A review of this data in conjunction with slope gradients allowed areas of deep peat (typically greater than 1.5m) to be avoided, where possible, at an early stage. The peat data is discussed in **Technical Appendix 10.1: Peat Landslide and Hazard Risk Assessment** and shown on **Figure 10.1.6** and **Figure 10.1.7.** Where possible, proposed turbines and infrastructure is located on areas of peat less than 1.5m deep.

2.63 Due to the topography of the Site, which has multiple hollows and pockets of lower ground in between hills and rocky outcrops, there are small areas of deep peat >1.5m spread throughout the

Site. Although considerable effort was given to avoiding areas of deep peat with proposed infrastructure, as a result of the distribution of small pockets of deep peat, combined with other constraints e.g. watercourses and steep slopes, there are instances where proposed infrastructure is located in peat in excess of 1.5m deep. In order to avoid the potential negative effects of locating proposed infrastructure on deep peat, the following mitigation has been applied:

- where onsite access tracks are proposed on areas with a peat depth of 0.5m (or more), for a distance of 50m (or greater) and with shallow topography (below 5%), the track will be floated; and

- where crane pads are located on areas of peat, the orientation of the crane pad has been designed so as to try and place the 'non intrusive' sections of the crane pad over the deepest areas of peat. These 'non intrusive' sections of the crane pad generally require clearance only, not any cut or fill (except where stated), and as such would see the peat left undisturbed. The breakdown of the various parts of the proposed crane pad design are shown on **Figure 3.5**.

Peat Slide Risk

2.64 All turbine locations, access tracks, the substation compound, the temporary construction compound and borrow pits have been designed to avoid any areas which may be subject to peat slide risk. The ground condition constraints that were taken into account in the design of the proposed development were:

- identification of peat depths in excess of 1.5m – to minimise incursion, protect from physical damage, minimise excavation and transportation of peat, reduce potential for peat instability and minimise potential soil carbon loss;

- identification of slope angles greater than 14% – to minimise soil loss and potential instability; and

- avoidance of areas where initial peat stability concern was identified (factor of safety values less than 1.4) where possible – to avoid areas with possible instability issues.

2.65 Consultation with SEPA, regarding the avoidance of deeper peat, formed part of the iterative design process.

2.66 Effects upon the peat and ground conditions of the Site is contained within **Chapter 10: Hydrology, Hydrogeology and Geology.**

Hydrology and Hydrogeology

2.67 A 50m buffer zone has been applied around the primary watercourses which traverse the Site, as well as the multiple small lochs / bodies of water within the Site. These buffers were used to ensure that as much of the proposed wind farm infrastructure as possible, other than tracks, is not located in close proximity to hydrological features, in accordance with wind farm construction best practice guidelines (GPP 5, 2018). This reduces the risk of run off and water pollution into existing watercourses.

2.68 Due to the number of watercourses within the Site, the crane pads associated with turbines T1, T2, T7, T10 and T24 extend partially into the 50m watercourse buffer. However, these crane pads have been orientated so that predominantly it is the ‘non intrusive’ sections of the crane pad (the parts that do not require excavation) that extend within the 50m buffer. No excavation or other works are proposed within the riverbed.

2.69 Watercourse crossings have been minimised as much as possible and existing culverts would be upgraded or replaced as required.

2.70 Data on private water supplies (PWS) was obtained from CnES and supplemented with data from a PWS surveys conducted onsite in November 2022.

2.71 Effects upon hydrology are assessed within **Chapter 10: Hydrology, Hydrogeology and Geology.**

Archaeology and Cultural Heritage

Cultural Heritage Features

2.72 There are no designated heritage assets of regional or national importance within the Site. Within 10km of the proposed turbines there are three nationally important designated heritage assets:

- Sideval Stone Circle; Scheduled Monument (SM5351); approximately 4km north west of Turbine 3;
- St Columb’s Church, Eilean Chaluim Chille; Scheduled Monument (SM5345); approximately 8.9km north east of Turbine 2; and
- Dun Cromore, Broch; Scheduled Monument (SM1670); 9.6km north east of Turbine 7.

2.73 There are 19 non-designated heritage assets within 1km of the Site.

2.74 There are 15 non-designated heritage assets within the Site itself.

2.75 The above cultural heritage assets have been considered during the design of the proposed development. This includes avoiding siting wind turbines and other infrastructure on cultural heritage features within the Site where possible, and also designing the wind turbine layout with cognisance of views from cultural heritage assets located within 10km of the proposed development.

2.76 Effects upon archaeological and cultural heritage assets are assessed within **Chapter 11: Cultural Heritage and Archaeology.**

Noise

Noise Sensitive Receptors

2.77 For the purposes of early constraints mapping, avoidance buffers of 800m were applied to residential properties in the vicinity of the Site. These buffers were further refined during the design process based on expert noise advice.

2.78 Noise modelling was undertaken for the proposed turbine layout at various stages of the design process, to predict the likely sound level which would result from the proposed development at nearby residential properties. The difference between measured background noise levels and predicted noise levels needs to be compliant with ETSU-R-97: 'The Assessment and Rating of Noise from Wind Farms' (Department for Trade and Industry (DTI), 1996) to avoid a significant impact. Applying design criteria in accordance with ETSU guidance, therefore, ensures that no exceedances of acceptable noise levels would occur for the proposed development.

2.79 During operation, the closest property to the proposed turbines would be Loch Shell House at approximately 870m from Turbine T16 (Loch Shell House and all properties associated with Eishken Lodge are financially involved in the proposed development). During refinement and finalisation of the design, the maximum distances possible were employed between these properties and the proposed turbines.

2.80 A noise assessment is presented within **Chapter 13: Noise.**

Shadow Flicker

2.81 Shadow flicker has the potential to be an issue for properties which are closer to a wind turbine than a distance of eleven times the diameter of the turbines blade length. Potential shadow flicker effects were a consideration during the constraints mapping process. Shadow Flicker is considered further in **Chapter 16: Other Issues**.

Aviation

2.82 The study area for the aviation assessment includes all military and civil aerodromes in the wider area out to approximately 60km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.

2.83 The design of the proposed development considered turbine tip heights in combination with ground level (AOD), in order to ensure that there would be no negative effects on Stornoway Airport instrument flight procedures. An Instrument Flight Procedure (IFP) Impact Assessment has been carried out on the proposed development to confirm this.

2.84 As the proposed turbines are in excess of 150m to tip height, some turbines will require visible aviation lighting on the turbine hub. Turbines have been positioned in such a way, or have had tip and hub heights lowered, in order to avoid the prominence of visible aviation lighting as seen from key viewpoints and settlements, particularly to the north of the Site. A reduced lighting scheme has been discussed with the relevant stakeholders and has been sent to the Civil Aviation Authority for agreement.

2.85 Aviation is considered further in **Chapter 15: Aviation**.

Socio-Economics, Tourism, Recreation and Land Use

Recreation

2.86 There are no 'core paths' within the Site boundary. There are however, footpaths associated with the Wider Path Network within the south of the Site, from Eishken Lodge running west along the shores of Loch Sealg. The effects of the proposed development on this and other recreation infrastructure is considered in **Chapter 14: Socio-economics, Tourism, Recreation and Land Use**.

Telecommunications

2.87 Consultation with Ofcom identified a single fixed telecommunication link which runs approximately north-south through the Site and could potentially be affected by the proposed development. Subsequently, the license holders for the link; BT, was consulted as part of the Telecommunications Impact Assessment for the Site. This consultation resulted in agreement with regards to appropriate separation distances between the proposed wind turbines and the fixed communications link. The design and layout of the Site therefore takes account of the constraints imposed by the operational fixed communications link. More detail is provided in **Chapter 16: Other Issues**.

DESIGN EVOLUTION

Design Iterations

2.88 The initial potential development area within the Site boundary was refined using the constraints mapping. These constraints (comprised of various environmental, technical and landscape and visual constraints) were used to inform the evolution of the location of the proposed turbines and associated infrastructure. The design optimisation process was iterative, involving review of multiple layouts and related wirelines from key landscape and visual receptor locations in the study area, and adjustment to turbine locations to minimise potentially adverse landscape and visual impacts insofar as possible, whilst also taking into consideration energy generation (e.g. wake loss) and other environmental, technical and economic considerations.

2.89 Four of the key design iterations are shown on **Figure 2.2** and comprise the Scoping layout (Layout A), the first public exhibition layout (Layout B), the Gatecheck Report Layout (Layout C), and the Design Freeze Layout (Layout D: the proposed development).

2.90 The factors that were considered as part of the design evolution process to achieve the final layout are described in the following paragraphs.

Wind Turbines

Layout A (Scoping Layout): 26 Turbines at 225m tip height

2.91 This Scoping layout was developed prior to the majority of the environmental surveys and landscape assessment working commencing. Some environmental and technical constraints were taken into consideration during the production of the Scoping layout, however, this layout focused more on representing a realistic size and number of turbines in order to gain responses from consultees.

2.92 This layout had 26 turbines at a height of up to 225m to blade tip height. Wirelines of this initial layout are shown on **Figure 2.3a**, **Figure 2.3b** and **Figure 2.3c**.

2.93 As a result of the early environmental and landscape and visual feasibility work, this layout was deemed to bring turbines very close to the South Lewis, Harris and North Uist NSA and Eisgien WLA and, due to the scale of the turbines, result in an increased prominence of turbines in views from key viewpoints to the north.

Layout B (1st Public Exhibition Layout): 26 Turbines at 215m tip height

2.94 2.95 In order to reduce the prominence of turbines in key views to the north (such as views experienced from the A859 and Bailie Ailein) and south west (such as Beinn Mhor within the Eisgein WLA) of the Site, turbine blade tip heights were reduced from 225m to 215m. Turbines located along the north eastern site boundary (T2 and T3 of Layout A) were pulled slightly further south west to reduce prominence in views from locations to the north of the Site.

2.95 This layout comprised 27 turbines at a height of up to 215m to blade tip height and was presented at the first round of public exhibitions. Wirelines of this layout (Layout B) are shown on **Figure 2.4a**, **Figure 2.4b** and **Figure 2.4c**.

2.96 Following continued environmental and landscape and visual assessment work, as well as feedback from consultees and the public, this layout was still considered as bringing turbines too close to the Eisgien WLA and, still considered as being too prominent from key viewpoints to the north, and also considered to be too close to an area of prominent eagle territory (Creag na Beirighe).

Layout C (Gatecheck Report Layout): 25 Turbines at 180m-200m tip height

2.97 As a result of the highlighted issues around Layout B, the number of turbines was reduced, as was the turbine tip height. Turbines located closest to the Eisgein Wild Land Area (T24, T25 and T26) were relocated further north east to the lower-lying area of the centre and north of the Site in order to reduce proximity and horizontal extent of turbines in key views from the Eisgein WLA. T8 of Layout B, which was located on the eastern footslopes of the ridgeline formed by Feiriosbhal and Beinn Mheadonach in the north west of the Site, was relocated considerably further east to a lower-lying area of the Site to reduce prominence of this turbine in key views from the South Lewis, Harris and North Uist NSA, Eisgein WLA and settlements to the north and east of the Site. T13, which was also located at slightly higher elevation on the south eastern footslopes of the ridgeline formed by Feiriosbhal and Beinn Mheadonach, was moved downslope further south and the tip height was reduced to 180m to reduce the prominence of this turbine in these views.

2.98 The layout that was submitted as part of the Gatecheck Report for the proposed development comprised a 25 turbine scheme, with blade tip heights of up to 200m. Wirelines of this layout (Layout C) are shown on **Figure 2.5a**, **Figure 2.5b** and **Figure 2.5c**.

2.99 The reduction in turbine blade tip heights from 215m to 200m reduced the overall visibility of the proposed development, however this was particularly targeted at reducing the visibility of the proposed development from settlements to the north e.g. Tabost, Balallan, and Lacasaigh. The removal of turbines closest to the South Lewis, Harris and North Uist NSA and Eisgein WLA reduced the overall extent of the proposed development and reduced the visibility of the proposed development from the NSA and WLA. This layout was considered to have addressed many of the main environmental and landscape and visual constraints / issues that were identified during the EIA and through consultation with stakeholders.

Layout D (Design Freeze – The Proposed Development): 25 Turbines at 180m-200m tip height

2.100 Following on from the Gatecheck Report layout, continued environmental and landscape assessment work, as well as further discussions with consultees (including the second round of public exhibitions), led to further improvements on the turbine layout.

2.101 The tip height of two additional turbines (T1, T12 and T19) were was reduced in height to 180m, with the blade tip height of T12 (T13 of Layout C) also remaining as 180m in order ensure they are less prominent to reduce the prominence of these turbines when seen from key viewpoints, particularly to the north. The blade tip height of T1 was also reduced to avoid visibility of lit turbine hubs in views from settlements to the north of the Site, particularly the central extents of the settlement of Balallan. Some other minor turbine movements were also made at this stage in order to ensure that potential effects on other environmental constraints, such as peat, have been minimised.

2.102 This layout incorporates necessary rotor spacing requirements, based on a prevailing south-westerly wind, and the turbines positioned to minimise interaction with onsite constraints, including areas of deep peat and watercourses. This included some minor refinements at a number of turbine positions, as more detailed Site survey results became available.

2.103 The layout incorporates infrastructure elements which were not present on the Scoping Layout and other earlier iterations. This includes internal access tracks, a substation compound, a temporary construction compound and borrow pit locations.

2.104 This layout comprises 25 turbines, three of which are 180m to blade tip height, and 22 of which are 200m to blade tip height. All turbines have the same rotor diameter. Further to this, turbines 19 to 25 (the southernmost seven turbines) are proposed to have painted blade mitigation applied, in order to further reduce predicted collision rates for eagle species (painted blade mitigation is considered further in **Chapter 7: Landscape and Visual Amenity** and **Chapter 9: Ornithology**).

2.105 Wirelines of this layout (Layout D) are shown on **Figure 2.6a**, **Figure 2.6b** and **Figure 2.6c**.

Other Site Infrastructure

Site Access

2.106 Access to the Site would be gained from the A859, taking the existing minor road (just north of Loch na h-Ola) south east towards Eishken Lodge.

2.107 The proposed abnormal load route required to transport turbine components to the Site is shown on **Figure 12.2** and would be from the Port of Arnish, via the A859 to the junction south of Bailie Ailein and then onto Site. HGV and construction traffic would also use this route to Site.

2.108 In order to accommodate abnormal loads, the existing minor road running from the A859 to Eishken Lodge would need to be upgraded and widened to a minimum of 4.5m on straight sections.

2.109 Consideration is being given to use of a berthing facility on the north shore of Loch Sealg, in order to bring large components e.g. turbine blades, on to Site. This would avoid the need to transport abnormal loads via the road network (A859) from the Port of Arnish. A separate planning application for the berthing facility is being considered and if deemed appropriate, a planning application may be submitted in late 2023 or early 2024.

2.110 The berthing facility is not included in the Uisenis Wind Farm Section 36 application, however it has been assessed in **Chapter 12: Site Access, Traffic and Transport**, alongside the abnormal load route from the Port of Arnish, via the A859, to Site.

Site Tracks

2.111 The onsite access tracks have been designed to use existing tracks as far as possible, whilst minimising cut and fill requirements in order to reduce the amount of ground disturbance, amount of material required for construction, loss of sensitive habitats and landscape and visual effects, particularly during construction.

2.112 Access tracks have been designed to follow routes which, in the main, do not exceed gradients of 14%. This gradient is specified by a number of turbine manufacturers in their technical specifications to permit safe delivery of turbine components and associated parts.

2.113 There are five sections of floating track across the Site. Consideration was given to alternative routing options in order to avoid the need to propose floating track, however due to Site topography (slope steepness) and watercourses, it was considered that floating track would be most appropriate at these locations.

Borrow Pits

2.114 Up to five borrow pits would be required as a source of rock to be used in the construction of the tracks, hardstandings and foundations. On Site borrow pits have been sought in order to reduce the need to transport large quantities of aggregate to the Site.

2.115 Search area locations for the borrow pits have been identified based upon a review of geological mapping and Site reconnaissance by a geological specialist. The location of each was considered with respect to the Site infrastructure and environmental constraints. **Figure 2.7** shows a cumulative ZTV for all borrow pit search areas.

2.116 Further intrusive geotechnical investigations would be carried out to identify which of the borrow pits would yield the required quality of rock for each aspect of the infrastructure. It is not anticipated that any more than five borrow pits would be needed.

Temporary Construction Compounds

2.117 Two temporary construction compounds are proposed, one would be located at the centre of the Site at NGR NB 31865 13324, while the other is located at the south of the Site at NGR NB 30146 11589. These locations are considered appropriate as they:

- have appropriate topography;
- are located in areas of shallow peat and low peat slide risk; and
- avoid sensitive habitat areas.

Substation Compound

2.118 The proposed substation compound would be located to the north of the turbine area at NGR NB 32509 14230. The location is considered appropriate as it:

- has appropriate topography (slope);
- is located in an area of shallow peat and low peat slide risk;
- avoids sensitive habitat areas;
- is lower down in the landscape than the wind turbines and as such less visible; and
- is adjacent to the existing road.

2.119 The substation compound is located greater than topple distance from the proposed turbines. The internal Site grid connection cables would be undergrounded within the Site from each turbine to the control building, therefore avoiding visual impact. **Figure 2.8** shows a ZTV for the proposed substation compound (the equipment / buildings within the substation compound have varying heights, so for the purposes of the ZTV an indicative height of 5m has been used). The proposed substation compound footprint has been sized so as to accommodate both the Uisenis Wind Farm substation and the SHE-T substation (SHE-T substation will be subject to a separate planning application).

MICROSITING

2.120 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 sought that the consent includes provision for a 75m micrositing allowance around wind turbine infrastructure. The technical assessments (presented in **Chapters 7** to **16**) have considered the potential for horizontal micrositing and it is considered that the proposed infrastructure could be microsited within 75m (except within watercourse buffers) without resulting in potential significant effects, except where notable deep peat is identified. During construction, the need for any micrositing would be assessed and agreed with the onsite Environmental Clerk of Works.

CONCLUSION

2.121 The design process has been an iterative one, so that constraints identified throughout the EIA and layout design process could be avoided, and potential impacts from the proposed development avoided or reduced. Various economic, technical, and environmental considerations were established by a combination of baseline surveys, assessment, and consultation with stakeholders.

2.122 The final layout of the proposed development is described in detail in **Chapter 3: Description of Development** and shown on **Figure 3.1**.

2.123 The assessment of potential impacts of the resulting layout is addressed in **Chapters 7** to **16** of the EIA Report.

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CONTENTS

INTRODUCTION

3.1 This Chapter describes the proposed development which is subject to this EIA. It sets out the way in which the proposed development would be constructed, including a description of the wind farm layout, its proposed scale, and the associated infrastructure. It also outlines the anticipated construction activities connected with the proposed development and a description of the operational elements of the wind farm.

3.2 The layout for the proposed development is shown on **Figure 3.1**. Information on construction methods are provided in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP)**. The outline CEMP is part of the description of the proposed development and illustrates the construction measures which are inherent in the project development and design, and which are therefore considered present at the outset of the environmental assessment.

PROPOSED DEVELOPMENT

Scheme Overview

3.3 The Site is centred on NGR NB 31366 12772 and covers an area of approximately 1,429.4ha. The characteristics of the site are described in **Chapter 2: Site Description and Design Evolution**.

3.4 The proposed development would comprise 25 three-bladed horizontal axis turbines up to 200m tip height with a combined rated output in the region of 165MW. The proposed development would include associated infrastructure including turbine foundations, crane hardstandings, new access tracks, underground cabling, a substation compound including a control building, up to five borrow pits and two temporary construction compounds (**Figure 3.1**).

3.5 In total, approximately 31.68ha of grazing land would be permanently lost as a result of the proposed development. This permanent loss represents approximately 2.22% of the area of the Site. Temporary infrastructure consisting of two construction compounds, five borrow pits and temporary hardstandings equates to around 10.93ha, or approximately 0.76% of the total Site area.

3.6 The proposed development includes the proposal for 50ha of blanket bog restoration, and 537ha of wet heath restoration across the Site. More information is provided in **Technical Appendix 8.5: Outline Habitat Management Plan**.

3.7 The proposed development has been designed with an operational life of up to 30 years, at the end of which it would be decommissioned, or an application may be submitted to repower the Site.

3.8 As noted in **Chapter 2**, the proposed development has been designed to reflect the topographical, environmental, visual, and technical factors which exist across the Site.

3.9 Each Chapter of the EIA Report takes an appropriate and topic specific approach to assess the proposed development. The EIA Report provides a worst-case assessment for each discipline and presents enough information for consultees and the decision makers to comment on and determine the application. Each technical Chapter has set out the degree to which the proposed development has been assessed, in order to provide a clear and robust assessment that allows for the necessary flexibility in relation to turbine procurement, post-consent. **Chapter 5: Environmental Impact Assessment**, provides further detail on the approach to assessment

3.10 The key component parts of the proposed development include the following as detailed in **Table 3-1**:

Table 3-1: Proposed Development Key Components

Key Component	Detail
Wind Turbines	25 wind turbines including internal transformers, three with blade tip heights of 180m and 22 with blade tip heights of 200m
Wind Turbine Foundations	25 turbine foundations (approximately 22.8m diameter) and associated crane hardstandings (approximately 50m x 20m and 1m in depth, with an additional temporary crane pad areas – shown on **Figure 3.5**)
Access Tracks	approximately 12.1km of upgraded access tracks (Eishken Road widened to 5m), and approximately 16.5km of new access tracks with a typical running width of 6m (wider at bends and junctions) and associated drainage. 2.2km of the new track is anticipated to be floating track where consistent (50m distance or more) peat depths of over 0.5m or greater are identified along with shallow topography (below 5%)
Underground Cabling	approximately 19.16km of underground cabling along access tracks to connect the turbine locations, and the onsite electrical substation
Substation Compound	one onsite substation which would accommodate 33kV Switchgear to collect electricity from different parts of the Site. The substation compound would have an area of 75m x 100m and would include a control and metering building (approximately 16m x 30m and 8m high)
Borrow Pits	up to five borrow pits (covering approximately 6.82ha)
Construction Compounds	two temporary construction compounds (1.43ha and 1.20ha respectively)
Meteorological (Met) Masts	two permanent met masts up to 122.5m in height. The met masts would have a main foundation area of 3m x 3m, as well as four anchor points for supporting guy wires.

3.11 Typical details for the proposed turbines, foundations, access tracks, crane hardstandings, electrical infrastructure, borrow pits and construction compounds are shown on **Figures 3.2** to **3.10**.

Access to the Site

3.12 The proposed abnormal load route required to transport turbine components to the Site is shown on **Figure 12.2** and is based on an assessment from the Port of Arnish, via the A859 to Site. The main Site area (Turbine Developable Area) would be reached via new track that spurs off the existing minor road leading from the A859 to the Eishken Lodge (Eishken Road). As such, the Eishken Road would be upgraded in line with required track specification (5m wide). This proposed abnormal load route (from the Port of Arnish, via the A859 to Site) is considered a 'worst case scenario' as there is also the potential (subject to a separate planning application) to deliver turbine components via a berthing facility at the Site, as detailed in paragraphs 3.17 to 3.20.

3.13 The proposed abnormal load route was assessed and verified for up to 76.5m blades, identifying where permanent or temporary road upgrades would be required (**Figure 12.2** and **Annex A** of

Technical Appendix 12.1: Transport Assessment). Any road improvements would be undertaken within this envelope.

3.14 A new bridge, located adjacent to the existing bridge (NGR: NB 29844 16214) on the Eishken Road, would be erected as part of the proposed development. A decision on whether the new bridge would be permanent or temporary, as well as the detailed design of the new bridge, would be agreed with CnES prior to the commencement of construction. If permanent, the bridge will be rendered to have a similar finish to the existing bridges within the Eishken Estate.

3.15 HGV and construction traffic would also use the entrance off the A859, travelling along the Eishken Road.

3.16 Full detail of the assessment of the effects on the road network is provided in **Chapter 12: Site Access, Traffic and Transport**.

Berthing Facility

3.17 Consideration is being given to the use of a berthing facility on the north shore of Loch Sealg, in order to bring large components e.g. turbine blades, on to Site. This would avoid the need to transport abnormal loads via the road network (A859) from the Port of Arnish.

3.18 There is a lapsed planning consent (Ref. 12/00248/PPD) for a dedicated berthing facility for the direct delivery of wind turbine components to Site. The berthing facility was subject to a planning application submitted to CnES and Marine Scotland and was consented in 2012. Planning consent lapsed in 2015.

3.19 A separate planning application for the berthing facility is being considered and if deemed appropriate, a planning application may be submitted in late 2023 or early 2024.

3.20 The berthing facility is not included in the Uisenis Wind Farm Section 36 application, however, it has been assessed in **Chapter 12: Site Access, Traffic and Transport**, alongside the abnormal load route from the Port of Arnish, via the A859, to Site.

Grid Connection

3.21 The grid connection point for the proposed development is subject to confirmation by the network operator. The precise route of the grid connection cabling has not been determined, meaning that its effects are not identifiable/assessable as it has yet to be designed and an application has not yet been made.

3.22 The grid connection will require separate consent under Section 37 of the Electricity Act 1989. The grid connection application would be made by Scottish and Southern Energy Electricity Networks (SSEN) who are responsible for the Transmission Grid in the area of the proposed development and who would own assets beyond the Site substation.

Operational Life

3.23 It is anticipated that the proposed development would have an operational life of 30 years. At the end of this period, the proposed development would be decommissioned or an application may be submitted to repower the Site. Details of infrastructure removal and restoration are provided in summary in **Table 3-5**.

EMBEDDED MITIGATION

3.24 A key benefit of the EIA process is the opportunity it gives to integrate environmental considerations into the careful, iterative design of a project. Embedded mitigation proposals are those mitigation measures which are inherent to the proposed development and are integral to and should be included in consideration of the application.

3.25 Throughout the design evolution, embedding mitigation has been a feature of the process that has led to the final design of the proposed development; and this embedded mitigation therefore forms part of the proposed development which is assessed.

3.26 During the construction of the proposed development, effects can be further taken into account by the adoption of good practice, supported by robust project management and an Environmental Clerk of Works (ECoW), as set out in the outline CEMP (**Technical Appendix 3.1**), and by the application of the Pollution Prevention Guidelines (PPGs) and replacement Guidance for Pollution Prevention (GPPs).

3.27 Reference to good practice and standards, guidelines and legislation relied upon in the assessment methodology are referred to within each of the individual specialist topics, in **Chapters 7** to **16**. Such environmental measures are also included in the outline CEMP (**Technical Appendix 3.1**).

Design Principles

3.28 A number of design principles and environmental measures have been implemented and incorporated into the proposed development as standard practice described in **Chapter 2: Site Description and Design Evolution.**

3.29 One of the key approaches to the design has been a desire to maximise the potential energy yield of the Site, whilst respecting environmental (including landscape and visual) constraints. Further details are set out in **Chapter 2** and the **Design and Access Statement** (DAS) submitted in support of the application.

Micrositing

3.30 During the construction process there may be a requirement to microsite elements of the proposed development infrastructure. This is an important measure which allows for further minimisation of environmental effects, under the supervision of the ECoW, where elements of the development can be moved to avoid areas of deep peat or other constraints, as more detailed information about Site conditions are procured. It is proposed that a 75m micrositing tolerance of turbines and all other infrastructure would be applied to the proposed development (so long as infrastructure moves no closer to any identified watercourse). Within this distance, any change from the consented locations would be subject to approval of the ECoW as required, and in consideration of other known constraints. It is anticipated that the agreed micrositing distance may form a planning condition accompanying consent for the proposed development. The assessment of the proposed development has assumed a 75m horizontal micrositing allowance.

CONSENT PRIOR TO COMMENCEMENT OF CONSTRUCTION

3.31 Prior to commencing construction on the Site, it may be necessary for the applicant to obtain a number of other statutory authorisations and consents to enable the proposed development to be implemented. Where relevant, these are covered in the technical chapters of this EIA Report.

CONSTRUCTION PHASE

Construction Timetable

3.32 It is anticipated that construction of the proposed wind farm would commence in 2026 and would last approximately 36 months. Construction would be undertaken over a period of 36 months to allow for any construction related mitigation e.g. no construction work taking place within 500m of a nest site during breeding seasons, or other such agreements reached with NatureScot. Construction would include the principal activities listed within the indicative construction programme as provided in **Table 3-2**. The final detailed construction programme will be agreed with CnES pre-construction.

Table 3-2: Indicative Construction Programme (Months)

Construction Activity	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Access Road Improvements	■	■	■	■	■	■	■	■	■	■	■	■												
Site establishment								■	■	■	■	■	■	■										
Construction of tracks, crane pads and compounds												■	■	■	■	■	■	■	■	■	■	■	■	
Turbine Foundation Construction																			■	■	■	■	■	■
Substation - civil & electrical works																					■	■	■	■
Cable Laying and Cable Bedding																								■
Crane Delivery																							■	
Turbine Delivery and Erection																							■	■

Construction Activity	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Turbine Foundation Construction	■	■	■	■	■																			
Substation - civil & electrical works	■	■	■	■	■	■	■	■	■	■	■													
Cable Laying and Cable Bedding	■	■	■	■	■	■	■	■	■	■	■													
Turbine Delivery and Erection	■	■	■	■	■	■	■	■	■	■	■													
Site restoration										■	■	■												

Cumulative Wind Farm Construction

3.33 There are currently two consented (but not constructed) large scale wind farm projects on the Isle of Lewis, as follows:

- Stornoway Wind Farm; and
- Druim Leathann Wind Farm.

3.34 There is a possibility that one or both of these consented projects could be undergoing construction at approximately the same time as the proposed development. It is acknowledged that this would have a potentially detrimental effect on traffic and that coordination between developers and contractors would be required (discussions are already underway) to mitigate these effects. Mitigation measures for this eventuality would be contained within the Traffic Management Plan, expected to be agreed, via condition, with CnES and Transport Scotland prior to the commencement of construction.

Construction Employment

3.35 The number of people employed during the construction period would vary depending on the stage of construction and the activities ongoing onsite. Staff numbers would start relatively low as Site enabling works progress. Numbers would ramp up quickly as tracks reach turbine locations and foundations start to get built out. It is anticipated that the peak workforce requirement would be up to 120 construction staff, at a point where the civils and electrical works are overlapping with turbine erection teams. Staff numbers would then drop as civils teams demobilise and turbine erection and testing is completed. The applicant has a commitment to using local suppliers, with a target of procuring at least 75% of the value of construction work from the businesses based in the Outer Hebrides.

Construction Hours

3.36 The construction working hours for the proposed development would be 07:00 to 19:00 Monday to Friday and 07:00 to 16:00 on Saturdays. It should be noted that out of necessity, some activities, for example abnormal load deliveries, concrete deliveries during foundation pours, and the lifting of turbine components, may occur outside the specified hours stated (excl. Sundays). These activities would not be undertaken without prior approval from CnES. The principal contractor would keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern, all under the terms of a traffic management plan as set out in **Chapter 12: Site Access, Traffic and Transport**.

Construction Environmental Management Plan

3.37 An outline CEMP is provided as **Technical Appendix 3.1**. In acknowledgement that the CEMP is a live document that would evolve throughout the construction phase of the proposed development, only the principles of the CEMP are outlined at this stage. It is anticipated that submission and approval of a more detailed CEMP, following Site investigation works and further detailed design, would be the subject of a condition should consent for the proposed development be forthcoming.

Site Preparation and Establishment

3.38 Site preparation works would include the following key tasks, some of which would be undertaken concurrently:

- set up of welfare facilities;
- formation of the construction compound areas;
- establishment of borrow pits; and
- establishment of internal tracks or upgrading of existing tracks.

Temporary Construction Compounds

3.39 Two temporary construction compounds would be required for the duration of the construction phase. The temporary construction compound locations are shown on **Figure 3.1**.

3.40 The northern temporary construction compound would have a footprint of 1.43ha, the southern temporary construction compound would have a footprint of 1.20ha. The compounds will contain the following:

- temporary modular building(s) to be used as a Site office;
- welfare facilities;
- parking for construction staff and visitors;
- reception area;
- fuelling point or mobile fuel bowser;
- secure storage areas for tools; and
- waste storage facilities.

3.41 **Figures 3.10a and 3.10b** illustrate the indicative temporary construction compounds, although the layout may differ depending onsite topography and contractor requirements. Crane hardstanding areas, along with the construction compounds, would be used for laydown during construction.

3.42 The buildings (e.g. welfare facilities, storage areas, offices and fuelling point) that form part of the temporary construction compound would be removed at the end of the construction phase.

Borrow Pits

3.43 Five borrow pit search areas have been identified on Site, to provide approximately 221,401m^3 of material to construct the proposed development. Quarrying these borrow pits would provide a greater volume of rock than would be needed for the construction of the proposed development, but would allow for the current uncertainty of the quality of the rock at these locations. The current preference would be for borrow pit 1 (**Figure 3.9a**) to be used first, followed by borrow pit 2 (**Figure 3.9b**), borrow pit 3 (**Figure 3.9c**), borrow pit 4 (**Figure 3.9d),** and borrow pit 5 (**Figure 3.9e**).

3.44 For the purposes of the EIA, all borrow pits have been assessed.

Access Tracks

3.45 Approximately 28.6km of new and upgraded onsite access tracks would be required to provide access to the wind turbines, substation, and construction compounds (**Figure 3.1**). A total of approximately 16.5km of new track would be created and approximately 12.1km of existing track would be used (upgraded).

3.46 New tracks would be unpaved and constructed of a graded local stone with a typical running width of 6m (wider on bends and at junctions). The tracks would be up to 8m wide including potential ditches and banks. Passing opportunities would be available using crane hardstandings and construction compounds. Additionally, 14 turning heads would be constructed. It is proposed that the majority of the stone required for construction of the tracks and hardstanding areas could be won from the identified borrow pits.

3.47 **Figure 3.4** provides a typical illustration of the design of an onsite track, the design of tracks would take account of recognised good practice guidance as noted in **Technical Appendix 3.1: Outline CEMP**.

3.48 Site visits have confirmed the presence of peat, of variable condition and depth across the Site area, with deeper peat present on low lying and shallow slope areas. Where possible, the turbines and tracks have been positioned to avoid areas of deep peat. Where this has not been possible, floating tracks would be constructed. It is anticipated that approximately 2.2km of floating track would be required where peat depth of 0.5m or more has been identified, for a distance of 50m or greater and with shallow topography in the area (below 5%). In areas where the peat is shallow, i.e. rockhead is less than 0.5m below the surface, then the track formation would be by cut and fill or by a cut operation where there is a slope. Where the peat layer is more than 0.5m in depth and where there is a side slope the peat would be removed to an appropriate horizon.

3.49 Floating track construction is described in the Outline CEMP (**Technical Appendix 3.1**). Details of the proposed floated track construction are provided on **Figure 3.4**. The construction comprises the laying of a geosynthetic (geotextile mat or geogrid reinforcement) across the soils prior to constructing the road. Where required, risk from run-off would be mitigated by directing drainage to settlement ponds. Erosion processes on the roadside embankments and cuttings would be mitigated by ensuring that gradients are below stability thresholds, which would also enable effective regeneration of vegetation. Sediment traps would be required in the early years following construction until natural regeneration is established.

3.50 The tracks would be left in place following construction to provide access for maintenance, repairs, and eventual decommissioning of the proposed development. At the end of the construction period, the edges of all new tracks would be restored using materials stripped from excavations.

3.51 There are 33 existing watercourse crossings (including fords) as part of the current Eishken Road, which are included as part of the proposed development. The 33 existing watercourse crossings would be upgraded as part of the proposed development.

3.52 A further 21 new watercourse crossings would be required as part of the proposed development.

3.53 Details of the watercourse crossings within the Site are provided in **Table 3-3** and shown on **Figure 10.1b-h**. **Chapter 10** of the EIA Report describes in more detail the identified watercourse crossings.

Table 3-3: Onsite Watercourse Crossing

Watercourse Crossing	NGR	New / Existing
WX01	NB 26114 19365	Existing
WX02	NB 26948 18313	Existing
WX03	NB 27720 17929	Existing
WX04	NB 27894 17577	Existing
WX05	NB 27931 17549	Existing
WX06	NB 28082 17341	Existing
WX07	NB 28179 17096	Existing
WX08	NB 28190 17056	Existing
WX09	NB 28802 16516	Existing
WX10	NB 29482 16426	Existing
WX11	NB 29843 16214	Existing
WX12	NB 29932 16109	Existing
WX13	NB 29976 16093	Existing
WX14	NB 30048 16083	Existing
WX15	NB 30146 16036	Existing
WX16	NB 30245 16004	Existing
WX17	NB 30386 16050	Existing
WX18	NB 30475 16057	Existing
WX19	NB 30641 16100	Existing
WX20	NB 30971 16056	Existing
WX21	NB 31159 16046	Existing
WX22	NB 31465 16051	Existing
WX23	NB 31707 15931	Existing
WX24	NB 32095 15721	Existing
WX25	NB 32149 15458	Existing
WX26	NB 32315 14842	Existing
WX27	NB 32478 14421	Existing
WX28	NB 32621 13923	Existing
WX29	NB 32645 12662	Existing
WX30	NB 32555 12272	Existing
WX31	NB 32580 12227	Existing
WX32	NB 32458 12111	Existing
WX33	NB 32508 12016	Existing
WX34	NB 32054 14857	New
WX35	NB 32686 14340	New
WX36	NB 32121 14046	New
WX37	NB 31100 14118	New
WX38	NB 31364 13609	New
WX39	NB 31639 13592	New
WX40	NB 31839 13690	New
WX41	NB 31754 13244	New
WX42	NB 32691 13014	New

Watercourse Crossing	NGR	New / Existing
WX43	NB 30635 13022	New
WX44	NB 30674 12902	New
WX45	NB 30528 12703	New
WX46	NB 30480 12678	New
WX47	NB 30379 12622	New
WX48	NB 30172 12533	New
WX49	NB 30198 12237	New
WX50	NB 30589 12189	New
WX51	NB 30389 11943	New
WX52	NB 30229 11890	New
WX53	NB 31001 11381	New
WX54	NB 31268 11390	New

Lighting

3.54 Artificial lighting may be required during the construction phase to ensure safe working conditions, during periods of limited natural light. Examples include vehicle and plant headlights, construction compound lighting, floodlights and mobile lighting units, to be used around specific construction activities. It is intended that the type of lighting would be non-intrusive (e.g. directed towards works activity and away from the Site boundary), to minimise impact on local properties and any other environmental considerations.

Materials Sourcing and Waste Management

3.55 For construction, the proposed development would require a range of materials (e.g. stone for access tracks, the temporary Site compounds and the substation compound). Excavated material from the turbine bases and access tracks would be used onsite for restoration/reinstatement.

3.56 A Site Waste Management Plan would be developed for implementation during construction, as discussed in the outline CEMP (**Technical Appendix 3.1**). This outlines the material requirements and waste generation during construction and how the applicant intends to consider the management of these aspects.

3.57 Concrete would be batched onsite at the construction compounds for which water would be required. There may be potential to use water mains, or alternatively a location for a borehole would be required to be found onsite.

3.58 Water would also be required for welfare facilities and to dampen the track during dry weather, although this would be minimal and an abstraction license is not anticipated to be required for the activity.

Wind Turbine Layout

3.59 The proposed development is for 25, three-bladed, horizontal axis wind turbines. The proposed turbine locations are shown on **Figure 3.1** and the coordinates for each are provided in **Table 3-4**.

Table 3-4: Turbine Coordinates and Specifications

Turbine No.	Easting	Northing	Tip Height (m)	AOD (m)
T1	131931	914665	180	47
T2	132350	914561	200	35
T3	131037	914236	200	89
T4	131599	914371	200	57
T5	131931	914002	200	56
T6	132871	914180	200	42
T7	133314	913950	200	38
T8	132352	913719	200	63
T9	131259	913846	200	68
T10	131096	913430	200	89
T11	131818	913429	200	50
T12	130527	912958	180	140
T13	130811	912781	200	117
T14	131384	912882	200	58
T15	131988	913015	200	42
T16	132490	912962	200	64
T17	132994	913371	200	63
T18	133378	913187	200	40
T19	131279	912006	180	127
T20	130825	911882	200	106
T21	130267	911675	200	131
T22	130033	911225	200	123
T23	130556	911241	200	112
T24	131203	911364	200	76
T25	131764	911402	200	91

Wind Turbines and Transformers

3.60 The exact model of the wind turbines to be installed at a proposed development would be selected through a competitive procurement process and would be dependent upon technology available at that time. This EIA Report has considered the use of indicative turbine types shown on **Figure 3.2a** and **Figure 3.2b**.

3.61 It is anticipated that the turbines would be rated at approximately 6.6MW. A realistic minimum capacity for the proposed development would be in the region of 165MW based on current turbine availability.

3.62 The turbines would each incorporate a tapered tubular tower and three blades attached to a nacelle that would house a turbine generator and other operating equipment e.g. a gear box. The turbines would be semi-matt pale grey (in line with RAL 7038) or a finish agreed with CnES. It is proposed that turbines T19 to T25 would incorporate painted blade mitigation, designed to make the turbines more visible to White-Tailed Eagle and as a result reduce the predicted collision rates. This mitigation would see one of the three blades on each turbine (T19 to T25) painted in a semi-matt black or a finish agreed with NatureScot and CnES. Further detail on how the painted blade mitigation would reduce predicted White-Tailed Eagle collision rates is presented in **Chapter 9:**

Ornithology. Further detail on how the painted blade mitigation would look is provided in **Chapter 7: Landscape and Visual Amenity**.

3.63 As the proposed turbines are in excess of 150m, visible aviation lighting will be required. An aviation lighting scheme is proposed, which would see turbines T1, T3, T7, T12, T18, T22 and T25 fitted with nacelle mounted, medium intensity, visible spectrum, steady red obstacle lights.

3.64 For the purposes of the assessment, it is assumed that each turbine would be served by an electrical transformer that would be located internally.

3.65 The final turbine models selected would be agreed with CnES, via condition, in the event of consent being granted.

Foundations and Crane Hardstandings

3.66 Turbine foundations would be designed to accommodate the final choice of turbines and to suit Site specific ground conditions. The final design specification for each foundation would depend on the findings of detailed ground investigation of the land on which each turbine would be located. An illustration of a typical turbine foundation is provided on **Figure 3.3**.

3.67 The turbines would have gravity foundations laid using reinforced concrete and would have a diameter of approximately 22.8m.

3.68 Depth of the excavation would depend on the need to reach suitable ground. Excavations would be, on average, approximately 3.0m deep.

3.69 The sides would be graded back, from the foundation to approximately 26.3m diameter and battered to ensure that they remain stable during construction.

3.70 The turbines would be erected using mobile cranes brought to the Site for the construction phase. A crane hardstanding would be built adjacent to each wind turbine and will have an estimated permanent footprint of approximately 50m x 20m and 1m in depth (with additional areas for temporary crane pad hardstanding). The actual crane pad design and layout would be determined by the turbine supplier according to their preferred erection method. An indicative design, considered to be the worst-case in terms of size, has been considered for the purposes of this assessment and is provided on **Figure 3.5**. The indicative crane pad design shown on **Figure 3.5** shows the areas of the crane pad which are permanent hardstanding (e.g. turbine foundation area), temporary hardstanding (e.g. additional crane pad / support areas), and clearance only (e.g. areas in between additional crane pad / support areas).

3.71 The crane hardstanding would also be utilised as a laydown area. These areas would remain in situ for the duration of the operational phase of the proposed development.

3.72 Soils that are excavated during construction would be set aside for backfilling the batter areas around the turbine bases and hardstandings and use of small bankings either side of access tracks. Further details of soil storage are contained in **Technical Appendix 10.2: Peat Management Plan**.

Onsite Substation Compound and Electrical Cabling

3.73 The proposed development would be connected to the electricity network via an onsite substation control building measuring approximately 16m x 30m and 8m high and located within the substation compound (approximately 75m x 100m) at NGR NB 32509 14230. The compound would include an area for car parking and High Voltage (HV) equipment, such as transformers and circuit breakers as well as a control building. This indicative onsite substation compound is shown on **Figure 3.7**.

3.74 The main control building would be single storey, built on a pre-cast concrete base and would measure approximately 16m x 30m and 8m high (pitched roof which would be 8m high at its tallest point). It is proposed that the buildings would have a rendered finish; the final external finishes would be agreed with CnES, via condition, in the event of consent being granted. A typical control building elevation is shown on **Figure 3.8**.

3.75 Underground power cables would run along the side of the access tracks in trenches from each of the turbines to the substation. Indicative cable trench arrangements are provided on **Figure 3.6.**

Meteorological (Met) Masts

3.76 The proposed development includes two permanent met masts, located at NGR NB 32050 13817 (northern met mast) and NGR NB 30482 11520 (southern met mast). The two permanent met masts would be up to 122.5m in height, and would have a main foundation area of approximately 3m x 3m, as well as four anchor points for supporting guy wires. The locations of the met masts are shown on **Figure 3.1**, with **Figure 3.11a** showing an indicative Plan drawing, and **Figure 3.11b** and indicative elevation drawing.

Site Signage (Construction)

3.77 During construction, the Site will have suitable signage to ensure that contractors use the correct roads, and also to protect the health and safety of workers, contractors and the general public. Signage will provide the operator's name, the name of the Development and an emergency contact telephone number. The exact final locations and design of the signage will be defined prior to construction commencing.

Site Restoration Post Construction

3.78 Soils would be used for reinstatement works associated with access tracks, cable trenches, turbine foundations, crane hardstandings, borrow pits and the temporary construction area. The upper vegetated turfs would be used to dress infrastructure edges, and to reinstate the surface of restoration areas. It is anticipated that most of the soil resources within areas directly affected by construction activities would be able to be stored and reinstated as close as possible to where they were excavated, in accordance with best practice; so that the Site would be restored with minimal movement of material from its original location. It is not anticipated that any excavated material would leave the Site.

3.79 Further detail on Site restoration would be provided within the CEMP, an outline of which is provided in **Technical Appendix 3.1**.

OPERATION AND MAINTENANCE PHASES

Duration

3.80 The proposed development would have an operational life of up to 30 years from the first commissioning (export to the electrical grid).

Electricity Generation

3.81 The turbines would start to generate electricity at wind speeds of around 3m/s (6.7mph). Electricity output would increase as the wind speeds increase up to a maximum of around 13m/s (29.1mph), when the wind turbines would reach their maximum capacity. The turbines would continue to operate at maximum capacity up to wind speeds of around 23m/s (51.4mph). Above 23m/s the turbines would operate at a reduced output under a storm-control mode up to wind speeds of around 30m/s (67.1mph). Above 30m/s, the turbines would cut-out and automatically stop as a safety precaution.

3.82 The proposed development would produce an average of approximately 438,000 Mega Watt hours (MWh) of electricity annually (based on a Site derived capacity factor of 40%). This equates to the power consumed by approximately 124,821 average UK households[1], which would be well above the current energy requirements of the approximately 14,901 homes across the Western Isles[2].

Maintenance

3.83 The proposed development would largely be controlled and managed remotely, however, there would be technicians on Site regularly and it would be maintained throughout its operational life via servicing at regular intervals. It is anticipated that there would be approximately four annual service visits per turbine by a service team of up to three people. Inspections of high-voltage equipment and general Site safety are expected to be carried out monthly. Faults would be responded to as required, most likely by a team of two technicians.

3.84 This team would either be employed directly by the developer or by the turbine manufacturer. Management of the wind farm would typically include turbine maintenance, health and safety inspections, and annual civil maintenance of tracks, drainage and buildings. Turbine maintenance includes the following:

- annual civil maintenance of tracks and drainage;
- scheduled routine maintenance and servicing;
- unplanned maintenance or call outs;

[1] Calculated using the most recent statistics from the Department of Business, Energy and Industrial Strategy (BEIS) showing that annual UK average domestic household consumption in 2022 was 3,509kWh

[2] https://statistics.gov.scot/atlas/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fid%2Fstatistical-geography%2FS08000028

- HV and electrical maintenance; and
- blade inspections.

Habitat Management Plan

3.85 As part of the proposed development an area of approximately 50ha would be targeted for blanket bog restoration in order to compensate for the 40ha of blanket bog that would be lost as a result of proposed wind turbine infrastructure.

3.86 The blanket bog restoration would be undertaken by fencing and ditch blocking, enabling the development of peatland habitats as part of a Habitat Management Plan (HMP).

3.87 As part of the proposed development an area of approximately 537ha would be targeted for wet heath restoration in order to compensate for the 34ha of wet heath that would be lost as a result of proposed wind turbine infrastructure.

3.88 The wet heath restoration would primarily be undertaken via fencing and reduced grazing measures as part of a HMP. An outline HMP is provided in **Technical Appendix 8.5**.

Community Benefit

3.89 Should the proposed development gain consent, a Community Benefit Fund would be made available to the community of interest illustrated within the **PAC Report**. This is offered on the basis of a payment per MW of installed capacity at the Scottish Government recommended rate at the time of commissioning the proposed wind farm. At present, the recommended rate is £5,000 per MW. It is estimated that, depending on the type of investment selected, the community benefit fund alone would accrue benefits to the local economy of approximately £24.75 million over the 30 year life of the wind farm.

3.90 The proposed development is being progressed with a shared ownership opportunity for communities in the local area, which are being offered the opportunity to acquire up to a 20% share of the proposed development. This would be explored in depth with CnES and the existing local development trusts should the proposed development receive consent.

3.91 The applicant is also proposing to offer various other community benefit schemes, including a footpath improvement fund, paid apprenticeship schemes and an Eagle conservation programme. These community benefits are considered in more detail within **Chapter 14: Socio-economics, Tourism, Recreation and Land Use**.

DECOMMISSIONING PHASE

3.92 At the end of its operational life, which would be defined by condition on the grant of any consent, the proposed development would be decommissioned unless an application is submitted to extend the operational period or to repower the Site. The decommissioning period would be expected to take up to 18 months.

3.93 The ultimate decommissioning protocol would be agreed with CnES and other appropriate regulatory authorities in line with best practice guidance and requirements of the time. This would be done through the preparation and agreement of a Decommissioning and Restoration Plan (DRP). Financial provision for the decommissioning would be provided. It is anticipated that the DRP would be the subject of a planning condition.

3.94 The final, detailed, DRP would reflect the relevant legislation, and best practice current at the time of decommissioning and restoration.

3.95 Further assessment of decommissioning effects has therefore been scoped out of this EIA. More detail on this is provided in **Chapter 6: Scoping and Consultation**.

3.96 **Table 3-5** sets out the potential decommissioning requirements for each element of the proposed development. These would be outlined further in the outline DRP and then updated in the detailed DRP.

Table 3-5: Decommissioning Requirements for Infrastructure / Decommissioning Statement

Element	Decommissioning and Requirement
Turbines	Turbines would be dismantled and removed from Site. Turbine components would be dismantled onsite using standard engineering techniques similar to those used for the original installation. The re-use or recycling of components would be prioritised, this would include exploration of any viable second hand turbine market. Turbine oils or any other oils would be removed from the Site and disposed of appropriately.
Turbine Foundations	Top soil material that has revegetated the foundations would be excavated first and temporarily stored for re-use following partial removal of foundations. The top 1m of the turbine foundation would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing concrete from the Site. The excavated foundation would be reprofiled with soil and reseeded.
Crane Hardstandings	Top soil material that has revegetated the crane hardstandings would be excavated first and temporarily stored for reuse following partial removal of crane hardstandings. The top 1m of the crane hardstandings would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing aggregate from the Site. The excavated hardstandings would be reprofiled with soil and reseeded. Recovered geogrids and geotextiles would be disposed of appropriately. All granular materials would be excavated and removed from the Site, for re-use where practicable.
Access Tracks	Access tracks would be left in-situ, which would reduce potential environmental impacts associated with potential sediment migration into watercourses as a result of removing all tracks.
Watercourse Crossings	These would remain in-situ in association with the access tracks after decommissioning. This would reduce decommissioning activities in the vicinity of watercourses and thus potential for contamination as a result of run-off.
Underground Cabling	These are underground and therefore all cables would be made safe and left in-situ. This is considered preferential to extracting cables from the cable trenches due to the potentially greater environmental impacts associated with excavating, processing and removing the cable from the Site.
Substation compound	All equipment from within the substation compound would be removed from Site and either reused, recycled or disposed of appropriately. Oils or lubricants from the compound would be removed and disposed of appropriately. The control building, and related infrastructure,

	would then be demolished and all materials would be reused, recycled or disposed of appropriately.
Substation compound foundation	The top 1m of the compound foundations would be removed and disposed of appropriately. The excavated hardstandings would be reprofiled with soil and reseeded.

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POLICY CONTEXT 4

CONTENTS

INTRODUCTION

4.1 This Chapter identifies the climate change, energy and planning legislation, policies and targets relevant to the determination of the planning application for the proposed development.

4.2 It is important to note that it is not the purpose of this chapter to provide an assessment of the proposed development against these climate change, renewable energy and planning policies and targets. Instead, it outlines the context in which the proposed development should be considered, including the urgent need case for rapidly increased renewable energy generation over the next decade in response to the global climate emergency. More detailed analysis and assessment of the proposed development against these planning policy and other material considerations is contained in the separate supporting Planning Statement which accompanies this application.

4.3 This Environmental Impact Assessment (EIA) Report is prepared to support the application for consent for the proposed development under Section 36 of the Electricity Act 1989. In the consideration of the application, the Scottish Ministers' have a duty to fulfil the requirements of Schedule 9 (paragraph 3) of the Electricity Act 1989. The applicant has had regard to the duties imposed upon them in terms of Schedule 9 and thereafter the Scottish Ministers will have to consider the *"desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest".* In addition, the Scottish Ministers are required to assess whether the applicant has fulfilled the requirement to *"do what he reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects".*

4.4 Deemed planning permission under section 57(2) of the Town and Country Planning Act 1997, as amended, is also sought.

4.5 In the case of Section 36 Applications the role of the Development Plan is not the same as in the case of the Town and Country Planning (Scotland) Act 1997. The test set out in Section 25 of the Town and Country Planning (Scotland) Act 1997 which sets out that development must accord with the terms of the Development Plan is not engaged in the case of a Section 36 application. The Development Plan is nonetheless material to the determination of the application. Through the EIA process the applicant has sought to develop a scheme that takes account of the duties set out in Schedule 9 of the Electricity Act 1989. The matters that are raised in Schedule 9 have been considered in the EIA process and the findings are presented in this EIA Report.

4.6 **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**, provides a summary of specific relevant legislation, planning policy and guidance for each technical discipline considered in the EIA Report.

POLICY ON CLIMATE CHANGE AND ENERGY

International and EU Context

4.7 In order to understand the need for a continuing increase of renewable energy generation in Scotland, it is important first to understand the international and European Union (EU) framework towards tackling climate change. The key targets and obligations in this regard are outlined below.

UK Withdrawal from the European Union

4.8 The UK formally submitted its intention to leave the EU under Article 50 of the Treaty of the EU in March 2017. The European Union (Withdrawal Agreement) Act 2020 received Royal Assent on 23 January 2020 and converts all EU laws, targets and rules into domestic UK governance. The existing EU renewable energy targets for the UK, including the requirements of the Renewable Energy Directive, remain applicable despite the UK formally leaving the EU on 31 January 2020, and the transition period ending on 31 December 2020.

The COP21 UN Paris Agreement

4.9 On 12 December 2015 delegates from nearly 200 different countries gathered at the Paris Climate Conference (COP21) and adopted a legally binding international agreement – known as 'the Paris Agreement' – by which all countries vowed to cut their carbon emissions. They agreed:

- a long-term goal of keeping the increase in global average temperature to well below 2 degrees Celsius (°C) above preindustrial levels;
- to aim to limit the increase to 1.5 °C, since this would significantly reduce risks and the impacts of climate change;
- on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries; and
- to undertake rapid reductions thereafter in accordance with the best available science, so as to achieve a balance between emissions and removals in the second half of the century.

4.10 Under the agreements, countries are also legally obliged to make new post-2030 commitments to reduce emissions every five years.

4.11 The EU formally ratified the Paris Agreement on 5 October 2016, thus enabling its entry into force on 4 November 2016. On the agreement, the European Commission stated, "*the Paris Agreement sends a clear signal to investors, businesses, and policy-makers that the global transition to clean energy is here to stay and resources have to shift away from polluting fossil fuels*."

COP26 Glasgow

4.12 In addition to the above legislation and targets, consideration should also be given to the recent UN Climate Change Conference of the Parties (COP26) event held in Glasgow in November 2021 at which there was worldwide consensus on the severity of the current climate emergency, in particular recognition of the loss and damage that the current impacts of climate change are already having. Following two weeks of intense talks, nearly 200 countries agreed to the Glasgow Climate Pact to continue to pursue efforts to limit global average temperature increases to 1.5˚C in accordance with the Paris Agreement. All countries also agreed to speeding up the pace of climate action this decade and to revisit and strengthen their current emissions targets to 2030. These outcomes further emphasise the importance of rapidly increasing renewable energy generation capacity over the next decade in response to the global climate emergency.

UK Context

4.13 Although the overarching position in the UK is that energy policy is not a devolved matter, the UK Government have made it clear that the Devolved Administrations must play an important role in helping the UK meet international and EU climate change targets. The key UK targets in this regard are outlined below.

Net Zero: The UK's Contribution to Stopping Global Warming (2019)

4.14 At COP21, the Intergovernmental Panel on Climate Change (IPCC) was invited to publish a Special Report on the impacts of global warming of 1.5°C and associated greenhouse gas emissions pathways. The IPCC released this Special Report on 8 October 2018. In response to the IPCC's Special Report, the UK Government requested advice from the Committee on Climate Change (a non-departmental public body that advises the Government on the climate) on the implications of the Paris Agreement. This included requesting advice on what further action was needed to meet the goals of the Paris Agreement.

4.15 On 2 May 2019 the Committee on Climate Change published their advice in '*Net Zero: the UK's Contribution to Stopping Global Warming'*. The report made the following recommendations:

- UK overall: a new tougher emissions target of net zero greenhouse gases by 2050, ending the UK's contribution to global warming within 30 years. This would replace the previous target of an 80% reduction by 2050 from a 1990 baseline.
- Scotland: a target of net zero greenhouse gases economy by 2045, reflecting Scotland's greater relative capacity to remove emissions than the UK as whole.
- A net zero greenhouse gases target for 2050 would deliver on the commitment that the UK made by signing the Paris Agreement.

4.16 The UK targets in the report have since been legislated through the Climate Change Act 2008 (2050 Target Amendment) Order 2019, which came into force on 27 June 2019. Prior to this, the UK was committed under the Climate Change Act 2008 to reducing net greenhouse gas emissions by at least 80% of their 1990 levels by 2050. As discussed later in this chapter, the Scottish net-zero targets in the report have also since been legislated.

4.17 In terms of the new net-zero targets, the report makes it clear for both the UK and Scotland that "*this is only possible if clear, stable and well-designed policies to reduce emissions further are* *introduced across the economy without delay*." It continues that "*current policy is insufficient for even the existing targets."*

4.18 The Committee on Climate Change report sets out various scenarios for UK net zero greenhouse gases in 2050. These include one of extensive electrification, particularly of transport and heating. Page 23 of the Executive Summary states that this would need to be "*supported by major expansion of renewable and other low carbon power generation. The scenarios involve around a doubling of electricity demand, with all power produced from low carbon sources (compared to 50 % today)."*

4.19 The Committee on Climate Change scenarios for electricity generation estimate that to keep the UK on track to meet is net zero target, that renewable energy deployment will require a fourfold increase across the UK from current levels. It identifies that this quadrupling of renewable energy will require approximately 22 to 29 gigawatts (GW) of onshore wind capacity by 2030 and solar capacity increased to 23 to 43 GW. Currently, capacity for both is approximately 13 to 14 GW each.

4.20 The technical annex to the report specifically addresses integrating variable renewables into the UK electricity system. The annex makes it clear that variable renewable electricity such as large-scale onshore wind energy is now the cheapest form of electricity generation in the UK and can be deployed at scale to meet UK electricity demands.

4.21 The report's 'further ambition scenario' for the power sector aims to see low-carbon sources providing 100% of power generation in 2050, with variable renewable sources (including onshore wind) anticipated to contribute some 57% of this total low carbon power generation.

4.22 Since the targets in the 'Net Zero: the UK's Contribution to Stopping Global Warming' report have been legislated through the Climate Change Act 2008 (2050 Target Amendment) Order 2019, the IPCC have released further reports on the impacts of climate change. The most recent report being the 'Synthesis Report of the IPCC Sixth Assessment Report (AR6)' which integrates the main findings of the Sixth Assessment Report (AR6) and the associated three Special Reports (including the 2018 Special Report detailed in paragraph 4.14 above). With regards current progress (globally) in climate change adaptation planning and implementation, the 'Synthesis Report of the IPCC Sixth Assessment Report (AR6)' states the following:

"Adaptation planning and implementation has progressed across all sectors and regions, with documented benefits and varying effectiveness. Despite progress, adaptation gaps exist, and will continue to grow at current rates of implementation. Hard and soft limits to adaptation have been reached in some ecosystems and regions. Maladaptation is happening in some sectors and regions. Current global financial flows for adaptation are insufficient for, and constrain implementation of, adaptation options, especially in developing countries.".

4.23 With regards future climate change, the 'Synthesis Report of the IPCC Sixth Assessment Report (AR6)' states the following:

"Continued greenhouse gas emissions will lead to increasing global warming, with the best estimate of reaching 1.5°C in the near term in considered scenarios and modelled pathways. Every increment of global warming will intensify multiple and concurrent hazards.".

The Sixth Carbon Budget (2020)

4.24 In December 2020 the Committee on Climate Change published 'The Sixth Carbon Budget', describing what the potential path options to net zero by 2050 look like and detailing the steps that must be taken to achieve this.

4.25 A key recommendation of the report is that the UK Government requires a reduction in UK territorial greenhouse gases of 78% by 2035 relative to 1990 levels. The report advises that this can be done through the following four steps:

- Take up of low carbon solutions;
- Expansion of low carbon energy supplies including onshore wind;
- Reducing demand for carbon intensive activities; and
- Land and greenhouse gas removals.

4.26 Key benefits for the UK are seen as including the opportunity for low carbon investment, recognised at a time when it is needed to support the UK's economic recovery from the COVID-19 health crisis.

4.27 Page 23 refers to the devolved nations and sets out that "*UK climate targets cannot be met without strong policy action across Scotland, Wales and Northern Ireland*" and recognises that although the main policy levers are held by the UK Government, that Scotland can take action through complementary measures at the devolved level including supporting policies such as "*planning and consenting".*

The UK Energy White Paper, Powering our Net Zero Future (2020)

4.28 The UK Government published its Energy White Paper *'Powering our Net Zero Future'* in December 2020. The White Paper sets out the UK Government's current thinking on the way in which the UK should work towards meeting its net zero targets. It advises that, although retiring capacity will need to be replaced, that modelling suggests overall that the demand for electricity could double as transport and heat switch from petrol/diesel and gas, respectively, to electricity. It notes that this will require a fourfold increase in low-carbon generation by 2030 if the increased demand and net zero targets are to be met.

4.29 The various actions set out in the White Paper are described as "*a strong signal to project developers and the wider investor community about the government's commitment to deliver clean electricity."* In the section 'Our Key Commitments', the White Paper states that "*onshore wind and solar will be the key building blocks for the future generation mix, along with offshore wind*.".

Net Zero Strategy: Build Back Greener (2021)

4.30 Net Zero Strategy: Build Back Greener was published on 19 October 2021 and sets out how the UK will deliver on its commitments to meet net zero carbon emissions by 2050. The document brings forward the UK government's intention to fully decarbonise the UK electricity system by 2035 and makes it clear that renewables will be a key focus, with the stated aim of 40GW of offshore wind power by 2030 and the creation of more onshore wind and solar energy supplies.

4.31 The government also commits to ending the sale of new petrol and diesel cars and vans by 2030 – declaring that by this point all new cars must be fully zero emissions capable.

Powering Up Britain (2023)

4.32 The latest UK Government's statement on 'Powering Up Britain' is to be the blueprint for the future of energy in the UK. It brings together the Energy Security Plan and Net Zero Growth Plan, and explains how the UK will diversify, decarbonise and domesticate energy production by investing in renewables and nuclear, to power Britain from Britain.

Climate Change Committee Progress Report to Parliament (2023)

4.33 The most recent Climate Change Committee's progress reports to Parliament '*Progress in reducing emissions*' was published in June 2023. As with previous reports, it restates the need for renewable energy and stronger actions on reducing emissions. The report advises that *"Renewable electricity capacity increased in 2022, but not at the rate required to meet the Government's stretching targets, particularly for solar deployment. Given short lead-times, rapid deployment of onshore wind and solar could have helped to mitigate dependence on imported gas during the fossil fuel crisis."*.

4.34 With regards the speed of onshore wind deployment and constraints to increasing this, the report states *"Both onshore wind and solar deployment are progressing more slowly than offshore wind, in part due to barriers in the planning system, despite being among the cheapest forms of electricity generation."*.

4.35 The report also speaks positively regarding the trends seen with renewable energy and the UK's historic leadership role stating *"The UK has had an impressive history of climate leadership. However, a muted response to the energy crisis, support for new fossil fuel production and a retreat from public leadership within the COP process all pose risks to the UK's international reputation. These must all be addressed to reinstate the UK as a credible, impactful climate leader on the international stage."*.

British Energy Security Strategy (2022)

4.36 The British Energy Security Strategy policy paper was published in April 2022. The strategy identifies that if the UK is to reduce rapidly increasingly energy bills and keep them down for the long term, the UK needs to reduce its dependence on imported oil and gas and to source more of its energy domestically instead.

4.37 Whilst primarily focusing on offshore wind rather than onshore wind, the strategy highlights that onshore wind is one of the cheapest forms of renewable power, and advises that improvements will be made to infrastructure UK wide, in order to facilitate more onshore wind development. The strategy seeks to increase deployment of wind and solar energy, and identifies that it expects the measures detailed in the strategy to result in an electricity generation mix that is 95% low carbon electricity by 2030.

Scotland Context

4.38 The Scottish Government has continually adopted more ambitious climate change and renewable energy policy and targets than that of the UK Government. These key targets, and the strategies and policies to delivering them, are outlined below.

The Climate Change (Scotland) Act 2009

4.39 The Climate Change (Scotland) Act 2009 initially established long term statutory targets for Scotland of reducing greenhouse gas emissions by at least 80% by 2050, with an interim target of reducing emissions by at least 42% by 2020. The Act also placed climate change duties on Scottish public bodies and included provisions on climate change including adaption, forestry, energy efficiency and waste reduction.

4.40 Section 44 of the 2009 Act places climate change duties on Scottish public bodies. It states that a *"public body must, in exercising its functions, act: in the way best calculated to contribute to the delivery of (Scotland's climate change) targets; in the way best calculated to help deliver any (Scottish adaption programme); and in the way that it considers most sustainable".* This means that all public sector organisations, including local authorities, are obliged in exercising their functions to do so in a manner which is consistent with meeting the net zero climate change target.

The Climate Emergency Declaration (2019)

4.41 At the SNP Conference in April 2019, Scotland's First Minister declared a climate emergency:

"*As First Minister of Scotland, I am declaring that there is a climate emergency. And Scotland will live up to our responsibility to tackle it*."

4.42 In May 2019 the Scottish Government formally declared a climate emergency. In a speech to the Scottish Parliament, the Climate Change Secretary stated:

"*There is a global emergency. The evidence is irrefutable. The science is clear. And people have been clear: they expect action*."

4.43 The Minister also highlighted the important role of the planning system in achieving climate change objectives, stating:

"*…the next National Planning Framework and review of the Scottish Planning Policy will include considerable focus on how the planning system can support our climate change goals*."

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

4.44 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 received Royal Assent on 31 October 2019 and came into force in March 2020. The Act responds to the Paris Agreement and the declaration of a 'climate emergency' in Scotland. It amends the Climate Change (Scotland) Act 2009 and commits Scotland to a new target of net zero emissions of all greenhouse gases by 2045, with interim targets for reductions of at least 56% by 2020, 75% by 2030 and 90% by 2040. These new greenhouse emissions targets represent a substantial increase over the targets set in the previous Act.

4.45 To help ensure delivery of the long-term targets, the framework includes statutory annual targets for every year to net zero. The latest statistics published in June 2021 on the Scottish Government's energy statistics hub identify that between 2018 and 2019, climate change emissions fell by 23% but that the target level of 55% fall from the baseline level was missed, with a reduction of 51.5%. Three consecutive years of targets have now been missed – for the years 2017, 2018 and 2019.

Climate Change Plan Update (2020)

4.46 The Scottish Government published its most recent Climate Change Plan in December 2020. The Climate Change Plan Update responds to the declared climate emergency and considers what policies and proposals are necessary to deliver against the new targets set under the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

4.47 The Climate Change Plan Update states that it is essential that a recovery from the COVID-19 pandemic "*responds to the climate emergency*" and "*continues the rapid growth in renewables over the past 20 years, moving from a low to a zero-carbon electricity system*".

4.48 Looking specifically at seeking to achieve Scotland's emissions targets out to 2032, the Climate Change Plan Update states that there will need to a be "*a substantial increase in renewable generation, particularly through new offshore and onshore wind capacity*." It seeks to quantify this by identifying that it expects between 11 to 16 GW of new renewable capacity will need to be developed during this period.

A Stronger and More Resilient Scotland: Programme for Government 2022-23 (2022)

4.49 The Programme for Government is published every year at the beginning of September and sets out the actions that the Scottish Government will take in the coming year and beyond.

4.50 The Scottish Government's '*A stronger and more resilient Scotland'* was published in September 2022. This document reaffirms the Scottish Government's commitment to targets set out in prior programmes by confirming that these commitments *"remain in place and our ambition to deliver them is undiminished: the more so since we are clear that much of the answer to the current cost crisis and the poverty it will cause lies in our journey to net zero, investment in a strong economy, and in building a fairer society.".*

4.51 Page 11 notes that *"Scotland has the potential to become a global green energy powerhouse, for Europe and beyond. Scotland's vast potential for renewable energy generation opens up opportunities for exporting electricity and green hydrogen, and attracting energy intensive industries."*.

2020 Routemap for Renewable Energy in Scotland (2011)

4.52 The 2020 Routemap for Renewable Energy in Scotland was initially published in July 2011. Further updates to the Routemap were subsequently published in October 2012, December 2013 and September 2015. The Routemap and subsequent updates were therefore prepared in the context of the lower greenhouse gas emissions targets set initially under the Climate Change (Scotland) Act 2009.

4.53 The Routemap committed Scotland to generating an equivalent of 100% of electricity demand from renewable sources by 2020. It stated that "*The successful delivery of the capacity required to deliver the equivalent of 100% of Scottish electricity consumption will demand a significant and sustained improvement over the deployment levels seen historically*."

4.54 Sectoral routemaps were provided for each of the key renewable technologies that it was anticipated would contribute towards achieving the 2020 targets. With regard to onshore wind, the stated ambition was "*that by 2020, onshore wind developments ranging from small and community-scale to large power utility scale maximise engagement with communities; contribute electricity to renewables targets; and through displacement of fossil fuel generation, help to reduce fossil fuel consumption*."

4.55 The Routemap identified that "*onshore wind is a mature and relatively low cost renewable technology with a large supply chain already established. It is capable of being deployed at a high rate. Onshore wind turbines can make a very large contribution to the progress to Scotland's renewable electricity target, and help establish Scotland's reputation as rapidly becoming the green powerhouse of Europe*."

4.56 A letter from the Scottish Government Planning and Architecture Division to all Heads of Planning entitled *'Energy Targets and Scottish Planning Policy'* was published on 11 November 2015. The letter set out the Scottish Government's position on onshore wind energy developments. With regard to the 100% of gross electricity consumption from renewables target by 2020, the letter states that "*the target is a statement of intent and that it is known that Scotland has the potential resource to deliver and exceed it*." The letter adds that there is no cap on the support for renewable energy development, including onshore wind, once the target has been reached.

4.57 The latest statistics from the Scottish Government's Energy Statistics Hub identify that in 2020 that the equivalent of 98.6% of gross electricity consumption was from renewable sources. The 2020 target of 100% gross electricity consumption equates to approximately 16 GW of installed renewable energy capacity. The latest statistics identify that as of June 2021 Scotland has 12 GW of installed capacity operational, a shortfall of approximately 4 GW.

Scottish Energy Strategy (2017)

4.58 The Scottish Energy Strategy (SES) was published in 2017 and was therefore also prepared in the context of the lower greenhouse gas emissions targets set initially under the Climate Change (Scotland) Act 2009. The SES sets out the Scottish Government vision for the future energy system in Scotland for the period through to 2050. The Strategy identifies that Scotland's long-term climate change targets will require the near complete decarbonisation of our energy system by 2050, with renewable energy meeting a significant share of our needs.

4.59 The SES sets a target for the equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources by 2030. This 50% target roughly equates to of 17 GW of installed capacity in 2030. The latest figures on the Scottish Government's Energy Statistics Hub identify that in 2020, 25.4% of total Scottish energy consumption came from renewable sources.

4.60 The SES also sets a second target for an increase by 30% in energy productivity by 2030 across the Scottish economy from a baseline of 2015. The latest figures on the Scottish Government's Energy Statistics Hub (Scottish Government 2021) estimate that energy productivity in Scotland in 2020 was 1.6% above the 2015 baseline.

4.61 Alongside these energy targets, the SES also sets out six strategic priorities. These include:

- "*System security and flexibility – we should have the capacity, the connections, the flexibility and resilience necessary to maintain secure and reliable supplies of energy to all of Scotland's homes and businesses as our energy transition takes place.*
- *Renewable and low carbon solutions – we will continue to champion and explore the potential of Scotland's huge renewable energy resource, and its ability to meet our local and national heat, transport and electricity needs – helping to achieve our ambitious emissions reduction targets*."

4.62 The SES advises that onshore wind energy development is essential to Scotland's transformation to a fully decarbonised energy system by 2050 and brings opportunities which underpin our vision to grow a low carbon economy and build a fairer society.

4.63 The SES notes that the Scottish Government want to "*see a significant increase in shared ownership of renewable energy projects in Scotland – putting energy into the hands of local communities and delivering a lasting economic asset to communities across Scotland*". The ambition is for at least half of newly consented renewable energy projects by 2020 to have an element of shared ownership. The Scottish Government believe that "*Shared ownership will play a key part in helping to meet our targets of 1 GW of community and locally-owned energy by 2020 and 2 GW by 2030*." The Scottish Government "*expect community involvement in onshore wind developments to continue to play a vital role in reaching these targets*."

Onshore Wind Policy Statement 2022

4.64 The Scottish Government's 'Onshore Wind Policy Statement 22' (OWPS 22) was published in December 2022, focusing on the following areas:

- main ambitions and aspirations;
- delivering on their ambitions in Scotland;
- environmental considerations: how to achieve a good balance and maximise benefits;
- benefits to local communities and financial mechanisms;
- benefits to Scotland;
- aviation considerations;
- technical considerations; and

- energy systems and regulation.

4.65 The OWPS ‘22 has been published with a purpose of restating the importance of onshore wind as a tool to accelerate Scotland’s transition towards a net zero society. The policy cites the Russian invasion of Ukraine, and subsequent global energy crisis as an additional reason for the further development of onshore wind in Scotland. The statement emphasises the importance of onshore wind in Scotland as a cheap and reliable source of zero carbon electricity. Within the statement, the Scottish Government commits to an overall ambition of 20GW of total installed onshore wind capacity by 2030, increasing the current installed capacity by 11.3GW. Referring to the projection that Scotland’s peak demand for electricity will at least double within the next two decades, the report states that *“This will require a substantial increase in installed capacity across all renewable technologies.”*.

4.66 The statement highlights the relative inexpensiveness to develop, and increasing profitability of onshore wind, showing that the cost of onshore wind has continued to fall over the contract for difference allocation rounds – showing costs of around 45% lower than in 2015.

4.67 The necessity for taller turbines has been reaffirmed in section 3.4.6 *“…What would previously have been considered ‘taller’ turbines are now more common and must continue to be deployed in appropriate locations…”* whilst in section 3.4.7 it reiterates why these turbines are a necessity *“Taller turbines have a higher installed capacity which results in the need for fewer turbines per site.”*.

4.68 The statement clarifies the Scottish Government’s position on the construction of new wind farms and their effect on the landscape further in section 3.6.2 *“The only areas where wind energy is not supported are National Parks and National Scenic Areas. Outside of these areas, the criteria for assessing proposals have been updated, including stronger weight being afforded to the contribution of the development to the climate emergency, as well as community benefits”* in accordance with NPF4.

4.69 The OWPS ’22 promotes community benefits, and the Scottish Government continues to encourage community benefits from all renewable energy businesses, as outlined in section 4.2. Along with community benefits, the statement advocates for an increase in shared ownership of renewables developments. The Scottish Government has set a target of 2GW of community and locally owned energy by 2030 as a minimum and encourages developers to consider shared ownership opportunities in all projects.

Draft Energy Strategy and Just Transition Plan 2023

4.70 On 10 January 2023, the Scottish Government published the Draft version of its ‘Energy Strategy and Just Transition Plan - delivering a fair and secure zero carbon energy system for Scotland’. This plan outlines the key ambitions for Scotland’s energy future, with an even greater focus on renewable energy. It is predicted that these policies would result in a net jobs gain across the energy production sector and will increase renewable energy exports whilst also reducing exposure to future global energy market fluctuations.

4.71 The Plan outlines several of the government's targets to reach a net zero Scotland, with the main milestones and dates outlined as:

- to substantially increase Scotland's renewable electricity generation capacity from the current level of 13.4 Gigawatts (GW) with an additional 20GW resulting in an overall capacity of at least 33.4GW by 2030;
- aims to have 8-11GW of installed offshore, and an additional 12GW of installed onshore wind capacity by 2030;
- for renewable and low-carbon hydrogen power to provide 5GW (the equivalent of 15% of Scotland's current energy needs) by 2030, increasing to 25GW by 2045; and
- to phase out the necessity for new petrol and diesel cars by 2032, and to reduce total car kilometres by 2030.

4.72 The plan also outlines general commitments made by the Government to assist with the transition to net zero, which include the following:

- to establish a national public energy agency – 'Heat and Energy Efficiency Scotland';
- to increase the contributions of solar, hydropower and marine energy within Scotland's energy mix;
- to accelerate the decarbonisation of domestic industry, transport and heat in buildings;
- to generate surplus electricity – allowing for the export of electricity and renewable hydrogen to support decarbonisation across Europe.;
- to create energy security – through the development of Scotland's resources and additional energy storage;
- to allow for a just transition by maintaining or increasing employment in Scotland's energy production sector against a decline in North Sea production; and
- to maximise the use of Scottish manufactured components in the energy transition, ensuring high-value technology and innovation.

4.73 Page 120 of the Draft Energy Strategy highlights the UK Government's decision not to award the Scottish Cluster, led by the Acorn Project at St Fergus, track 1 status in their carbon capture, utilisation and storage (CCUS) cluster sequencing process. The Draft Energy Strategy goes on to state that this decision from the UK Government will have a negative effect on Scotland's ability to meet emissions reduction targets. As a result of this, it is highlighted that Scotland *"will require contingency planning to identify the additional emissions reduction effort that may be needed from other sectors to meet Scotland's 2030 target."*.

Progress Towards Targets

4.74 **Tables 4-1** and **4-2** and **Graphs 4-1** and **4-2** set out how Scotland has made progress towards the renewable energy and greenhouse gas targets set by the Government. Since renewable energy targets are not yet being met, it is considered that the proposed development would make a valuable contribution to trying to achieve these ambitious targets.

Table 4-1: Progress Against Renewable Energy Targets

Year	Target	Achieved / Progress
2020	Equivalent of 100% of all electricity used in Scotland to come from renewable sources. [1]	No - equivalent of 98.6% of all electricity used in Scotland came from renewable sources.[2]
2021	Equivalent of 100% of all electricity used in Scotland to come from renewable sources. (continuation of 2020 target as target was not met)	No - equivalent of 85.2% of all electricity used in Scotland came from renewable sources (**Graph 4-1**).
2030	To increase the installed onshore wind capacity in Scotland to 20GW.[3]	Latest figures in September 2022 (most recently available) show that the installed onshore wind capacity in Scotland was 13.6GW. [4]
2030	To generate 50% of Scotland's overall energy consumption from renewable sources.[5]	Final figures for 2020 indicate that the equivalent of 26.7% of total Scottish energy consumption came from renewable sources; the highest level to date. It increased from 24.0% in 2019 (**Graph 4-2**).
2050	To have decarbonised the energy system almost completely.[5]	Future target is difficult to gauge progress against.

[1] Scottish Government (2011) *2020 Renewable Routemap for Renewable Energy in Scotland Update 2011*

[2] Scottish Government *Energy Statistics for Scotland – Q4 2020* *https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2018/10/quarterly-energy-statistics-bulletins/documents/energy-statistics-summary---march-2021/energy-statistics-summary---march-2021/govscot:document/Scotland+Energy+Statistics+Q4+2020.pdf*

[3] Scottish Government *Onshore Wind Policy Statement 2022* https://www.gov.scot/publications/onshore-wind-policy-statement-2022/documents/

[4] Scottish Government *Energy Statistics for Scotland – Q3 2022* https://www.gov.scot/publications/energy-statistics-for-scotland-q3-2022/pages/renewable-electricity-capacity/

[5] Scottish Government (2017). *The future of energy in Scotland: Scottish energy strategy* 20 December 2017

Table 4-2: Progress Against Greenhouse Gas Emissions Targets

Year	Current Target[6] (% Reduction of Emissions relative to 1990)	Recommended Target[7] (% Reduction of Emissions relative to 1990)	Achieved / Progress[8]
2020	56% reduction.	N/A	Achieved – GHG account reduced by 59% between the baseline period and 2020.As detailed in the Scottish Emissions Targets – First Five-Yearly Review (December 2022): *"The fall in emissions in 2020 was largely due to the travel restrictions during the COVID-19 pandemic and it is unlikely the target would have been achieved without the impacts of the pandemic."*.
2021	57.9%	51.1%	Not achieved – GHG account reduced by 49.9% between baseline period and 2021.
2022	59.8%	53.8%	Most recent data available is 2021 figure.
2023	61.7%	56.4%	Most recent data available is 2021 figure.
2024	63.6%	59.1%	Most recent data available is 2021 figure.
2025	65.5%	61.7%	Most recent data available is 2021 figure.
2026	67.4%	64.4%	Most recent data available is 2021 figure.
2027	69.3%	67.0%	Most recent data available is 2021 figure.
2028	71.2%	69.7%	Most recent data available is 2021 figure.

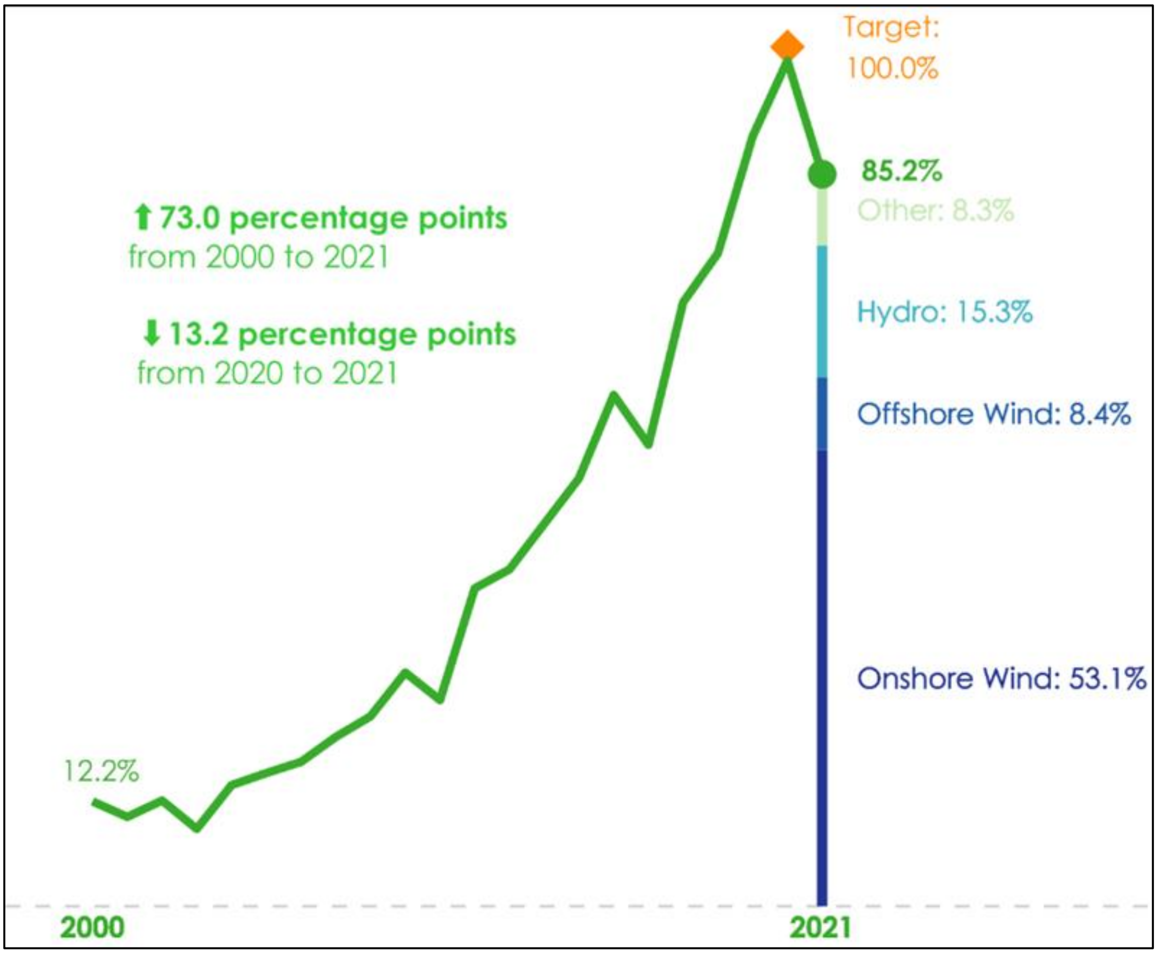
[6] Scottish Government (2019). Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

[7] Independent Climate Change Committee (2022). Scottish Emissions Targets – First Five-Yearly Review

[8] Scottish Government Scottish Greenhouse Gas Statistics 2021: https://www.gov.scot/binaries/content/documents/govscot/publications/statistics/2023/06/scottish-greenhouse-gas-statistics-2021/documents/scottish-greenhouse-gas-statistics-2021/scottish-greenhouse-gas-statistics-2021/govscot%3Adocument/scottish-greenhouse-gas-statistics-2021.pdf

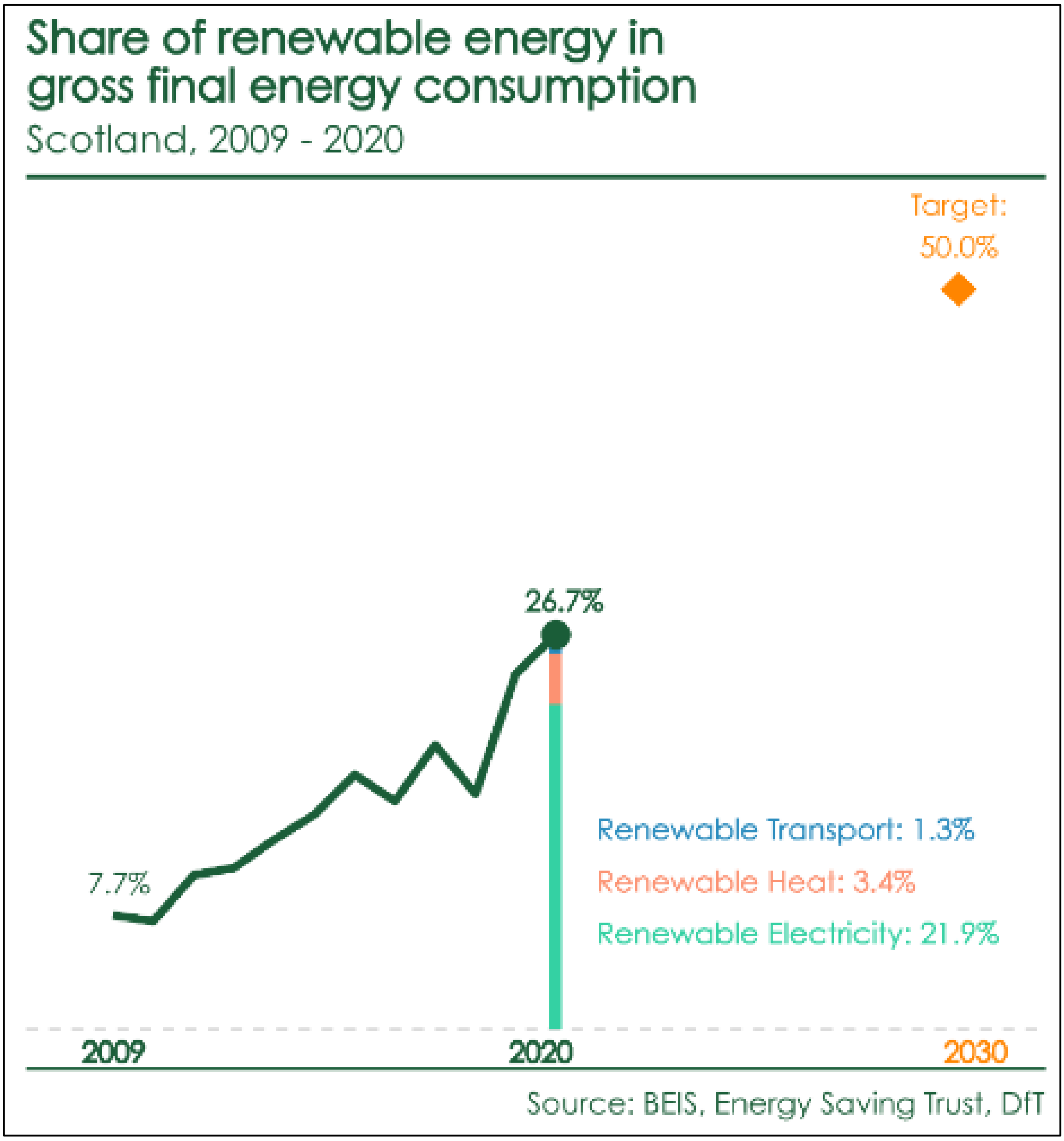
Year	Current Target[6] (% Reduction of Emissions relative to 1990)	Recommended Target[7] (% Reduction of Emissions relative to 1990)	Achieved / Progress[8]
2029	73.1%	72.3%	Most recent data available is 2021 figure.
2030	75% reduction.		Most recent data available is 2021 figure.
2040	90% reduction.		Most recent data available is 2021 figure.
2045	100% reduction.		Most recent data available is 2021 figure.

Graph 4-1: Renewable Electricity Generation in Scotland



Source: Energy Statistics for Scotland Q3 2022

Graph 4-2: Progress against Renewable Energy Targets



(Scottish Energy Statistics Hub, 2022)

PLANNING POLICY

Scottish Government Planning Policy

4.75 The Scottish Government adopted the National Planning Framework 4 (NPF4) on 13 February 2023. NPF4 has now replaced National Planning Framework 3 (NPF3) and the Scottish Planning Policy 2014 (SPP). NPF3 and SPP no longer represent Scottish Ministers' planning policy and should not form the basis for (or be taken into consideration when) determining planning applications or Section 36 applications. Both have been repealed entirely.

4.76 NPF4 is now also part of the statutory Development Plan alongside Local Development Plans (LDPs), in this case Outer Hebrides Local Development Plan (2018).

4.77 The NPF4 and the relevant LDP are to be read together as the Development Plan. But where there is an incompatibility between one document and the other, the legislation prescribes that the later document prevails. For present purposes that is NPF4. Local planning policy constitutes a material consideration in the determination of this application, although the Development Plan does not have elevated status for Section 36 applications.

National Planning Framework 4 (NPF4)

4.78 The Revised Draft of the National Planning Framework 4 (NPF4) was approved in January 2023 and was adopted on 13 February 2023. The NPF4 sets out an overarching spatial strategy for Scotland until 2045. It is based upon two prior rounds of consultation. These consultations identified the need for a rebalancing of the planning system to ensure that climate change is a guiding principle for all future plans and decisions. As expected, the urgency of the need to tackle climate change and the fundamental role of the planning system in delivering the radical change required to tackle and adapt to climate change is therefore a central focus for much of the NPF4: *"The world is facing unprecedented challenges. The global climate emergency means that we need to reduce greenhouse gas emissions and adapt to the future impacts of climate change."*.

4.79 Within the spatial strategy, the NPF4 identifies that there will be significant climate challenges for the North and West Coastal Area (which includes the proposed Site), stating that the *"island and coastal ecosystems, and the communities they support, are naturally more vulnerable to the effects of climate change, sea level rise and extreme events"*. If action is not taken, it concludes that these *"island and coastal communities could suffer disproportionately from the impacts of climate change"*.

4.80 Whilst these areas are considered more vulnerable to climate change, the NPF4 identifies that there are significant opportunities to capitalise on the natural assets of the area to significantly reduce greenhouse gas emissions through increased renewable energy generation. In addition to tackling climate change, the NPF4 identifies that such development also has the potential to bring opportunities to strengthen local communities, build community wealth and secure long-term sustainability in the region.

4.81 The NPF4 states that a priority for these areas will be to *"maximise the benefits of renewable energy whilst enhancing blue and green infrastructure"*. Considering Scotland as a whole, the NPF4 in section 3 of Annex B, states that *"A large and rapid increase in electricity generation from renewable sources will be essential for Scotland to meet its net zero emissions targets"*. Further to this, on the 'need' for strategic renewable electricity generation and transmission infrastructure, section 3 of Annex B notes *"Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas"*. This clearly establishes beyond any reasonable doubt the strengthened need for the continued development of renewable electricity generation, and by extension, the development of onshore wind.

4.82 Further to the above, 'National Developments' of which the proposed development is classed, are prescribed as such by the Scottish Government under s3A(4)(b) of the Town and Country Planning (Scotland) Act 1997, and the Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009. The need case for 'National Developments' is therefore already established.

4.83 In terms of national planning policy, the main policies that are most relevant to the proposed development are Policies 1, 3, 5 and 11. The following will look at the relevant aspects of these policies in more detail.

Policy 1: Tackling the climate and nature crisis

4.84 A key new policy is Policy 1: Tackling the climate and nature crises. This policy requires that *"significant weight will be given to the global climate and nature crises"* when considering all development proposals. The addition of this policy is reflective of the increased prominence and weight which the Scottish Government now expect to be given to the climate emergency in all planning decisions. It goes on to state that Local Development Plans must: *"address the global climate emergency and nature crisis by ensuring the spatial strategy will reduce emissions and adapt to current and future risks of climate change by promoting nature recovery and restoration in the area."*.

Policy 3: Biodiversity

4.85 Policy 3: Biodiversity is another policy which will impact the decision-making process for the proposed development. This policy intends to: *"protect biodiversity, reverse biodiversity loss, deliver positive effects from development and strengthen nature networks"* and states that Local Development Plans should *"protect, conserve, restore and enhance biodiversity in line with the mitigation hierarchy. They should also promote nature recovery and nature restoration across the development plan area, including by: …restoring degraded habitats or creating new habitats…"*.

4.86 For applications that require an EIA such as the proposed development, the policy states that applications *"will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance biodiversity, including nature networks so they are in a demonstrably better state than without intervention."*.

Policy 5: Soils

4.87 Policy 5: Soils intends to *"protect carbon-rich soils, restore peatlands and minimise disturbance to soils from development."* and is especially relevant to this proposed development due to the relative prevalence of peatland on the Site, and the amount of peatland present within the region as a whole. Policy 5 (a) goes on to say that:

"Development proposals will only be supported if they are designed and constructed:

i. In accordance with the mitigation hierarchy by first avoiding and then minimising the amount of disturbance to soils on undeveloped land".

4.88 Policy 5 (d) goes into further detail regarding what is required of developments that are proposed on peatland, carbon rich soils, or priority peatland habitat. It states that in these instances:

"a detailed site-specific assessment will be required to identify:

i. the baseline depth, habitat condition, quality, and stability of carbon rich soils;

ii. the likely effects of the development on peatland, including on soil disturbance; and

iii. the likely net effects of the development on climate emissions and loss of carbon.

This assessment should inform careful project design and ensure, in accordance with relevant guidance and the mitigation hierarchy, that adverse impacts are first avoided and then minimised through best practice. A peat management plan will be required to demonstrate that this approach has been followed, alongside other appropriate plans required for restoring and/ or enhancing the site into a functioning peatland system capable of achieving carbon sequestration.".

Policy 11: Energy

4.89 Regarding onshore wind, Policy 11: Energy, intends to *"encourage, promote and facilitate all forms of renewable energy development onshore and offshore."* Policy outcomes are identified as: *"expansion of renewable, low carbon and zero emission technologies"*. The policy declares that development proposals for wind farms outwith National Parks and National Scenic Areas should be supported, whilst also considering the impacts that have been identified. It is recognised that *"significant landscape and visual 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 to be acceptable"*. In terms of the impacts, the policy goes on to state that: *"In considering these impacts, significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets"*.

4.90 Policy 11: Energy is as follows:

"a) Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include:

> *i. wind farms including repowering, extending, expanding and extending the life of existing wind farms;*

ii. enabling works, such as grid transmission and distribution infrastructure;

iii. energy storage, such as battery storage and pumped storage hydro;

iv. small scale renewable energy generation technology;

v. solar arrays;

vi. proposals associated with negative emissions technologies and carbon capture; and

vii. proposals including co-location of these technologies.

b) Development proposals for wind farms in National Parks and National Scenic Areas will not be supported.

c) Development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities.

d) Development proposals that impact on international or national designations will be assessed in relation to Policy 4.

e) In addition, project design and mitigation will demonstrate how the following impacts are addressed:

i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;

ii. 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 to be acceptable;

iii. public access, including impact on long distance walking and cycling routes and scenic routes;

iv. impacts on aviation and defence interests including seismological recording;

v. impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;

vi. impacts on road traffic and on adjacent trunk roads, including during construction;

vii. impacts on historic environment;

viii. effects on hydrology, the water environment and flood risk;

ix. biodiversity including impacts on birds;

x. impacts on trees, woods and forests;

xi. proposals for the decommissioning of developments, including ancillary infrastructure, and site restoration;

xii. the quality of site restoration plans including the measures in place to safeguard or guarantee availability of finances to effectively implement those plans; and

xiii. cumulative impacts.

In considering these impacts, significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets.

Grid capacity should not constrain renewable energy development. It is for developers to agree connections to the grid with the relevant network operator. In the case of proposals for grid infrastructure, consideration should be given to underground connections where possible.

f) Consents for development proposals may be time-limited. Areas identified for wind farms are, however, expected to be suitable for use in perpetuity."

Other Relevant NPF4 Policies

4.91 In addition to the above NPF4 policies, the following are also considered applicable to the proposed development: 2) Climate mitigation and adaptation, 4) Natural Principles, 7) Historic assets and places, 12) Zero Waste, 13) Sustainable transport, 14) Design, quality and place, 18) Infrastructure First, 19) Heating and cooling, 20) Blue and green infrastructure, 21) Play, recreation and sport, 22) Flood risk and water management, 23) Health and safety, 25) Community wealth building, 26) Business and industry, 29) Rural development, 30) Tourism, and 33) Minerals.

Development Plan Policy

4.92 The Development Plan for the proposed development includes the adopted Outer Hebrides Local Development Plan 2018 (OHLDP) and relevant supplementary guidance, including the Supplementary Guidance for Wind Energy Development (SGWED).

4.93 The primary Development Plan policy for assessment of the proposed development is consequently 'Policy EI8: Energy and Heat Resources' of the OHLDP.

4.94 OHLDP Policy EI8 states that the Comhairle will support proposals that contribute to meeting relevant energy (including renewable energy) targets and objectives. OHLDP Policy EI8 states that where wind farm developments are located in *'Areas of Constraint, with potential in certain circumstances'*[9], as the proposed Uisenis Wind Farm development is, development proposals will be assessed against the relevant policies in the SGWED.

4.95 The SGWED contains the following policies that wind farm development proposals will be assessed against:

- Economics Impacts and Benefits;

[9] Outer Hebrides Local Development Plan 2018, Supplementary Guidance for Wind Energy Development, Map 1: Comhairle Spatial Strategy

- Landscape and Visual Impact;
- Aviation and Defence;
- Noise;
- Community Amenity;
- Neighbouring Developments;
- Historic Resources;
- Natural Heritage;
- Peat and Soil Resources;
- Water Resources;
- Borrow Pits;
- Repowering;
- Planning Obligations;
- Decommissioning;
- Cumulative Impacts; and
- Radar Impacts.

4.96 **Table 4-3** lists the other OHLDP policies (aside from Policy EI8: Energy and Heat Resources) and their associated Supplementary Guidance documents considered to be relevant to the proposed development. These other policies and guidance are covered within the relevant technical chapters of this EIA Report and in the Planning Statement which accompanies this application.

Table 4-3: Relevant OHLDP Policies and Supplementary Guidance

OHLDP Policies	Associated Supplementary Guidance
Policy DS1: Development Strategy	Caravans, Huts and Temporary Buildings
Policy PD1: Placemaking and Design	Outer Hebrides Design Guide Caravans, Huts and Temporary Buildings
Policy PD2: Car Parking and Roads Layout	Caravans, Huts and Temporary Buildings
Policy PD6: Compatibility of Neighbouring Uses	
Policy ED1: Economic Development	

OHLDP Policies	Associated Supplementary Guidance
Policy ED5: Minerals	
Policy EI1: Flooding	Caravans, Huts and Temporary Buildings
Policy EI3: Water Environment	Marine Fish Farming
Policy EI4: Waste Management	Caravans, Huts and Temporary Buildings
Policy EI5: Soils	
Policy EI7: Countryside and Coastal Access	
Policy EI9: Transport Infrastructure	
Policy EI11: Safeguarding	
Policy EI12: Developer Contributions	
Policy NBH1: Landscape	Caravans, Huts and Temporary Buildings
Policy NBH2: Natural Heritage	Caravans, Huts and Temporary Buildings
Policy NBH3: Trees and Woodland	
Policy NBH4: Built Heritage	Conservation Area Management Plans
Policy NBH5: Archaeology	
Policy NBH6: Historic Areas	Conservation Area Management Plans

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CONTENTS

INTRODUCTION

5.1 This Chapter discusses the need for Environmental Impact Assessment (EIA) and sets out the approach to assessment taken in this EIA Report. This EIA Report has been prepared for the purposes of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ('the EIA Regulations').

EIA REGULATIONS

5.2 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."*

5.3 It was acknowledged at an early stage that given the nature, location and characteristics of the proposed development that an EIA would be required. It was therefore not considered necessary to seek a screening opinion and this EIA Report is submitted voluntarily.

5.4 Establishing which aspects of the environment and associated issues are relevant for a particular project is captured in the EIA scoping process. The results of the EIA are presented in this EIA Report which, as prescribed in Schedule 4 of the EIA Regulations 2017, is required to include a *"description of the likely significant effects"* of the proposed development; the effects which are not considered to be significant do not need to be described. It is therefore necessary for the scope of the EIA to be appropriately and clearly defined to ensure that any likely significant effects are described and assessed.

5.5 Scoping is the process of identifying those aspects of the environment and associated issues which may be significantly affected by any proposed development and which therefore should be subject to detailed assessment and reported on in the EIA Report. This recognises that there may be some environmental elements where there would be no significant issues or likely effects resulting from the proposed development, and hence where there is no need for further assessment to be undertaken. The Scoping exercise for the proposed development is detailed in **Chapter 6: Scoping and Consultation.**

5.6 Following the identification of the scope of the EIA, individual environmental matters are subject to survey, investigation and assessment, and individual technical discipline chapters are prepared for presentation in an EIA Report to accompany the application for a proposed development. The assessment methodologies are based on recognised good practice and guidelines specific to each discipline area.

5.7 The EIA Regulations prohibit the Scottish Ministers from granting consent for EIA development unless they have taken the environmental information provided into consideration.

5.8 This EIA Report is presented in order to be taken into consideration by the Scottish Ministers in the determination of this application.

REQUIREMENTS OF THE EIA DIRECTIVE AND REGULATIONS

5.9 The approach to this EIA has followed the requirements of the EIA Directive (2011/92/EU as amended by 2014/52/EU) and the EIA Regulations. Regulation 4 of the EIA Regulations defines the process of EIA and highlights the factors and their interactions that should be considered. Regulation 5 sets out the minimum requirements for an EIA Report, and notes that where a Scoping Opinion is issued the EIA must be prepared based on that Scoping Opinion.

5.10 Schedule 4 of the EIA Regulations set out the information that must be included in the EIA Report, summarised in **Table 5-1**. This also identifies where corresponding information can be found in this EIA Report.

Table 5-1: EIA Report Required Information

Required Information	Relevant Section of the EIA Report
1. Description of the development, including in particular: (a) a description of the location of the development; (b) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases; (c) a description of the main characteristics of the production processes, for instance, nature and quality of the materials used; (d) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.	A description of the location of the proposed development is presented in **Chapter 2**. A description of the proposed development and its characteristics is presented in **Chapter 3**. The predicted individual environmental effects of the proposed development are reported in **Chapters 7** to **16**.
2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	The alternatives considered are covered under **Chapter 2**.
3. A description of the relevant aspects of the current state of the environment (the “baseline scenario”) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of relevant information and scientific knowledge.	Provided in **Chapters 7** to **16**.
4. A description of the [environmental factors] likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for	Effects on population are discussed in relation to visual/residential amenity impacts, traffic, noise and air quality. Material assets are addressed through the effects

Required Information	Relevant Section of the EIA Report
example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	identified for land use, soil, geology and waste, hydrology and cultural heritage.
5. A description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 4(3) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium- term and long-term, permanent and temporary, positive and negative effects of the development.	Assumptions and limitations of the EIA process are reported as required in the relevant technical chapters. The predicted significant effects of the proposed development are reported in each of the technical chapters as residual effects after relevant mitigation measures are described in the EIA Report (**Chapters 7** to **16**). The methods used to predict significant effects are explained in this chapter and each individual chapter as relevant. Effects have been predicted in relation to the proposed development's construction and permanent use of the land. The operation and nature of these effects and their duration are reported.
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Methodologies, assumptions and limitations in the EIA process are reported as required in the relevant technical chapters.
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and,	EIA Report (**Chapters 7** to **16**). The overall approach to mitigation is discussed in these

Required Information	Relevant Section of the EIA Report
where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	chapters. Specific mitigation measures are reported in each relevant technical chapter and are summarised in **Chapter 17**.
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned.	**Chapter 16** considers the risk of major accidents and/or disasters relevant to the proposed development.
9. A non-technical summary of the information provided under paragraphs 1 to 8.	A **Non-Technical Summary** (NTS) is presented as Volume 1 of this EIA Report.
10. A reference list detailing the sources used for the descriptions and assessments included in the EIA report.	**Chapters 1** to **16** each have a reference list detailing relevant sources used.

EIA AND THE DESIGN PROCESS

5.11 The EIA was conducted as an iterative process, rather than a one-off, post design environmental appraisal. This has allowed the findings of the EIA to be fed into the design process, to avoid, reduce and where possible, mitigate environmental effects. Where potentially adverse environmental effects were identified through preliminary investigations as part of feasibility work, or later in the detailed EIA, consideration was given as to how the scheme design could be modified to design out adverse environmental effects, or where this was not possible, to identify appropriate mitigation.

5.12 This iterative design process is explained further in **Chapter 2: Site Description and Design Evolution** and the **Design and Access Statement**. Consultation, from key consultees and the public, that also fed into the design process is outlined in **Chapter 6: Scoping and Consultation**.

EIA PROJECT TEAM AND COMPETENCY

5.13 The EIA team is led by SLR with assistance from specialist consultants Land Use Consultants (LUC) (who have produced the Landscape and Visual Impact Assessment (LVIA) Chapter), MacArthur Green (who have produced the Ornithology Chapter and Appendices) and Pell Frischmann (who have undertaken the abnormal load swept path analysis, detailed in **Annex A** of **Technical Appendix 12.1,** and road/ancillary infrastructure design). Wind Business Limited also provided assistance during the design process and EIA for Aviation and Telecommunications. **Table 1-1** in **Chapter 1** shows the EIA Team Assessors', qualifications and experience.

DETERMINING THE SCOPE OF THE EIA REPORT

5.14 The EIA Report is the independent assessment of the proposed development, its likely significant environmental effects, and the measures proposed to avoid, reduce and where possible mitigate adverse effects.

5.15 The scope of the EIA Report has been established through a combination of informal consultation with various stakeholders, and an EIA scoping process. The Scoping Request was submitted to the Scottish Ministers on 21 July 2022. A Scoping Opinion was received from the Scottish Ministers on 05 October 2022.

5.16 The scoping consultation undertaken as part of the EIA process is detailed in **Chapter 6: Scoping and Consultation** and **Technical Appendix 6.1: Scoping Response Table**. The responses of all consultations collated during the scoping process are addressed in this EIA Report and referred to as appropriate in each technical EIA Report chapter.

APPROACH AND METHODS

General Approach to the EIA

5.17 The assessments that have been undertaken as part of the EIA have been based upon the Site and study areas. The Site is the area contained within the red line boundary shown on **Figure 1.2**. The study areas vary between assessments and are defined in individual EIA Report chapters.

5.18 Assessments have been undertaken using a 'worst-case' approach. A worst-case approach assumes that the proposed development would produce the maximum anticipated effect on the surrounding environment from the range of possible effects projected.

5.19 The EIA has been undertaken based on a fixed location for turbines and infrastructure (subject to micrositing) and a specified turbine envelope for the turbines proposed in the development (as shown on **Figure 3.1**).

5.20 The turbine tip heights, hub heights, blade lengths and all other proposed infrastructure are all based on the Rochdale Envelope[1] principle. The proposed development has been assessed within the 75m micrositing boundary put forward.

5.21 Each chapter considers the range and nature of effects associated with the proposed development. The proposed development is subject to detailed environmental assessment including establishment of mitigation proposals where appropriate. A statement is then given in each chapter about the environmental effects subject to detailed assessment.

[1] The 'Rochdale Envelope' principle is employed where the nature of the proposed development means that some details of the whole project have not been confirmed (for instance the precise dimensions of structures, due to unknown market conditions at time of project conception and application) so that when the application is submitted flexibility is sought to address that future uncertainty.

5.22 The EIA Regulations require a description of the likely significant effects on the environment, with these covering *"the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium- term and long-term, permanent and temporary, positive and negative effects of the development."*

5.23 Unless qualified elsewhere, the following interpretation is applied with regard to effects. Short term effects are those which extend over a short period of time only and, in the context of the proposed development, are typically those associated with the construction or decommissioning periods or other limited period. Other temporary effects which persist for less than the life of the proposed development are described as medium term, with those extending to the full lifetime of the proposed development described as long term. Any effects which persist beyond the life of the proposed development are considered permanent. Effects with duration of up to long term are considered reversible, whereas permanent effects are considered irreversible. Where any effect is identified, its duration is described. **Table 5-2** below summarises the interpretation applied with regards to effects.

Table 5-2: Interpretation Applied with Regards to Effects

Time Period of Effects	Detail	Reversible / Irreversible Effects
Short term effect	An effect which extends over a short period of time only and are typically those associated with the construction or decommissioning periods or other limited periods. This is a temporary effect.	Reversible
Medium term effect	An effect which extends over a period of time which is longer that that of a short term effect but which persists for less than the life of the proposed development. This is a temporary effect.	Reversible
Long term effect	An effect which persists to the full lifetime of the proposed development. This is a temporary effect.	Reversible
Permanent effect	An effect which persists beyond the lifetime of the proposed development. This is a permanent effect.	Irreversible

5.24 Assessment criteria have been used to evaluate environmental effects. Significance is generally determined through a combination of the sensitivity of a receptor to an effect and the magnitude of the change. This process is outlined below:

- identification of environmental baseline conditions at the Site and its environs, including sensitivity of receptors which may be affected by changes in the baseline conditions;
- consideration of the magnitude of potential changes to the environmental baseline;

- assessment of the significance of effect taking into account sensitivity of receptors and magnitude of effect;
- identification of appropriate mitigation measures; and
- assessment of significance of residual effects taking account of any mitigation measures.

5.25 Where significant environmental impacts are predicted in the EIA process, then the EIA Report provides measures which would be employed to eliminate or ameliorate the impact to acceptable levels. Mitigation measures can be in the form of changes to operational practice, or changes/additions to the design.

5.26 The above approach does not, however, apply to all disciplines addressed in the EIA Report, and alternative approaches were therefore developed as appropriate. These are described and justified in the relevant EIA Report chapter.

Baseline Conditions

5.27 A fundamental aspect of the EIA is to determine the baseline environmental conditions prevailing at the Site. These form the benchmark against which predicted changes resultant from the proposed development are assessed to determine the magnitude of any impact. The baseline conditions have been determined by a number of different methods, including desktop studies, site surveys, use of analytical models and the acquisition of data from third parties.

5.28 The assessment of each environmental parameter was undertaken in comparison to baseline conditions. The baseline conditions section in each chapter describes the existing environmental conditions at the Site (and in the wider area as pertinent to the particular environmental parameter).

5.29 The sensitivity of the baseline conditions has been defined according to the relative sensitivity of existing environmental features on, or in the vicinity of, the Site, or by the sensitivity of receptors which would potentially be affected by the proposed development. Criteria for the determination of sensitivity or importance have been established based on prescribed guidance, legislation, statutory designation and/or professional judgement. The criteria for each environmental parameter are outlined in the EIA Report according to the technical subject area.

5.30 Relevant wind farms which are under construction, operational or consented are considered to be part of the baseline for the purposes of this EIA Report, unless specifically stated otherwise within relevant topic chapters.

5.31 The EIA Report considers the present baseline environment, but also considers how the baseline environment may change during the operational period of the proposed development (for example in relation to climate change).

Consultation

5.32 Consultation has formed an integral part of the EIA process and both the EIA team and the applicant have contacted a number of interested parties to determine their views on the proposed development, collected baseline information and refine survey methodologies.

5.33 **Chapter 6** of this EIA Report provides a summary of the Scoping consultation, with **Technical Appendix 6.1** providing a table of the Scoping responses. Each chapter of the EIA Report provides a summary of the consultation undertaken for each technical discipline.

5.34 In relation to the EIA, engagement with the local community has been undertaken through two rounds of public exhibitions. The first round of exhibitions were held on the 08, 09 and 10 November 2022 on the Isle of Lewis, with the aim of introducing the proposed development to the public and to gain feedback on the initial design. The information available included plans of the proposed development layout, information boards explaining the key environmental effects, and photomontages to illustrate anticipated views. The second public exhibition round, comprising four exhibitions across the Isle of Lewis were held in March 2023, with the aim of showing the 'nearly' final design and layout of the proposed development, as well as providing a response to feedback received at the November 2022 public exhibitions. The responses received through consultation are detailed in the **Pre Application Consultation (PAC) Report** submitted with the application for the proposed development.

5.35 In addition, correspondence and meetings with the local community took place throughout 2022 and have continued in 2023, to discuss the progress of the proposed development and the potential for long-term community benefits arising from improved infrastructure – such as the enhancement of access routes. These meetings are further detailed in **Chapter 6: Scoping and Consultation** and the **PAC Report**.

Assessment of Effects

5.36 The assessment of potential effects, using a range of appropriate methodologies, takes into account the construction and operation of the proposed development in relation to the Site and environs. Further detail on decommissioning of the proposed development is provided in **Chapter 3** and **Chapter 6**, however; an assessment of the potential effects of the decommissioning of the proposed development have been scoped out of the EIA as at this stage future baseline conditions cannot be predicted accurately and both the proposals for refurbishment/decommissioning and the future regulatory context are unknown. Methodologies for predicting the nature and magnitude of any potential environmental impacts vary according to the technical subject area. Numerical or quantitative methods of assessment are used to predict values which can be compared against published thresholds and indicative criteria contained in relevant guidance and standards.

5.37 Not all technical subject areas are capable of being assessed numerically or quantitatively, and thus qualitative assessments are used in certain cases. Such assessments rely on previous experience of similar projects, environments and professional judgement.

Assessment of Cumulative Effects

5.38 In accordance with the EIA Regulations, the assessment has considered 'cumulative effects'. By definition, these are effects which result from incremental changes caused by past, present or reasonably foreseeable projects of a similar nature to the proposed development, together with the proposed development. Likely cumulative effects have been defined as the likely effects that the proposed development may have in combination with other wind farm developments in the local area which are at application stage, consented, under construction or operational (i.e. the incremental effects resulting from the proposed development if all other developments are assumed to be constructed/operated). The extent to which the potential combined effects through that co-existence is considered, is described as appropriate throughout **Chapters 7** to **16** of this EIA Report.

5.39 The study area for considering cumulative effects varies per technical discipline and each EIA Report chapter refers to the cumulative sites considered as appropriate. In general, most specialisms have considered cumulative effects within approximately 10km from the proposed turbines, which includes the following scheme:

- Lemreway (operational) which comprises 1 turbine at 42m to blade tip (approximately 3.9km east).

5.40 The study area for considering cumulative effects on landscape and visual amenity is up to approximately 45km from the Site. Consented and operational wind farms between 10km and 45km from the proposed development turbines are as follows:

- North Harris (operational) which comprises 3 turbines at 86m to blade tip (approximately 14.8km south west);
- Arnish Moor (operational) which comprises 3 turbines at 76m to blade tip (approximately 16km north);
- Stornoway Wind Farm (consented) which comprises 33 turbines at 180m to blade tip (approximately 17km north);
- Creed Business Park (operational) which comprises 1 turbine at 61.14m to blade tip (approximately 19km north);
- Beinn Ghrideag Community Wind Farm (operational) which comprises 3 turbines at 125m to blade tip (approximately 19km north west);
- Pentland Road Wind Farm (operational) which comprises 6 turbines at 121m to blade tip (approximately 21.3km north);
- Horshader, Cnoc Airigh Mhic Crishnidh (operational) which comprises 1 turbine at 81m to blade tip (approximately 31.5km north west);
- Druim Leathann Wind Farm at North Tolsta (consented) which comprises 14 turbines at 140m to blade tip (approximately 36.7km north);
- Tolsta (operational) which comprises 1 turbine at 77m to blade tip (approximately 37.8km north); and
- Baile an Truseil Wind Farm (operational) which comprises 3 turbines at 81m to blade tip (approximately 38km north).

5.41 Cumulative wind farm sites within the vicinity of the Site are identified on **Figure 7.8**. **Figure 7.8** which includes all known operational sites within 45km, and also sites that are under construction, consented, or at application stage. The cut-off month for the cumulative assessment was agreed with Comhairle nan Eilean Siar (CnES) and NatureScot and taken as April 2023.

Sensitivity of Receptors

5.42 Criteria for the determination of sensitivity (e.g. 'high', 'medium', or 'low') or of importance (e.g. 'international', 'national', 'regional' or 'authority area') have been established based on prescribed guidance, legislation, statutory designation and/or professional judgement. The criteria for each environmental parameter are provided in the relevant chapter of the EIA Report.

Magnitude of Change

5.43 The magnitude of change on environmental baseline conditions is identified through detailed consideration of the proposed development, taking due cognisance of any legislative or policy standards or guidance, and/or the following factors:

- the degree to which the environment would be changed, e.g. whether the quality is enhanced or impaired;
- the scale or degree of change from the baseline situation;
- whether the change is temporary or permanent, indirect or direct, short term, medium term or long term; and
- changes resulting from any in-combination or cumulative effects.

5.44 The magnitude of change for a receptor that would be affected by a proposed development would be identified on a scale from very low to very high. As with receptor sensitivity or value, a rationale is provided in each topic chapter (**Chapter 7** to **Chapter 16**) that explains how the categories of environmental change are defined. For certain topics, the magnitude of change would be related to guidance on what levels of change are acceptable (e.g. noise), and be based on numerical parameters. For other changes, it will be a matter of professional judgement to determine the magnitude of change, using descriptive terms.

Mitigation

5.45 Mitigation is considered an integral part of the overall design strategy for the proposed development, including 'embedded' mitigation (e.g. altering and refining the proposed development to reduce landscape and visual impact, reduce the number of watercourse crossings or avoid sensitive species and habitats) rather than relying solely on 'enhancement' measures to prevent or reduce environmental effects. Identifying mitigation measures is also a requirement of the EIA Regulations. The applicant has adopted an iterative approach, whereby mitigation is assessed and considered at all stages of the project, and the final design of the proposed development has evolved over the project life time, being systematically optimised during the EIA process in response to increasing knowledge of the Site and potential environmental effects.

5.46 Some of the mitigation measures described within **Chapters 7** to **16** of this EIA Report do not relate only to likely significant adverse effects, but have been included as good practice to reduce the level of adverse effects, or enhance the level of beneficial effects, of the proposed development. Where relevant, these mitigation measures are described in the EIA chapters. **Chapter 17** provides a summary of the mitigation measures proposed throughout the EIA Report.

5.47 Where significant environmental effects are predicted in the EIA process, this EIA Report provides measures which would be employed to eliminate or ameliorate the effect. Mitigation measures are envisaged through the consideration of alternatives, changes/additions to the design of the proposed development, or project management or operation to avoid, prevent, reduce or, where possible, offset any adverse significant effects.

5.48 In some cases, environmental mitigation through compensation may be appropriate to provide replacement features or assets (e.g. habitat to replace that which has been disturbed or lost due to the construction of the proposed development). However, compensation may not initially be effective at remedying effects, as it may take time to mature sufficiently to enable the effect of the disturbance or loss to be offset.

5.49 Where complete avoidance of potential effects is not feasible during refinement of the Site design, additional measures are identified to reduce effects. These include a range of mitigation proposals such as the use of construction methods, avoidance of sensitive habitats, landscaping and Site operation activities. Mitigation measures follow standard techniques and best practice and are therefore considered to be effective for the purposes of assessment.

Monitoring

5.50 Also incorporated, where appropriate, are monitoring measures to ensure that the proposed development and any mitigation measures perform as required.

5.51 The EIA Report sets out details of any post-consent monitoring which is proposed. This includes, where appropriate, proposals to measure the effectiveness of the identified mitigation measures.

Consideration of Transboundary Effects

5.52 In accordance with the EIA Regulations, the assessment has considered 'transboundary effects'. Regulation 29 of the EIA Regulations refers to development with significant transboundary effects as being developments proposed to be carried out in Scotland that are *"likely to have significant effects on the environment in an EEA State"*. The nature of the proposed development and the location of the application Site are such that significant transboundary effects are not predicted for the proposed development.

STATEMENT OF SIGNIFICANCE

5.53 Assessing the significance of effects relies, at least in part, on value judgements including placing weight or value on the environment likely to experience the change.

5.54 The significance of an effect is derived from an analysis of:

- the sensitivity of the receiving environment or receptor to change, including its capacity to accommodate the kinds of changes the proposed development may bring about;

- the amount and type of change, often referred to as the impact magnitude which includes the timing, scale, size and duration of the impact;
- the likelihood of the impact occurring – which may range from certainty to a remote possibility;
- comparing the impacts on the environment which would result from the proposed development with the changes that would occur without the proposed development - often referred to as the "do nothing" or "do minimum" comparison; and
- expressing the significance of the effects of the project, usually in relative terms, based on the principle that the more sensitive the resource, the more likely the changes and the greater the magnitude of the changes, compared with the do nothing comparison, the greater will be the significance of the effect.

5.55 As the significance of effects will differ depending on the context and the 'receptors' affected by the proposed development, there is no general definition of what constitutes significance. In EIA, the term significance reflects both its literal meaning of 'importance' and its statistical meaning where there is an element of quantification. This combination of judgemental/subjective and quantifiable/objective tests has become the standard approach to understanding and applying the test of 'significance'.

5.56 Significant effects are defined in each of the topic specific chapters. Any effects associated with the proposed development are considered to be negative except where it is stated that they are positive. An effect assessed as significant does not necessarily mean it is unacceptable; other factors such as mitigation require to be taken into account.

ASSUMPTIONS, LIMITATION AND TECHNICAL DIFFICULTIES

5.57 The EIA process is designed to enable good decision-making based on the best possible available information about the environmental implications of a proposed development.

5.58 It is not considered that any matter has prevented the accurate assessment of potential environmental impacts or the identification of appropriate mitigation measures. The environmental impacts reported in this EIA Report, and the level of mitigation described, effectively sets the minimum standard which will be achieved by the final development. The applicant has a commitment to ensuring that, where details of the proposed development differ from those assessed in the EIA, the proposed development will not have any adverse environmental impacts which are significantly worse than those which have been assessed in the EIA and reported in this EIA Report.

REFERENCES

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CONTENTS

INTRODUCTION

6.1 This Chapter sets out the Scoping process that has been undertaken as part of the Environmental Impact Assessment (EIA) for the proposed development. It also details additional consultation that has been undertaken in respect of the proposed development with consultees.

The purpose of scoping and consultation is to:

- ensure that statutory consultees and other bodies with a particular interest in the environment are informed of the proposed development and provided with an opportunity to comment at an early stage in the EIA process;
- obtain baseline information regarding existing environmental Site conditions;
- establish key environmental issues and identify potential effects to be considered during the EIA;
- identify those issues which are likely to give rise to significant environmental effects and therefore which require more detailed study and those which can be justifiably excluded from further assessment;
- provide focus to the EIA process so that assessment is focussed in areas where there is likely to be significant effects; and
- provide a means of confirming the most appropriate methods of assessment.

SCOPING

6.2 A Scoping Report (available from the Energy Consents Unit (ECU) Portal[1]) was submitted to the ECU on 21 July 2022 to accompany a request for the Scottish Ministers to adopt a Scoping Opinion under Regulation 12 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

6.3 The list of organisations consulted that responded and the date of the response is shown in **Table 6-1**.

Table 6-1: Scoping Consultees (Responses)

Consultee	Scoping Response Date
Aberdeen Airport	08/08/2022
British Telecom	02/08/2022

[1] Reference Number ECU00004568 on the Energy Consents Unit ECU Portal

Consultee	Scoping Response Date
Comhairle nan Eilean Siar (CnES)	26/08/2022
Defence Infrastructure Organisation	05/08/2022
Edinburgh Airport	05/08/2022
Fisheries Management Scotland	05/08/2022
Glasgow Airport	01/08/2022
Glasgow Prestwick Airport	15/08/2022
Highlands and Islands Airports Limited (HIAL)	29/07/2022
Historic Environment Scotland (HES)	20/09/2022
Joint Radio Company	25/07/2022
Marine Scotland Science (MSS)	N/A (Standard Advice)
Met Office	28/07/2022
Mountaineering Scotland	12/08/2022
NATS Safeguarding	09/08/2022
NatureScot	12/09/2022
Office for Nuclear Regulation	02/08/2022
Scottish Environment Protection Agency (SEPA)	16/08/2022
Scottish Rights of Way and Access Society (ScotWays)	05/09/2022
Scottish Water	26/07/2022
Transport Scotland	12/08/2022

6.4 The list of organisations consulted that did not respond are shown in **Table 6-2**.

Table 6-2: Scoping Consultees (No Response)

Consultee
Scottish Forestry
British Horse Society
Civil Aviation Authority
Crown Estate Scotland
Cycling Scotland
John Muir Trust
Outer Hebrides Fisheries Trust
Pairc Trust
RSPB Scotland
Scottish Association for Country Sports
Scottish Wildlife Trust
Scottish Wild Land Group
Sustrans Scotland
Visit Scotland
Kinloch Community Council
PAIRC Community Council

6.5 A Scoping Opinion was received from the ECU on 05 October 2022 and included advice from the consultees listed in **Table 6-1**.

6.6 A summary of the key issues raised at Scoping is provided in **Technical Appendix 6.1**. The Scoping Opinion (and relevant consultee Scoping responses) is detailed in the consultation tables contained within each EIA Report **Chapters 7** to **16**, with reference to how the comments have been addressed. The EIA Report has been prepared with regard to the Scoping Opinion received from the ECU on 05 October 2022 and any subsequent consultation held with consultees and the ECU.

POST SCOPING CONSULTATION

6.7 In addition to the formal scoping process, further consultation (post Scoping but pre Gatecheck Report) was undertaken with a number of organisations regarding specific issues. In particular, follow up consultation was undertaken with:

- Historic Environment Scotland (HES);
- Comhairle Nan Eilean Siar (CnES); and
- NatureScot.

6.8 Detail of the consultation carried out is provided in the relevant technical Chapters (EIA Report **Chapter 7** to **16**), however a summary is provided below.

Historic Environment Scotland

6.9 A letter was issued by SLR to HES on 16 November 2022, responding to HES's Scoping Response and in particular clarifying the study area proposed, clarification on direct versus indirect effects, and also further discussion on potential additional assets to include in the assessment. HES formally responded to this letter on 06 December 2022. This post Scoping correspondence is detailed further in **Chapter 11: Cultural Heritage and Archaeology**.

Comhairle nan Eilean Siar (CnES Environmental Health Officer)

6.10 A letter was issued by Bow Acoustics on 19 December 2022, setting out key parameters for the noise assessment of the proposed development. An email response was received from CnES on 17 January 2023 and was followed by several rounds of email correspondence primarily relating to the financially involved status of the residential properties at Eishken Lodge, and as a result the appropriateness of applying a higher dB limit. This post Scoping correspondence is detailed further in **Chapter 13: Noise**.

NatureScot

Landscape and Visual

6.11 A letter was issued to NatureScot by LUC on 14 December 2022, following a meeting on 06 December. The letter outlined the proposed approach to the LVIA assessment as well as LUC's thoughts on a Wild Land Impact Assessment and proposed LVIA viewpoints. A confirmation email from NatureScot was received on 11 January 2023. This post Scoping correspondence is detailed further in **Chapter 7: Landscape and Visual Amenity**.

6.12 An email was issued to NatureScot by LUC on 19 June 2023, which provided example visualisations of the proposed development. These example visualisations were provided so that NatureScot could see, in advance of the application, what was being proposed in terms of painted blade (ornithology related) mitigation, and how this would look on visualisations. A response in terms of Landscape and Visual considerations was received from NatureScot on 10 July 2023. This post Scoping correspondence is detailed further in **Chapter 7: Landscape and Visual Amenity** .

Ornithology

6.13 An email was issued to NatureScot by MacArthur Green on 04 October 2022, in order to discuss in more detail the potential effects of the proposed development on eagles. An email response was received from NatureScot on 21 December 2022. This post Scoping correspondence is detailed further in **Chapter 9: Ornithology**.

6.14 An email was issued to NatureScot by LUC on 19 June 2023, which provided example visualisations of the proposed development. These example visualisations were provided so that NatureScot could see, in advance of the application, what was being proposed in terms of painted blade (ornithology related) mitigation, and how this would look on visualisations. A response in terms of ornithological considerations was received from NatureScot on 05 July 2023. This post Scoping correspondence is detailed further in **Chapter 9: Ornithology**.

MATTERS SCOPED OUT OF DETAILED CONSIDERATION

6.15 Paragraph 76 of Circular 1/2017 is clear that it is the 'significant' environmental effects to which a proposed development is likely to give rise that should be the primary focus of the EIA Report and that the requirement *"is to include the information that may reasonably be required for reaching a reasoned conclusion on the significant effects of the project on the environment".* Other lesser impacts may need *"only brief treatment to indicate that their possible relevance has been considered".* Although Circular 1/2017 is referring to The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, it is equally applicable to the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

6.16 Paragraph 3.1 of PAN 1/2013 similarly outlines that EIAs should be proportionate and fit for purpose. *"Proportionality can best be achieved by seeking information from the planning authority and the Consultation Bodies on the scope of the assessment, paying attention to their views from the outset, and by focussing on the significant environmental effects of the proposed development"*. A similar emphasis is contained at paragraph 5.4 of PAN 1/2013 that outlines that the EIA Report should contain a clear analysis of the significant areas of impact and should highlight key issues relevant to the decision.

6.17 On the basis of the desk based and survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects, policy guidance or standards, and with the agreement of the consultees, a number of topic areas have been 'scoped out'. The following main issues have been scoped out of the EIA:

Landscape and Visual Amenity

- Effects on Landscape Character Types (LCTs) with no intervisibility - beyond a 15km radius of the Site, have been scoped out of further assessment;
- Effects on the Trotternish NSA and Wester Ross NSA, given the location of these NSAs at distances exceeding 45km from the Site, they have been scoped out of further assessment;
- Impacts on the Wild Land Qualities of WLA 30: Harris – Uig Hills have been scoped out of further assessment, given the limited visibility indicated within the remote western extents of

the WLA, and existing influence of development on the wild land qualities expressed within the eastern extents of the WLA; and

- Effects upon residential visual amenity, in the form of a detailed Residential Visual Amenity Assessment (RVAA) have been scoped out of the assessment. This is due to the nearest residential properties that are not financially involved in the proposed development, being located approximately 2.7km away from the nearest turbine.

Hydrology, Hydrogeology and Geology

- Effects on geology have been scoped out of the assessment. While there will be effects arising from rock extraction for borrow pits, track construction and for turbine and crane pad areas, these are limited in area and do not extend beyond the immediate development footprint. No particularly sensitive geological features have been identified within the study area;

- Detailed Flood Risk Assessment has been scoped out of further assessment. Published mapping confirms that the Site is not located in an area of fluvial or coastal flood risk. Therefore, a simple screening of potential flooding sources (fluvial, coastal, groundwater, infrastructure etc.) is presented in the EIA Report and measures that would be used to control the rate and quality of runoff will be specified in the EIA Report; and

- Water Quality Monitoring has been scoped out of further assessment. Classification data is available from SEPA for the watercourses at the Site and there are no known sources of potential water pollution at the Site that might give rise for the need for water quality monitoring.

Ecology

- Water vole, badger, amphibian, pine marten and red squirrel surveys are not needed as these species have not been recorded on the Isle of Lewis.

Ornithology

- Common and/or low conservation species not recognised in statute as requiring special conservation measures (i.e., not listed as Annex 1/Schedule 1 species) have been scoped out due to significant effects on these species being considered unlikely;

- Common and/or low conservation species not included in non-statutory lists (i.e., not listed as Amber or Red-listed BoCC species), showing birds whose populations are at some risk either generally or in parts of their range, have been scoped out due to significant effects on these species being considered unlikely; and

- Passerine species, which are not generally considered to be at risk from wind farm developments (SNH, 2017), unless being particularly rare or vulnerable at a national level, have been scoped out due to significant effects on these species being considered unlikely.

Cultural Heritage and Archaeology

- Indirect and cumulative impacts of the proposed development on Category C Listed Buildings have been scoped out of further assessment. Scotland's Listed Buildings by Historic Scotland (2014), described Category C Listed Buildings as of local rather than national or regional importance.

Site Access, Traffic and Transport

- Operational and decommissioning effects have been scoped out of further assessment, due to the negligible environmental effects anticipated.

Noise

- Low frequency noise and infrasound has been scoped out of further assessment, given that Bowdler et al. (2009) concludes that: "...there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours.";

- Amplitude modulation (AM), and the carrying out of any specific AM assessment, has been scoped out of further assessment, as a result of current guidance (Institute of Acoustics Good Practice Guide); and

- Vibration effects as a result of construction and operational activities and associated traffic, in consideration of the distance to closest Noise Sensitive Receptors, has been scoped out of further assessment.

Socio-economics, Tourism, Recreation and Land Use

- Permanent demand for health or educational services, associated with the proposed development have been scoped out of further assessment;

- Recreational activities outwith the Site have been scoped out of further assessment unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area;

- Land use effects during the operational phase of the wind farm have been scoped out of further assessment; and

- The impacts on socio-economics, recreation, tourism and land use during the decommissioning phase have been scoped out of further assessment.

Air Quality

- Given the remote location of the Site, the generation of dust during construction activity is unlikely to have a direct impact on any human receptors and would be controlled by means of best practice to be described in the EIA Report. Air Quality has therefore been scoped out of further assessment.

Television Reception

- The proposed development is located in an area which is served by a digital transmitter and is unlikely to be affected by the Proposed Development as digital signals are rarely affected. In the unlikely event that television signals are affected by the proposed development, mitigation measures will be considered by the applicant. Television reception is scoped out of the EIA.

Decommissioning

- Over the period of operation of the proposed development it is recognised that there would likely be changes in legislation and guidance, environmental designations, the status/condition of sensitive environmental receptors and stakeholder objectives that may affect decommissioning and restoration methodologies;

- At the end of its operational life, the proposed development would be decommissioned (see **Chapter 3**, **Table 3-5**, for further detail on decommissioning requirements for infrastructure) or an application may be submitted to repower the Site. The decommissioning period would take up to a year. A detailed Decommission and Restoration Plan (DRP) would be agreed with CnES and other appropriate regulatory authorities in line with best practice guidance and requirements of the time; and

- With this in mind, assessment of the decommissioning of the proposed development has been scoped out of this EIA as at this stage the future baseline conditions cannot be predicted accurately and both the proposals for refurbishment/decommissioning and the future regulatory context are unknown.

GATECHECK AND FURTHER CONSULTATION

6.18 A Gatecheck Report was submitted to the ECU on 24 January 2023. The report provides detail on how consultee Scoping responses have been addressed by the EIA process and the design of the proposed development. Responses to the Gatecheck Report were received from four consultees (CnES, SEPA, NatureScot and HES) throughout February 2023.

6.19 The four consultees that responded to the Gatecheck Report generally confirmed that they were satisfied that the majority of their views had been considered and specified concerns addressed, however SEPA in particular advised that further dialogue on the proposed layout would be beneficial. Consultee Gatecheck comments and subsequent consultation on the proposed development and approach to EIA, is summarised in the following sections.

SEPA

Gatecheck Report Response

6.20 On 02 February 2023, SEPA issued their Gatecheck Response to the ECU, with the key points being summarised as following:

- SEPA advised that prior to design freeze, they would strongly encourage the developer to consult further with SEPA on the project with, as a minimum, the following three sets of separate layout plans showing all permanent and temporary works: (1) 50m buffers to watercourses, (2) NVC survey results, and (3) all peat probing results (showing the location of individual peat probes, colour coded for depth). The layout also requires to clearly demonstrate how the mitigation hierarchy outlined in policy 5(a) of National Planning Policy Framework 4 has been applied with infrastructure avoiding the deepest areas of peat;

- SEPA advised that the application will also now need to show compliance with Policy 5(d) of National Planning Framework 4 and they expect to see extensive proposals for peatland restoration and enhancement works to ensure that any disturbed peat is used to form a functioning peatland system capable of achieving carbon sequestration;

- Confirmed that a Peat Management Plan is required as part of the application. The EIA Report should also consider peatland quality with areas of pristine or near natural peat forming habitat avoided;

- Compensatory restoration and additional enhancement proposals are to be provided to address any direct or indirect impacts to the environment. SEPA recommend that this take the form of an Outline Habitat Management Plan, which should include a clear drawing showing areas that can be restored;

- Provided watercourse crossings are designed as oversized bottomless arched culverts or traditional style bridges, and other infrastructure is located well away from watercourses SEPA do not foresee a need for detailed information on flood risk or watercourse crossings. The only exception to this would be if a crossing of the Abhainn Cheothadail is proposed;

- SEPA confirmed that as long as infrastructure is located outwith the 50m buffer to watercourses (including small scale watercourses) then they do not require detailed drainage design information at the application stage; and

- SEPA's preference would be to have aggregate sourced from offsite existing quarries to minimise environmental impact; however, advised that should borrow pits be required on Site, they should be located in an area demonstrating the least environmental impact.

Further Consultation

6.21 On 14 March 2023 SLR sent SEPA a letter and Figures covering the requested information in paragraph 6.20 above and a request for SEPA to provide their thoughts on the current (at the time) Site layout proposed. On 30 March 2023, SEPA responded, providing comment on the Site layout and how it might be improved (particularly in relation to watercourses and peat). A summary of SEPA's comments is as follows (note that SEPA commented on an earlier layout prior to turbine numbering being rationalised, hence the turbine numbering clarification below):

- there are many areas where infrastructure is proposed on deeper peat which could be avoided, either by changing the orientation of the supporting infrastructure or in other locations moving turbines. There are a number of areas where an alternative track layout would avoid or minimise impacts on issues within our interests and there are a couple of locations where turbine infrastructure would seem to have a direct impact on watercourses, which would not be acceptable;

- accessing T4 (now T3) from T8 (now T9) would reduce the length of tracks and number of watercourse crossings;
- an alternative track configuration such as accessing T7 (now T8) from T5 (still T5) would reduce the length of track and number of watercourse crossings;
- a T-junction just south of T28 (now T11) would reduce track length;
- a more direct access from the existing road to T15 (now T16) would reduce the length of track;
- a more direct access to T9 (now T17) and then T12 (now T18) would significantly reduce track length;
- there is a very long track to join T16 (now T13) to T20/T22 (now T20/21). Are there opportunities to make it shorter? Could this track be removed and access to this array taken from the existing road via T18 (now T25);
- the track from T19 (now T24) to T17 (now T19) is proposed within the buffer zone to three watercourses, on steep slopes and therefore in a high risk area;
- access to T17 (now T19) from T20 (still T20) would result in a shorter track in a less sensitive area;
- noted that you have indicated that it is not possible to observe the 50m watercourse buffer in all infrastructure locations. Smaller buffers may be acceptable to us on a Site-specific case, where suitable Site-specific mitigation is identified and there are no specific downstream sensitivities;
- wind turbine infrastructure, associated with T1 (still T1), T8 (now T9), T9 (now T17), T10 (still T10), T12 (now T18), T14 (still T14), T19 (now T24), T20 (still T20), T27 (now T4), T28 (now T11) needs to be moved to avoid deeper peat;
- construction compounds to be moved, or shape altered in order to avoid deeper peat;
- the track to T10 (still T10) is on an extensive area of peat >3m deep but could be moved as there is shallow peat to the south; and
- the track west of T28 (now T11) goes over small pockets of deep peat – which could be avoided by moving the track north or south.

6.22 Many of the above comments raised by SEPA have been addressed as part of the final proposed layout. Further detail on how these comments have been addressed is provided in **Chapter 10: Hydrology, Hydrogeology and Geology**.

NatureScot

Gatecheck Report Response

6.23 On 16 February 2023, NatureScot issued their Gatecheck Response to the ECU, with the key points being summarised as following:

- we note that at the point of making the scoping opinion request, the proposal was for a development of 26 turbines, up to 225m to tip height. The Gatecheck Report explains how design modification has resulted in the intention to now take forward a 25 turbine proposal, up to 200m to blade tip height. There have also been changes to the layout design. Taken together, these are welcome, and should have the effect of reducing impacts on the key sensitivities that we have highlighted;

- we are encouraged that the applicant appears to have taken on board the advice we have provided to date with regards to the scope of the Environmental Impact Assessment (EIA); and

- prior to the publishing of the EIA, we wish to draw the applicant's attention to our 'general pre-application / scoping advice to developers of onshore wind farms' guidance, in particular to the preferred formatting of the report and associated figures and appendices. This document is regularly updated over time to reflect any changes to available information and our guidance, so users should ensure they refer to the most up to date version before use.

Further Consultation

6.24 There was considerable post Gatecheck consultation carried out with NatureScot, predominantly in relation to the topics of landscape and visual, and ornithology. **Chapter 7: Landscape and Visual Amenity**, and **Chapter 9: Ornithology**, provide further detail on this consultation, however some of the key items covered included:

- viewpoint locations for LVIA wirelines and photomontages;

- cumulative wind farm cut-off date for inclusion within the LVIA;

- painted blade mitigation (to increase predicted bird species avoidance rates) to be applied to wind turbines – this was discussed in terms of both ornithology and also landscape and visual; and

- appropriate scope of ornithology assessment e.g. collision risk avoidance rates to use for White Tailed Eagle and how to present assessment outcomes.

Historic Environment Scotland

Gatecheck Report Response

6.25 On 17 February 2023, Historic Environment Scotland issued their Gatecheck Response to the ECU, with the key points being summarised as following:

- having reviewed the submitted gate-check report, we can confirm that we are broadly content that the details given reflect Historic Environment Scotland's involvement with, and advice regarding, the EIA process for this development;

- we welcome the clarification that assets outside the 10km buffer will be considered where long-distance views contribute to cultural significance as part of your EIA assessment;

- however, we remain of the view that effects on setting are direct effects as identified in Appendix 1 of the EIA Handbook (Version 5, 2018). We also wish to reiterate our comments provided at scoping which noted that, although a designated asset may lie outwith the ZTV, key views within specific areas beyond the assets themselves should also be considered; and

- Should key views towards or associated with designated heritage assets remain outwith the ZTV and be unaffected by the proposed development we recommend that this is clearly identified in the chapter of the EIA report (EIAR) to justify their exclusion.

Further Consultation

6.26 No further post Gatecheck consultation has been carried out with HES.

Comhairle nan Eilean Siar (CnES)

Gatecheck Report Response

6.27 On 16 February 2023, CnES issued their Gatecheck Response to the ECU, with the key points being summarised as following:

- since the Scoping Response was issued NPF4 has been adopted by the Scottish Parliament and as of 13 February 2023, it forms part of the statutory development plan. The following NPF4 policies (not exclusive) would be material/may inform determination: 1) Tackling Climate Change and nature crises 2) Climate mitigation and adaption 3) Biodiversity 4) Natural Principles 5) Soils 7) Historic Assets & Places 11) Energy 12) Zero Waste 13) Sustainable Transport 14) Design, quality & place 18) Infrastructure First 19) Heating & cooling 20) Blue & green infrastructure 21) Play, recreation & sport 22) Flood risk & water management 23) Health and safety 25) Community Wealth Building 26) Business & Industry 29) Rural Development 30) Tourism 33) Minerals;

- the EIA should include visualizations of the sub-station from public viewpoints together with details of siting and design;

- the ZTV for turbines of 225m indicate visibility at the two viewpoints below which we ask be reviewed for visibility and considered for wireframes/ inclusion as viewpoints also: Toddun Hilltop, Rheninigadale, Isle of Harris; and Isle Orinsay in South Lochs being the area with residential houses (without financial interest) closest to the turbines;

- it was requested to include a night-time viewpoint from the Lochside (Gravir) viewpoint;

- note that a separate suite of viewpoint photography requires to be prepared to inform impacts on Cultural Heritage (CH) assets (viewpoints for CH assets);

- overall, satisfied with the archaeology comments set out in the Gatecheck Report; and
- while considering [Archaeology] it would be worth including several other Sites for the assessment. The justification behind this is that we have not dealt with development of this scale (height) before, and it would be useful to have a broader spectrum of data to consider. This would allow us a broader topographical consideration of the landscape of the Isle of Lewis and the potential effect of the development from a wider perspective. The addition of several monuments at greater distances would afford analysis of this data which would include viewpoints from not just across the landscape but would include the aspect of the seascape as well. This will be particularly useful regarding areas of North Tolsta and Point, both of which have anticipated high visibility of the turbines. The proposed additional Sites for inclusion are as follows: Stornoway War Memorial (LB19211); Cnoc nan Dursainean, Cairn & Stone Circle (SM 5357); Airidh an Taillear, Cairn (SM 13740); Airigh a'Sguir Beehive Sheilings (SM5353).

Further Consultation

6.28 A letter was issued to CnES / the Western Isles Archaeology Service by SLR on 09 March 2023. The letter was in relation to the request to include several other cultural heritage Sites, all further than 15km from the proposed development, in the cultural heritage assessment. Further detail on this correspondence is detailed in **Chapter 11: Cultural Heritage and Archaeology**.

COMMUNITY CONSULTION

6.29 Public consultation is a key element of the environmental assessment process; therefore, as part of the wider consultation process, attention was given to community engagement in cognisance of Planning Advice Note (PAN) 3/2010: Community Engagement. Local Community Councils were contacted during development of the proposals.

6.30 In addition to the consultation as part of the scoping process, consultation has been undertaken with the local communities in the form of public exhibitions and meetings.

6.31 The following Community Councils were invited to the public exhibitions held in November 2022 (in person) and March 2022 (in person):

- Kinloch Community Council;
- Pairc Community Council;
- North Harris Community Council; and
- North Lochs Community Council.

6.32 Local councillors and Members of the Scottish Parliament (MSPs) were also invited to attend.

6.33 In addition to the above public exhibitions, all households within approximately 20km (1,772 residences and businesses) of the Site boundary were written to, to advise them of the public exhibitions. The applicant has also met with a number of community councils and community groups.

6.34 The applicant has been discussing the shared ownership offer associated with the CnES and the local community trusts with a view to developing formal agreements for shared ownership, should the local community be interested in this option. It is anticipated that the local community groups would be supported with impartial advice from a third party such as the Scottish Government's Community and Renewable Energy Scheme (CARES) during the preparation of the agreement.

6.35 Further details of the public exhibitions and Community Consultation held in respect of the proposed development are contained in the **PAC Report** submitted as part of the application for the proposed development.

REFERENCES

The Electricity Act 1989.

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

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The Scottish Government (2013). Planning Advice Note 1/2013: Environmental Impact Assessment. Available at: https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/

The Scottish Government (2010). Planning Advice Note 3/2010: community engagement. Available at: https://www.gov.scot/publications/pan-3-2010-community-engagement/

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CONTENTS

INTRODUCTION

7.1 This Chapter considers the potential effects of the proposed Uisenis Wind Farm (the proposed development) on the landscape and visual resources of the proposed development location (the Site) and the surrounding study area, during the construction, operational and decommissioning phases of the project.

7.2 Landscape character and resources are considered to be of importance in their own right and are valued regardless of whether they are seen by people. Effects on views and visual amenity as perceived by people are clearly distinguished from, although closely linked to, effects on landscape character and resources. Landscape and visual assessments are therefore separate, although linked, processes.

7.3 The assessment methodology for the Landscape and Visual Impact Assessment (LVIA) was developed in accordance with the Guidelines for Landscape and Visual Impact Assessment (Version 3, 2013) (GLVIA3), and is detailed in **Technical Appendix 7.1: LVIA Methodology**. The assessment was undertaken by chartered Landscape Architects at LUC.

7.4 This Chapter should be read in conjunction with the following chapters:

- **Chapter 2: Site Description and Design Evolution**;
- **Chapter 3: Description of Development**;
- **Chapter 8: Ecology**;
- **Chapter 9: Ornithology**;
- **Chapter 11: Cultural Heritage and Archaeology**;
- **Chapter 14: Socio-economics, Tourism, Recreation and Land Use**; and
- **Chapter 15: Aviation**.

7.5 This Chapter is supported by Figures contained in **Volume 3a**, visualisations contained in **Volumes 3b** and **3c**, and the following Technical Appendices contained in **Volume 4a**:

- **Technical Appendix 7.1: LVIA Methodology**;
- **Technical Appendix 7.2: ZTV Mapping and Visualisation Methodology**;
- **Technical Appendix 7.3: Assessment of Effects on Special Landscape Qualities**;
- **Technical Appendix 7.4: Wild Land Impact Assessment**;
- **Technical Appendix 7.5: Aviation Lighting Impact Assessment**; and
- **Technical Appendix 7.6: Consultation**.

SCOPE AND CONSULTATION

Consultation and Scoping Responses

7.6 In undertaking the assessment, consideration was given to the scoping responses as undertaken as detailed in **Table 7-1**. Further consultation undertaken post-scoping is detailed in **Technical Appendix 7.6: Consultation Responses**.

Table 7-1: Scoping Responses

Consultee and Date	Issue Raised	Response/ Action Taken
NatureScot[1] 12 September 2022	"*NatureScot considers this* [landscape and visual amenity]*, especially cumulative impacts, to be one of the key issues for this proposal requiring attention in the EIA. Due to high landscape sensitivities within and outwith the outlined site, which extends southwards and westwards towards the South Lewis, Harris and North Uist National Scenic Area (NSA) and the Eisgein Wild Land Area (WLA), the capacity for a development with this scale of turbines may be limited. Should the developer progress an application, thorough analysis of landscape and visual impacts is required to ensure that the impacts upon landscape character, wild land and the NSA do not result in significant adverse effects*."	Assessment of effects on landscape character considered within LVIA (this chapter); Assessment of Special Landscape Qualities (AESLQ) of NSA included in **Technical Appendix 7.3**; Wild Land Impact Assessment included in **Technical Appendix 7.4.**
	"The Environmental Impact Assessment (EIA) should explore landscape impacts on the South Lewis, Harris and North Uist NSA…Some views of the proposal would be in the foreground of views of this nationally designated landscape, which may affect the perception of the NSA when viewed from the north and east…NatureScot considers that the proposal, although outwith the designated area, has the potential to result in significant impacts upon the NSA's Special Qualities due to its close proximity."	Assessment of Special Landscape Qualities of NSA included in **Technical Appendix 7.3**; embedded mitigation for the proposed development has included siting of turbines at a greater distance east, north east from the NSA boundary than those of the consented Muaitheabhal Wind Farm (ECU ref. EC00005222), Muaitheabhal Wind Farm Southern Extension (ECU ref. EC00002096) and Muaitheabhal Wind Farm Eastern Extension (ECU ref. EC00005223) wind farms.
	"This LCT is highly sensitive to windfarm development, due to impacts on perceptions of the landscape being largely untouched by development, as well as impacts on the dominant vertical scale of landform…This position is supported by a SNH/CNES commissioned report on the landscape and visual capacity of the Western Isles to accommodate onshore windfarms, which	Assessment of effects on landscape character of the Site and host LCTs, as detailed in **Table 7-2**, considered within LVIA.

[1] NatureScot is the operating name for the body formally called Scottish Natural Heritage (SNH)

Consultee and Date	Issue Raised	Response/ Action Taken
	states that in this LCT "vertical scale is particularly pronounced… (and) large turbines would diminish the apparent scale of mountains and glens." At the time of writing, 'large' turbines were of a much smaller scale than what is considered in the scoping report. The report considers that this LCT is of 'medium-high' sensitivity, but that the perceptions are of 'high' sensitivity as "the dramatic scale and sense of remoteness and naturalness would be severely affected by development"	
	"The EIA should explore impacts on wild land…The proposal would have turbines sited close to a Wild Land Area (WLA), thus extending the introduction of large scale manmade structures towards an area that is, in part, valued for the absence of such development. In addition to the turbines, a thorough examination of the design of ancillary development is required, particularly considering potential impacts arising from access tracks and the proposed berthing facility."	Assessment of Impacts on Wild Land Qualities included in **Technical Appendix 7.4**. Potential effects arising from visible ancillary development considered in **Technical Appendix 7.4**. If chosen as a means of transport, the berthing facility will be subject to a separate application and assessment. It therefore does not form part of the proposed development and is not considered within the LVIA.
	"At this stage we would like to highlight the potential for increased visual impacts to north at Baile Ailein, to the northeast at Eisgein, to the south within the NSA and WLA, from the Harris ferry and to the west from summits such as the Clisham and Beinn Mhòr, which are within the NSA."	Representative viewpoints (VPs) for the assessment include: • VP3: Beinn Mhòr; • VP8: Baile Ailein; • VP15: An Cliseam; • In addition to further viewpoints/assessment points within the WLA/NSA. Final list of representative LVIA viewpoints (**Table 7-5**) was agreed with NatureScot 11 January 2023 (as detailed in **Technical Appendix 7.6**).
	"We understand that turbines of the size proposed may require aviation lighting to be installed. This could compound effects on the wild land qualities of the Eisgein WLA, by extending adverse effects into the hours of darkness. We would therefore expect the LVIA to include an assessment of the effects of aviation lighting, accompanied by some suitable visualisations."	Aviation Lighting Impact Assessment included in **Technical Appendix 7.5**. Night time visualisations included for VP2: B8060, east of the Site; VP5: B8060 near Tabost (Habost) Church; VP11: Liurbost; VP15: An Cliseam

Consultee and Date	Issue Raised	Response/ Action Taken
Comhairle nan Eilean Siar (CnES) 26 August 2022	*"The EIAR should include a Zone of Theoretical Visibility (ZTV) with no added layers or points (other than the site boundary and Theoretical blade tip visibility) at a resolution than allows the underlying map to be read; the overlays when enlarged obscure the detail on the underlying OS basemap restricting ability for the reader to appreciate the areas from where tips will be visible and the number and extent of that visibility."*	A ZTV figure at A1 size, with Ordnance Survey (OS) base mapping, showing the Site boundary, turbines of the proposed development, the ZTV and LVIA viewpoint locations is provided in Volume 3a as **Figure 7.2c**
	"Wild Land- The proposal site is on the boundary with Eisgein Wild Land Area (WLA 31) which lies to the west and to the south and Harris-Uig Hills Wild Land Area (WLA 30) lies to the west. The EIA should be able to demonstrate the proposal will have no unacceptable adverse impact on the character of areas of Wild Land, as identified on the 2014 SNH Maps (now NatureScot), and that any significant effects on these qualities can be substantially overcome by siting, design or other mitigation."	Potential effects on the wild land qualities of the Eisgein Wild Land Area (WLA 31) were considered in the iterative turbine layout design process (as documented in **Chapter 2: Site Description and Design Evolution**). **Technical Appendix 7.4** contains the Wild Land Impact Assessment for WLA 31.
	Additional viewpoint suggestions: - within the village of Leurbost, (Leurbost village), including night time viewpoint; and - from Pairc Land Raiders Cairn.	VP11: Liurbost represents views from the village. The proposed development would be screened by intervening landform in views from the Pairc Land Raiders Cairn. The location therefore is Not included as an LVIA assessment viewpoint.
	"Comhairle nan Eilean Siar will defer to the views of Naturescot on the whether the Impacts on the Wild Land Qualities of WLA 30: Harris – Uig Hills should be scoped in or out, but otherwise concur with the items to be scoped out of the Landscape and Visual assessment."	Further consultation was undertaken with NatureScot to inform the scope and approach to the assessment of effects on the Special Landscape Qualities of the South Lewis, Harris and North Uist NSA and the assessment of effects on the Wild Land Qualities of the Eisgein Wild Land Area (WLA 31), as detailed in **Technical Appendix 7.6**.
Mountaineering Scotland 12 August 2022	*"Mountaineering Scotland recognises that the Muaitheabhal wind farm (with extensions) is consented for this site and have taken the consented scheme as our baseline for assessing the information needed to consider a future Uisenis planning application. With that in mind, it would be very useful to have hub and blade-tip ZTVs comparing Uisenis with the consented scheme."*	Comparative ZTV showing the consented/proposed scheme shown in **Figure 7.5**.
	"Mountaineering Scotland supports the inclusion of viewpoints relevant to hillwalkers: 1 [Beinn Mhòr]*, 6* [Uisinis]*, 9* [Liuthaid]*, and 11* [An	Comparative wirelines showing the consented schemes and the proposed development are

Consultee and Date	Issue Raised	Response/ Action Taken
	Cliseam]. *Viewpoints 1* [Beinn Mhòr] *and 11* [An Cliseam] *are of particular importance as hillwalking destinations and we think that wireline comparisons of Uisenis with the consented scheme for these viewpoints would be very valuable aids to assessing whether the visual impact of Uisenis differs materially from that of the consented scheme."*	provided in the Project Comparison Report.

Effects Assessed in Full

7.7 The following effects were identified at the scoping stage for consideration in this assessment:

- effects on the physical landscape of the Site;
- effects on the perceived landscape character of Landscape Character Types (LCT) within a 15km radius from the outermost wind turbines of the proposed development;
- effects which could be of relevance to the reasons for designation as described by the key characteristics/special qualities of nationally and locally designated landscapes within the study area, as well as the overall integrity of nationally designated areas, as required by NPF4;
- effects on visual receptors at representative viewpoints;
- effects on visual receptors at settlements and routes in the study area (described below); and
- cumulative landscape and visual effects (including combined, successive, and sequential visual effects).

Effects Scoped Out

7.8 On the basis of the desk based and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, and in agreement with statutory consultees (NatureScot and CnES), the following topic areas were 'scoped out' of detailed assessment, as proposed in the Scoping Report:

- effects on Landscape Character Types (LCTs) beyond a 15km radius of the Site with no intervisibility;
- effects on the Trotternish NSA and Wester Ross NSA, given the location of these NSAs at distances exceeding 40km from the Site;
- impacts on the Wild Land Qualities of WLA 30: Harris – Uig Hills, given the limited visibility indicated within the remote western extents of the WLA, and existing influence of development on the wild land qualities expressed within the eastern extents of the WLA;
- effects upon residential visual amenity, in the form of a detailed RVAA, given the nearest uninvolved[2] residential properties are located c. 2.7km from the nearest turbine; and

[2] The Eishken Estate Lodge is located approximately 0.9km to the east of the nearest proposed turbine. However, this property is financially involved in the proposed development.

- effects arising from decommissioning of the proposed development, given the baseline against which to assess likely significant decommissioning effects cannot be easily predicted, and the approach to decommissioning is not currently known.

APPROACH AND METHODS

7.9 The LVIA methodology was prepared in accordance with the principles contained within GLVIA3 and is described in detail in **Technical Appendix 7.1**. The methodology for the assessment of effects on Special Landscape Qualities of the South Lewis, Harris and North Uist NSA, Wild Land Qualities of the Eisgein WLA 31 and aviation lighting effects are contained within **Technical Appendices 7.3**, **7.4** and **7.5**, respectively.

7.10 The key steps in the methodology for assessing both landscape and visual effects are as follows:

- the area from which the proposed development may theoretically be visible was established through creation of a ZTV covering a distance of up to 45km from the outermost wind turbines of the proposed development, refer to **Figures 7.2a** and **7.2b** for blade tip ZTV;
- the landscape of the study area was analysed, and landscape receptors identified;
- the visual baseline was recorded in terms of the places where people would be affected by views of the proposed development, and the nature of views and visual amenity, seen by different groups of people;
- viewpoints were selected (including representative viewpoints, specific viewpoints and illustrative viewpoints), in consultation with CnES and NatureScot; and
- likely effects on landscape and visual resources were identified.

7.11 This assessment is carried out in accordance with the principles contained within the relevant legislation, policy and guidance detailed in **Technical Appendix 4.1: Legislation, Policy and Guidance**.

Study Area

7.12 The study area for the assessment was defined as a 45km radius from the outermost turbines of the proposed development in all directions, as recommended in current guidance for turbines equal to or greater than 150m to blade tip[3] , and in agreement with statutory consultees NatureScot[4] and CnES. The Site is shown on **Figure 1.1: Site Location** and **Figure 1.2: Site Boundary**, and the study area is shown on **Figure 7.1: Landscape and Visual Impact Assessment study area**.

7.13 To consider cumulative effects of the proposed development in relation to other schemes in the wider area, wind farms within 45km of the red line boundary of the proposed development were included for the purposes of modelling and detailed assessment, as agreed with NatureScot and CnES. A review of patterns of development is also provided for wind farms in the wider area,

[3] SNH (February 2017) Visual Representation of Wind Farms Guidance. Version 2.2

[4] Scottish Natural Heritage (SNH) rebranded in August 2020 as NatureScot. Where relevant reference is still made to SNH within this chapter in respect of guidance which remains valid and is yet to be republished etc.

extending to 60m, in accordance with guidance from NatureScot[5]. Other wind farm developments are shown on **Figure 7.8: Other Wind Farm Developments**.

Information and Data Sources

7.14 The following data sources have informed the assessment:

Landscape and coastal character and landscape capacity

- NatureScot, (2019). Scottish Landscape Character Types Maps and Descriptions;
- Comhairle nan Eilean Siar, (2021). Outer Hebrides Local Development Plan, Supplementary Guidance for Wind Energy Development;
- SNH, (2010). Scottish National Coastal Character Type Map;
- Scott, K.E., Anderson, C., Dunsford, H., Benson, J.F. and MacFarlane, R. (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to offshore windfarms. Scottish Natural Heritage Commissioned Report No.103; and
- Benson, J.F., Scott, K.E., Anderson, C., Macfarlane, R., Dunsford, H. and Turner K. (2004). Landscape capacity study for onshore wind energy development in the Western Isles. Scottish Natural Heritage Commissioned Report No. 042 (ROAME No. F02LC04).

Designated Areas

- SNH, (2010). The special qualities of the National Scenic Areas, SNH Commissioned Report No.374.

Wild Land

- SNH, (2017). Scotland's Wild Land Area Descriptions: methodology;
- SNH, (2017). Description of Wild Land Areas – Harris-Uig Hills Wild Land Area (30);
- SNH, (2017). Descriptions of Wild Land Areas – Eisgein Wild Land Area (31);
- SNH, (2014). Core Areas of Wild Land 2013 Map – Advice to Government – 16th June 2014;
- SNH, (2014). Mapping Scotland's Wildness; and
- SNH, (2003). Wildness in Scotland's Countryside, Policy Statement No. 02/03.

Mapped Data Sources

- Ordnance Survey (OS) Maps at 1:50,000 and 1:25,000 scales;
- OS Terrain® 5 mid-resolution height data (DTM) (5m grid spacing, 2.5metres RMSE);
- Ordnance Survey 1:25,000 raster data;
- Ordnance Survey 1:50,000 raster data; and

[5] NatureScot (2021). Assessing the cumulative impact of onshore wind energy developments.

- Ordnance Survey 1:250,000 raster data.

Cumulative Assessment

- Data from other wind farm applications for the cumulative assessment; and
- The CnES and the Energy Consents Unit (websites) to inform the cumulative assessment.

Field Surveys

7.15 Field survey work was carried out during several visits under differing weather conditions between November 2022 and April 2023, and records were made in the form of field notes and photographs. The LUC assessment team has also been involved in the earlier consented schemes since approximately 2015 and has extensive familiarity with the study area, and the landscapes of Lewis and Harris from other renewable energy projects. Field survey work included a visit to the Site, visits to viewpoints and designated landscapes and extensive travel around the study area, during both the day and hours of darkness, to consider potential effects on landscape character and on experiences of views seen from specific viewpoints, settlements and routes.

Assessment Methods

7.16 **Technical Appendix 7.1: LVIA Methodology** should be referred to whilst reviewing the approach taken and the findings of this assessment in order to gain a clear understanding of how findings of significance are informed. The significance of the potential effects of the proposed development considers the sensitivity of the receptor and the magnitude of the potential effect and is assessed in line with industry best practice guidance[6].

Sensitivity of Receptor

7.17 The sensitivity of the potentially affected receptors is influenced by both the susceptibility of the landscape or visual receptor to the type of development proposed and the value attached to the landscape or view. Judgements were recorded as high, medium, low, or negligible. Detailed information about the approach to assessment of sensitivity is provided in **Technical Appendix 7.1.**

Magnitude of Change

7.18 The magnitude of change (described as the magnitude of effect in GLVIA3) was identified through consideration of the degree of change to baseline conditions predicted as a result of the proposed development, as well as the geographical extent of the landscape or visual effect, its duration and reversibility. This is recorded as high, medium, low, or negligible. Detailed information about the approach to assessment of magnitude is provided in **Technical Appendix 7.1**.

[6] Landscape Institute and the Institute of Environmental Management and Assessment, (2013). Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)

Overall Level of Effect and Significance

7.19 Levels of effect were identified as negligible, minor, moderate, or major, as described in **Technical Appendix 7.1**. Moderate and major effects are considered significant in the context of the EIA Regulations.

7.20 In terms of the direction of effects (positive or adverse), there is a wide spectrum of opinion with regard to wind energy development. To cover the worst-case scenario, effects during construction and operation for the type and scale of wind farm development proposed are assumed to be adverse, unless stated otherwise.

Visualisation Methodology

7.21 The methodology for production of the visualisations is based on current good practice guidance as set out by NatureScot[7]. Detailed information about the approach to viewpoint photography, ZTV and visualisation production is provided in **Technical Appendix 7.2: ZTV Mapping and Visualisation Methodology**.

Mitigation and Residual Effects

7.22 Measures to reduce effects upon the landscape resource and, views and visual amenity were predominantly achieved through the design of the proposed development, as detailed in **Chapter 2: Site Description and Design Evolution**. Measures to reduce landscape and visual effects, including cumulative effects, are embedded into the design of the wind farm and the Site restoration proposals. All residual effects are therefore as predicted in the assessment sections above.

Assumptions, Limitations and Confidence

7.23 No substantial information gaps were identified during the preparation of baseline information or undertaking of the assessment, and 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 effects on landscape, views, and visual amenity.

BASELINE CONDITIONS

Landscape Baseline

7.24 This section presents an overview of the landscape baseline including current landscape character (including constituent landscape elements), landscape condition and any designations attached to the landscape. Wind farms and other development which is already present in the landscape and views is considered as part of the primary LVIA, including the potential cumulative interactions that the proposed development would have with it.

[7] SNH, (2017). Visual Representation of Wind Farms, Version 2.2

Site and context

7.25 The Site context is described in **Chapter 2: Site Description and Design Evolution**; and detailed information on the proposed development is provided in **Chapter 3: Description of Development** and shown on **Figure 3.1**.

7.26 The Site (shown on **Figure 7.1**) is located in the Western Isles, in the south east of Lewis on the Pairc (Park) peninsula. The Site comprises numerous ridges and elevated landform, including the summits of Creag na Beirighe (236m AOD) and Cleit Catriona (139m AOD) in the south of the Site. Topography rises from sea level in the south, reaching a high point of approximately 270m AOD in the north west. The summits of Feiriosbhal (327m AOD), Cleit na Cerdaich (168m AOD) and Beinn Mheadhanach (288m AOD) are located outside of the Site boundary, but are within close proximity to the north western extents of the Site boundary. Landform is characterised by gently rolling open moorland with some areas of steep slopes and rocky outcrops, particularly in the west of the Site.

7.27 There are numerous lochans and small watercourses found across the Site, draining to Loch Seaforth to the north and west and Loch Sealg to the south. Within the Site, Loch Eisgien, Loch an Eilein, Loch Beag Stiomrabhaigh and Loch a' Choin Dhubh are among the larger lochans. Abhainn Cheothadail bisects more elevated landform in the south of the Site, running between Loch na Beirighe and Loch Eisgein.

7.28 The Eisgein (Eishken) Estate Lodge exerts an existing influence of development in the south eastern extents of the Site, with occasional scattered historic sheilings along loch shores. A track passes through the east of the Site boundary.

7.29 Access to the Site is afforded via an unclassified road (Eishken Road) which leads to Eishken Lodge, east of the Site. The road traverses south west from the A859 to the north of Loch Seaforth. There is no access to the Site from across the Eishken peninsula from the west or south.

Landscape of the Study Area

7.30 The study area, shown on **Figure 7.1**, extends to a 45km radius from the outermost wind turbines of the proposed development in all directions. Almost the entirety of the study area is within the CnES administrative area, with only a small section in the Highland Council administrative area, encompassing the area across The Little Minch strait and the northern extents of the Waternish Peninsula of Skye at over 35km from the nearest turbine of the proposed development.

7.31 The landscape character of the study area is varied. Each island of the Outer Hebrides has a distinct character. North Lewis contains a great plateau of low-lying peatland, which contrasts with the bold, rugged hills in South Lewis and North Harris which rise above the expansive blanket bog.

7.32 Much of the Hebrides contains coastal dune grasslands ('Machair') which lie alongside the white beaches, a rare habitat prominent on the western coastline, particularly in South Harris. In contrast, the east coast of South Harris contains varied terrain including cnoc and lochan topography and extensive rockscapes.

7.33 The highest peaks in the Outer Hebrides are located on North Harris, dominating the landscape. The hills rise steeply from sea level which gives them a larger appearance, the tallest of which is An

Cliseam/Clisham at 799m AOD. It is the highest mountain in the Outer Hebrides and the archipelago's only Corbett.

Landscape Character Types

7.34 This section provides a description of landscape character (including constituent landscape elements) – drawing on published studies, supplemented with project specific research and field work where relevant.

7.35 The landscape character of the Site and the study area is described in the 'Scottish Landscape Character Assessment', published by SNH in 2019. Landscape Character Types (LCTs) across the study area are shown on **Figure 7.6a** and are shown overlaid with the ZTV on **Figure 7.6b**.

7.36 The SNH Landscape Capacity Study for Onshore Wind Energy Development in the Western Isles includes a landscape sensitivity assessment of Landscape Character Types within a study area of the Outer Hebrides. The LCTs considered within this assessment are based on the SNH 2019 'Scottish Landscape Character Assessment', however the findings of the Landscape Capacity Study were considered within the assessment. The Outer Hebrides Local Development Plan: Supplementary Guidance for Wind Energy Development (2021) notes that "*technology and scale have changed considerably since this study was originally undertaken*".

7.37 The Site is located across three LCTs, as shown on **Figure 7.6a**. Turbines of the proposed development are located within the Prominent Hills and Mountains LCT 326[8] and Rocky Moorland – Outer Hebrides LCT 323[9].

7.38 Existing wind farms within the study area are predominantly located within the Boggy Moorland – Outer Hebrides LCT 322[10] in the north of Lewis to the west and south west of Stornoway. Operational turbines influence the "*remote upland character*" and "*expansive horizontal scale and remoteness*" and characterise localised areas of the LCT near Stornoway. The operational North Harris Wind Farm is located on the edge of the Prominent Hills and Mountains LCT 326. This wind farm locally influences the *"open remote character"* and "*massive vertical scale*", although turbines are 46m tip height and therefore do not diminish the scale of the distinctive landform of An Cliseam (799m AOD) to the north east.

7.39 The LCTs within 45km of the red line boundary of the proposed development are listed in **Table 7-2**. The theoretical visibility of the proposed development is described. The theoretical visibility of the proposed development (ZTV coverage) is used as a means of identifying which LCTs require further assessment, and which LCTs can be scoped out because they are unlikely to experience significant effects arising from the proposed development. LCTs beyond 15km from the Site, and

[8] Prominent Hills and Mountains LCT 326 [Online] Available at: https://www.nature.scot/sites/default/files/LCA/LCT%20326%20-%20Prominent%20Hills%20and%20Mountains%20-%20final%20pdf.pdf

[9] Rocky Moorland - Outer Hebrides LCT 323 [Online] Available at: https://www.nature.scot/sites/default/files/LCA/LCT%20323%20-%20Rocky%20Moorland%20-%20Outer%20Hebrides%20-%20final%20pdf.pdf

[10] Boggy Moorland – Outer Hebrides LCT 322 [Online] Available at: https://www.nature.scot/sites/default/files/LCA/LCT%20322%20-%20Boggy%20Moorland%20-%20Outer%20Hebrides%20-%20final%20pdf.pdf

those with limited actual visibility within 15km of the Site, are not considered further within the assessment.

Table 7-2: Landscape Character Types within the study area

LCT	Distance and Theoretical Visibility of proposed development
Within 15km	
Prominent Hills and Mountains (326)	Host, <1km, widespread visibility across the LCT within 5km of the nearest turbine of the proposed development. **Considered within assessment.**
Rocky Moorland – Outer Hebrides (323)	Host, <1km, widespread visibility across the LCT within 5km of the nearest turbine of the proposed development. **Considered within assessment**
Boggy Moorland – Outer Hebrides (322)	Relatively widespread visibility within 1.8-7.2km to the east and north east of the nearest turbine of the proposed development, intermittent visibility indicated within 9-40km. **Considered within assessment**
Dispersed Crofting (319)	Relatively widespread visibility within approximately 570m of the nearest turbine of the proposed development, further intermittent visibility indicated within 5.9-14.4km to the north east. **Considered within assessment**
Linear Crofting (318)	Intermittent visibility within 2.8-7.2km to the north, north east and east of the nearest turbine of the proposed development, with further visibility indicated 11.9-27.6km to the north west, north and north east. **Considered within assessment.**
Cnoc and Lochan (324)	Intermittent visibility from elevated localised landform within 4.0-15.1km to the east and north east of the nearest turbine of the proposed development. **Considered within assessment.**
Gently Sloping Crofting (317)	Intermittent visibility within 5.8-7.9km to the north and north west of the nearest turbine of the proposed development. **Considered within assessment.**
Within 15-45km	
Machair (321)	Limited visibility indicated at distances exceeding 30km, not considered further.
Rock and Lochan (325)	No visibility indicated by ZTV, not considered further.
Rounded Rocky Hills – Outer Hebrides (327)	No visibility indicated by ZTV, not considered further.
Stepped Moorland (360)	Limited visibility indicated at distances exceeding 35km, not considered further.
Farmed and Settled Lowlands – Skye and Lochalsh (357)	Limited visibility indicated at distances exceeding 36km, not considered further.
Low Smooth Moorland (358)	Limited visibility indicated at distances exceeding 38km, not considered further.
Landslide Edge and Undulating Ridge (366)	Limited visibility indicated at distances exceeding 40km, not considered further.

Coastal Character Types

7.40 There is no published coastal character assessment for the Outer Hebrides, however thirteen national Coastal Character types (CCT) were identified by SNH[11] at a very broad scale and provide a strategic level of characterisation at a national scale. Coastlines within the study area are located mainly within the Low Rocky Island Coasts CCT (13), and the shores of Loch Seaforth are located within the Sounds, Narrows and Islands CCT (9).

7.41 The ZTV on **Figure 7.6b** indicates intermittent visibility from the Low Rocky Island Coasts CCT (13), within 5.3-10.4km to the north of the proposed development along the shores of Loch Eireasort, within 24.5-40.km to the north east of the proposed development along the southern coast of the Eye Peninsula (An Rubha), and within 24.5-40km to the north east of the proposed development along the eastern coast of Lewis, including near Tong (Tunga), Breivig (Beibhig) and Tolsta Head (Rubha Tholsastaidh). This CCT is considered within the assessment.

7.42 There is no theoretical visibility indicated from the Sounds, Narrows and Islands CCT (9) and this CCT is therefore not considered within the assessment.

Designated Landscapes

7.43 The Site itself is not designated; however, the South Lewis, Harris and North Uist NSA is located approximately 3.7km to the south and south west of the nearest turbine of the proposed development at its nearest point. There are no other NSAs within a 20km radius of the Site. The Trotternish NSA is located approximately 41.4km to the south east of the Site and the Wester Ross NSA is located 45.1km to the south east of the Site.

7.44 Designated Landscapes across the study area are shown in **Figure 7.7a** and are shown overlaid with the ZTV in **Figure 7.7b**. The theoretical inter-visibility with the proposed development (ZTV coverage) is used as a means of identifying which Designated Landscapes require further assessment.

7.45 The proposed development is not located within a nationally designated landscape but an assessment of effects on the South Lewis, Harris and North Uist NSA was undertaken with reference to the NatureScot guidance[12]. This assessment is contained in **Technical Appendix 7.3: Assessment of Effects on Special Landscape Qualities** and was undertaken as a separate exercise because of the specific assessment guidance that applies, albeit that the findings of the LVIA are used to inform it. **Table 7-3** below details the designated landscapes within the study area.

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[11] Scott, K.E., Anderson, C., Dunsford, H., Benson, J.F. and MacFarlane, R. (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to offshore windfarms. Scottish Natural Heritage Commissioned Report No.103.

[12] SNH (unpublished, 2018). Guidance for Assessing Effects on Special Qualities and Special Landscape Qualities. Working Draft 11.

Table 7-3: Designated Landscapes within the study area

Designated Landscape	Distance and Theoretical Visibility of proposed development
National Scenic Areas (NSA)	
South Lewis, Harris and North Uist NSA	Theoretical visibility indicated within 3.7km of the nearest turbine of the proposed development, **considered within assessment** (**Technical Appendix 7.3**).
Trotternish NSA	Limited visibility indicated at distances exceeding 41.1km south, south east of the nearest turbine of the proposed development, not considered further.
Wester Ross NSA	Limited visibility indicated at distances exceeding 45.1km south east of the nearest turbine of the proposed development, not considered further.

Wild Land

7.46 Wild Land Areas (WLA) are not designated but their importance is recognised in NPF4[13]. Each WLA has an accompanying WLA descriptions published by SNH in January 2017[14]. Policy 4 of NPF4 sets out that "*development proposals for wind farms in National Parks and National Scenic Areas will not be supported*" (Page 53). Policy 4 also notes that wind energy development within Wild Land Areas is not precluded but that a wind farm proposal must be developed with cognisance of the WLA and the need to protect it, as "*all such proposals must be accompanied by a wild land impact assessment which sets out how design, siting, or other mitigation measures have been and will be used to minimise significant impacts on the qualities of the wild land, as well as any management and monitoring arrangements where appropriate*". It also outlines that "*Buffer zones around wild land will not be applied, and effects of development outwith wild land areas will not be a significant consideration*" (NPF4, Policy 4, Page 41).

7.47 There are no WLAs within the Site; however, WLA 31: Eisgein directly abuts the south western Site boundary, as shown on **Figure 7.7a**. An assessment of effects on the wild land qualities of WLA 31 is included in **Technical Appendix 7.4: Wild Land Impact Assessment** and was undertaken with reference to the NatureScot guidance[15]. The assessment within **Technical Appendix 7.4** was undertaken as a separate exercise because of the specific assessment guidance that applies, albeit that the findings of the LVIA are used to inform it.

Table 7-4: Wild Land Areas within the study area

WLA	Distance and Theoretical Visibility of proposed development
Eisgein (WLA 31)	Theoretical visibility indicated across eastern extents of WLA within 0.5km of the proposed development at its nearest point, **considered within assessment** (**Technical Appendix 7.4**).
Harris – Uig Hills (WLA 30)	Intermittent theoretical visibility indicated from the eastern extents of the WLA at a distance of 8.4-17.2km to the north and north west of the proposed development at its

[13] Scottish Government (2023) National Planning Framework 4 [Online] Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2022/11/national-planning-framework-4-revised-draft/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4-revised-draft.pdf

[14] NatureScot (previously SNH) (2017) WLA descriptions [Online] Available at: https://www.nature.scot/doc/wild-land-areas-map-and-descriptions-2014

[15] NatureScot (September 2020). Assessing Impacts on Wild Land Areas – Technical Guidance. [Online] Available at: https://www.nature.scot/assessing-impacts-wild-land-areas-technical-guidance

WLA	Distance and Theoretical Visibility of proposed development
	nearest point, with some existing attrition of wild land qualities in this area due to presence of proximate development. Localised areas of theoretical visibility indicated from the remote western extents of the WLA within 13.4-29.7km of the proposed development at its nearest point, however this area of the WLA is located within the South Lewis, Harris and North Uist NSA (assessment of effects on special landscape qualities of the NSA are considered in **Technical Appendix 7.3**). WLA 30 is therefore not considered further.

Locally Designated Landscapes

7.48 There are no locally designated landscapes within the CnES administrative area. Special landscape areas (SLA) within the Highland Council administrative area are shown on **Figure 7.7a,** however these have been scoped out of the assessment due to intervening distance from the proposed development.

Gardens and Designed Landscapes

7.49 There are no Gardens and Designed Landscapes (GDL) within the Site. Lews Castle and Lady Lever Park (GDL) is located approximately 19.7km to the north east of the nearest proposed turbine. Some areas of the GDL are within the ZTV, however the presence of woodland limits outward views south towards the Site. Further information on designated and previously recorded undesignated cultural heritage assets is provided in **Chapter 11: Cultural Heritage and Archaeology**.

Visual Baseline

7.50 This section identifies the extent of theoretical visibility of the proposed development and identifies visual receptors that are assessed within the visual assessment of the LVIA. This section also introduces the assessment viewpoints agreed with statutory consultees that are used as representative points from which to assess effects on visual receptors (people) and particular views, including reasons for their selection.

Study Area

7.51 Key transport routes near the Site include the A859, which is the main route connecting Lewis and Harris and passes approximately 6.2km to the north west of the Site at its nearest point. The B8060 is located approximately 3.6km to the east of the Site, and passes along the lower-lying coastal landscape between dispersed small settlements and residential properties. The A866 passes to the east of Stornoway, approximately 20km to the north east of the Site. The A587 passes north and north west of Stornoway, approximately 22km to the north of the Site.

7.52 Key ferry routes near the Site include the Stornoway to Ullapool ferry route, which passes approximately 20km to the north east of the Site, and the Uig to Tarbert ferry route, which passes approximately 20km to the south of the Site.

7.53 The settlement pattern near the Site comprises dispersed villages and individual properties, primarily located along main roads, including the A859, A858 and B8060, which pass through valleys or along the lower-lying coastline. Settlements within approximately 5km of the Site are primarily located along the B8060, and include the small villages of Orasaigh (Orinsay) and Leumrabhagh to the south east of the Site, Taobh a' Ghlinne (Glenside) to the east of the Site, and Tabost (Habost) to the north of the Site. The only larger settlement within the wider study area is Stornoway, located approximately 20km to the north east of the Site.

7.54 The Hebridean Way National Trail passes approximately 6.0km to the north west of the Site at its nearest point. The route passes between Vatersay and the Butt of Lewis, with separate route options provided for cyclists and walkers using the route.

7.55 Existing wind farm development within the study area is predominantly focused in the north of Lewis, and includes the operational Baile an Truiseil (3 turbines, 81m tip height), Pentland Road (6 turbines, 121.2m tip height), Beinn Ghrideag Community (3 turbines, 125m tip height) and Arnish Moor (3 turbines, 76m tip height) Wind Farms located to the north of the Site. The North Harris Wind Farm (3 turbines, 86m tip height) is located approximately 15.3km to the south west of the Site, and within the South Lewis, Harris and North Uist NSA. There are also occasional smaller scale (<50m tip height) single turbines, which are typically located along the main communications corridors or in proximity to local coastal communities and residential properties.

7.56 A full list of operational and under construction wind farms is provided in **Table 7-8** and shown on **Figure 7.8**.

Analysis of Visibility of the proposed development

7.57 **Figures 7.2a-7.2c** illustrate the theoretical visibility of the wind turbines of the proposed development to blade tip height (180m-200m). **Figures 7.3a** and **7.3b** illustrate theoretical visibility of the wind turbines of the proposed development to hub height (102.5m-122.5m). Within 5km of the outermost turbines of the proposed development, relatively widespread visibility is indicated from the rolling moorland to the north and east of the Site, and from the elevated landform and hill summits to the west and south of the Site. The ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD), located just beyond the north western boundary, partially screens views of the proposed development to the north west of the Site, including from the north eastern extents of Loch Seaforth. Localised landform also occasionally screens views of the proposed development from lower-lying extents within 5km of the Site, including along Glen Uirn to the north east of the Site, Glen Orinsay to the east of the Site and Gleann a' Loin Bhain to the east of the Site.

7.58 Within 10-15km of the outermost turbines of the proposed development, theoretical visibility is relatively widespread to the north, east and south of the Site, although localised landform limits some views. Landform to the south and west of the Site partially screens views from the wider landscape to the south and west, although views of the proposed development is indicated from localised hill summits including An Cliseam, Todun, Leac Easgadail and Caiteseal.

7.59 Beyond 15km of the outermost turbines of the proposed development, visibility becomes more intermittent given screening by localised landform. Occasional theoretical visibility is indicated from north Lewis, including from the Calanais Standing Stones, elevated landform along the western edge of Stornoway, and from more distant communities on An Rubha (the Eye Peninsula). Visibility from the sea to the east, north east and south east of the proposed development is relatively widespread, however views would be relatively distant.

Selection of Viewpoints for Assessment

7.60 This section sets out the viewpoints that are used to represent and assess the visual effects of the proposed development. The viewpoint list is a representative selection of locations agreed with statutory consultees; it is not an exhaustive list of locations from which the proposed development would be visible.

7.61 A total of 18 viewpoints were selected through desk study, field work and consultation with statutory consultees (as detailed in **Table 7-1** and **Technical Appendix 7.6**). The viewpoints are all publicly accessible as advocated by GLVIA3[16] and include:

- locations selected to represent the experience of different types of receptor;
- locations at different distances to provide a representative range of viewing angles and distances (i.e. short, medium and long distance views);
- locations which illustrate key cumulative interactions with other existing, consented and/or proposed wind farms (i.e. either in combined or successive views);
- locations which represent a range of viewing experiences (i.e. static views and points along sequential routes);
- specific viewpoints selected because they represent promoted views or viewpoints within the landscape; and
- illustrative viewpoints chosen specifically to demonstrate a particular visual effect or specific issue (which could include restricted visibility in particular locations).

7.62 The viewpoints used to assess the visual effects are listed in **Table 7-5** and their locations are shown on **Figure 7.2a**. Representative viewpoints used to assess the visual effects of visible aviation lighting are highlighted in blue.

Table 7-5: Assessment Viewpoints

VP	Viewpoint Name	Grid Reference (NGR)		Distance and nearest turbine[17]	Reason for Selection
1	Orasaigh (Orinsay)	136331	912018	3.2km, T18	Represents views experienced by residential receptors to the east of the Site.
2	B8060, east of the Site	137332	913263	4.0km, T18	Represents views experienced by road users from the access road to settlements north of Loch Sealg.
3	Beinn Mhòr	125433	909534	4.9km, T22	Represents views experienced by recreational receptors from hill summit on edge of South Lewis, Harris and North Uist NSA and within WLA 31.

[16] The selection of viewpoints for LVIA should take account of the factors listed in Paragraph 6.20 of GLVIA3.

[17] Distance between viewpoint and the nearest wind turbine of the proposed development.

VP	Viewpoint Name	Grid Reference (NGR)		Distance and nearest turbine[17]	Reason for Selection
4	Taobh a' Ghlinne (Glenside)	137942	915827	5.0km, T7	Represents views experienced by residential receptors to the north east of the Site.
5	B8060 near Tabost (Habost) Church	133107	919529	5.0km, T1	Represents views experienced by road users and residents to the north of the Site.
6	Leumrabhagh	138103	911869	4.9km, T18	Represents views experienced by residential receptors within one of the nearest settlements to the east of the Site.
7	Uisinis	133706	906727	5.1km, T25	Represents views experienced by recreational receptors from hill summit on edge of South Lewis, Harris and North Uist NSA and within WLA 31.
8	Baile Ailein	128007	920503	7.0km, T3[18]	Represents views experienced by residential receptors, recreational receptors on the Hebridean Way and road users to the north of the Site.
9	A859 near Lacasaigh (Laxay) Cemetery	134254	922063	7.7km, T2	Represents views experienced by visitors to the cemetery, nearby residential receptors, recreational receptors on the Hebridean Way and road users to the north of the Site.
10	Todun	121033	902967	12.2km, T22	Represents views experienced by recreational receptors within the South Lewis, Harris and North Uist NSA.
11	Liurbost	137284	925851	12.3km, T2	Represents views experienced by residential receptors to the north east of the Site.
12	Liuthaid	117535	913654	12.7km, T22[19]	Represents views experienced by recreational receptors from the hill summits within the WLA 30.
13	A859 near Liurbost	135520	927373	13.2km, T2	Represents views experienced by residential receptors, recreational receptors on the Hebridean Way and road users to the north of the Site.
14	Acha Mor (Achamore)	131363	929357	14.7km, T1	Represents views experienced by nearby residential receptors, recreational receptors on the Hebridean Way and road users.
15	An Cliseam	115481	907302	15.1km, T22	Represents views experienced by residential receptors within the South

[18] T3 is screened by intervening landform in views from this location.

[19] T22 is screened by intervening landform in views from this location.

VP	Viewpoint Name	Grid Reference (NGR)		Distance and nearest turbine[17]	Reason for Selection
					Lewis, Harris and North Uist NSA and WLA 30.
16	Calanais Standing Stones	121325	933012	21.1km, T3	Represents views experienced by visitors to the ancient prehistoric monument (Scheduled Monument) and highly popular tourist destination.
17	Stornoway War Memorial	141713	934340	21.9km, T2	Represents views experienced by visitors to the memorial and similar views experienced from nearby residential properties.
18	An-Cnoc (Knock)	149417	932188	24.3km, T7	Represents views experienced by residential receptors and road users to the north east of the Site.

Settlements

7.63 Settlements are those defined as such within the Outer Hebrides Local Development Plan, Adopted Plan (November 2018). Settlements within the study area are generally concentrated along the coastline, within coastal bays (where there are ports) or on the edge of sea lochs. Near the Site, the settlement pattern comprises dispersed villages and individual properties, primarily located along the A and B roads.

7.64 The main settlements within the study area are Stornoway and Tarbert. Further settlements are primarily residential and agricultural, with few public, commercial or community services. Outside of settlements, there are few scattered residential properties and the landscape is considered remote. Within 5km of the Site, there are a number of small villages situated along the B8060.

7.65 The Outer Hebrides Local Development Plan, which covers the majority of the study area and the entirety of the Outer Hebrides, identifies a hierarchy of settlements including Stornoway core, main settlements, and rural settlements. The Highland Council Local Development Plan (Highland Wide Local Development Plan) covers the southernmost section of the study area across The Little Minch strait, on the Isle of Skye. Settlements within this area located at distances exceeding 35km from the nearest proposed turbine and are therefore not considered within the assessment.

7.66 There are no settlements located within 5km of the outermost turbines of the proposed development.

7.67 Theoretical visibility of the proposed development from settlements across the 45km radius study area is illustrated by **Figure 7.2a** with potential views from settlements described in

Table 7-6.

7.68 The ZTV does not take account of any screening or filtering of views by built form or vegetation, which would substantially reduce visibility from the majority of settlements. In order to focus on potentially significant effects, settlements from which there is no theoretical visibility are not considered further in this assessment. Furthermore, settlements with limited visibility over a longer-distance i.e. beyond 15km from the outermost turbines of the proposed development; or where views of the surrounding landscape (including the Site) are not important to its setting, and where it is unlikely that significant effects could occur, are not considered further in the assessment.

Table 7-6: Settlements

Settlement	Distance and Theoretical Visibility of proposed development
Within 15km	
Leumrabhagh (Lemreway)	Visibility indicated from residential properties along the eastern edge of the community within approximately 4.6km to the east of the nearest turbine of the proposed development. **Considered within the assessment**.
Orasaigh (Orinsay)	Intermittent visibility indicated within approximately 3.0km to the east of the nearest turbine of the proposed development. **Considered within the assessment.**
Taobh a Ghlinne (Glenside)/ Grabhair (Gravir)	Intermittent visibility indicated within approximately 4.7km to the north east of the nearest turbine of the proposed development. **Considered within the assessment**.
Gearraidh Bhaird (Garyvard)/ Caersiadair (Kershader) and Tabost (Habost)	Intermittent visibility indicated within approximately 4.8km to the north of the nearest turbine of the proposed development. **Considered within the assessment.**
Baile Ailein (Balallan)	Intermittent visibility indicated within approximately 6.4km to the north of the nearest turbine of the proposed development. **Considered within the assessment.**
Lacasaigh (Laxay)	Visibility indicated from across the community at a distance of 7.1km to the north of the nearest turbine of the proposed development. **Considered within the assessment.**
Ceos (Keos)/ Glib Cheos (Keose Glebe)	Intermittent visibility indicated within approximately 7.6km to the north east of the nearest turbine of the proposed development. **Considered within the assessment.**
Liurbost/ Griomsiadar (Grimshader)/ Ranais/ Crosbost	Intermittent visibility indicated at a distance of 12.2km to the north and north east of the nearest turbine of the proposed development. **Considered within the assessment.**
Achamore	Visibility indicated from across the community at a distance of 14.1km to the north of the nearest turbine of the proposed development. **Considered within the assessment.**
Calbost/ Marbhig/ Cromore	Limited visibility indicated within 9.0km to the north east of the nearest turbine of the proposed development. Not considered further.
Airidh a Bhruaich (Arivruaich)	Limited visibility of turbine blades indicated at a distance of 7.0km to the north west of the nearest turbine of the proposed development. Not considered further.
15km-45km	
Steorenabhagh (Stornoway)	Limited visibility indicated within settlement at distances exceeding 20.8km. Not considered further. Views from elevated landform to the west of the settlement considered within VP17: Stornoway War Memorial.
An Tairbeart (Tarbert)	No visibility indicated by ZTV, not considered further.
Calanais (Callanish)/ Breascleit (Breasclete)	Intermittent visibility indicated at distances exceeding 21.5km, not considered further.
Carolway	Intermittent visibility indicated at distances exceeding 30.0km, not considered further.

Settlement	Distance and Theoretical Visibility of proposed development
Communities located on An Rubha (the Eye Peninsula), including Knock (Cnoc)	Intermittent visibility indicated at distances exceeding 23.0km, not considered further.
Communities located on the north eastern coast of Lewis, including Tunga, Back, Gress, and North Tolsta	Intermittent visibility indicated at distances exceeding 24.0km, not considered further.
Communities located on the north western coast of Lewis, including Shawbost, Bragar, Arnol, Barvas, Lower Shader and High Borve	No visibility indicated by ZTV, not considered further.

Routes

7.69 Visibility from a linear route is rarely uniform along its entire length. This is because views of the surrounding landscape change as receptors (people) move along a route depending on the surrounding landform, the presence of buildings, structures, tree cover and vegetation situated along its length. Theoretical visibility of the proposed development from routes across the study area is illustrated by **Figure 7.2b**. They include a hierarchy of paved public roads, recreational routes (promoted long distance footpaths, core paths and cycle routes) and ferry routes.

7.70 Based on an analysis of theoretical visibility and potential views **Table 7-7** provides information on which routes were carried forward for detailed assessment. Due to the lower susceptibility of receptors typically using roads, those beyond 15km from the outermost wind turbines of the proposed development were scoped out of the assessment. Promoted long distance footpaths and cycle routes were included at up to 15km from the outermost wind turbines of the proposed development. Where there is limited theoretical visibility, or where actual visibility from a route is likely to be limited due to localised screening, these routes are not considered further in this LVIA, as the likelihood for significant sequential effects is limited.

Table 7-7: Routes

Route	Distance and Theoretical Visibility of proposed development
Key Roads within 15km	
A859	Intermittent sequential visibility from approximately 9.5km of the road within 10km to the north of the nearest turbine of the proposed development. **Considered within assessment.**
A858	Sequential visibility from 6.0km of the road within 14.0km to the north of the nearest turbine of the proposed development. **Considered within assessment**.
B8060	Sequential visibility from approximately 3.3km of the road within 4.0km to the east and north east of the nearest turbine of the proposed development, with further intermittent visibility within 4.7-6.1km to the north east and north. **Considered within assessment.**
Recreational Routes	
Hebridean Way Walking and Cycling Routes/ NCN Route 780	Intermittent visibility from approximately 14.6km of the routes within 10km to the north west and north of the nearest turbine of the proposed development. **Considered within assessment.**
Pairc Trust Steimreway Path	Sequential visibility from approximately 1.6km of the route within 2.1km to the south east of the nearest turbine of the proposed development. **Considered within assessment.**

Route	Distance and Theoretical Visibility of proposed development
Ferry Routes	
Stornoway – Ullapool	Visibility indicated across the route within 19.8km of the nearest turbine of the proposed development. **Considered within assessment.**
Tarbert – Uig	Visibility limited to turbine blades at distances exceeding 34km, not considered within further.

Other Wind Farm and Infrastructure Developments

Existing Wind Farm Development

7.71 Operational wind farms located across the study area are listed in **Table 7-8** and shown on **Figure 7.8**. Operational wind farms are included as part of the baseline for the LVIA and considered as part of the primary LVIA assessment.

Identification of Potential Future Developments

7.72 In line with NatureScot guidance[20], the scope for the assessment of potential future cumulative landscape and visual effects (i.e. beyond those with existing projects which are already determined as part of the primary LVIA) included other wind farm proposals within an initial 60km radius search area from the proposed development. Wind farms within the 45km study area[21] are listed in **Table 7-8** and shown on **Figure 7.8** and the wireframes in **Figures 7.12 – 7.29** to illustrate the wider context. The assessment of cumulative effects focuses on developments that are likely to give rise to significant cumulative effects, and concentrates on the relationship between the proposed development and other operational, consented and proposed developments (i.e. developments with a valid application or awaiting determination following appeal/public inquiry). In this instance the assessment focuses on schemes within 20km of the red line boundary of the proposed development, because of the limited scope for significant cumulative effects beyond this distance.

7.73 Single turbines are given consideration where it is judged that potential interactions with the proposed development may give rise to significant cumulative effects; this was judged to be within 5km of the red line boundary of the proposed development. Proposals that have not yet progressed beyond Scoping stage are not considered within the assessment.

7.74 Wind energy developments located within the 45km radius study area, which are considered likely to give rise to significant cumulative effects were selected as follows:

- all wind turbines within a 5km radius of the proposed outermost wind turbines; and
- wind farms (e.g. clusters of two or more wind turbines) with wind turbines of ≥80m maximum blade tip height within a 45km radius of the proposed outermost wind turbines.

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[20] NatureScot, (2021). Assessing the cumulative landscape and visual impact of onshore wind energy developments.

[21] As recommended in current guidance (SNH (February 2017) Visual Representation of Wind Farms Guidance. Version 2.2) for turbines equal to or greater than 150m to blade tip.

7.75 Consented wind farms and wind farms currently in the planning system, are considered as part of the assessment of potential future cumulative effects, as they may give rise to different potential future cumulative baseline scenarios.

7.76 A cut-off date of 18 April 2023 was applied for the inclusion of developments within the cumulative assessment. These developments are listed in **Table 7-8** and shown on **Figure 7.8**. Developments highlighted in blue are understood to have or require visible aviation lighting.

Table 7-8: Other Developments included in the Cumulative Assessment

Wind Farm	Status	No. of Turbines	Blade Tip Height (m)	Distance (km)[22]
Lemreway	Operational	1	42	3.9km
North Harris	Operational	3	46	14.8km
Arnish Moor[23]	Operational	3	76	16.0km
Stornoway[24]	Consented	33	180	17.0km
Creed Business Park	Operational	1	61.14	19.0km
Beinn Ghrideag Community Windfarm	Operational	3	125	19.0km
Pentland Road	Operational	6	121.2	21.3km
Horshader (Cnoc Airigh Mhic Crishnidh)	Operational	1	81	31.5km
Druim Leathann[25]	Consented	14	140	36.7km
Tolsta	Operational	1	77	37.8km
Baile an Truseil	Operational	3	81	38.0km
Other Infrastructure	**Status**	**Main Infrastructure**		**Distance (km)[26]**
Harris-Stornoway 132kV overhead line (OHL) replacement (electricity transmission infrastructure)	At application	132kV OHL supported by trident H wood and steel poles		7.4km
Eitshal main TV and Radio Transmitter mast	Operational	Guyed steel lattice mast (approximately 170m height)		15.7km

7.77 The proposed development would be built in lieu of the existing consents for the Muaitheabhal (33 turbines of up to 145m tip height), Muaitheabhal East Extension (6 turbines of up to 150m tip height) and Muaitheabhal South Extension (6 turbines of up to 150m tip height) Wind Farms. These

[22] Approximate distance between the outermost turbines of the proposed development and other wind farms.

[23] A screening request was submitted January 2023 (CnES planning reference: 23/00024/SCR_L) for a revised scheme of 3 turbines at 86m tip height.

[24] Supersedes the consented Bheinn Thulabaigh and Sandwick North Street wind farms, and proposed Sandwick East Community, Melbost and Aignish wind farms.

[25] Aviation lighting to be fitted per Condition 49 of planning consent (reference: 18/00216/PPDM) :"*Prior to development commencing a scheme of aviation lighting will be submitted for the written approval of the Comhairle as Planning Authority in consultation with HIAL and the Ministry of Defence. For the avoidance of doubt, turbine numbers T6, T7, T9, T11, T12, T13 and T14 are to be fitted with obstacle warning lighting to meet the aviation safety requirements of HIAL and the Ministry of Defence. Reason In the interests of protecting civilian and military aviation safety*".

[26] Approximate distance between the outermost turbines of the proposed development and other developments.

wind farms are therefore not considered in the cumulative assessment. A high-level comparison between the proposed development and these consented schemes is provided in the stand alone Project Comparison Report submitted alongside the planning application for the proposed development.

7.78 The baseline situation is constantly changing, and there may be changes to the status or list of wind energy developments considered between carrying out the assessment and the determination of the application. Unless there are substantial changes to proposals that would materially alter the pattern of development (such as the addition of a large wind farm located within a 10km radius of the nearest turbine of the proposed development), it is considered that the cumulative assessment undertaken for the relevant landscape and visual receptors would remain relevant.

7.79 Given the varied status, and therefore certainty, associated with un-built wind farms and infrastructure across the study area the cumulative assessment is structured so as to report on two potential development scenarios, beyond that reported upon in the primary assessment (i.e. consideration of relationship between the proposed development and existing developments):

- scenario 1: higher level of certainty: the addition of the proposed development to a landscape with operational, under construction and consented wind farms; and
- scenario 2: lower level of certainty: the addition of the proposed development to a landscape with operational, under construction, consented and undetermined valid planning applications (in this instance, the Harris-Stornoway 132kV OHL replacement).

7.80 The cumulative assessment focuses on the assessment of 'additional' effects, i.e. the additional effects that would arise from adding the proposed development to a more speculative baseline, which includes other built wind farms and other consented and proposed developments under Scenario 1 and Scenario 2. The additional effects may vary under different scenarios, e.g. because another proposed wind farm could either result in screening of turbines (potentially reducing the effects), or may result in effects being exacerbated (i.e. made more severe).

7.81 Combined ZTVs (**Figures 7.9-7.10**) for other wind farms were prepared to show where ZTVs overlap and where cumulative effects may arise. This includes in-combination views – two wind farms seen at the same time in a similar direction - and successive views - two wind farms seen from the same location but in different directions.

General Observations – Current Baseline (Operational Developments)

7.82 This section describes existing and proposed patterns of development, noting for example where the presence of multiple other wind farm developments associated with particular areas, or landscape types, may give rise to combined landscape and visual effects. The following sections comment on the evolving patterns that may occur in the future.

7.83 The pattern of existing wind farm development in the study area is focused to the north of the Site and includes relatively compact clusters of turbines. General observations on the location, pattern and scale of existing wind energy development across the study area are summarised below:

- a single turbine (41.7m tip height) is located approximately 3.5km to the east of the Site, along the B8060 and within the Boggy Moorland – Outer Hebrides LCT (322);

- operational wind farm development is mostly focused on Lewis approximately 16-21km to the north of the Site, and includes a cluster of development to the west of Stornoway comprising the Pentland Road (6 turbines, 121.2m tip height), Beinn Ghrideag Community (3 turbines, 125m tip height) and Arnish Moor (3 turbines, 76m tip height) Wind Farms, which are located on the edges of the Boggy Moorland – Outer Hebrides LCT (322);
- the operational Baile an Truseil Wind Farm (3 turbines, 81m tip height) is located further to the north west (approximately 38km to the north of the Site) and is also located on the edge of the Boggy Moorland – Outer Hebrides LCT (322); and
- the operational North Harris Wind Farm (3 turbines, 86m tip height) is located approximately 15.3km to the south west of the Site along the A859 and within the Prominent Hills and Mountains LCT (326).

7.84 As such, when considering the combined effects of all wind farm development across the study area, it is apparent that most operational development is located within the Boggy Moorland – Outer Hebrides LCT (322), mostly clustered to the west of Stornoway with further scattered developments located across North Lewis and North Harris.

7.85 The cumulative ZTV (CZTV) on **Figure 7.9** illustrates where only the proposed development is theoretically visible, where only other operational and under construction wind farms within 45km are theoretically visible, and where both are theoretically visible together. Although the operational wind farms within the study area are relatively small in scale (comprising developments of 1-6 turbines ranging from 42-125m blade tip height), the low-lying character of the North Lewis landscape results in relatively widespread existing visibility of operational wind farms across much of this area, as well as localised elevated areas within the Pairc peninsula. The operational North Harris Wind Farm also exerts an existing influence of turbines within a relatively localised area of North Harris near An Cliseam, within the Prominent Hills and Mountains LCT (326).

General Observations – Scenario 1: Consented Developments (Existing, plus Consented Developments)

7.86 Consented wind farm development in the study area is also focused to the north of the Site. General observations on the location, pattern, and scale of existing and consented wind energy development across the study area are summarised below:

- the consented Stornoway Wind Farm (33 turbines, 180m tip height) is located approximately 16.4km to the north of the Site, and will increase the extent of wind farm development of the existing cluster formed by the operational within the Boggy Moorland – Outer Hebrides LCT (322); and
- the consented Druim Leathann Wind Farm (14 turbines, 140m tip height) is located approximately 36.7km to the north of the Site, on the edge of the Boggy Moorland – Outer Hebrides LCT (322).

7.87 As such, when considering the future combined effects of wind farm development across the study area (assuming a Scenario 1 baseline), consented wind farm development generally follows a similar pattern to operational wind farm development, with further consented turbines at Stornoway Wind Farm extending between operational wind farms to the west of Stornoway. The consented Druim Leathann Wind Farm increases the influence of wind turbines in North Lewis. The majority of operational and consented wind farms would be located within the Boggy Moorland – Outer Hebrides LCT (322).

7.88 The CZTV on **Figure 7.10** illustrates where only the proposed development is theoretically visible, where only other operational, under construction and consented wind farms within 45km are theoretically visible, and where both are theoretically visible together. As for operational wind farm development, the low-lying character of the North Lewis landscape results in relatively widespread existing visibility of operational and consented wind farms across much of this area, across much of the sea to the east of the site, as well as localised elevated areas within the Pairc peninsula.

General Observations – Scenario 2: Proposed developments (Existing, Consented, and Proposed developments)

7.89 Other proposed development within the study area includes the Harris-Stornoway 132kV OHL replacement. The Harris-Stornoway 132kV OHL replacement will replace the existing trident wood pole 132kV line with a wood 'H' pole line. The LVIA for the Harris-Stornoway 132kV OHL replacement (ECU reference: ECU00004490) considered potential effects on receptors within a 6km study area and potential cumulative effects based on other developments (including wind farms) within a 10km study area. However, no significant effects or cumulative effects were identified within the LVIA for the Harris-Stornoway 132kV OHL replacement. Given the difference in typologies and scale between the proposed development (25 turbines at 180-200m tip height) and the proposed Harris-Stornoway 132kV OHL replacement (58km single circuit 132kV OHL supported by wood H-poles of 10.5-18m in height), cumulative effects arising from the introduction of both developments are considered unlikely to occur beyond 2km distance from the OHL. As such, potential for cumulative effects have been considered under Scenario 2 for the following receptors:

- host LCTs for the Harris-Stornoway 132kV OHL replacement, focusing on units of the host LCTs from which theoretical visibility of the proposed development is indicated (**Figure 7.6b**) within 2km of the proposed Harris-Stornoway 132kV OHL replacement. Relevant host LCTs for the proposed Harris-Stornoway 132kV OHL replacement include:
    - prominent Hills and Mountains (LCT 326) within 9.8km to the west of the nearest turbine of the proposed development (**Table 7-11**);
    - rocky Moorland – Outer Hebrides (LCT 323) within 7.5km to the north of the nearest turbine of the proposed development (**Table 7-12**);
    - boggy Moorland – Outer Hebrides (LCT 322) within 13.2km to the north of the nearest turbine of the proposed development (**Table 7-14**); and
    - gently Sloping Crofting (LCT 317) within 7.3km to the north west of the nearest turbine of the proposed development (**Table 7-17**).
- viewpoint 8: Baile Ailein, located 260m south of the Harris-Stornoway 132kV OHL replacement (**Table 7-26**);
- viewpoint 9: A859 near Lacasaigh (Laxay) Cemetery, located 940m south east of the Harris-Stornoway 132kV OHL replacement (**Table 7-27**);
- viewpoint 13: A859 near Liurbost, located 800m east of the Harris-Stornoway 132kV OHL replacement (**Table 7-31**);
- views from the settlements of Baile Ailein (Table 7-41) and Lacasaigh (Laxay) (
- Table 7-42);

- views from the A859 (Table 7-46);
- views from the Hebridean Way / NCN Route 780 (Table 7-49); and
- south Lewis, Harris and North Uist NSA (**Technical Appendix 7.3**).

7.90 However, given the existing influence of the operational 132kV trident wood pole OHL, the future combined effects of operational and consented wind farm development and the proposed Harris-Stornoway 132kV OHL replacement (assuming a Scenario 2 baseline) are unlikely to change beyond the influences on LCTs and visual receptors identified under Scenario 1 above.

ASSESSMENT OF EFFECTS

7.91 The assessment of effects is based on the project description as outlined in **Chapter 3: Description of Development**. Unless otherwise stated, potential effects identified are considered to be negative.

7.92 The assessment of landscape and visual effects follows the methodology summarised in this chapter and set out in detail in **Technical Appendix 7.1: LVIA Methodology** and is based upon the project description outlined in **Chapter 3: Description of Development**. The LVIA reports on construction and operational effects separately.

Embedded Measures

7.93 The design of the proposed development aims to achieve a coherent and balanced turbine layout, in line with guidance provided by NatureScot. The rationale behind the design strategy and documentation of the iterative design process in response to the technical and environmental constraints is identified in **Chapter 2: Site Description and Design Evolution**. The objective in designing the wind farm was to develop a layout that responds to its setting in terms of landform and pattern, and which presents a simple visual image, avoiding the clustering of turbines and the isolation of outlying turbines in views from key locations and views from sequential routes seen by a range of different receptors (people) of varying sensitivity, on balance with environmental and technical constraints.

7.94 The appearance and proximity of the proposed development in views from the South Lewis, Harris and North Uist NSA and Eisgein WLA 31, formed a key consideration in the design development. Potential views from local communities and the wider landscape, including from VP16: Calanais Standing Stones, also formed key considerations in the design development, particularly visibility of turbine nacelles, some of which would require visible aviation lighting as detailed in **Technical Appendix 15.1: Aviation Lighting Report**.

7.95 Further commitments which have been made to reduce landscape and visual effects, such as the protection of vegetation and restoration of disturbed areas after construction are detailed in **Chapter 17: Schedule of Commitments** and will be included within the Construction Environmental Management Plan (CEMP) which will be produced following consent and prior to construction. A draft CEMP has been included in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan** (CEMP).

Potential Construction Effects

Sources of Effects during Construction

7.96 During the proposed 36 months construction phase, there would be potential short-term landscape effects arising from the presence of partially constructed infrastructure and construction activities on the Site (as described in **Chapter 3: Description of Development**). Effects occurring during the construction phase are considered to be reversible unless otherwise stated.

7.97 The changes arising from the construction of the proposed development, as outlined in **Chapter 3: Description of Development**, would include:

- construction of temporary construction/security compound and car parking;
- the working of borrow pits (as required);
- construction of control building, substation and energy storage facility;
- the upgrading/creation of Site access tracks, including passing places, turning heads, junctions and drainage;
- construction of turbine foundations at each turbine location;
- excavation of trenches and laying of electrical and control cables adjacent to the Site tracks connecting the turbines to the control building;
- construction of crane hardstandings and turning heads at each turbine base location where required;
- delivery to Site and erection of wind turbines (including the installation of aviation lighting);
- testing and commissioning of Site equipment including wind turbines; and
- site restoration and implementation of habitat management measures;
- temporary construction lighting including vehicle and plant headlights, construction compound lighting, floodlights and mobile lighting units, to be used around specific construction activities; and
- site signage.

Landscape Effects during Construction

Table 7-9: Construction Effects on the Site

Construction Effects on the Site	
Location and baseline description	The Site is described in detail in the Site and Context section.
Sensitivity	The Site forms part of a transitional landscape between the lower-lying Rocky Moorland – Outer Hebrides LCT (located in the eastern part of the Site and along the Site access route) and the Prominent Hills and Mountains LCT (located in the western part of the Site). Landform within the Site is gently rolling with occasional steep slopes and rocky outcrops. Though moorland within the Site is generally simple in pattern, numerous lochans and rocky outcrops result in a more complex landscape pattern.

Construction Effects on the Site	
	Influence of modern development within the Site is limited to estate tracks, including the track leading to the Eishken Estate Lodge and outbuildings, located in the south east of the Site. Away from this influence, a sense of remoteness is experienced across the Site. Localised rolling landform within the wider landscape partially contains outward views to the north and east of the Site, though occasional open views are afforded. More elevated and distinctive landform within the Prominent Hills and Mountains LCT leads to a stronger degree of enclosure to the west and south of the Site. The susceptibility of the Site is judged to be high. The Site is not located within a designated landscape or WLA; however, the boundary of the Eisgein WLA 31 is located directly adjacent to the south western Site boundary. The landscape value of the Site is judged to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	Construction activities would result in direct effects on the landscape of the Site. The main construction activities with the potential to affect the Site include excavations and track construction; the presence of tall cranes and partially built towers whilst turbines are being erected; and the movement of construction vehicles and plant. There would be some large-scale changes within the Site relating to construction activity. However, changes within the Site would be variable over the length of construction, increasing in the amount of construction activity and proportion of the site disturbed. The construction works are expected to last approximately 36 months, so would be temporary and short-term. The level of reversibility would be varied, from fully reversible changes associated with ground disturbances (albeit that vegetation would take some time to recover) to longer lasting effects associated with infrastructure that forms part of the operational scheme.
Overall Level of Effect and Significance	Given the variable nature of construction effects over the 36-month construction period, the magnitude of change is judged to be **medium**. The effect of construction on the Site would be **moderate (adverse)** and **significant**; however these effects would be temporary and largely contained within the geographical extent of the Site. Most effects would cease following the 36-month construction period.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	There are currently no other consented[27] or proposed wind farms located within the Site therefore significant cumulative effects on the landscape of the Site are considered unlikely. As such no significant additional cumulative landscape effects are predicted under either cumulative assessment scenario.

Visual Effects during Construction

7.98 Visual effects during the construction phase would affect the same receptors as assessed in the operational phase. Visual effects resulting from construction would change throughout the construction phase as wind turbines are gradually constructed in sections. As such, visual effects during the construction phase are unlikely to exceed the level of effect associated with operational visual effects and are not assessed independently.

[27] As noted in paragraph 7.76, the proposed development would be built in lieu of the existing consents for the Muaitheabhal (33 turbines of up to 145m tip height), Muaitheabhal East Extension (6 turbines of up to 150m tip height) and Muaitheabhal South Extension (6 turbines of up to 150m tip height) Wind Farms. These wind farms are therefore not considered in the cumulative assessment.

Residual Construction Effects

7.99 The assessment of effects above assumes all construction related best practice mitigation measures are implemented (as identified in T**echnical Appendix 3.1: Outline Construction and Environmental Management Plan** (CEMP)), therefore the residual effects arising from construction would remain as identified in the section above.

Potential Operational Effects

Sources of Effects during Operation

7.100 The main likely effects of the proposed development on landscape and visual amenity once operational would be associated with the presence of the wind turbines, turbine transformers and ancillary infrastructure including access tracks, onsite substation and Site access track as described in **Chapter 3: Description of Development** and shown on **Figure 3.1**.

7.101 The key components of the proposed development of relevance to this assessment include:

- up to 25 wind turbines (including transformers). 22 turbines will have tip heights of up to 200m and three turbines will have tip heights of up to 180m (T1, T12, T19);
- seven turbines (T19 to T25) would incorporate painted blade mitigation comprising one of the three blades on each turbine (T19 to T25) painted a semi-matt black colour;
- visible aviation lighting on the nacelles of seven turbines (T1, T3, T7, T12, T18, T22, T25);
- foundations supporting each wind turbine;
- associated crane hardstandings at each turbine location;
- approximately 12.1km of upgraded access tracks, and approximately 16.5km of new access tracks with a typical running width of 6m (wider at bends and junctions) and associated drainage;
- 20 new watercourse crossings and associated infrastructure;
- network of underground cables to connect the turbines to the onsite substation; and
- a control building and substation.

Predicted Operational Effects

Table 7-10: Operational Effects on the Site

Operational Effects on the Site	
Location and baseline description	The Site is described in detail in the Site and Context section.
Sensitivity	See **Table 7-9** above. Overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	There would be large-scale changes to the Site relating to the introduction of new features including 25 turbines and associated infrastructure (including access roads and turning areas, hardstandings and a substation), which would change the character of the Site from moorland to moorland with a wind farm. The change would be experienced within a relatively small

Operational Effects on the Site	
	geographical extent, limited to the edges of the wider lower-lying rocky moorland landscape to the east and the wider landscape of prominent hills to the west.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **high** and taking account of the **high** sensitivity would result in a **major (adverse)** and **significant** effect on the landscape of the Site.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	There are currently no other consented[28] or proposed wind farms located within the Site therefore significant cumulative effects on the landscape of the Site are considered unlikely. As such **no significant additional cumulative landscape effects** are predicted under either cumulative assessment scenario.

Operational Effects on Landscape Character Types (LCTs)

7.102 LCTs within 45km of the nearest turbine of the proposed development are illustrated on **Figure 7.6a**, with theoretical visibility from those LCTs located within 20km indicated by the ZTV shown on **Figure 7.6b**. The assessment describes the potential effects on landscape character resulting from the introduction of the proposed development during the operational phase and a consideration of potential cumulative landscape effects arising in conjunction with other existing, consented and/or proposed wind farms. The assessment is limited to those LCTs where potentially significant effects are considered possible, as detailed in **Table 7-2**.

Table 7-11: Prominent Hills and Mountains (LCT 326)

Prominent Hills and Mountains (LCT 326)	
Location and baseline description	Within the study area, this LCT covers large areas of the mountainous interior of South Lewis and Harris. Approximately half of the Site (west) is located within this LCT. The area of LCT 326 which encompasses the Site also occupies the peninsula east of Loch Siophort. Key characteristics include: • *"Individual peaks with pronounced summits, long ridges and slopes.* • *Rises steadily from surrounding terrain, contrasting in character between the open remote character of the uplands, and the more diverse patterns of settlement of the coastal crofting areas.* • *Massive vertical scale.* • *Irregular rock buttresses, ledges, shelves and deep gullies on upper slopes.* • *Lower slopes of windswept heather moorland.* • *Uninhabited."* The operational North Harris Wind Farm (3 turbines, 46m tip height) is located within this LCT.

[28] As noted in paragraph 7.76, the proposed development would be built in lieu of the existing consents for the Muaitheabhal (33 turbines of up to 145m tip height), Muaitheabhal East Extension (6 turbines of up to 150m tip height) and Muaitheabhal South Extension (6 turbines of up to 150m tip height) Wind Farms. These wind farms are therefore not considered in the cumulative assessment.

Prominent Hills and Mountains (LCT 326)	
Landscape Capacity Study (2004)	This LCT is referred to as "*Mountain Massif*" and "*Dramatic Mountain Massif*" in the Western Isles landscape capacity[29] study, which were both noted as being of "*high*" sensitivity.
Sensitivity	The large scale and areas of relatively simple landform/landscape pattern indicate a lower susceptibility, whilst the sense of remoteness, highly visible nature of the skylines, and areas of distinctive summits indicate a higher susceptibility to wind energy of the type and scale proposed. Much of this LCT is located within the South Lewis, Harris and North Uist NSA, Harris – Uig Hills (WLA 30) and Eisgein (WLA 31). Overall, the landscape value is considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	Direct operational effects would arise from the introduction of up to ten turbines and associated infrastructure (with the remaining 15 turbines of the proposed development located in the Rocky Moorland – Outer Hebrides LCT). The Site is located in the eastern extents of the LCT, comprising an area of rolling and elevated moorland with rocky outcrops. One turbine of the proposed development would be located on Cleite Catriona (139m AOD) within the south of the Site, however the higher localised landform of Creag na Beirighe (236m AOD) would be avoided. The distinctive ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha is located just beyond the north western Site boundary; turbines of the proposed development would be partially contained by this landform. The introduction of the proposed development would result in the direct loss of approximately 39HA of upland wet heath and blanket bog habitats (see Chapter 8: Ecology). The introduction of the proposed development would also result in indirect effects within the wider LCT. **Figure 7.6b** indicates relatively widespread visibility within 5km of the nearest turbine of the proposed development. The proposed development would be visible from elevated landform and summits within 5km to the north west, west, south west and south of the Site including Mor-Mhonadh, Guaineamol, Beinn Mhòr, Crionaig and Uisinis. Incised landform along Abhainn Cheothadail (within the south of the Site), Abhainn Gleann na h-Uamha (west of the Site) and Abhainn Gleann Airighean Dhomhnaill (south west of the Site) would partially screen views of turbines. The distinctive ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha (located just beyond the north western Site boundary) would partially screen views of turbines in views from the north west of the Site. Intervening landform would screen some visibility of the proposed development in views from the LCT beyond 5km of the Site. Visibility would be focused within elevated landform and summits to the north west, west, south west and south of the Site including Roineabhal, Liuthaid, An Cliseam, Todun, Leac Easgadail and Caiteseal. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Visibility of turbine lighting within the LCT would be focused within approximately 5km of the site, with some localised areas of visibility indicated within approximately 15-25km to the west of the site. The proposed development would increase the influence of wind farm development within this LCT beyond the relatively localised influence of the operational Harris Wind Farm, located to the south west of the Site.

[29] Landscape 'capacity' is no longer considered to be an appropriate term when developing these types of wind energy study: *"In the past, many so-called capacity studies actually dealt with susceptibility rather than capacity. Capacity is determined by wider spatial planning, societal and technical considerations."* NatureScot, (2022) Landscape Sensitivity Assessment Guidance (Methodology). [Online} Available at: https://www.nature.scot/doc/landscape-sensitivity-assessment-guidance-methodology

Prominent Hills and Mountains (LCT 326)	
	The proposed development would directly affect the "*slopes of windswept heather moorland*" and *"open remote character"* within the Site. Beyond the Site, the proposed development would indirectly affect the *"open remote character"*, introducing a scale indicator in views across the eastern extents of the LCT. However, the "*massive vertical scale*" of key summits, which is most strongly appreciated from lower-lying landscapes, would not be diminished. The geographical extent of these effects is considered small, with effects primarily focused within 5km of the Site. The introduction of the proposed development would result in a medium scale change to the landscape features of the LCT within 5km of the Site, reducing to a small scale change for the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally within the LCT, reducing to **low** for the LCT as a whole. Taking account of the **high** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	There are currently no other consented wind farms located within or in proximity to this LCT, however relatively distant views of wind farms in other LCTs would be afforded from localised extents of the LCT. The consented Stornoway and Druim Leathann Wind Farms would be seen in relatively distant outward views north and north east from hill summits within the LCT, increasing the horizontal extent of turbines across the view. However, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass within units of this LCT within 9.8km to the west of the nearest turbine of the proposed development. The proposed OHL broadly follows the alignment of the A859, which passes at relatively lower elevation within and along the boundary of the LCT. The proposed development would be visible from elevated landform and hill summits within this unit of the LCT. Where views of the proposed development are afforded, the proposed OHL would appear as a relatively distant feature, though appearing closer in the view than the proposed development. Within the LCT there would be limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment and Scenario 1.

Table 7-12: Rocky Moorland – Outer Hebrides (LCT 323)

Rocky Moorland – Outer Hebrides (LCT 323)	
Location and baseline description	Within the study area, this LCT is extensive, covering large inland areas of the Outer Hebrides and smaller areas along the coast. The east half of the Site is covered by this LCT. This extends north of the Site, occupying the area of Ceann Shiphoirt (Seaforth Head) and parts of the southern bank of Loch Eireasort. Further, this LCT also occupies the north bank of Loch Eireasort. Key characteristics include: • *"Rocky, stepped landscape with irregular topography.* • *Rocky knolls interlocked with peaty moorland vegetation and small lochans.* • *Considerable diversity of form and texture.* • *Occasional areas of forestry, small woodlands and shelter planting*

Rocky Moorland – Outer Hebrides (LCT 323)	
	• *Medium scale* • *Predominantly uninhabited and sense of remoteness."*
Landscape Capacity Study (2004)	This LCT is referred to as the "*Rocky Moor*" LCT within the Western Isles landscape capacity study.
Sensitivity	The irregular topography, diversity of form and texture and sense of remoteness indicate a higher susceptibility to wind energy of the type and scale proposed. Parts of this LCT are located within the South Lewis, Harris and North Uist NSA, Harris – Uig Hills (WLA 30) and Eisgein (WLA 31). Overall, the landscape value is considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	Direct operational effects would arise from the introduction of up to 15 turbines and associated infrastructure (with the remaining ten turbines of the proposed development located in the Prominent Hills and Mountains LCT). The Site is located in the eastern extents of the LCT, comprising an area of irregular moorland with rocky knolls and many small lochans. The introduction of the proposed development would result in the loss of approximately 39HA of upland wet heath and blanket bog habitats (see Chapter 8: Ecology). The introduction of the proposed development would also result in indirect effects within the wider LCT. **Figure 7.6b** indicates relatively widespread visibility within 5km to the east and north east of the nearest turbine of the proposed development. Localised landform within the LCT, including Beinn Eisgein (to the south east of the Site) and Sithean Mor nan Coarach (to the north east of the Site), occasionally partially screens views of the proposed development. The distinctive ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha (located just beyond the north western Site boundary within the Prominent Hills and Mountains LCT) would partially screen views of turbines in views from the LCT to the north west of the Site. Beyond 5km of the Site, visibility within the LCT is focused within units of the LCT which extend to the coastlines north of Grimshader and north of Keose (to the north east of the Site), and rolling moorland between the A859 and B8011 (to the north west of the Site). Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Visibility of turbine lighting within the LCT would be focused within approximately 5km of the Site, with some localised areas of visibility indicated within approximately 5-30km to the north west of the site. The proposed development would directly affect the "*peaty moorland vegetation*" within the Site. The proposed development would indirectly affect the "*sense of remoteness"* and perception of scale of the "*stepped landscape with irregular topography*", introducing a scale indicator in views from areas of the LCT outside of the Site. However, effects on landscape features would decrease with distance from the Site. The geographical extent of these effects is considered small, with effects primarily focused within 5km of the east and north Site. The introduction of the proposed development would result in a medium scale change to the landscape features of the LCT within 5km of the Site, reducing to a small scale change for the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally, reducing to **low** for the LCT as a whole. Taking account of the **high** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects	One turbine of the consented Druim Leathann Wind Farm is located within a unit of this LCT located approximately 39.1km to the north east of the nearest turbine of the proposed development. The

Rocky Moorland – Outer Hebrides (LCT 323)	
under Scenario 1 cumulative baseline	consented Stornoway Wind Farm is located within 2.1km of a unit of this LCT located approximately 17.9km to the north east of the nearest turbine of the proposed development. In views from units of the LCT located within 5km of the nearest turbine of the proposed development, the consented Stornoway and Druim Leathann Wind Farms would be seen in relatively distant outward views north and north east. However, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass within units of this LCT within 7.5km to the north and 8.0km to the north west of the nearest turbine of the proposed development. The proposed OHL broadly follows the alignment of the A859 through the LCT. The proposed development would be visible from intermittent extents of the LCT within approximately 2km of the proposed OHL, mostly focused to the north west of Laxay and near Keose. Where views of the proposed development are afforded, the proposed OHL would appear closer in the view than the proposed development and would exert an influence "*sense of remoteness"* and perception of scale of the "*stepped landscape with irregular topography*". However, the existing 132kV trident wood pole OHL (which the proposed OHL would replace) exerts an existing influence on these characteristics. The proposed development would appear as a relatively distant feature in combined views with the proposed OHL, and there would be limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment and Scenario 1.

Table 7-13: Dispersed Crofting (LCT 319)

Dispersed Crofting (LCT 319)	
Location and baseline description	A small area in the south east of the Site in Eisgen (Eishken) is covered by this LCT. Within the study area, small patches of the LCT are located on coastal sites throughout South Lewis and Harris. Key characteristics include: • *"Short, even slopes interspersed between rocky knock and boulder outcrops.* • *Small and intimate landscape scale.* • *Strong, simple relationship between crofting townships and the sea.* • *Dispersed settlement pattern, with occasional groups focused around harbours and sheltered glens.* • *Combination of landform variation and coastal location of townships create a landscape with a high level of natural diversity in a relatively small area.* • *Absence of woodland and trees."*
Landscape Capacity Study (2004)	This LCT is referred to as the "*Crofting 2*" and "*Crofting 3*" LCT within the Western Isles landscape capacity study, which were noted as being of "*medium-high*" sensitivity.
Sensitivity	Areas with some influence of development or settlement indicate a lower susceptibility, whilst the small scale of the landscape, varied landform and diverse landscape pattern indicate a higher susceptibility to wind energy of the type and scale proposed.

Dispersed Crofting (LCT 319)	
	Some areas of this LCT are located within the South Lewis, Harris and North Uist NSA. Overall, the landscape value is considered to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	The turbines of the proposed development would be located entirely outside of this LCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the LCT. One unit of this LCT is located near Eishken Lodge, within relatively close proximity of the proposed development. **Figure 7.6b** indicates relatively widespread visibility across this unit of the LCT, within approximately 570m of the nearest turbine of the proposed development. However, woodland and localised landform would reduce actual visibility from this unit of the LCT. Where views of the proposed development are afforded from this unit of the LCT, turbines would appear as evident skyline feature in close-distance views, and would diminish the "*small and intimate landscape scale*". The introduction of the proposed development would result in a medium scale change to the characteristics of the LCT. However, these effects would be experienced from very localised extents of the LCT within approximately 0.6-1km of the nearest turbine of the proposed development. The ZTV also indicates localised visibility from units of this LCT located beyond 5km of the Site, including areas of localised visibility near Garyvard, Keose, Cromore and Ranais to the north east of the Site. In outward views from these units of the LCT, the proposed development would be seen in middle to long distance views south and south west, with turbines partially screened by intervening localised landform. Given the intervening distance between these units of the LCT and the Site, the proposed development is unlikely to diminish the "*small and intimate landscape scale"* or perception of "*landform variation"* within the LCT, although turbines would be evident in outward views towards the Rocky Moorland – Outer Hebrides LCT and Prominent Hills and Mountains LCT. The geographical extent of these effects is considered small. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Theoretical visibility of turbine lighting is indicated from units of the LCT within 5km of the nearest turbine of the proposed development, with localised areas of visibility indicated from units of the LCT within 15km. The introduction of the proposed development would result in a medium scale change to the landscape features of the LCT within approximately 0.6-1km of the Site, reducing to a small scale change for the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally, reducing to **low** for the LCT as a whole. Taking account of the **high** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	In views from units of the LCT located within approximately 15km of the nearest turbine of the proposed development, the consented Druim Leathann Wind Farm would be seen in relatively distant outward views north east. The consented Stornoway Wind Farm would appear in closer views from units of the LCT located within approximately 15km of the nearest turbine of the proposed development. However, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.

Dispersed Crofting (LCT 319)	
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 1.5km to the north west of this LCT at its nearest point and does not pass within this LCT, therefore **additional cumulative effects are not considered under this scenario** as set out in paragraph 7.89 above. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-14: Boggy Moorland – Outer Hebrides (LCT 322)

Boggy Moorland – Outer Hebrides (LCT 322)	
Location and baseline description	Within the study area, this LCT covers extensive inland areas, the largest of which covers the majority of North Lewis. The LCT does not form part of the Site. The LCT occupies a large area east of the Site, roughly surrounding the B8060. Key characteristics include: • *"Large scale, gently undulating peat moorlands.* • *Relatively few landscape elements.* • *Numerous large and small rounded lochs, interconnected by narrow, slow-moving rivers.* • *Occasional small, shallow-sided hills.* • *Sea cliffs with eroded gullies at the coast.* • *Remote upland character.* • *Predominantly uninhabited.* • *Visible cultural elements dominated by shielings and township boundary dykes.* • *Expansive horizontal scale and remoteness."* The operational Pentland Road (6 turbines, 121.2m tip height), Beinn Ghrideag Community (3 turbines, 125m tip height), Arnish Moor (3 turbines, 76m tip height) and Baile an Truseil (3 turbines, 81m tip height) Wind Farms are located within this LCT.
Landscape Capacity Study (2004)	Within the Site, this LCT is referred to as the "*Boggy Moor 1*" and "*Boggy Moor 2*" LCT within the Western Isles landscape capacity study. Boggy Moor 1 is noted as being of "*low-medium*" sensitivity with a "*medium-high*" landscape capacity. Boggy Moor 2 is noted as being of "*medium-high*" sensitivity with a "*medium*" landscape capacity.
Sensitivity	The large scale, relatively simple landform and some presence of operational wind turbines indicate a lower susceptibility, whilst the sense of remoteness within much of the LCT, diversity in landscape pattern and high intervisibility indicate a higher susceptibility to wind energy of the type and scale proposed. Some areas of this LCT are located within the South Lewis, Harris and North Uist NSA, Harris – Uig Hills (WLA 30) and Eisgein (WLA 31). Overall, the landscape value is considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.
Assessment of Landscape Effects (Primary assessment)	The proposed development would be located entirely outside of this LCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the LCT. **Figure 7.6b** indicates relatively widespread visibility within 1.8-7.2km to the east and north east of the red line boundary of the proposed development. Beyond approximately 7km, further intermittent visibility is indicated from units of the LCT within 9-40km to the north and north east of the nearest turbine of the proposed development. Intervening landform partially screens visibility of the proposed development in views from units of the LCT to the west and north west of the proposed development. Where views of the proposed development are afforded from the LCT within 1.8-7.2km of the nearest turbine, the proposed development would form an evident feature in middle to long distance views.

Boggy Moorland – Outer Hebrides (LCT 322)	
	Turbines of the proposed development may influence the "*remote upland character"* and "*expansive horizontal scale and remoteness*", and would introduce vertical features into the view with *"relatively few landscape elements"*. The introduction would result in a medium scale change to landscape features of the LCT within approximately 1.8-7.2km of the nearest turbine of the proposed development. The geographical extent of these effects is considered small. However, there is an existing presence of wind farm development within units of the LCT located further north. Potential for effects on landscape features would decrease with distance, with these other wind farms exerting a stronger influence in units of the LCT located beyond 9km of the nearest turbine of the proposed development. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Localised areas of visibility of turbine lighting are indicated from units of the LCT within approximately 7km to the north east of the nearest turbine of the proposed development. Further localised areas of visibility of turbine lighting are indicated from units of the LCT within approximately 8.5-30km to the north of the nearest turbine of the proposed development. The introduction of the proposed development would result in a medium scale change to the landscape features of the LCT within 1.8-7.2km of the nearest turbine, reducing to a small scale change for the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally, reducing to **low** for the LCT as a whole. Taking account of the **medium** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway and Druim Leathann Wind Farms are located within this LCT, and would increase the influence of wind farm development across the northern unit of the LCT. The introduction of the proposed development under this scenario would increase the extent of indirect effects of wind turbines across the LCT. However, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass within units of this LCT located 11.3km to the west of the nearest turbine of the proposed development, however visibility of the proposed development is not indicated from this unit of the LCT. The proposed Harris-Stornoway 132kV OHL replacement would pass within units of this LCT would also pass within units of this LCT located 13.2km to the north of the nearest turbine of the proposed development. The proposed OHL broadly follows the alignment of the A859 through the LCT. The proposed development would be visible from intermittent extents of the LCT within approximately 2km of the proposed OHL, mostly focused to areas of slightly elevated localised landform to the west and east of the A859. Where views of the proposed development are afforded, the proposed OHL would appear closer in the view than the proposed development and would exert an influence on the "*remote upland character"* and "*expansive horizontal scale and remoteness*", and would add vertical features into the view with *"relatively few landscape elements"*. However, the existing 132kV trident wood pole OHL (which the proposed OHL would replace) exerts an existing influence on these characteristics. The proposed development would appear as a relatively distant feature in combined views with the proposed OHL, and there would be limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** locally, reducing to **low** for the LCT as a whole.

Boggy Moorland – Outer Hebrides (LCT 322)	
	The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment and Scenario 1.

Table 7-15: Linear Crofting (LCT 318)

Linear Crofting (LCT 318)	
Location and baseline description	Within the study area, this LCT is found in small patches in coastal locations throughout Lewis and Harris. The LCT does not form part of the Site, with the nearest patches east of the Site in the coastal areas of Orasaigh and Leumrabhagh. Within 10km of the Site, this LCT is found at the head of Loch Odhairn encompassing the village of Grabhair, and in patches along the southern bank of Loch Eireasort. Key characteristics include: • *"Strong linear rectangular field patterns on irregular landform of sweeping slightly concave slopes with rocky knolls, rising to rocky or boggy moor inland and sloping down to rocky shores or broad shallow glens.* • *Medium scale landscape.* • *Landcover dominated by improved and semi-improved grassland fields.* • *Lack of tree cover, limited to a few small mixed and coniferous woodlands.* • *Limited colour and textural diversity.* • *Sharp contrast between inbye and outbye.* • *House siting relates to topography, giving overall effect of being dispersed.* • *Narrow buffer of common grazing between townships.* • *Callanish stone circle complex.* • *Strong, simple relationship between croft houses and land holdings, with occasional views outwards to open moorlands, giving townships a feeling of rural remoteness."*
Landscape Capacity Study (2004)	This LCT is referred to as the "*Crofting 1*" LCT within the Western Isles landscape capacity study, which was noted as being of "*medium*" sensitivity.
Sensitivity	The relatively simple landcover and texture, and areas with some influence of development or settlement indicate a lower susceptibility, whilst the varied landform and sense of remoteness indicate a higher susceptibility to wind energy of the type and scale proposed. Some small areas of this LCT are located within the South Lewis, Harris and North Uist NSA. Overall, the landscape value is considered to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.
Assessment of Landscape Effects (Primary assessment)	The proposed development would be located entirely outside of this LCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the LCT. **Figure 7.6b** indicates intermittent visibility from units of the LCT within approximately 2.8-7.2km to the north, north east and east of the nearest turbine of the proposed development near Orinsay, Lemreway, Glenside and Habost. Where views of the proposed development are afforded within approximately 5km to the north and east of the nearest turbine, turbines would appear in outward views from the LCT as evident features against the skyline, partially screened by intervening landform. The proposed development would influence the "occasional views outwards to open moorlands", which contribute to the sense of remoteness within townships. Some turbines may begin to diminish the medium scale of the landscape. The introduction of the proposed development would result in a small scale change from

Linear Crofting (LCT 318)	
	localised extents of the LCT within 5km of the nearest turbine of the proposed development, including units of the LCT near Orinsay, Lemreway and Habost. The ZTV also indicates more distant intermittent visibility from units of the LCT within approximately 11.9-27.6km to the north west, north and north east of the nearest turbine of the proposed development, including near Liurbost, Achamore and Calanais. Potential for effects on landscape features would decrease with distance. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Within 5km, visibility of turbine lighting would be limited to localised areas of the LCT. Areas of visibility of turbine lighting are more widespread, albeit seen in more distant views, from units of the LCT within 11-16km to the north and north east of the nearest turbine of the proposed development. The introduction of the proposed development would result in a medium scale change to the landscape features of the LCT within 5km of the nearet tubrine, reducing to a small scale change for the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally, reducing to **low** for the LCT as a whole. Taking account of the **medium** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen from localised extents of this LCT, appearing in relatively distant views north. The proposed development would appear in a separate angle of the view as the consented Stornoway Wind Farm. The introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in occasional outward views from the LCT, however there would be limited interaction between the proposed development and the consented scheme given the intervening distance between the developments. The consented Druim Leathann Wind Farm is located approximately 0.7km to the west of a unit of this LCT located 39.1km to the north east of the nearest turbine of the proposed development. There would be limited interaction between the proposed development and the consented scheme given the intervening distance between the developments and limited areas of combined visibility. The magnitude of landscape change under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the LCT as a whole. The landscape effect would be **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 0.4km to the north west of this LCT at its nearest point and does not pass within this LCT, therefore **additional cumulative effects are not considered under this scenario** as set out in paragraph 7.89 above. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-16: Cnoc and Lochan (LCT 324)

Cnoc and Lochan (LCT 324)	
Location and baseline description	Within the study area, this LCT is entirely contained to coastal areas of Lewis and Harris. East of the Site, it occupies large areas on the headlands of Rhubha Iosal – east of Grabhair - and A' Chabag – east of Leumrabhagh. Key characteristics include:

Cnoc and Lochan (LCT 324)	
	• *"Steep-sided irregular outline of small cnocs, separated by depressions which frequently contain small lochans.* • *Intimate landscape scale with only short internal views.* • *Diversity of landform and contrasting textures, creating diverse microclimates.* • *Intensive use and reuse of small areas of cultivable land over thousands of years, with occasional patches of cultivated land creating focal features today."*
Landscape Capacity Study (2004)	This LCT is referred to as the "*Knock and Lochan*" LCT within the Western Isles landscape capacity study, which were noted as being of "*high*" sensitivity with a "*low-medium*" landscape capacity.
Sensitivity	Areas with some influence of development or settlement and the contained nature of views indicate a lower susceptibility, whilst the small scale of the landscape, varied landform and diverse landscape pattern and texture indicate a higher susceptibility to wind energy of the type and scale proposed. Small areas of this LCT are located within the South Lewis, Harris and North Uist NSA. Overall, the landscape value is considered to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	The proposed development would be located entirely outside of this LCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the LCT. The ZTV in **Figure 7.6b** indicates intermittent visibility from elevated localised landform within units of the LCT within 4.0-15.1km to the east and north east of the nearest turbine of the proposed development. Where views of the proposed development are afforded, turbines would form evident features extending across the middle to longer distance views, occasionally partially screened by intervening landform. Turbines would be partially backclothed by more distant landform. Given the intervening distance and perception of turbines being located outside of the LCT, the introduction of the proposed development would not diminish the small scale of the landscape, or detract from the diverse landscape pattern. The ZTV also indicates more distant intermittent visibility from units of the LCT within 24.3-30.0km to the north west of the nearest turbine of the proposed development. Potential for effects on landscape features would decrease with distance. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Within units of the LCT located approximately 4.2-15.5km to the east and north east of the nearest turbine of the proposed development, visibility of turbine lighting would be limited to localised extents of the LCT. The introduction of the proposed development would result in a small scale change to the LCT as a whole. The geographical extent of effects is considered to be medium.
Overall Level of Effect and Significance	The magnitude of change is judged to be **low.** Taking account of the **high** sensitivity, this would result in a **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm is located within 2.3km of a unit of this LCT located approximately 12.1km to the north east of the nearest turbine of the proposed development. The consented Druim Leathann Wind Farm is located within 1.2km of a unit of this LCT located approximately 39.2km to the north east of the nearest turbine of the proposed development.

Cnoc and Lochan (LCT 324)	
	In views from units of the LCT located within 4-15km of the nearest turbine of the proposed development, the consented Stornoway and Druim Leathann Wind Farms would be seen in relatively distant outward views north and north east from localised extents of the LCT. Whilst the introduction of the proposed development under this scenario would increase the geographical extent of indirect effects on the LCT, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments and localised extent of combined visibility. The magnitude of change to views under this scenario, which includes all consented developments, would remain **low**. The landscape effect would remain **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 0.9km to the north west of this LCT at its nearest point and does not pass within this LCT, therefore **additional cumulative effects are not considered under this scenario** as set out in paragraph 7.89 above. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-17: Gently Sloping Crofting (LCT 317)

Gently Sloping Crofting (LCT 317)	
Location and baseline description	Within the study area, this LCT is mostly found on the northern and eastern coastlines of Lewis. The Site does not contain this LCT. The patch closest to the Site is the most southern example of this LCT, on the northern bank of Loch Shiphoirt. Key characteristics include: • *"Long sweeping gentle slopes.* • *Large scale landscape with open views.* • *Dividing buffers of common land between townships.* • *Visually diverse due to land use management patterns.* • *Rectangular field patterns.* • *Graduation of landuse in the croft inbye from crops to grazing.* • *Paucity of trees, limited to infrequent small areas of woodland.* • *Crofting settlement set back from the shore.* • *Repetitive pattern of croft houses backed by crofting strips.* • *Strong simple relationship between the older croft buildings and the management of individual croft strips.* • *Modern croft houses located behind original houses, of diverse design and constructed using diverse range of building materials.* • *Occasional development of new small/medium housing schemes of contrasting layout to the original crofts.* • *Remains of pre-crofting and prehistoric settlement, often including chapels and burial grounds, adjacent to the shore.* • *Constant views outwards to the sea and open moorland, giving a sense of remoteness.* • *Contrasting urban settlement of Stornoway."*
Landscape Capacity Study (2004)	This LCT is referred to as the "*Crofting 1*" LCT within the Western Isles landscape capacity study, which was noted as being of "*medium*" sensitivity.
Sensitivity	The large scale of the landscape, relatively simple landform, and areas with some influence of development or settlement indicate a lower susceptibility, whilst the diverse landscape pattern, and

Gently Sloping Crofting (LCT 317)	
	outward views which lend to the sense of remoteness indicate a higher susceptibility to wind energy of the type and scale proposed. This LCT is not located within a designated landscape or wild land area. Overall, the landscape value is considered to be medium. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **medium**.
Assessment of Landscape Effects (Primary assessment)	The proposed development would be located entirely outside of this LCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the LCT. **Figure 7.6b** indicates visibility of the proposed development from units of the LCT located within approximately 6-8km to the north and north west of the nearest turbine of the proposed development. In outward views from these parts of the LCT, the proposed development would be relatively evident, extending across a medium angle of middle distance views. Turbines would occasionally be partially screened by intervening localised landform and the ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha. The proposed development would influence the "*open views*" and "*constant views outwards to the sea and open moorland"* experienced from the LCT, which would also influence the sense of remoteness. However, the proposed development would not influence the underlying visually diverse landscape pattern, mixed historic settlement pattern, large scale, and relatively exposed nature of the LCT. The ZTV indicates more distant intermittent visibility from units of the LCT located within approximately 21-36km of the nearest turbine of the proposed development. Potential for effects on landscape features would decrease with distance. The introduction of the proposed development would result in a small scale change across medium geographical extents of the LCT. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the LCT, with visibility of the turbine lighting evident across the areas indicated by **Figure 7.5.1**. Within 10km, visibility of turbine lighting would be limited to localised areas of the LCT. Areas of visibility of turbine lighting are more widespread, albeit seen in more distant views, from units of the LCT within 20-38km to the north east of the nearest turbine of the proposed development. The introduction of the proposed development would result in a small scale change to the LCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **low.** Taking account of the **medium** sensitivity, this would result in a **minor (adverse)** and **not significant** for the LCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm is located within 1.3km of a unit of this LCT located approximately 21.8km to the north east of the nearest turbine of the proposed development. The consented Druim Leathann Wind Farm is located within 0.7km of a unit of this LCT located approximately 36.8km to the north east of the nearest turbine of the proposed development. In views from units of the LCT located within 6-8km of the nearest turbine of the proposed development, the consented Stornoway and Druim Leathann Wind Farms would be seen in relatively distant outward views north and north east from localised extents of the LCT. Visibility of these consented developments would be more widespread in units of the LCT located 20-38km to the north east of the nearest turbine of the proposed development, however visibility of the proposed development from these units of the LCT would be limited. Whilst the introduction of the proposed development under this scenario would increase the geographical extent of indirect effects on the LCT, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change to views under this scenario, which includes all consented

Gently Sloping Crofting (LCT 317)	
	developments, would remain **low**. The landscape effect would remain **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass along approximately 1.6km of the boundary of a unit of this LCT within 7.3km to the north west of the nearest turbine of the proposed development. In views from these localised extents of the LCT, the proposed OHL would be seen in the opposite direction of the view as the proposed development, and would appear evident in close distance views. The proposed OHL would influence the "*open views*" characteristic of the LCT. However, the existing 132kV trident wood pole OHL (which the proposed OHL would replace) exerts an existing influence on this characteristic. The proposed development would appear as a relatively distant feature in successive views, and there would be limited cumulative interaction between the proposed development and the proposed OHL given the intervening distance and different angles of the view that would be occupied. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **low.** The landscape effect would remain **minor (adverse)** and **not significant** for the LCT as a whole, as for the primary assessment and Scenario 1.

Table 7-18: Low Rocky Island Coasts (CCT 13)

Low Rocky Island Coasts (CCT 13)	
Location and baseline description	Within the study area, this CCT is located along the coastlines of Lewis (excluding along Loch Seaforth), and eastern and north western coastlines of Harris. The physical characteristics and experiential qualities of the CCT relevant to this assessment include the following: **Physical characteristics:** • *"Moorland, either rocky, 'stepped' or boggy, tends to back a narrow sparsely settled open coastal fringe, usually some crofting and few settlements";* • *"Views of open Atlantic Ocean in the main; dramatic mountain backdrops";* • *"Many island coasts are low and rocky with dramatic mountain backdrops, principally the eastern coasts of Lewis/Harris";* • *"Fragmented', low, rocky island coasts include the 'Knock and Lochan' and fragmented lower lying coasts of the Western Isles, particularly the east coasts of Harris"; and* • *"This is a small scale landscape with an intricate pattern where views to the open sea are restricted".* **Experiential qualities:** • *"These island seascapes can feel very remote due to the sparse settlement, the hinterland of moorland or low-key crofting, and exposure to the open sea"; and* • *"Strong sense of being on an island due to close proximity of the sea often with 'all round' views and closeness of the sea".*

Low Rocky Island Coasts (CCT 13)	
Sensitivity	The complex landscape pattern, rugged texture, small landscape scale, some intervisibility within distinctive mountain skylines and sense of remoteness indicate a higher susceptibility to wind energy of the type and scale proposed. The CCT is partially located within the South Lewis, Harris and North Uist NSA and Eisgein WLA. Overall, the landscape value is considered to be high. Considering the judgements of susceptibility and value, overall sensitivity is judged to be **high**.
Assessment of Landscape Effects (Primary assessment)	The proposed development would be located entirely outside of this CCT, therefore any effects would be limited to indirect effects experienced through views of the proposed development from within the CCT. The ZTV in **Figure 7.6b** indicates intermittent visibility within 5.3-10.4km to the north of the red line boundary of the proposed development along the northern shore of Loch Eireasort. Where views of the proposed development are afforded from these areas of the CCT, the proposed development would be relatively evident, extending across a medium angle of middle distance views. Turbines would occasionally be screened by intervening landform. Turbine hubs and blades would be partially backclothed, though occasionally forming skyline features. The introduction of the proposed development would influence views towards the "*dramatic mountain backdrops*" and the sense of remoteness experienced from the CCT. The ZTV also indicates more distant visibility 24.5-40.km to the north east of the nearest turbine of the proposed development, along the southern coast of the Eye Peninsula and the eastern coastline of Lewis. The proposed development would be appear as a relatively distant feature in views from these locations. Potential for effects on landscape features would decrease with distance. Visibility of turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would extend from dusk into the night-time within the CCT, with visibility of the turbine lighting evident across localised extents of the CCT within 10km to the north and east of the nearest turbine of the proposed development indicated by **Figure 7.5.1**. The introduction of the proposed development would result in a medium scale change to the landscape features within very localised extents of the CCT within 5.3-10.4km of the Site, reducing to a small scale change for the CCT as a whole.
Overall Level of Effect and Significance	The magnitude of change is judged to be **medium** locally, reducing to **low** for the CCT as a whole. Taking account of the **high** sensitivity, this would result in a **moderate (adverse)** and **significant** landscape effect locally, reducing to **minor (adverse)** and **not significant** for the CCT as a whole.
Assessment of effects under Scenario 1 cumulative baseline	Within 10km of the nearest turbine of the proposed development, the consented Stornoway and Druim Leathann Wind Farms would be seen in distant views north and north east from localised extents of the LCT, limited to the southern shores of Loch Eireasort and Loch Luirboist. Visibility of these consented developments would be more widespread in parts of the CCT located 15-45km to the north east of the nearest turbine of the proposed development, however visibility of the proposed development from these units of the CCT would be limited. Whilst the introduction of the proposed development under this scenario would increase the geographical extent of indirect effects on the LCT, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** locally, reducing to **low** for the CCT as a whole. The landscape effect would remain **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the CCT as a whole, as for the primary assessment.

Low Rocky Island Coasts (CCT 13)	
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 0.5km to the north west of this CCT at its nearest point and does not pass within this CCT, therefore **additional cumulative effects are not considered under this scenario** as set out in paragraph 7.89 above. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Visual Effects

7.103 This section presents the assessment of effects of the proposed development on views and visual amenity for receptors identified across the study area.

Effects on Visual Receptors at Viewpoints

7.104 The assessment of visual effects from the 18 viewpoints selected to represent views of the proposed development are set out below (as listed in **Table 7-5** and shown on **Figure 7.2a**). This assessment assumes that all effects are long-term, during the proposed 30 year operational lifespan of the proposed development, and reversible, unless stated otherwise.

7.105 Accompanying visualisations for each assessment viewpoint are contained in **Volumes 3b** and **3c** of the EIA Report prepared in accordance with the methodology set out in **Technical Appendix 7.2**.

Table 7-19: Viewpoint 1: Orasaigh (Orinsay)

Viewpoint 1: Orasaigh (Orinsay)				
Grid Reference (NGR)	136331	912018	**Figure Number**	7.12
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	West		**Distance to nearest turbine**	3.2km
Number of hubs theoretically visible	5		**Number of turbines with blades theoretically visible**	12
Viewpoint location, receptors, and existing view	This roadside viewpoint is located in the settlement of Orasaigh/ Orinsay, on the northern bank of Loch Sealg, east of the Site. The viewpoint is located along the unclassified road which leads west from B8060. The viewpoint represents views experienced by residential receptors within the local community. The primary view orientation is south overlooking Tòb an Iar bay and Loch Sealg and out towards the sea. Orinsay Island is glimpsed beyond undulating topography and residential properties south east of the viewpoint. The rising landform of the Shiant Islands is seen in distant views south. The foreground of views west, towards the Site, is formed by the road and landform, which descends to the south of the view towards Loch Sealg. Rising landform, including the ridgeline formed by Giearol (120m AOD), forms the skyline in the middle distance of the view, obscuring more distant views across the Pairc peninsula. Longer glimpsed views west are afforded looking west beyond Glen Orinsay, in a slight dip in between the landform of Giearol (120m AOD) and Cleite Loch Shaghachain (78m AOD). The ridgeline formed by Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD) forms the background and skyline of the view in this direction.			
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high**.			
Assessment of visual effects (Primary assessment)	The hubs and blades of up to five turbines and blades of a further seven turbines of the proposed development would be seen, partially screened by intervening landform in views west. Turbines would occupy a medium angle of the middle distance view, seen in a dip in landform between Giearol and Cleite Loch Shaghachain. The blades of T3, T5, T12 and T14 would be barely perceptible against the skyline. The blades of all visible turbines would be seen to break the skyline, with turbines T16, T17 and T18 forming relatively prominent skyline features. The hubs of these three turbines would be seen above the skyline. Turbines would not diminish the scale of the surrounding landform on either side, which steeply encloses outward views from the settlement. The black painted turbine blades of T19-T25 would not be visible from this location.			

Viewpoint 1: Orasaigh (Orinsay)	
	Similar views would be experienced from localised extents within the centre of the settlement. From residential properties located to the west of this location before the road turns south, views of the proposed development would be further screened by intervening topography. The blades of up to six turbines would be barely perceptible above the intervening landform. From the south west and north east of the settlement, the proposed development would be screened by intervening landform. The geographical extent of similar views would be small. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-20: Viewpoint 2: B8060, east of the Site

Viewpoint 2: B8060, east of the Site				
Grid Reference (NGR)	137332	913263	**Figure Number**	7.13
LCT	Cnoc and Lochan (324)		**Landscape Designation or Wild Land Area**	None
Direction of View	West		**Distance to nearest turbine**	4.0km
Number of hubs theoretically visible	25		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This roadside viewpoint is located along the west side of the B8060, north of the settlement Leumrabhagh and east of the Site. In the foreground of views west, fences lining the B8060 and a wood pole overhead electricity line are evident across a wide angle of the view. Views west overlook the undulating rocky moorland landscape with occasional lochans, which extends through the middle distance of view. More distant gradually rising landform forms the skyline of the view, including the summits of Creag na Beirighe (236m AOD), Beinn na h-Uamha (389m AOD), and the ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD). Infrastructure associated with Scottish Water is seen in close-distance views south. One single operational turbine is seen in relatively close-distance views north east. Outward views east from the road are limited by localised landform, and the primary view orientation is west in the direction of the Site.			

Viewpoint 2: B8060, east of the Site	
Sensitivity	Road users are considered to be of **low** susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point or promoted view. The value of the view is considered to be **medium**. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **medium.**
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be seen extending across the middle distance of the view west, partially backclothed by landform to the west of the Site (including Creag na Beirighe, Beinn na h-Uamha, Beinn Mheadhanach and Feiriosbhal). The tops of blades of 16 turbines would be seen against the skyline. The black painted blades of T19-T25 would be seen in views from this location, with T22-T25 mostly backclothed by more distant landform and the tops of blades of T19-T21 appearing partially against the skyline. There would be some overlapping of turbine blades, with turbines appearing as two slightly separate clusters, separated by the dip in landform along Loch Eisgein and Abhainn Cheothadail. The proposed development would form a new focal feature, extending across a wide angle of the view. Met masts and access tracks would also be seen in views from this location. Similar views would be afforded from approximately 3.3km of the B8060, though visibility would be intermittent given the undulating nature of localised landform to the west of the road. The proposed development would be seen in oblique views west from the road, with the road passing broadly on a north-south alignment. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a large scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **high** and taking account of the **medium** sensitivity would result in a **major (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-21: Viewpoint 3: Beinn Mhòr

Viewpoint 3: Beinn Mhòr				
Grid Reference (NGR)	125433	909534	**Figure Number**	7.14
LCT	Prominent Hills and Mountains (326)		**Landscape Designation or Wild Land Area**	South Lewis, Harris and Uist NSA; Eisgein WLA 31
Direction of View	North East		**Distance to nearest turbine**	4.9km
Number of hubs	25		**Number of turbines**	25

Viewpoint 3: Beinn Mhòr			
theoretically visible		**with blades theoretically visible**	
Viewpoint location, receptors and existing view	This viewpoint is located on the summit of Beinn Mhòr (572m AOD), located between Loch Shiphoirt to the west and the mouth of Loch Sealg north east. The viewpoint is located within the Eisgein WLA 31 and on the boundary of the South Lewis, Harris and Uist NSA. The viewpoint is located within the Eishken Estate[30], and represents views experienced by estate workers and recreational visitors to the estate, including hill walkers. As Beinn Mhòr is the tallest mountain on the Pairc peninsula, open panoramic views from the top are afforded. Expansive views are afforded towards the lower-lying and relatively flat landscape of the north of Lewis to the north and north east, towards the mountainous landscape of Harris to the south west, and across the sea to the Isle of Skye and mainland Scotland to the east. The foreground of views north east towards the Site comprises the rocky landform of the summit, which descends to elevated rolling moorland speckled with lochans in the middle distance of the view. The ridgeline formed by Muaitheabhal (424m AOD), Beinn na h-Uamha (388m AOD) and the more distant Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD) extends across the middle distance of the view north, containing the western edge of the Site. More distant views of Loch Sealg and the low rocky coastline are seen beyond. Distant views are formed by a mosaic of water and landform, with more distant landform on the mainland of Scotland seen beyond. The mosaic of water and landscape draws attention to the fragments of coastline and the range of topography that is present. The island of Eilean Shiphoirt forms a focus in the middle distance of views west, situated within Loch Shiphoirt. The hill summit of An Cliseam/Clisham (the tallest mountain on Isle of Harris at 799m AOD) is seen in views south west beyond Loch Shiphoirt. The operational Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms are seen in relatively distant views north, north east, seen within the context of the lower-lying landscape to the north of the Site with scattered small-scale settlement. The Eitshal main TV and Radio Transmitter mast forms a relatively distant feature, with the top of the mast seen against the skyline in views north.		
Sensitivity	Recreational receptors, whose attention is focused on the surroundings and scenic value, are considered to be of high susceptibility to changes in the view. Workers are considered to be of low susceptibility to changes in the view. This viewpoint is located within the Eisgein WLA 31 and on the boundary of the South Lewis, Harris and Uist NSA. The value of the view is therefore considered to be high. Considering the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high**.		
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be seen extending across the middle distance of the view north east, backclothed by landform and occasional lochans. Turbines would appear within an area of elevated plateau, with turbines in the north of the cluster partially appearing beyond the ridgeline formed by Beinn Mheadhanach and Feiriosbhal. There would be some overlapping of turbine blades, with four turbines in the south of the cluster appearing slightly separate to the main cluster. The black painted blades of T19-T25 would be seen in views from this location, backclothed by more distant landform.		

[30] Information regarding use of the estate is available at https://www.eishken.com/

Viewpoint 3: Beinn Mhòr	
	The proposed development would extend across a medium angle of the view and would form a new focal feature. Steel lattice met masts would form a barely perceptible feature in views from this location, given the intervening distance and backclothing. Access tracks would also be seen in views from this elevated location. Similar views would be experienced from elevated landform and hill summits within approximately 2-5km to the west and south of the Site (within the Eisgein WLA 31). The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a large scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **high** and taking account of the **high** sensitivity would result in a **major (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would appear in relatively distant views north, north east, in a similar angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms. The consented Stornoway Wind Farm would increase the horizontal extent of development further east, narrowing the gap between this emerging cluster of development and the operational Arnish Moor Wind Farm. The consented Druim Leathann Wind Farm would form a very distant feature in views north, north east, seen beyond the operational Arnish Moor Wind Farm. The proposed development would appear in a separate angle of the view as these consented wind farms. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **high** and the visual effect would be **major (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 5.9km to the north west of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-22: Viewpoint 4: Taobh a' Ghlinne (Glenside)

Viewpoint 4: Taobh a' Ghlinne (Glenside)				
Grid Reference (NGR)	137942	915827	**Figure Number**	7.15
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	5.0km
Number of hubs theoretically visible	23		**Number of turbines with blades theoretically visible**	25

Viewpoint 4: Taobh a' Ghlinne (Glenside)	
Viewpoint location, receptors, and existing view	This viewpoint is located in Taobh a’ Ghlinne, a small community located on the Pairc peninsula. The viewpoint is located on the minor road which passes east from the B8060 towards Loch Crois Ailein. The viewpoint is representative of views experienced from the community. The viewpoint is situated on slightly elevated ground, with similar views afforded from nearby residential properties within the north of the community and from the school. Relatively open views are afforded looking south west. The school and dispersed properties within the village can be seen in the foreground and middle distance of the view within the landscape of rolling moorland and rough grassland. Rising landform directly west of the village is seen beyond and partially forms the skyline. Wood pole overhead electricity lines and small clumps of conifers form skyline features in views south west and west. More distant landform, including Beinn Mhòr (572m AOD), An Cliseam (799m AOD) and the ridgeline formed by Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD), is seen beyond the village and forms the skyline in views south west.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of 23 turbines of the proposed development and the blades of two further turbines would be visible, extending across a wide angle of the view. The bases of all turbines would be screened by intervening landform to the west of Loch Odhairn. The tops of the blades of most turbines would appear to break the skyline but would not appear as distinctive skyline features. Turbines located in the east of the Site (particularly T7, T17, T18) would begin to transcend the scale of the more distant landform of Beinn Mhòr, which forms the most distinctive skyline feature of the view, backclothing several turbines. Other turbines are partially backclothed by the hills of Muaitheabhal and Sidhean an Airgid, north of Beinn Mhòr. The black painted blades of T19-T25 would be seen in views from this location, partially against the skyline. There would be some overlapping of turbine blades, particularly within the centre and north of the cluster. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Similar views would be afforded from elevated sections of the B8060 at the northern approach into the village, from the school and from some residential properties in the north east of the village. Intervening landform screens views towards the Site from the south of the village. The geographical extent of similar views is considered to be small. The proposed development would result in a large scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-23: Viewpoint 5: B8060 near Tabost (Habost) Church

<table>
<tr><th colspan="6">Viewpoint 5: B8060 near Tabost (Habost) Church</th></tr>
<tr><td>Grid Reference (NGR)</td><td>133107</td><td>919529</td><td>Figure Number</td><td colspan="2">7.16</td></tr>
<tr><td>LCT</td><td colspan="2">Linear Crofting (318)</td><td>Landscape Designation or Wild Land Area</td><td colspan="2">None</td></tr>
<tr><td>Direction of View</td><td colspan="2">South west</td><td>Distance to nearest turbine</td><td colspan="2">5.0km</td></tr>
<tr><td>Number of hubs theoretically visible</td><td colspan="2">21</td><td>Number of turbines with blades theoretically visible</td><td colspan="2">25</td></tr>
<tr><td>Viewpoint location, receptors, and existing view</td><td colspan="5">This viewpoint is located within the community of Tabost (Habost), located south of Loch Eireasort along the B8060 on the northern coast of the Pairc peninsula. It is representative of road users and residential receptors, located near several properties between the settlements of Tabost and Cearsiadar. The viewpoint is located in the parking area adjacent to Tabost Meeting House, which is located at slightly higher elevation than the B8060.

The main orientation of the view is north towards Loch Eireasort, which is glimpsed beyond undulating topography in the middle distance of the view. Residential properties and small-scale settlement located on the northern shore of Loch Eireasort can be seen in relatively distant views.

Views south, in the direction of the Site, are partially screened by undulating topography in the middle distance of the view. However, views of more distant elevated landform and hill summits are afforded beyond localised landform in the foreground and middle distance of the view. The ridgeline located along the north western Site boundary, formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD) forms a distinctive feature on the skyline of views south west. The more distant summits of Crionaig (464m AOD), Gormol (470m AOD) and Uisinis (371m AOD), located in the south of the Pairc peninsula, form part of the skyline in views south west. A wood pole overhead electricity line extends across a wide angle of relatively close distance views south west and middle distance views east.</td></tr>
<tr><td>Sensitivity</td><td colspan="5">Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view.

The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium.

Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.</td></tr>
<tr><td>Assessment of visual effects (Primary assessment)</td><td colspan="5">The hubs and blades of 21 turbines and the blades of a further four turbines of the proposed development would be seen extending across a wide angle of the view south.

Intervening landform, including the relatively low-lying Beinn Bhuidhe, would obscure the bases of all turbines and the hubs of several, particularly in the east of the development (T7, T17, T18). Turbines in the centre of the cluster would be partially backclothed by Gormol, though some turbines in the east of the cluster form more evident skyline features.

The blades of up to 24 turbines would be seen to break the skyline. The hubs of up to seven turbines would be visible against the skyline, notably T16 and T8 in the east, and T3 and T12 seen to</td></tr>
</table>

Viewpoint 5: B8060 near Tabost (Habost) Church	
	the east of Feiriosbhal. Whilst T3 and T12 would be seen on the lower flanks of the ridgeline formed by Cleit na Ceardaich, Creag na h-Uamha and Feiriosbhal, the turbines would not diminish the scale of this landform. The black painted blades of T19-T25 would be seen in views from this location, partially against the skyline. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Views from other locations within the settlement of Tabost vary. Visibility of the Site is intermittent given the undulating nature of landform south of the B8060, though some glimpsed views south west are afforded from the B8060. Similar views would also be afforded from properties situated south of the B8060, which are generally located at a raised position above the road. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen in relatively distant successive views north, partially screened by intervening landform. Under this scenario the consented Stornoway Wind Farm would introduce visibility of turbines into the view, and the proposed development would be seen in a separate angle of the view. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented Stornoway Wind Farm given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain medium and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 2.8km to the north of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-24: Viewpoint 6: Leumrabhagh (Lemreway)

Viewpoint 6: Leumrabhagh (Lemreway)				
Grid Reference (NGR)	138103	911869	**Figure Number**	7.17
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	West		**Distance to nearest turbine**	4.9km
Number of hubs theoretically visible	3		**Number of turbines with blades theoretically visible**	10

Viewpoint 6: Leumrabhagh (Lemreway)	
Viewpoint location, receptors, and existing view	This viewpoint is located on an unclassified road within the village of Leumrabhagh (Lemreway), along the eastern edge of the settlement. It represents views experienced by residents of the local community. Views west towards the Site overlook residential properties in the centre and west of the community, which are relatively dispersed across the lower-lying coastal landscape of rough grassland with occasional rocky outcrops. In the near distance, residential houses, fences lining property boundaries, a telecoms mast and overhead telecoms and wood pole electricity lines can be seen. Beyond the residential properties, rolling moorland landform rises and forms part of the skyline, in addition to more distant mountainous landform further west, including the summits of Mor-Mhonadh (401m AOD) and Guaineamol (406m AOD). Views looking south from this location are relatively open and focused across the sea to Eilean Liubhaird, an uninhabited island close to the coastline and nestled between two peninsulas. The Shiant Isles and the Isle of Skye are seen in more distant views south. Views north east and east are obscured by steep rocky landform which encloses the eastern edge of the settlement.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of three turbines and the blades of a further seven turbines would be seen beyond intervening landform in relatively distant views west from this location. Rocky knoll landform to the east of the Site, including Beinn Eisgein (129m AOD), would partially screen turbines and would lead to the perception of two slightly separate clusters of turbines. The black painted blades of T19-T25 would be seen in views from this location. The proposed development would appear across a medium angle of the view, with the tops of turbine blades seen against the skyline. However, the proposed development would not diminish the scale of landform which currently forms the skyline. The proposed development would introduce wind turbines into the view, with views west focused towards the relatively remote hill summits of WLA 31 Eisgein. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Similar views would be afforded from the minor road and residential properties located at slightly higher elevation along the eastern edge of the community. The geographical extent of similar views is considered small. The proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-25: Viewpoint 7: Uisinis

Viewpoint 7: Uisinis				
Grid Reference (NGR)	133706	906727	**Figure Number**	7.18
LCT	Prominent Hills and Mountains (326)		**Landscape Designation or Wild Land Area**	Eisgein WLA 31; on the boundary of the South Lewis, Harris and Uist NSA
Direction of View	North west		**Distance to nearest turbine**	5.1km
Number of hubs theoretically visible	25		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located at the summit of Uisinis, the most easterly hill on the Pairc peninsula, on the boundary of the South Lewis, Harris and Uist NSA and within the Eisgein WLA 31. The viewpoint is located within the Eishken Estate[31], and represents views experienced by estate workers and recreational visitors to the estate, including hill walkers. Open and panoramic views are afforded from this elevated location, overlooking the sea to the east and south, elevated landform and summits of North Harris and South Lewis to the west, Loch Sealg to the north with the low-lying plateau landscape of North Lewis beyond. Views north west, in the direction of the Site, overlook descending landform of rolling moorland speckled with lochans. The ridgeline formed by Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD) is seen in relatively distant views, with North Lewis seen beyond. The operational Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms are seen in relatively distant views north, north east, seen within the context of the lower-lying landscape to the north of the Site with scattered small-scale settlement.			
Sensitivity	Recreational receptors, whose attention is focused on the surroundings and scenic value, are considered to be of high susceptibility to changes in the view. Workers are considered to be of low susceptibility to changes in the view. The value of the view is considered to be of high due its location within the WLA and proximity to the NSA. Taking into account the judgements of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high**.			
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be seen, occupying a wide angle of views north west. Turbines would be mostly backclothed by landform and water, though forming an evident feature in views. Turbines would appear within an area of elevated plateau, with some overlapping of turbine blades. The black painted blades of T19-T25 would be seen in views from this location, backclothed by more distant landform. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Access tracks would also be seen in views from this elevated location.			

31 Information regarding use of the estate is available at https://www.eishken.com/

Viewpoint 7: Uisinis	
	The proposed development would bring turbines perceptibly closer in the view, and would increase the horizontal extent of development beyond the operational Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms. Similar views would be experienced from elevated landform and hill summits within approximately 2-5km to the west and south of the Site (within the Eisgein WLA 31). The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a large scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **high** and taking account of the **high** sensitivity would result in a **major (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would appear in relatively distant views north and would increase the horizontal extent of the operational Pentland Road and Beinn Ghrideag Community Wind Farms. The consented Stornoway Wind Farm would narrow the gap between this emerging cluster of development and the operational Arnish Moor Wind Farm. The consented Druim Leathann Wind Farm would form a very distant feature in views north, north east. A slight gap would exist between the proposed development and the cluster formed by consented the Stornoway, operational Pentland Road and operational Beinn Ghrideag Community Wind Farms. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **high** and the visual effect would be **major (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 14.3km to the west of this viewpoint location, therefore **no additional cumulative effects are** predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-26: Viewpoint 8: Baile Ailein

Viewpoint 8: Baile Ailein				
Grid Reference (NGR)	128007	920503	**Figure Number**	7.19
LCT	Gently Sloping Crofting (317)		**Landscape Designation or Wild Land Area**	None
Direction of View	South		**Distance to nearest turbine**	7.0km
Number of hubs theoretically visible	0		**Number of turbines with blades theoretically visible**	11

Viewpoint 8: Baile Ailein	
Viewpoint location, receptors, and existing view	This viewpoint is located along the A859 within the linear community of Baile Ailein/Ballalan to the north of Loch Eireasort. The viewpoint represents views experienced by residents of the community, road users on the A859 and cyclists on the Hebridean Way / NCN Route 780. Views are focused south, overlooking Loch Eireasort. The foreground of the view south comprises gently descending fields of semi-improved grazing bound by post and wire fencing, with dispersed residential properties and small scale agricultural buildings scattered across the view. Loch Eireasort is seen beyond, with rising landform of rocky knolls and isolated residential properties on the southern side of the loch extending across the middle distance of the view. More distant landform, including the ridgeline of Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD) and the ridgeline comprising Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty'), forms the skyline of views looking south, south west. Additional hill summits, including An Cliseam (799m AOD), form distinctive skyline features in views south west. Views east and west are focused along the road. Views north are foreshortened by rising landform and residential properties. The hub and blades of one small domestic scale turbine, the base of which is partially screened by intervening landform, is seen against the skyline in the middle distance of views north east. A trident 132kV wood pole overhead electricity line is seen, occasionally against the skyline in middle to long distance successive views looking west to north east.
Sensitivity	Residential and recreational receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The blades of 11 turbines of the proposed development would be seen, occupying a medium angle of relatively distant. Turbine hubs would be screened by intervening landform, with blades just visible against the skyline. The turbines would appear in two separate clusters on either side of the ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha, with the majority of turbines visible to the east of Creag na h-Uamha. Turbines T21-T22, which would appear as a slightly separate cluster of turbines to the west of Creag na h-Uamha, would have one painted black turbine blade, though this would be barely perceptible in views from this location. The other five turbines with black painted blades would be screened by intervening landform in views from this location. Although all visible turbines would be seen to break the skyline, they would not diminish the scale of nearby landform. The proposed development would appear in a slightly separate angle of the view as the ridgeline of the 'Sleeping Beauty' (Mor Mhonadh, Guaineamol and Sidhean an Airgid), which appears as a skyline feature in views south, south west. Visibility from other properties within Baile Ailein vary greatly due to the length of the village and localised intervening landform which partially screens views towards the Site. Similar views would be afforded from residential properties located near the viewpoint, along approximately 1.3km of the A859. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.

Viewpoint 8: Baile Ailein	
Assessment of effects under Scenario 1 cumulative baseline	No consented wind energy developments would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for this cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 260m to the north of this viewpoint, generally following the alignment of the existing trident wood pole line. The proposed OHL would be seen in the opposite direction of the view as the proposed development, with limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **low** and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.

Table 7-27: Viewpoint 9: A859 near Lacasaigh (Laxay) Cemetery

Viewpoint 9: A859 near Lacasaigh (Laxay) Cemetery				
Grid Reference (NGR)	134254	922063	**Figure Number**	7.20
LCT	Rocky Moorland-Outer Hebrides (323)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	7.7km
Number of hubs theoretically visible	25		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located at the cemetery and Kinloch War Memorial to the north of Lacasaigh, located to the east of the A859. The viewpoint is representative of views experienced by road users on the A859, cyclists on the Hebridean Way / NCN Route 780, visitors to the cemetery and nearby residential receptors. Views are focused south east to south west, looking across Loch Eireasort towards the distant hill summits of South Lewis and North Harris. The foreground of the view looking south west comprises the cemetery, which is bound by post and wire fencing, and undulating fields of semi-improved grassland and moorland. Wood pole overhead electricity lines and post and wire fencing extend through the middle distance of the view. Dispersed residential properties are seen to the north and south of Loch Eireasort. Distant landform, including the ridgeline of Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD), the ridgeline comprising Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty') and An Cliseam (799m AOD) form the skyline and a layered background to the view. Views north and west from this location are foreshortened by rolling localised rocky knoll landform.			

Viewpoint 9: A859 near Lacasaigh (Laxay) Cemetery	
	An operational 132kv trident wood pole overhead line is glimpsed in between intervening landform crossing the middle distance of views north.
Sensitivity	Residential and recreational receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be visible, occupying a relatively wide angle of distant views south west. The blades of 18 turbines would be seen to break the skyline, however the majority of blades do not transcend the scale of Feiriosbhal and Beinn Mheadhanach which would backcloth many of the turbines. The bases of several turbines would be partially screened by intervening landform such as the low lying Beinn Bhùidhe, north east of the Site and east of Loch Sgiobacleit. Turbines would form an evident focal feature, albeit in relatively distant views. The black painted blades of T19-T25 would be seen in views from this location, partially against the skyline. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Similar views would be experienced from properties at the eastern edge of Lacasaigh/Laxay, extending for approximately 700m along the A859 and from properties south of the A859. The geographical extent of similar views from the settlement and this section of the A859 is considered medium. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	No consented wind energy developments would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for this cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 940m to the north west of this viewpoint, generally following the alignment of the existing trident wood pole line although passing slightly further west around Loch Nabhar. The proposed OHL would be seen in the opposite direction of the view as the proposed development, with limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.

Table 7-28: Viewpoint 10: Todun

Viewpoint 10: Todun				
Grid Reference (NGR)	121033	902967	**Figure Number**	7.21
LCT	Prominent Hills and Mountains (326)		**Landscape Designation or Wild Land Area**	South Lewis, Harris and North Uist NSA
Direction of View	North east		**Distance to nearest turbine**	12.2km
Number of hubs theoretically visible	23		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located on the summit of Todun (528m AOD), located in north Harris, south west of Loch Shiophoirt/Seaforth and north west of the bay of Loch Trolamaraig. The viewpoint represents views experienced by recreational receptors, such as walkers. The hill comprises a steep-sided ridge which extends broadly north west to south east, with a conical summit. The views from the summit are panoramic with long distance views afforded in most directions. Looking north west, views are occupied by peaks of An Cliseam/Clisham (799m AOD), which limits more distant views north west. Distant views south east overlook Loch Trolamaraig and the sea with the Isle of Skye and more distant landform on the mainland of Scotland seen beyond. The foreground of views north east, in the direction of the Site, is formed by descending landform. Loch Seaforth extends through the middle distance of the view, with the summit of Caiteseal (449m AOD) forming a focal feature rising above the eastern shores of the loch. Beinn Mhòr (572m AOD) forms part of the skyline in views north east. The operational Pentland Road Wind Farm forms a distant feature with the tops of some turbines seen against the skyline in views north, north east. The operational Beinn Ghrideag Community Wind Farm is barely perceptible beyond intervening landform in views north, north east. The operational Eitshal main TV and Radio Transmitter mast forms a skyline feature in views north.			
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is located within the South Lewis, Harris and North Uist NSA. The value of the view is therefore considered to be high. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**			
Assessment of visual effects (Primary assessment)	The hubs and blades of 23 turbines and the blades of two further turbines of the proposed development would be visible, extending across a medium angle of relatively distant views north east. The proposed development would be seen in between the focal points of Beinn Mhòr and Caiteseal, however turbines would not diminish the scale of these distinctive landform features. Visible turbines to the north west of the development (T1, T3, T4) are mostly screened by the lower slopes of Beinn Mhòr. Turbines would be backclothed by more distant landform and the sea. There would be some overlapping of turbine blades, with turbines in the south east of the cluster (T18, T24, T25)			

Viewpoint 10: Todun	
	appearing unevenly spaced. The black painted blades of T19-T25 would be seen in views from this location backclothed by more distant landform. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Similar views would be afforded from the summit of Todun and north east facing slopes of the hill summit. Views of the proposed from other areas of elevated landform within proximity of the viewpoint are limited, given screening by intervening landform to the south west of the Site. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would appear in relatively distant views north, north east, in a similar angle of the view as the operational Beinn Ghrideag Community Wind Farm and would increase the horizontal extent of development further east. The consented Stornoway Wind Farm, operational Pentland Road and Beinn Ghrideag Community Wind Farms would appear as one continuous development in distant views, partially screened by intervening landform. The proposed development would appear in a separate angle of the view as these consented wind farms, with the intervening landform of Beinn Mhòr further visually separating the developments in the view. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 3.9km to the north west of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-29: Viewpoint 11: Liurbost

Viewpoint 11: Liurbost				
Grid Reference (NGR)	137284	925851	**Figure Number**	7.22
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	12.3km
Number of hubs theoretically visible	25		**Number of turbines with blades theoretically visible**	25

Viewpoint 11: Liurbost	
Viewpoint location and existing view	This viewpoint is located within the village of Liurbost, to the north of Loch Liurbost. The village is linear, with properties located along a minor road which is accessed from the A859 to the west and runs broadly parallel to the shoreline. This viewpoint represents views experienced by residents within the local community. The foreground of view south west, in the direction of the Site, is occupied by residential properties and fields with post and wire fencing. Residential properties partially obscure some distant views. Undulating topography in between the viewpoint and loch partially screens views to the shoreline, particularly towards the mouth of the loch. Localised landform to the south of Loch Liurbost, including Creag an Rainich and Cnoc nan Each, extends through the middle distance of the view. More distant landform, including Gormol (470m AOD), Crionaig (464m AOD), Beinn Mhòr (572m AOD) and the ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD) forms the background and skyline of the view south west.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be seen, occupying a medium angle of distant views south west. More distant landform, including the summits of Gormol and Crionaig, partially backclothes turbines. However, some hubs and blades would be seen to break the skyline, particularly turbines located within the west of the Site (T3 and T12). There would be some overlapping of turbine blades. The black painted blades of T19-T25 would be seen in views from this location, mostly backclothed against more distant landform although the blades of T21-T22 would be seen against the skyline. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. The summits of Gormol and Crionaig backcloth turbines in the centre of the cluster. Turbines would avoid the lower slopes of the ridgeline formed by Beinn Mheadhanach, Feiriosbhal, Creag na h-Uamha and Cleit na Ceardaich, seen to the west of the proposed development. Turbines would not diminish the scale of the distinctive summit of Beinn Mhòr, also seen to the west of the proposed development. Similar views would be afforded from much of the centre and east of the settlement, however intervening landform screens views of the proposed development from parts of the west of the settlement. The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-30: Viewpoint 12: Liuthaid

<table>
<tr><th colspan="5">Viewpoint 12: Liuthaid</th></tr>
<tr><td>Grid Reference (NGR)</td><td>117535</td><td>913654</td><td>Figure Number</td><td>7.23</td></tr>
<tr><td>LCT</td><td colspan="2">Prominent Hills and Mountains (326)</td><td>Landscape Designation or Wild Land Area</td><td>South Lewis, Harris and North Uist NSA; Harris-Uig Hills WLA 30</td></tr>
<tr><td>Direction of View</td><td colspan="2">East</td><td>Distance to nearest turbine</td><td>12.7km</td></tr>
<tr><td>Number of hubs theoretically visible</td><td colspan="2">2</td><td>Number of turbines with blades theoretically visible</td><td>6</td></tr>
<tr><td>Viewpoint location, receptors, and existing view</td><td colspan="4">This viewpoint is located on the hill summit of Liuthaid, within the South Lewis, Harris and North Uist NSA and Harris-Uig Hills WLA 30. The viewpoint is representative of views experienced by recreational receptors (hill walkers) accessing elevated areas of the NSA and WLA.

Relatively open and panoramic views are afforded from the hill summit, overlooking Loch Seaforth, Eilean Shiophoirt and out to the sea to the south east, the hill summits of Uig and North Harris including An Cliseam/Clisham (799m AOD) to the south and west, and Loch Langabhat to the north with the lower-lying plateau and coastal landscapes of Lewis seen beyond.

Views east are focused across Loch Seaforth, with rising landform to the east of the loch forming the background and skyline of the view, including Sidhean an Airgid (387m AOD), Muaitheabhal (424m AOD), Guaineamol (406m AOD), Beinn Mhòr (572m AOD) and Feiriosbhal (326m AOD).

The operational Eitshal main TV and Radio Transmitter mast and Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms form relatively distant features in views north east.</td></tr>
<tr><td>Sensitivity</td><td colspan="4">Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view.

The viewpoint is located within the South Lewis, Harris and North Uist NSA and the Harris-Uig Hills WLA 30. The value of the view is therefore considered to be high.

Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be high.</td></tr>
<tr><td>Assessment of visual effects (Primary assessment)</td><td colspan="4">The hubs and blades of two turbines and the blades of a further four turbines of the proposed development would be seen extending across a relatively small angle of distant views. Turbines would be backclothed by more distant landform.

The proposed development would be seen between the ridges of Sidhean an Airgid and Muaitheabhal, with the turbines on either side of the view (T12, T13, T21 and T25) barely perceptible beyond intervening landform. T19 and T20 would be positioned more centrally between these hills and would be more evident in the view. The black painted blades of T19, T20, T21 and T25 would be seen in views from this location, although T21 and T25 would be barely perceptible beyond intervening landform.

Similar views would be afforded from other summits in this hill range including Mulloch Bhìogadail, Mulloch a' Ruisg and Meinn a Mhuil. On the ascent to the summit of Liuthaid from the east, the intervening landform of Beinn a' Mhuil would screen views east towards the proposed</td></tr>
</table>

Viewpoint 12: Liuthaid	
	development, though some similar views would be afforded from east-facing upper slopes. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would appear in relatively distant views north east, in a similar angle of the view as the operational Beinn Ghrideag Community Wind Farm and would increase the horizontal extent of development further east. The consented Stornoway Wind Farm, operational Pentland Road and Beinn Ghrideag Community Wind Farms would appear as one continuous development in distant views. The consented Druim Leathann would form a more distant feature beyond the consented Stornoway Wind Farm. The proposed development would appear in a separate angle of the view as these consented wind farms. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain low and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 2.1km to the south east of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-31: Viewpoint 13: A859 near Liurbost

Viewpoint 13: A859 near Liurbost				
Grid Reference (NGR)	135520	927373	**Figure Number**	7.24
LCT	Boggy Moorland-Outer Hebrides (322)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	13.2km
Number of hubs theoretically visible	25		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located at a lay-by to the east of the A859, near the junction of the A859 and A858. The viewpoint is representative of views experienced by residents at nearby properties, cyclists on the Hebridean Way / NCN Route 780 and road users on the A859. Views are focused looking south and south west. The foreground of the view in this direction comprises the road, bound by semi-improved grassland to the east and lined with semi-detached			

Viewpoint 13: A859 near Liurbost	
	houses to the west. More isolated properties are seen beyond within the landscape of gently undulating fields and occasional pockets of coniferous forestry. Wood pole overhead electricity lines extend through the foreground and distant views. Rising landform with occasional rocky outcrops in the middle distance of the view, including Cnoc Mor Shobhail (132m AOD), Sobhal (129m AOD) and Loidse Shobhail (108m AOD), forms the skyline of views south west and screens views of Loch Eireasort. More distant hill summits, including Gormol (470m AOD), Crionaig (464m AOD), and the ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD), are seen in views further south. The summit of An Cliseam/Clisham (799m AOD) is seen in distant views south west. Wood pole overhead electricity lines extend across close to long distance views south west. Two small domestic scale turbines are seen adjacent to a block of coniferous forestry in views south east.
Sensitivity	Residential and recreational receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of all 25 turbines of the proposed development would be seen extending across a medium angle of relatively distant views. Turbines would be mostly backclothed by more distant landform, including Gormol and Crionaig, although the blades of turbines in the east of the cluster would more evidently break the skyline. Turbines would not diminish the scale of surrounding landform. The proposed development would form a new evident focal feature in the view, however there is some existing influence of electricity infrastructure in the view. The black painted blades of T19-T25 would be seen in views from this location, mostly backclothed by more distant landform although the blades of T25 would be seen against the skyline. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing. Similar views would be experienced from approximately 1.5km of the A859, localised elevated landform near the viewpoint and limited extents of the A858 near the junction with the A859. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would extend across a wide angle of close-distance successive views north, partially screened by intervening landform and buildings located along the west side of the A859. The consented Stornoway Wind Farm would be seen in a similar angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms, although the consented development would bring turbines perceptibly closer and would increase the horizontal extent of turbines in the view. The proposed development would be seen in a separate angle of the view and would appear perceptibly more distant than the consented Stornoway Wind Farm. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented Stornoway Wind Farm given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.

Viewpoint 13: A859 near Liurbost	
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 800m to the west of this viewpoint, generally following the alignment of the existing trident wood pole line although passing slightly further west beyond a row of residential properties lining the A858. The proposed OHL would be seen in successive views looking south to west, occasionally appearing as a distant feature in similar direction of the view as the proposed development, although in a slightly different part of the view to the west of the A859. The proposed OHL would replace the existing trident wood pole line which exerts an existing influence in the view (as considered in the primary assessment). The perceptibility of the OHL would decrease with distance, to a greater degree than the proposed turbines. Given the intervening distance and varying perceptibility of the OHL in distant views, there would be limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment and Scenario 1.

Table 7-32: Viewpoint 14: Acha Mor (Achamore)

Viewpoint 14: Acha Mor (Achamore)				
Grid Reference (NGR)	131363	929357	**Figure Number**	7.25
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	South		**Distance to nearest turbine**	14.7km
Number of hubs theoretically visible	21		**Number of turbines with blades theoretically visible**	24
Viewpoint location, receptors, and existing view	This viewpoint is located along the A858 within the community of Acha Mor. The viewpoint is representative of views experienced by residential receptors within the local community, cyclists and walkers travelling on the Hebridean Way / NCN Route 780 and road users travelling on the A858. Views from the community are focused looking south and south west, over the landscape of lochans, boggy moorland, with the elevated ridgelines and hill summits of South Lewis and North Harris forming the skyline and background to views. The foreground of the view south is formed of fields bound by post and wire fencing, with dispersed residential and small scale agricultural buildings seen beyond. A relatively flat area of boggy moorland with numerous lochans, including Loch Acha Mor, Loch Foid and Loch na Craoibhe, extends through the middle distance of the view. Landform rises in more distant views, with the rounded summit of Beinn Mhòr (572m AOD), Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty') and An Cliseam/Clisham (799m AOD) forming key skyline features in the distance. Three small domestic scale turbines are seen in relatively close distance views south along the shore of Loch Achamore. A wood pole electricity distribution line extends across close distance views. The Eitshal main TV and Radio Transmitter mast forms an evident skyline feature in relatively close distance views north west.			

Viewpoint 14: Acha Mor (Achamore)	
Sensitivity	Residential and recreational receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The hubs and blades of 21 turbines and the blades of a further three turbines of the proposed development would be seen extending across a medium angle of distant views. There would be some overlapping of turbine blades and turbines in the east of the cluster would appear unevenly spaced. The bases of several turbines and the hubs of three turbines would be partially screened by the ridgeline of Creag na h-Uamha and Cleit na Ceardaich. Most turbines would be partially backclothed by more distant landform, however the tops of blades would be seen to break the skyline. The black painted blades of T19-T21 and T23-T25 would be seen in views from this location partially against the skyline. The blades of T21 and T23 would be barely perceptible beyond intervening landform and T22 would be fully screened by intervening landform. The proposed development would be seen in a slightly different angle of the view as the ridgeline of the 'Sleeping Beauty' (Mor Mhonadh, Guaineamol and Sidhean an Airgid), which appears as a skyline feature in views south, south west. Similar views would be experienced from much of the settlement and from approximately 6km of the A858, although outward views from residential properties are occasionally screened by intervening vegetation. The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-33: Viewpoint 15: An Cliseam

Viewpoint 15: An Cliseam				
Grid Reference (NGR)	115481	907302	**Figure Number**	7.26
LCT	Prominent Hills and Mountains (326)		**Landscape Designation or Wild Land Area**	South Lewis, Harris and North Uist NSA; Harris-Uig Hills WLA 30

Viewpoint 15: An Cliseam			
Direction of View	North east	**Distance to nearest turbine**	15.1km
Number of hubs theoretically visible	9	**Number of turbines with blades theoretically visible**	22
Viewpoint location, receptors, and existing view	This viewpoint is located on the summit of An Cliseam/Clisham (799m AOD), which is the highest point on Lewis and Harris. It is located within the South Lewis, Harris and North Uist NSA and Harris-Uig Hills WLA 30. The viewpoint is representative of views experienced by recreational receptors (hill walkers) within the NSA and WLA. Relatively open and panoramic views are afforded from the hill summit, overlooking Loch Seaforth and Eilean Shiophoirt to the east with receding ridgelines and the lower-lying coastline seen beyond. Loch A Siar and the sea are seen to the west, and further hill summits and ridgelines of the Harris and Uig hills are seen to the north and south. The foreground of the view north east, in the direction of the Site, comprises descending rocky moorland landform. Lower-lying undulating moorland, Loch Seaforth and Eilean Shiophoirt extend through the middle distance of the view. Elevated landform and hill summits, including Beinn Mhòr (572m AOD), Muaitheabhal (424m AOD), and the ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD), are seen beyond the loch. The background of the view is formed by more distant landform and the sea, which extends across distant views. The operational Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms form relatively distant features in views north east.		
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The viewpoint is located within the South Lewis, Harris and North Uist NSA and the Harris-Uig Hills WLA 30. The value of the view is therefore considered to be high. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**		
Assessment of visual effects (Primary assessment)	The hubs and blades of nine turbines and the blades of a further 13 turbines of the proposed development would be seen extending across a medium angle of relatively distant views. Turbines would be backclothed by more distant landform and the sea. Intervening landform, including Muaitheabhal, Beinn na h-Uamha, Beinn Mheadhanach and Beinn Mhòr, partially screens many of the turbines with only turbine blades visible for approximately half of the total horizontal extent of the cluster. The blades of T22 would be just visible beyond Beinn Mhòr, which fully screens three turbines (T23, T24, T25) in the south of the Site. The blades of T1 would be barely perceptible beyond Beinn Mheadhanach, which partially screens turbines in the north of the site. T19, T20 and T21 would be evident between the intervening landform of Beinn Mhòr and Beinn na h-Uamha, with some overlapping of turbine blades. Though the proposed turbines will form a relatively distant feature, the proposed development will introduce large scale turbines into this angle of the view. However, turbines would not diminish the scale of adjacent landform. The black painted blades of T19-T22 would be seen in views from this location, backclothed by more distant landform, although the blades of T22 would be barely perceptible. Steel lattice met masts would be barely perceptible in views from this location given the intervening distance and backclothing.		

Viewpoint 15: An Cliseam	
	The proposed development would be screened by intervening landform in views from much of the ascent to the summit from the south east. Similar views would be afforded from relatively localised extents, including the upper north east facing slopes of the hill summit, and from other summits nearby including Mulla bho Dheas (743m AOD), Mulla bho Thuath (720m AOD) and Mullach an Langa (614m AOD). The geographical extent of similar views is considered small. The introduction of the proposed development would result in a medium scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would appear in relatively distant views north east, in a similar angle of the view as the operational Beinn Ghrideag Community Wind Farm and would increase the horizontal extent of development further east. The consented Stornoway Wind Farm, operational Pentland Road and Beinn Ghrideag Community Wind Farms would appear as one continuous development in distant views. The consented Druim Leathann would form a more distant feature beyond the consented Stornoway Wind Farm. The proposed development would appear in a separate angle of the view as these consented wind farms. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 2.0km to the south of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-34: Viewpoint 16: Calanais Standing Stones

Viewpoint 16: Calanais Standing Stones				
Grid Reference (NGR)	121325	933012	**Figure Number**	7.27
LCT	Linear Crofting (318)		**Landscape Designation or Wild Land Area**	None
Direction of View	South east		**Distance to nearest turbine**	21.1km
Number of hubs theoretically visible	0		**Number of turbines with blades theoretically visible**	16
Viewpoint location,	This viewpoint is located near the Calanais Standing Stones, a prehistoric archaeological site which is designated as a Scheduled Monument and is a popular tourist attraction. The standing stones are			

Viewpoint 16: Calanais Standing Stones	
receptors, and existing view	located south of the village of Calanais in the west of the Isle of Lewis. The viewpoint is located along the south eastern edge of the standing stones. The Calanais Standing Stones Visitor Centre is located to the south of the viewpoint. The viewpoint is representative of views experienced by visitors to the standing stones and similar views experienced from some nearby residential properties at Calanais. The Calanais Standing Stones are located on a slight promontory which overlooks Loch Ceann Hulabhaig. Views from this location are relatively open and look across the shores of the loch towards distant elevated landform and hill summits of south Lewis and North Harris. The foreground of views south east comprises fields of undulating boggy moorland bound by stone walls reinforced with post and wire fencing. Landform gently descends to the rocky loch shore which is paralleled by a minor road. Eilean Trosdam, Eilean Orasaigh and other smaller islands extend through the middle distance of the view. Landform rises to the south of the loch with more distant summits and ridgelines, including the rounded summit of Beinn Mhòr (572m AOD), Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty'), forming the skyline and background of the view. The operational Pentland Road Wind Farm forms a distant feature against the skyline in views north east. The operational Eitshal main TV and Radio Transmitter mast is relatively evident against the skyline in views east.
Sensitivity	Recreational receptors, whose attention is focused on the surroundings and scenic value, are considered to be of high susceptibility to changes in the view. The viewpoint represents views from a promoted tourist location, and the value of the view is considered to be high. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high.**
Assessment of visual effects (Primary assessment)	The blades of 16 turbines would be glimpsed beyond intervening landform in distant views south east. Whilst turbine blades would be seen against the skyline, the proposed development would form a relatively distant feature beyond intervening landform. The black painted blades of T20 and T21 would be barely perceptible beyond intervening landform in views from this location. Other turbines with painted black blades would be screened in views from this location. The profile of the 'Sleeping Beauty' would be seen in a slightly different angle of the view as the proposed development, separated by localised landform at Neapabhal (90m AOD), seen just beyond Loch Ceann Hulabhaig. Similar views would be afforded from relatively localised extents, limited to areas of the standing stones where outward views south east are afforded, and a small number of residential properties located north of the standing stones. Intervening landform and woodland further screens views of turbines from the visitor centre, which is located at slightly lower elevation than the standing stones, however some glimpsed views of turbine blades would be afforded. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **high** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of effects under	The blades of the consented Stornoway Wind Farm would appear in relatively distant views east, in a similar angle of the view as the operational Beinn Ghrideag Community Wind Farm, with blades just visible beyond intervening landform. The consented Stornoway Wind Farm would increase the

Viewpoint 16: Calanais Standing Stones	
Scenario 1 cumulative baseline	horizontal extent of development further south in the view, with the consented windfarm, and operational Pentland Road and Beinn Ghrideag Community Wind Farms appearing as one continuous development in distant views. The proposed development would appear in a separate angle of the view as the consented Stornoway Wind Farm. The introduction of the proposed development under this scenario would increase the overall horizontal extent of the view occupied by wind turbines, however there would be limited interaction between the proposed development and the consented scheme given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **low** and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 14.5km to the south east of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-35: Viewpoint 17: Stornoway War Memorial

Viewpoint 17: Stornoway War Memorial				
Grid Reference (NGR)	141713	934340	**Figure Number**	7.28
LCT	Gently Sloping Crofting (317)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	21.9km
Number of hubs theoretically visible	24		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located at the base of the Stornoway War Memorial tower, which is situated at a high point to the west of Stornoway. The viewpoint represents views experienced by visitors to the memorial, and similar views experienced from nearby elevated landform to the west of the settlement. From this elevated location, views are relatively open and panoramic, although coniferous forestry to the south west screens and filters views. The foreground is formed by descending moorland with occasional rocky outcrops and small lochans. Residential and industrial buildings with conifer shelterbelt planting, and mixed woodland at the Lews Castle Gardens are seen in the middle distance of the view south west, with undulating open moorland seen beyond. Elevated landform and the hills of southern Lewis and Harris, including the rounded summit of Beinn Mhòr (572m AOD), Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty') and An Cliseam/Clisham (799m AOD), form the background of distant views south west. The operational Eitshal main TV and Radio Transmitter mast, further telecommunications masts, and the operational Pentland Road and Beinn Ghrideag Community Wind Farms are evident in			

Viewpoint 17: Stornoway War Memorial	
	views south west and west from this location. One turbine of the operational Arnish Moor is glimpsed beyond the coniferous forestry to the south west of the viewpoint.
Sensitivity	Recreational receptors, whose attention is focused on the surroundings and scenic value, are considered to be of high susceptibility to changes in the view. The viewpoint represents views from a promoted visitor location, and the value of the view is considered to be high. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **high**.
Assessment of visual effects (Primary assessment)	Intervening coniferous forestry would screen the hubs and blades of all 25 turbines of the proposed development. However, should the forestry be felled, the proposed development would potentially be seen, extending across a small proportion of distant views. Where visible, the majority of turbines would be backclothed by more distant landform. Proposed turbines would extend to the east of the operational Arnish Moor wind farm, which would appear slightly closer in the view. The proposed development would appear in a separate angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms, which are evident in views south west and west. The black painted blades of T19-T25 would be seen in views from this location, albeit barely perceptible given the intervening distance and backclothing by more distant landform. Under the current baseline, which includes conifer forestry that screens and filters views of the proposed development, the introduction of the proposed development would result in a barely perceptible change to the view. Should the forestry in the foreground be felled in the future, the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **negligible** and taking account of the **high** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would extend across a wide angle of close-distance successive views west, with the bases of turbines in the north of the development partially screened by intervening landform. The consented Stornoway Wind Farm would be seen in a similar angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms, although the consented development would bring turbines perceptibly closer and would increase the horizontal extent of turbines in the view. The consented Druim Leathann would form a relatively distant feature against the skyline in views north east, introducing large-scale turbines into this angle of the view. The proposed development would be seen in a separate angle of the view as both the consented Stornoway and Druim Leathann Wind Farms, and would appear perceptibly more distant than the consented Stornoway Wind Farm. The proposed development would appear slightly more distant in the view as the consented Druim Leathann Wind Farm. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **negligible** and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 2.5km to the south west of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-36: Viewpoint 18: An-Cnoc (Knock)

Viewpoint 18: An-Cnoc (Knock)				
Grid Reference (NGR)	149417	932188	**Figure Number**	7.29
-LCT	Gently Sloping Crofting (317)		**Landscape Designation or Wild Land Area**	None
Direction of View	South west		**Distance to nearest turbine**	24.3km
Number of hubs theoretically visible	19		**Number of turbines with blades theoretically visible**	25
Viewpoint location, receptors, and existing view	This viewpoint is located near the A866 within the community of An Cnoc (Knock), located on the Eye Peninsula (An Rubha) in the east of Lewis. The viewpoint represents views experienced by residents within the community, other residential properties further north east on the Eye Peninsula and road users travelling on the A866. Outward views south west from this location are relatively open and slightly channelled by rising landform to the south east of the road. Views overlook the gently undulating coastal landscape with crofts, fields and one and two-storey residential dwellings. The road extends through the foreground and middle distance of the view. Fields of rough grazing are seen in the middle distance, with the sea beyond. Elevated landform and the hills of southern Lewis and Harris rise from the sea, forming the background of distant views south west. Views south east are foreshortened by localised landform and nearby properties which contain the view. Views north west overlook the descending landform to Broad Bay, with distant views afforded looking north west and north across Loch a Tuath. The operational Eitshal main TV and Radio Transmitter mast and the operational Arnish Moor, Pentland Road and Beinn Ghrideag Community Wind Farms form relatively distant skyline features in views looking south west to west.			
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Road users are considered to be of low susceptibility to changes in the view. The viewpoint is not located within a designated landscape or a recognised stopping point of promoted view. The value of the view is judged to be medium. Taking into the account the judgments of susceptibility and value, overall sensitivity of receptors at this viewpoint is judged to be **medium.**			
Assessment of visual effects (Primary assessment)	The hubs and blades of 19 turbines and blades of a further six turbines of the proposed development would be seen across a small proportion of distant views, partially screened by intervening buildings and vegetation in the middle distance of the view. The black painted blades of T19-T25 would be barely perceptible in views from this location given the intervening distance. The base and hubs of several turbines are obscured by the intervening landform on Rubha Ranais, which forms the northern headland of Loch Liurboist. Visible turbines would not transcend the scale of landform which forms the focus of the view south west, including Gormol and Beinn Mhòr. The proposed development would increase the horizontal extent of turbines in the view, however			

Viewpoint 18: An-Cnoc (Knock)	
	proposed turbines would appear as a more distant feature than other operational wind turbines seen in views looking south west and west. Similar views would be afforded from the communities of Aignish, Knock and Sworsdale, although intervening localised landform and vegetation occasionally screens outward views from residential properties. Similar views would be afforded from intermittent extents of the A866, limited to approximately 2km of the road on the Eye Peninsula. Similar views, albeit more distant, would also be afforded from localised residential properties within the communities of Garrabost and Shulishader. The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would extend across a relatively wide angle of distant successive views west, partially screened by intervening vegetation and buildings which extend through the middle distance of the view. The consented Stornoway Wind Farm would be seen in a similar angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms, although the consented turbines would appear perceptibly larger and would increase the horizontal extent of turbines in the view. The consented Druim Leathann would form a relatively distant feature against the skyline in views north, introducing large-scale turbines into this angle of the view. The proposed development would be seen in a separate angle of the view as both the consented Stornoway and Druim Leathann Wind Farms, and would appear perceptibly more distant than both consented developments. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **low** and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 9.3km to the west of this viewpoint location, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Settlements

7.106 Theoretical visibility of the proposed development from settlements across the study area is illustrated by **Figures 7.2a-7.2c**. Visual effects from settlements, which were taken forward for detailed assessment, as outlined in

Table 7-6, are discussed below. Where a settlement is represented by an assessment viewpoint reference is made to this.

Table 7-37: Leumrabhagh (Lemreway)

Leumrabhagh (Lemreway)			
Representative viewpoint	VP6: Leumrabhagh (Lemreway)	**Approximate distance to nearest turbine**	4.4km
Description	Leumrabhagh is a small, low density crofting village in the south of Lewis. The village comprises of a number of dispersed residential properties grouped around the B8060 and an unclassified road, to the east of Loch Bhreacaich, approximately 4.4km east of the Site. The settlement is strongly related to the sea, and there is some influence of light industry related to fishing and fish farming off the coast. Views to the east and west of the community are contained by rising landform which forms the skyline, including Beinn Eisgein (129m AOD) and the more distant summits of Mor-Mhonadh (401m AOD) and Guaineamol (406m AOD). From the southern end of the settlement, views are focused looking south across the sea towards Eilean Liubhaird, which partially foreshortens more distant views across the sea. From residential properties located on slightly higher ground in the north of the settlement, views across the sea to Eilean Liubhaird, the Shiant Isles and the more distant Isle of Skye are afforded. Principal orientation from residential properties varies, though most properties are predominantly orientated with principal aspects looking north east and south west. There are several properties situated on minor side roads, facing north and south. Where properties face west or south west, in the direction of the Site, undulating intervening topography foreshortens views.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Leumrabhagh is not located within a designated landscape however some views are afforded looking towards the remote hill summits within the Eisgein WLA 31. The value of views is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be **high**.		
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates theoretical visibility of the proposed development from the eastern extents of the community, where residential properties are located at slightly higher elevation along an unclassified road which passes south towards Rubha nan Cudaigean. Intervening landform would screen views of the proposed development from the lower-lying central and eastern extents of the community. Where outward views are afforded from residential properties within the community (illustrated by VP 6: Leumrabhagh (Lemreway)), the hubs and blades of up to three turbines and the blades of up to a further seven turbines would be seen beyond intervening landform in relatively distant views west. Rocky knoll landform to the east of the Site, including Beinn Eisgein (129m AOD), would partially screen turbines and would lead to the perception of two slightly separate clusters of turbines. The proposed development would appear across a medium angle of the view, with the tops of turbine blades seen against the skyline. The proposed development would result in a medium scale change to the view. Similar views would be afforded from the minor road and residential properties located at slightly higher elevation along the eastern edge of the community. The geographical extent of similar views is considered small. A small number of residential properties located further south east along the minor road would experience the greatest visibility of the proposed development, albeit at a slightly greater distance than residential properties located near VP6: Leumrabhagh (Lemreway). In views from these properties, the hubs and blades of all 25 turbines of the proposed development would be seen extending across a relatively wide angle of the view. The bases of some turbines would be		

Leumrabhagh (Lemreway)	
	screened by intervening landform and more distant landform would backcloth some turbines, though the tops of blades would appear against the skyline. The proposed development would result in a medium scale change in views from these properties. A medium magnitude of change and moderate (significant) effect would be experienced from very localised geographical extents. Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be seen in views from very localised extents in the south east of the community, as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect, experienced from localised extents of the settlement.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-38: Orasaigh (Orinsay)

Orasaigh (Orinsay)			
Representative viewpoint	VP1: Orasaigh (Orinsay)	**Approximate distance to nearest turbine**	3.0km
Description	Orasaigh/Orinsay is a community located on the northern bank of Loch Sealg on the Pairc peninsula, approximately 3.0km south east of the nearest turbine of the proposed development. The settlement comprises a number of dispersed residential properties located along an unclassified road that is accessed from B8060 to the north east of the settlement, at the junction north of Leumrabhagh/Lemreway. The road travels follows the shore of Tòb an Iar bay with properties generally located close to the shoreline. The primary outlook from most residential properties within the settlement is south and south east, across Tòb an Iar bay, Orinsay Island and Loch Sealg towards hill summits in the south of the Pairc peninsula which form the background and skyline of views. Several properties are orientated south west towards Giearol (120m AOD) in the close to middle distance. Where properties face west and north west, in the direction of the Site, intervening topography, including the ridgeline of Gierarol foreshortens views. Glimpsed longer distance views are afforded beyond Glen Orinsay in a slight dip in between the landform of Giearol and Cleite Loch Shaghachain (78m AOD). The ridgeline formed by Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD) forms the background and skyline of the view in this direction.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Orasaigh/Orinsay is not located within a designated landscape however some views are afforded looking towards the remote hill summits within the Eisgein WLA 31. The value of views is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be **high**.		

Orasaigh (Orinsay)	
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates intermittent visibility of the proposed development from the settlement, mostly focused on properties within the centre of the settlement where the minor road runs on a west-east alignment. Where outward views west towards the proposed development are afforded (illustrated by VP1: Orasaigh (Orinsay)), the hubs and blades of up to five turbines and blades of a further seven turbines of the proposed development would be seen, partially screened by intervening landform. Turbines would occupy a medium angle of the middle distance view, seen in a dip in landform between Giearol and Cleite Loch Shaghachain. The blades of T3, T5, T12 and T14 would be barely perceptible against the skyline. The introduction of the proposed development would result in a medium scale change to the view. Similar views would be experienced from localised extents within the centre of the settlement. Intervening landform would partially or fully limit visibility of the proposed development from the north eastern and south western extents of the settlement. One turbine (T18) with visible aviation lighting would be seen from localised extents of the community. Other turbines with visible lighting (T1, T3, T7, T12, T22, T25) would be unlikely to be evident from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-39: Taobh a Ghlinne (Glenside)/ Grabhair (Gravir)

Taobh a Ghlinne/ Grabhair			
Representative viewpoint	VP4: Taobh a' Ghlinne (Glenside)	**Approximate distance to nearest turbine**	3.8km
Description	Grabhair (Gravir) is a settlement situated at the head of Loch Odhairn, a sea loch on the east coast of Lewis, running between the headlands of Rubha Iosal in the north and A' Chabag (Kebock head) in the south. Taobh a Ghlinne (Glenside) is located directly north west of Grabhair along the B8060. The properties of both communities are relatively dispersed, though there are clusters of some properties in the north of Taobh a Ghlinne along the B8060. Principal views from most properties within Taobh a Ghlinne are focused east and west looking across the B8060, whilst the principal views from properties within Grabhair are predominantly focused north and south. The village of Grabhair lies within a small glen with raised ground both north and south of the properties, with properties starting from just above sea level and rising as the settlement spreads west. Rising landform to the north and south of the glen restricts distant outward views from many residential properties within the settlement. There are some focused views across Loch Odhairn available from properties in the east of the community. Undulating landform also contains some of the views afforded from residential properties within the community of Taobh a Ghlinne,		

Taobh a Ghlinne/ Grabhair	
	however views of distant landform are afforded from properties on higher ground in the north of the community.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in view. These settlements are not situated within a designated landscape or WLA. The value of views is considered to be medium. Taking into account the judgements of susceptibility and value, overall sensitivity of receptors at these settlements is judged to be **high**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates theoretical visibility of the proposed development from the northern extents of Taobh a Ghlinne (Glenside) and localised extents of Grabhair (Gravir), limited to properties located at slightly higher elevation above Loch Odhairn in the east of the community. Intervening landform would screen views of the proposed development from many of the residential properties within Grabhair (Gravir). Vegetation associated with residential properties occasionally screens outward views from localised areas of the community. Where outward views of the proposed development are afforded (as illustrated by VP4: Taobh a' Ghlinne (Glenside)), the hubs and blades of up to 23 turbines of the proposed development and the blades of up to two further turbines would be visible, extending across a wide angle of the view. The bases of all turbines would be screened by intervening landform. The proposed development would result in a medium scale change to the view. Similar views would be afforded from elevated sections of the B8060 at the northern approach into the village, from the school and from some residential properties in the north east of the village. Intervening landform screens views towards the Site from the south of the village and from much of the community of Grabhair (Gravir). The geographical extent of similar views is considered to be small. Visible aviation lighting on the hubs of up to six turbines (T3, T7, T12, T18, T22, T25) would be evident in views from this settlement. Lighting associated with T1 would be unlikely to be evident from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the high sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-40: Gearraidh Bhaird (Garyvard), Caersiadair (Kershader) and Tabost (Habost)

Gearraidh Bhaird, Caersiadair and Tabost			
Representative viewpoint	VP5: B8060 near Tabost (Habost) Church	**Approximate distance to nearest turbine**	4.7km
Description	These three small settlements are located along the B8060, located on the southern bank of Loch Eireasort, a sea loch which extends inland from the east coast of Lewis. These communities are set		

Gearraidh Bhaird, Caersiadair and Tabost	
	within a landscape of rocky cnocs and scattered lochans, including Loch Dobhrain, Loch an Tairbeirt, Loch Airigh Fhearchair and Loch nam Breac. The pattern of settlement reflects the underlying topography and linear relationship between residential properties with croft land holdings. Residential properties within all three communities are relatively dispersed, though there is some clustering of properties within Gearraidh Bhaird near the bend in the B8060. The principal views of most residential properties are predominantly focused north looking across Loch Eireasort, though outward views from some properties located within close proximity of the road are screened by intervening shelterbelt planting. Rolling localised landform rises to the south of the B8060, with some properties to the south of the road affording relatively elevated views overlooking Loch Eireasort.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in view. These settlements are not located within a designated landscape or WLA. The value of views is considered to be medium. Overall, the sensitivity of receptors at these settlements is judged to be **high**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates localised visibility from the communities of Gearraidh Bhaird (Garyvard), Caersiadair (Kershader) and Tabost (Habost), with intervening undulating topography to the south of the communities limiting distant views south and south west. Occasional distant views south are afforded from relatively elevated properties to the south of the B8060, and glimpsed in between dips in intervening landform. Where outward views of the proposed development are afforded (illustrated by VP5: B8060 near Tabost (Habost) Church), the hubs and blades of up to 21 turbines and the blades of up to a further four turbines of the proposed development would be seen extending across a wide angle of the view south. Intervening landform, including the relatively low-lying Beinn Bhuidhe, would obscure the bases of all turbines and the hubs of several. The geographical extent of similar views is considered small. The introduction of the proposed development would result in a medium scale change to views from the communities locally, reducing to a small scale change to views from the communities as a whole. Five turbines (T1, T3, T7, T12, T25) with visible aviation lighting would be seen from localised extents of the community. Other turbines with visible lighting (T18, T22) would be unlikely to be evident from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** locally, reducing to **low** for the communities as a whole. Taking account of the **high** sensitivity this would result in a **moderate (adverse)** and **significant** visual effect locally, reducing to a **minor (adverse)** and **not significant** visual effect for the communities as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen in relatively distant successive views north from the communities, partially screened by intervening landform. Under this scenario the consented Stornoway Wind Farm would introduce visibility of turbines into the view, and the proposed development would be seen in a separate angle of the view. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented Stornoway Wind Farm given the intervening distance between the developments. The magnitude of change to views from the settlements under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant** locally, reducing to a **minor (adverse)** and **not significant** for the communities as a whole, as for the primary assessment.
Assessment of effects under Scenario 2	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 2.4km to the north and north west of these settlements at its nearest point, therefore **no additional**

Gearraidh Bhaird, Caersiadair and Tabost	
cumulative baseline	**cumulative effects** arepredicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-41: Baile Ailein (Balallan)

Baile Ailein (Balallan)			
Representative viewpoint	VP8: Baile Ailein	**Approximate distance to nearest turbine**	6.3km
Description	Baile Ailein is a village on the northern bank of Loch Eireasort and is known to be the longest village in Lewis, extending along a 5km section of the A859. Properties are positioned in a linear pattern to the north and south of the road. The western edge of the village sits at the head of Loch Eireasort. Residential properties are relatively dispersed along the road, reflecting the underlying pattern of croft land holdings to the south of the road. Properties near the community centre and school are more clustered in pattern. The field pattern between properties and the sea loch is relatively linear, with long fields stretching to the coast and slim pathways between each field, leading south to the shore. Whilst the settlement pattern is relatively linear, the principal view orientation of residential properties varies throughout the settlement. Principal views from many properties overlook Loch Eireasort to the south. Properties on the southern shore of the loch (near Sildinis) are seen across the middle distance of the view. More distant landform, including the ridgeline of Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD) and the ridgeline comprising Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty'), forms the skyline of views looking south, south west. Additional hill summits, including An Cliseam (799m AOD), form distinctive skyline features in views south west. Landform rises to the north of the A859, with some properties located north of the road affording elevated and open views. This landform foreshortens views north from lower-lying residential properties. One small domestic scale turbine and two steel lattice telecoms masts are located within close proximity to the north of the settlement, and are glimpsed against the skyline in relatively close distance views. A trident wood pole overhead electricity line is seen passing to the north of the settlement, occasionally against the skyline in successive views looking west to north east.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in view. This settlement is not located within a designated landscape or WLA. The value of views is considered to be medium. Overall, the sensitivity of receptors at this settlement is judged to be **high**.		
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates visibility of the proposed development from much of the settlement, although intervening landform partially screens views of the proposed development from the centre of the settlement near the school, and from residential properties located along the western and eastern edges of the settlement. A small number of residential properties in the south east of the settlement, located along approximately 300m of the A859 south east of Beinn Bhuidhe (108m AOD) and a small number of properties located south of the A859, would experience the greatest visibility of the proposed development. The hubs and blades of up to 12 turbines and the blades of a further six turbines would be visible, partially screened by intervening landform. Turbines would be partially backclothed by more distant landform, though some turbine hubs and blades would break the		

Baile Ailein (Balallan)	
	skyline. Turbines in the south west of the Site would be screened by the ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha. The proposed development would result in a medium scale change in views from these properties. A medium magnitude of change and moderate (significant) effect would be experienced from very localised geographical extents. Three turbines (T1, T7 and T18) with visible aviation lighting would be seen from localised extents of the community. Other turbines with visible lighting (T3, T12, T22, T25) would be unlikely to be evident from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. In views experienced more widely from residential properties located along the A859 in the west of the settlement (illustrated by VP8: Baile Ailein), the blades of 11 turbines of the proposed development would be seen, occupying a medium angle of the middle distance of the view. Turbines would be partially screened by the ridgeline formed by Beinn Mheadhanach, Feiriosbhal and Creag na h-Uamha. Although turbine blades would break the skyline, they would not diminish the scale of nearby landform. The proposed development would result in a small scale change in views from these properties. A small magnitude of change and minor (not significant) effect would be experienced from properties located along approximately 2km of the A859. Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be unlikely to be evident from these extents of the settlement as indicated **by Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. Visibility of the proposed development is limited by intervening landform in views from the west of the settlement, near the junction of the A859 and B8060, the east of the settlement along the A859, and the centre of the settlement near the school.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** for a very small number of properties located along the south eastern edge of the settlement, reducing to **low** for the settlement as a whole. Taking account of the **high** sensitivity this would result in a **moderate (adverse)** and **significant** visual effect for very localised geographically extents of the settlement. The magnitude of change would reduce to **low** for the settlement as a whole, resulting in a **minor (adverse)** and **not significant** visual effect for the settlement as a whole.
Assessment of effects under Scenario 1 cumulative baseline	Blade tips of the consented Stornoway Wind Farm would be perceptible beyond intervening landform in views north from a very localised extent of this settlement. **No additional cumulative visual effects** are predicted to occur for this cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass within relatively close proximity to the north of the settlement, generally following the alignment of the existing trident wood pole line. The proposed OHL would be seen in the opposite direction of the view as the proposed development, with limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain medium locally, reducing to low for the settlement as a whole and the visual effect would be **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the settlement as a whole, as for the primary assessment.

Table 7-42: Lacasaigh (Laxay)

Lacasaigh (Laxay)			
Representative viewpoint	VP9: A859 near Lacasaigh (Laxay) Cemetery	**Approximate distance to nearest turbine**	7.1km
Description	This settlement is located along the A859 to the north of Loch Eireasort and Eilean Mor Lascasaidh, a small uninhabited island within Loch Eireasort. Lacasaigh is located between two rivers; Abhainn Lacasaidh to the west and Abhainn Eallaidh to the east. The majority of residential properties in this settlement are situated alongside minor roads which extend south from the A859, gradually descending towards the northern shoreline of Loch Eireasort. A landscape of relatively linear fields separates many properties from the shoreline of the loch, however there is a cluster of properties in the south west of the community that is considerably closer to the head of the loch. The orientation of principal views for residential properties varies across the community, although the views from many properties in the more elevated northern extents of the community are focused south towards the loch, with more distant landform forming the skyline of the view. Outward views from the settlement also vary given the presence of undulating localised topography which foreshortens views in some locations. An operational 132kv trident wood pole overhead line passes within relatively close proximity to the north of the community and is glimpsed in between intervening landform crossing the middle distance of views.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Lacasaigh is not located within a designated landscape or WLA. The value of views is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be **high**.		
Assessment of visual effects (Primary assessment)	The ZTV indicates visibility of the proposed development from much of the settlement, although intervening localised landform and vegetation occasionally screens some views of the proposed development from residential properties. Several properties situated to the east of the unclassified road that leads to the shoreline and properties along the A859 in the east of the settlement would experience some of the greatest visibility, with the hubs and tips of all 25 turbines visible (similar views illustrated by VP 9: A859 near Lacasaigh (Laxay) Cemetery). Turbines would occupy a relatively wide angle of distant views south west with some hubs and blades seen against the skyline. The introduction of the proposed development would result in a medium scale change to the view. The geographical extent of similar views within the settlement is medium. To the west of this unclassified road, intervening localised topography screens views towards the Site. Intervening topography near the cemetery also screens views from approximately 250m of the A859 along the western settlement edge. Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be seen in relatively distant views from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.		

Lacasaigh (Laxay)	
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	No consented wind energy developments would be perceptible in views from this settlement therefore **no additional cumulative visual effects** are predicted to occur for this cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass within relatively close proximity to the north of the settlement, generally following the alignment of the existing trident wood pole line although passing slightly further west around Loch Nabhar to the north east of the settlement. The proposed OHL would be seen in the opposite direction of the view as the proposed development, with limited cumulative interaction between the proposed development and the proposed OHL. The magnitude of change to views under this scenario, which includes all consented and proposed developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.

Table 7-43: Ceos (Keose)/ Glib Cheos (Keose Glebe)

Ceos (Keose)/ Glib Cheos (Keose Glebe)			
Representative viewpoint	N/A	**Approximate distance to nearest turbine**	7.6km
Description	These settlements are crofting townships located on the north shore of Loch Eireasort. The settlement is located along an unclassified road which is accessed from the A859 near Loch Cnoc an Uibhe. The settlements are approximately 1.2km east Lacasaigh/Laxay. Primary outlooks from residential properties within the communities varies, and it related to areas of complex localised landform and the winding nature of the unclassified road. The presence of undulating localised landform influences the character and containment of principal views from the communities, with middle and far distance views south obscured for many properties. Glimpsed views looking south across Loch Eireasort are afforded from some residential properties, with more distant landform and hill summits forming the skyline of the view, including the ridgeline formed by Beinn Mheadhanach (288m AOD) and Feiriosbhal (326m AOD) south of Loch Sgiobacleit. Distant views of the operational Pentland Road and Beinn Ghrideag Community Wind Farms are glimpsed beyond intervening landform in occasional views north from the communities.		
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. Ceos/Glib Cheos are not located within a designated landscape or WLA. The value of views is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at these settlements is judged to be **high**.		
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates intermittent visibility of the proposed development from the settlements, focused within the west of Keose/Ceos and the east of Keose Glebe/Glib Cheois. Localised landform limits outward views from parts of the communities. Where outward views towards the proposed development are afforded, the hubs and tips of all 25 turbines would be visible across a relatively wide angle of distant views south west with some hubs and blades seen against the skyline. The introduction of the proposed development would		

Ceos (Keose)/ Glib Cheos (Keose Glebe)	
	result in a medium scale change to the view. The geographical extent of similar views within the settlement is medium. Intervening topography near Aird-Mhòr Keose would limit views of the proposed development from residential properties in the centre and east of Keose/Ceos. Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be seen in relatively distant views from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen in relatively distant successive views north from the settlements, partially screened by intervening landform. Some hubs and blades of the consented wind farm would be seen against the skyline. The proposed development would be seen in a separate angle of the view. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented Stornoway Wind Farm given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 1.7km to the north west of these settlements at its nearest point, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-44: Liurbost/ Griomsiadar (Grimshader)/ Ranais/ Crosbost

Liurbost/ Griomsiadar (Grimshader)/ Ranais/ Crosbost			
Representative viewpoint	VP11: Liurbost	**Approximate distance to nearest turbine**	12.2km
Description	This village of Liurbost is located north of Loch Liurbost, with residential properties located along the minor road which runs broadly parallel to the shoreline. The settlement is accessed from the A858 to the north west. Linear fields, reflective of the underlying croft land holdings, separate the residential properties from the shoreline of the loch. The smaller communities of Griomsiadar (Grimshader), Ranais and Crosbost are located further east and north east and are also linear in pattern. The orientation of principal views from most residential properties within these communities is south and south west in the direction of Loch Liurbost or Loch Griomsiadair (for Griomsiadar (Grimshader)). Undulating topography partially obscures views to the shoreline from certain properties, particularly towards the mouth of the loch. Directly south, the low mounds of Creag an Rainich and Cnoc nan Each and the small island of Eilean Mhiabhaig are seen across Loch Liurbost in the middle distance. The foreground of outward views south west from the community, in the direction of the Site, is occupied by fields with post and wire fencing. Residential properties partially obscure some outward views from within the community. Undulating topography in between properties and the loch partially screens views to the shoreline, particularly towards the mouth of the loch. Localised		

Liurbost/ Griomsiadar (Grimshader)/ Ranais/ Crosbost	
	landform to the south of Loch Liurbost, including Creag an Rainich and Cnoc nan Each, extends through the middle distance of the view. More distant landform, including Gormol (470m AOD), Crionaig (464m AOD), Beinn Mhòr (572m AOD) and the ridgeline formed by Beinn Mheadhanach (288m AOD), Feiriosbhal (326m AOD), Creag na h-Uamha and Cleit na Ceardaich (168m AOD) forms the background and skyline of the view south west. Distant views of the operational Pentland Road, Beinn Ghrideag Community and Arnish Moor Wind Farms are glimpsed beyond intervening landform in occasional views north from the communities.
Sensitivity	Residential receptors are considered to be of high susceptibility to changes in the view. These communities are not located within a designated landscape or WLA. The value of views is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at these settlements is judged to be **high**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates relatively widespread visibility from Liurbost, with intermittent visibility from the communities of Griomsiadar (Grimshader), Ranais and Crosbost. Where outward views of the proposed development are afforded (illustrated by VP11: Liurbost), the hubs and blades of all 25 turbines of the proposed development would be seen, occupying a medium angle of distant views south west. More distant landform, including the summits of Gormol and Crionaig, partially backclothes turbines. However, some hubs and blades would be seen to break the skyline. The introduction of the proposed development would result in a medium scale change to the view. The geographical extent of similar views across the communities is considered to be medium. Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be seen in relatively distant views from this settlement as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. Intervening landform screens views of the proposed development from parts of the western extents of Liurbost, and intermittent extents of Griomsiadar (Grimshader), Ranais and Crosbost.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** and taking account of the **high** sensitivity would result in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen extending across a relatively wide angle of glimpsed middle-distance views north from the community of Griomsiadar (Grimshader). Hubs and blades of the consented wind farm would be seen against the skyline. The proposed development would be seen in a separate angle of the view and would be seen as a more distant feature. The consented Stornoway Wind Farm would also be seen partially screened by intervening landform from localised extents of the communities of Crosbost, Liurbost and Ranais. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented Stornoway Wind Farm given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **medium** and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass approximately 1.1km to the west of these settlements at its nearest point, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Table 7-45: Acha Mor (Achamore)

<table>
<tr><th colspan="4">Acha Mor (Achamore)</th></tr>
<tr><td>Representative viewpoint</td><td>VP14: Acha Mor (Achamore)</td><td>Approximate distance to nearest turbine</td><td>14.1km</td></tr>
<tr><td>Description</td><td colspan="3">This community is located along the A858 in Lewis, situated inland, unlike the majority of settlements on the island. Situated approximately 14.1km north of the nearest turbine of the proposed development, the settlement is relatively linear in pattern with properties located north and south along the A858. The pattern of settlement reflects the underlying topography and linear relationship between residential properties with croft land holdings.

The primary orientation of views from the settlement are south to south west, perpendicular to the road, overlooking the landscape of linear fields, lochans and boggy moorland which extends through the foreground and middle distance of views. Distant views south and south west are afforded from much of the community, towards hill summits within South Lewis and North Harris including Beinn Mhòr (572m AOD), Mor Mhonadh (401m AOD), Guaineamol (406m AOD) and Sidhean an Airgid (387m AOD) (forming the profile of the 'Sleeping Beauty') and An Cliseam/Clisham (799m AOD). Vegetation associated with residential properties occasionally screens outward views from the community.

Three small domestic scale turbines are seen in relatively close distance views south along the shore of Loch Achamore. A wood pole electricity distribution line extends across close distance views. The Eitshal main TV and Radio Transmitter mast forms a relatively evident skyline feature in close distance views from the settlement.</td></tr>
<tr><td>Sensitivity</td><td colspan="3">Residential receptors are considered to be of high susceptibility to changes in the view. The community is not located within a designated landscape or WLA. The value of views is considered to be medium.
Taking account of the judgements of susceptibility and value, overall sensitivity of receptors at this settlement is judged to be high.</td></tr>
<tr><td>Assessment of visual effects (Primary assessment)</td><td colspan="3">The ZTV (Figures 7.2a-7.2c) indicates relatively widespread visibility from across the community, extending along approximately 4.0km of the A858. Intervening landform screens views of the proposed development from relatively isolated properties along the eastern edge of the community.

In views from the community (illustrated by VP14: Acha Mor (Achamore)), the hubs and blades of 21 turbines and the blades of a further 3 turbines would be seen extending across a medium angle of distant views. The geographical extent of similar views is considered medium. The introduction of the proposed development would result in a medium scale change to the view.

The bases of several turbines would be obscured by the eastern extents of Feiriosbhal and by the ridgeline of summits Creag na h-Uamha and Cleit na Ceardaich in the far distance. Moving west in the settlement, Feiriosbhal obscures fewer of the turbine bases.

In contrast, from the eastern edge of village near Loch Thoa Bridein where properties are sparser, the proposed development is screened by intervening landform. A further cluster of properties to the west of the settlement, within Lochganvich affords slightly lower visibility.

Turbines with visible lighting (T1, T3, T7, T12, T18, T22, T25) would be seen in relatively distant views from this settlement as indicated by Technical Appendix 7.5, Figure 7.5.2 and Technical Appendix 7.5, Annex A.</td></tr>
<tr><td>Overall Level of Effect and Significance</td><td colspan="3">The overall magnitude of change is judged to be medium and taking account of the high sensitivity would result in a moderate (adverse) and significant visual effect.</td></tr>
</table>

Acha Mor (Achamore)	
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	Blade tips of the consented Stornoway Wind Farm would be glimpsed beyond intervening landform in views north from localised extents in the east of the settlement. No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Routes

7.107 Visibility from a route is not uniform along its entire length. This is because views of the surrounding landscape change due to the landform, built form, and vegetation cover as the viewer moves along the route. Sequential effects from the key routes which were taken forward for detailed assessment, as outlined from **Table 7-7**, are set out below.

Table 7-46: A859

A859			
Representative viewpoint	VP8: Baile Ailein; VP9: A859 near Lacasaigh (Laxay) Cemetery; VP13: A859 near Liurbost	**Approximate distance to nearest turbine**	7.0km
Description	The A859 is the main road on Lewis and Harris, connecting Stornoway, the largest settlement on Lewis, and Leverburgh in the south of Harris. Within 10km of the Site, A859 passes west of Loch Seaforth/Shiophort, crossing broadly on a south west to north east alignment towards Stornoway. The A859 forms a considerable part of the route of NCN 780 and the Hebridean Way. The road passes through many of the settlements within the study area. Within approximately 8-18km to the west and south west of the Site, the road passes through a relatively remote landscape of boggy moorland with dramatic hill summits. Outward views from the road are focused on the undulating topography with occasional lochans, Loch Seaforth/Shiophoirt and the distinctive hill summits surrounding the road, including An Cliseam/Clisham (799m AOD) which is located to the north of the road. At Loidse Ath Linne on the west coast of Loch Seaforth, the road passes closely to the western shore of the loch and is situated on lower ground. Here, there are open views to Eilean Shiophoirt in the centre of the sea loch. Conifer forestry at Aline Community Woodland limits outward views from a relatively short section of the road to the west of the Site. To the north west and north of the Site, the road passes through a lower-lying landscape of boggy and rocky moorland with undulating cnocs and scattered lochans. The road passes parallel to the northern shore of Loch Eireasort and through a number of small communities, including Baile Ailein and Lacasaigh. Views are focused across the undulating localised landform situated on either side of the road, which screens some outward views from the road, with occasional		

A859	
	views south across Loch Eireasort and towards more distant elevated landform and summits of south Lewis and north Harris afforded from sections of the road. Further north, the road approaches Stornoway and the influence of settlement becoming more evident in outward views from the road. The operational Arnish Moor is seen in relatively close distance views east from the road near the junction with the B891. A single operational turbine at Creed Business Park is seen in relatively close distance views east from the road. The operational Pentland Road and Beinn Ghrideag Community Wind Farms are glimpsed in middle and longer distance views north and north west from the northern extents of the road. The operational Eitshal main TV and Radio Transmitter mast is also seen in relatively distant glimpsed views west from the road, and an operational trident wood pole 132kV overhead line runs broadly parallel to the road between South Harris and Stornoway.
Sensitivity	Road users are considered to be of low susceptibility to changes in the view. Within the study area, the southern section of the road passes through the South Lewis, Harris and North Uist NSA, however the northern extents of the road do not pass through a designated landscape or WLA. On balance, the value of views from the road is considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors is judged to be **medium**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates intermittent sequential visibility from approximately 9.5km of the road within 10km of the nearest turbine of the proposed development, including extents of the road near Baile Ailein and Laxay/Lacasaigh (illustrated by VP8: Baile Ailein and VP9: A859 near Lacasaigh (Laxay) Cemetery). Views of the proposed development would vary, given screening by intervening landform. Where relatively open outward views are afforded from the road (illustrated by VP9: A859 near Lacasaigh (Laxay) Cemetery), the hubs and blades of all 25 turbines of the proposed development would be visible, occupying a relatively wide angle of distant views south west. The proposed development would be seen in the direction of travel for road users travelling south on this section of the A859 before the road turns west near this location. In views from extents of the road near Baile Ailein (illustrated by VP8: Baile Ailein), the tops of blades of the proposed development would be glimpsed beyond intervening landform. The ZTV (**Figures 7.2a-7.2c**) also indicates intermittent sequential visibility from more distant extents of the road, including near the junction with the A858 (illustrated by VP13: A859 near Liurbost) and near the junction with the B897. The hubs and blades of all 25 turbines of the proposed development would be seen extending across a medium angle of relatively distant views from these sections of the road. The proposed development would be seen in the direction of travel for road users travelling south on this section of the A859. Visibility of the turbines with visible lighting would be evident from short sections of this route as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. The introduction of the proposed development would result in a medium scale change to views from extents of the road near Laxay/Lacasaigh and the junction of the A859/A858, where all turbines of the proposed development would be seen extending across medium to wide angle of outward views from the road. The scale of change would reduce to small for the route as a whole.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be medium for localised sections of the road near Laxay/Lacasaigh and the junction of the A859/A858, resulting in a **moderate (adverse)** and **significant** visual effect. The magnitude of change would reduce to **low** for the road as a whole and taking account of the **medium** sensitivity would result in a **minor (adverse)** and **not significant** visual effect for the road as a whole.

A859	
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen in sequential views from localised extents of the road, appearing most evidently in views west from the northern extents of the road near Stornoway. The visual assessment for VP13 identified that the overall magnitude of change under Scenario 1 would remain as medium and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment. Similar sequential views of wind farms would be experienced from localised extents of the road north of Laxay. The visual assessments for VP8 and VP9 identified no additional cumulative effects under this future baseline scenario. Overall the magnitude of change to views from the route under this scenario, which considers all consented developments, would remain as medium locally, reducing to low for the route as a whole. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the road a whole (as for the primary assessment).
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would run broadly parallel to the road, and would occasionally appear as an evident skyline feature in views north and west from the road. Given the proposed OHL would replace the existing 132kV trident wood pole OHL, cumulative effects under this future baseline scenario are unlikely to change from those considered under the primary assessment. VP8, VP9 and VP13 identified that the overall magnitude of change under Scenario 2 would remain as assessed in the primary assessment and Scenario 1. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the road a whole (as for the primary assessment).

Table 7-47: A858

A858			
Representative viewpoint	VP14: Acha Mor (Achamore)	**Approximate distance to nearest turbine**	13.1km
Description	The A858 is a C-shaped road which connects a number of small settlements on the west coast of Lewis. North west of Liurbost, the A858 splits from A859 and heads north west towards Calanais, where the popular tourist attraction of the Calanais Standing Stones is situated. It loosely follows the western coastline of Lewis north and east, passing the settlements of Carloway and Bragar before ending at the junction with the A857 just south of Barvas. From the section of the road which passes Achamore and Garynahine, relatively open views are afforded looking south across the landscape of undulating cnocs and scattered lochans towards more distant elevated landform and hill summits of south Lewis and north Harris. In views from sections of the road which pass along the western coast of Lewis, undulating topography foreshortens some outward views, particularly looking towards the coast, however some glimpsed views south towards the elevated landform in south Lewis and north Harris are afforded. Loch na Muilne and Loch Dunain are directly adjacent to the road and form distinctive features in views. The operational Baile an Truseil Wind Farm is evident from outward views from the northern extents of the road. The Pentland Road and Beinn Ghrideag Community Wind Farms are glimpsed in longer distance views east and south east from localised extents of the road. The operational Eitshal main TV and Radio Transmitter mast is evident in views from sections of the road near Acha Mor.		
Sensitivity	Road users are considered to be of low susceptibility to changes in the view. The road does not pass through any designated landscapes or WLA. The value of views from the road are considered to be medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors is judged to be **medium**.		

A858	
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates sequential visibility from 6.0km of the road near Acha Mor (illustrated by VP14: Acha Mor (Achamore)), within approximately 14.0km of the nearest turbine of the proposed development. Intermittent sequential visibility is also indicated from more distant extents of the road between Garynahine and Breasclete, within 18.2-23.8km of the nearest turbine of the proposed development, and near Carloway, within 30.0km of the nearest turbine of the proposed development. Where relatively open outward views are afforded from extents of the road within approximately 15km of the nearest turbine of the proposed development (illustrated by VP14: Acha Mor (Achamore)), the hubs and blades of up to 21 turbines and the blades of up to a further three turbines of the proposed development would be seen extending across a medium angle of distant oblique views from the road. Similar views would be afforded from approximately 6km of the A858. In more distant views from the road, intervening landform would screen a greater proportion of the proposed development, with turbine blades appearing as distant skyline features. Visibility of the turbines with visible lighting would be evident from short sections of this route as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. The introduction of the proposed development would result in a medium scale change to the view to localised extents of the road near Acha Mor, reducing to a small scale change to views from the road as a whole.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **medium** for localised sections of the road near Acha Mor, resulting in a **moderate (adverse)** and **significant** visual effect. The magnitude of change would reduce to **low** for the road as a whole and taking account of the **medium** sensitivity would result in a **minor (adverse)** and **not significant** visual effect for the road as a whole.
Assessment of effects under Scenario 1 cumulative baseline	Blade tips of the consented Stornoway Wind Farm would be glimpsed beyond intervening landform in views north from localised extents of the road to the east of Acha Mor, approximately 14km to the north of the nearest turbine of the proposed development. VP14 identified no additional cumulative effects under this future baseline scenario. Overall the magnitude of change to views from the route under this scenario, which considers all consented developments, would remain as **medium** locally, reducing to **low** for the route as a whole. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to **minor** (adverse) and **not significant** for the road a whole (as for the primary assessment).
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would cross the road near its junction with the A859. Given the proposed OHL would replace the existing 132kV trident wood pole OHL, cumulative effects under this future baseline scenario are unlikely to change from those considered under the primary assessment. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the road a whole (as for the primary assessment).

Table 7-48: B8060

B8060			
Representative viewpoint	VP2: B8060, east of the Site; VP5: B8060 near Tabost	**Approximate distance to nearest turbine**	4.0km

B8060			
	(Habost) Church		
Description	The B8060 links the A859 with the Pairc (Park) peninsula on Lewis. The route joins the A859 west of Baile Ailein and terminates in Leumrabhagh, at the south end of the Pairc peninsula. From the junction with the A859, the road passes east, broadly following the southern shore of Loch Eireasort. The road passes the settlements Tabost and Cearsiadar and crosses a landscape of rolling rocky moorland. Outward views from this section of the road are predominantly foreshortened by undulating localised landform on either side of the road, with occasional glimpsed views north across Loch Eireasort and west towards more distant elevated landform. At Gearraidh Bhaird, the B8060 heads south, gaining in elevation until it passes west of Loch Crois Aillein and into the community of Taobh a' Ghlinne, where the road declines in elevation. The B8060 passes the west end of settlement Grabhair, then continues broadly south in a loosely winding pattern until Leumrabhagh, at the southern end of the Pairc peninsula. Rolling localised landform foreshortens outward views from the southern sections of the road as well, though more open views south, south west and west towards distant rising landform, including towards hill summits within Eisgein WLA 31 and on the eastern boundary of the South Lewis, Harris and North Uist NSA, are occasionally glimpsed in between intervening landform from sections of the road.		
Sensitivity	Road users are considered to be of low susceptibility to changes in the view. The road does not pass through any designated landscapes. The value of views from the road is considered medium. Taking account of the judgements of susceptibility and value, overall sensitivity of receptors is judged to be **medium**.		
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates visibility from approximately 3.3km of the road within 4.0km to the east and north east of the nearest turbine of the proposed development (illustrated by VP2: B8060, east of the Site). Intermittent visibility is also indicated from the extents of the road within 4.7-6.1km to the north east and north of the nearest turbine of the proposed development (illustrated by VP5: B8060 near Tabost (Habost) Church). Where relatively open views are afforded from extents of the road to the east of the Site (illustrated by VP2: B8060, east of the Site), hubs and blades of all 25 turbines of the proposed development would be seen extending across the middle distance of oblique views west, partially backclothed by landform. The proposed development would form a new focal feature, extending across a wide angle of oblique views. Access tracks would also be seen in views from this section of the road. Similar views would be afforded from approximately 3.3km of the B8060, although the undulating nature of localised landform to the west of the road occasionally would occasionally screen views. Where more distant views of the proposed development are afforded (illustrated by VP5: B8060 near Tabost (Habost) Church), hubs and blades of up to 21 turbines and the blades of up to a further four turbines of the proposed development would be seen extending across a wide angle of the view south, partially screened by intervening landform. Visibility of the turbines with visible lighting would be evident from short sections of this route as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. The introduction of the proposed development would result in a large scale change to views experienced from localised extents of the road within 4.0km to the east, reducing to a medium scale change to more distant views experienced from localised extents of the road within 4.7-6.1km to the north and north east of the nearest turbine of the proposed development.		
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **high** and taking account of the **medium** sensitivity would result in a **major (adverse)** and **significant** visual effect for localised extents of the road within 4.0km to the east of the nearest turbine of the proposed development. The		

B8060	
	magnitude of change would reduce to **medium** for the route as a whole, resulting in a **moderate (adverse)** and **significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The visual assessment for VP2 identified that no additional cumulative visual effects would occur from this location. The visual assessment for VP5 identified that the overall magnitude of change under Scenario 1 would remain as medium, resulting in a **moderate (adverse)** and **significant** visual effect (as for the primary assessment). Similar sequential views of wind farms would be experienced from localised extents in the north of the road. Overall the magnitude of change to views from the route under this scenario, which considers all consented developments, would remain as **high** for localised extents, reducing to **medium** for the route as a whole. The visual effect would be **major (adverse)** and **significant**, reducing to **moderate (adverse)** and **significant** for the route as whole.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 0.2km to the east of the road at its nearest point, however the road passes further east away from the OHL. Given the proposed OHL would replace the existing 132kV trident wood pole OHL, cumulative effects under this future baseline scenario are unlikely to change from those considered under the primary assessment. The visual effect would remain as **high** for localised extents, reducing to **medium** for the route as a whole. The visual effect would be **major (adverse)** and **significant**, reducing to **moderate (adverse)** and **significant** for the route as whole.

Table 7-49: Hebridean Way / NCN Route 780

Hebridean Way / NCN Route 780			
Representative viewpoint	VP8: Baile Ailein; VP9: A859 near Lacasaigh (Laxay) Cemetery; VP13: A859 near Liurbost; and VP14: Acha Mor (Achamore).	**Approximate distance to nearest turbine**	7.0km
Description	The Hebridean Way comprises a 185-mile cycle route, with the option for a 156-mile walking route, that traverses the islands of the Outer Hebrides, using ferries and causeways to link the route between islands. The full route begins on the Island of Vatersay in the south and terminates on the northernmost point of the Butt of Lewis, by the lighthouse, in the north. Within the study area, the walking route slightly diverts from the cycle route, which mainly follows main roads (A485 and A858). In north Harris, the walking route travels north east from Tarbert through Gleann Lacasdail. The walking route then crosses the A485 and cycle route, passing to the west of Cleit Ard. Between the Aline Community Woodland and Laxay (Lacasaigh), the walking route occasionally diverts to pass through the undulating rocky moorland to the west of the A485. The walking route passes north and north west from Laxay (Lacasaigh), briefly running alongside the A858 and cycle route near Acha Mor, before passing north east along a minor road towards Stornoway. Within the study area, the cycle route passes along the A859 from Leverburgh, crossing		

Hebridean Way / NCN Route 780	
	west along the A858 from near Tom Mhic Leoid towards Barvas, and continuing onto the A857 between Barvas and the Butt of Lewis (Rubha Robhanais). Both the walking and cycle route pass through a landscape with varied views and scenery. Within approximately 15km of the nearest turbine of the proposed development, views from both routes are occasionally screened by intervening landform, which is more dramatic as the route passes to the west of Loch Seaforth. Views from sections fo the route to the north east and north of Loch Seaforth are focused on the undulating rocky and boggy moorland with occasional glimpsed views towards loch shores. The rising summits of south Lewis and north Harris form the background of glimpsed distant outward views from sections of the routes. The operational Baile an Truseil Wind Farm is evident from outward views from the northern extents of the cycle route. The Pentland Road and Beinn Ghrideag Community Wind Farms are glimpsed in middle and longer distance views north and north west from localised extents of the routes, particularly the section of the walking route to the north of Acha Mor. The operational Eitshal main TV and Radio Transmitter mast is also evident in views from this section of the walking route and nearby sections of the cycle route. An operational trident wood pole 132Kv overhead line runs broadly parallel to the routes between south Harris and the A858.
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. Within 15km of the Site the routes pass through the South Lewis, Harris and North Uist NSA. The value of the view is considered to be high. Taking into account the judgements of susceptibility and value, overall sensitivity of receptors on this route is judged to be **high**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates intermittent visibility from approximately 14.6km of the routes within 10km to the north west and north of the nearest turbine of the proposed development, however localised landform would occasionally screen outward views from some sections of the route. Further visibility is indicated from sections of the routes beyond 10km of the nearest turbine of the proposed development, focused near Acha Mor within 14.0km of the nearest turbine of the proposed development. Views of the proposed development from sections of the routes within 10km would vary. Where relatively open views are afforded (illustrated by VP9: A859 near Lacasaigh (Laxay) Cemetery), the hubs and blades of all 25 turbines of the proposed development would be visible, occupying a relatively wide angle of distant views south west. Given both the walking and cycle routes are typically experienced travelling from south to north, the proposed development would be seen in views opposite to the direction of travel in this location. Similar views would be experienced from relatively localised extents of the routes (approximately 3.7km of the cycle route and 2.5km of the walking route), given intervening landform which screens views of the proposed development from other sections of the routes within 10km of the nearest turbine of the proposed development. Where relatively open views are afforded within approximately 14.0km of the nearest turbine of the proposed development, near Acha Mor (illustrated by VP14: Acha Mor (Achamore)), the hubs and blades of up to 21 turbines and the blades of up to a further three turbines of the proposed development would be seen extending across a medium angle of distant oblique views south from the routes. Similar views would be experienced from localised extents (approximately 6.0km of the cycle route and 4.2km of the walking route). Visibility of the turbines with visible lighting would be evident from short sections of these routes as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. The introduction of the proposed development would result in a medium scale change to views from extents of the routes near Laxay/Lacasaigh and Acha Mor. The scale of change would reduce to small for the routes as a whole.

Hebridean Way / NCN Route 780	
Overall Level of Effect and Significance	The overall magnitude of change is judged to be medium for localised sections of the road near Laxay/Lacasaigh and Acha Mor, resulting in a **moderate (adverse)** and **significant** visual effect. The magnitude of change would reduce to low for the routes as a whole and taking account of the medium sensitivity would result in a **minor (adverse)** and **not significant** visual effect for the routes as a whole.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would be seen in sequential views from localised extents of the routes, appearing most evidently in views north from localised extents of the cycle route near the junction of the A859 and A858 and sections of the walking route north of Acha Mor. The visual assessment for VP13 identified that the overall magnitude of change under Scenario 1 would remain as medium and the visual effect would be **moderate (adverse)** and **significant**, as for the primary assessment. Similar sequential views of wind farms would be experienced from localised extents of the routes north of Laxay. The visual assessments for VP8, VP9 and VP14 identified no additional cumulative effects under this future baseline scenario. Overall, the magnitude of change to views from the routes under this scenario, which considers all consented developments, would remain as **medium** locally, reducing to **low** for the route as a whole. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the routes a whole (as for the primary assessment).
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would run broadly parallel to sections of the routes which pass on or alongside the A859. Given the proposed OHL would replace the existing 132kV trident wood pole OHL, cumulative effects under this future baseline scenario are unlikely to change from those considered under the primary assessment. VP8, VP9, VP13 and VP14 identified that the overall magnitude of change under Scenario 2 would remain as assessed in the primary assessment and Scenario 1. The visual effect would remain as **moderate (adverse)** and **significant** locally, reducing to **minor (adverse)** and **not significant** for the routes a whole (as for the primary assessment).

Table 7-50: Pairc Trust Steimreway Path

Pairc Trust Steimreway Path			
Representative viewpoint	N/A	**Approximate distance to nearest turbine**	2.1km
Description	This route, promoted by the Pairc Trust, passes west from the western edge of Orinsay/Orasaigh and terminates at the historical ruins of Steimreway/ Stiomrabhaigh. The deserted village was originally cleared in 1857 and again in 1940, with remnants of both periods of occupation visible today. Situated on the south western coast of the Pairc peninsula, the village lies above the shore of Lodan Stiomrabhaigh which feeds into Loch Sealg. The route can be accessed from Orinsay/Orasaigh near the western end of the village. The return route is approximately 5.5km in length. The main route travels north then west from its starting point towards Loch Shaghachain, where it then follows the shoreline to the south west. The route passes to the north of Giearol (120m AOD), passing roughly along the 30m AOD contour. There is a slight topographical rise as the route travels south west, before descending into Steimreway/Stiomrabhaigh. An alternative route with the same starting point travels south then west, ascending the summit of Giearol. At the western base of the hill, the route passes south of the small Loch na Mnà before joining the main route on its approach to Steimreway/Stiomrabhaigh.		

Pairc Trust Steimreway Path	
	Outward views vary; from the eastern section of the route, Giearol obscures views west and views north are predominantly focused on low lying undulating topography of the rocky moorland. Relatively open views towards the Site are afforded from the north-facing slopes of Giearol. From Loch Shaghachain to the south western section of the route, views are focused south west towards Meall Mor an t-Stroim across Tob Stiomrabhaigh bay and south looking across Loch Sealg towards hills in the Eisgein WLA 31. From sections of the alternative route which pass at higher elevation, more distant views south to east are afforded towards Eilean Liubhaird and the Shiant Islands beyond. In the far distance, the north west coast of mainland Scotland can be seen on the horizon across the sea.
Sensitivity	Recreational receptors, whose attention is focused on their surroundings, are considered to be of high susceptibility to changes in the view. The route does not pass through any designated landscapes of WLA. The value of views from the route is considered medium. Considering the judgements of susceptibility and value, overall sensitivity of receptors on this route is judged to be **high**.
Assessment of visual effects (Primary assessment)	The ZTV (**Figures 7.2a-7.2c**) indicates visibility from approximately half of the length of the route, focused on sections of the route which pass to the north or over the summit of Giearol, and western sections of the route which descend into Steimreway/Stiomrabhaigh. In outward views from these sections of the route, the hubs and blades of up to 25 turbines would form evident features across a wide angle of relatively close distance views. The introduction of the proposed development would result in a large scale change to views from these sections of the route. Visibility of the turbines with visible lighting would be evident from this route as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**.
Overall Level of Effect and Significance	The magnitude of change is judged to be large for approximately half of the route, resulting in a **major (adverse)** and **significant** visual effect.
Assessment of Cumulative Effects under alternative baselines (Scenario 1 and 2)	No other consented or proposed wind energy or infrastructure developments (as identified in **Table 7-8**) would be perceptible in views from this location therefore **no additional cumulative visual effects** are predicted to occur for either cumulative assessment scenario. The level of effect would therefore remain as identified in the primary assessment.

Table 7-51: Stornoway-Ullapool ferry route

Stornoway-Ullapool ferry route			
Representative viewpoint	N/A	**Approximate distance to nearest turbine**	19.8km
Description	This ferry route passes approximately 83km from Ullapool, on the north east coast of mainland Scotland, to Stornoway on Lewis. The journey takes just under three hours. Outward views from much of the route are relatively open with distant views afforded looking across the North Minch. Distant landform, including the hills of south Lewis and north Harris, rise on the horizon and form the background of views west. On approach to or departure from Stornoway Harbour, An Rubha (the Eye Peninsula) appears as the nearest landform to the north of the route. Landform to the east and west of the route partially foreshorten and enclose more distant views from the route upon approach into the harbour.		

Stornoway-Ullapool ferry route	
Sensitivity	Ferry users are considered to be of medium susceptibility to changes in the view. Many commuters use the ferry, however it is recognised that tourists and recreational receptors also use the ferry. Within the study area, the ferry route does not cross within any designated landscapes. The value of views is considered medium. Considering the judgements of susceptibility and value, overall sensitivity of receptors on this route is judged to be **medium**.
Assessment of visual effects (Primary assessment)	Within the study area, the ZTV (**Figures 7.2a-7.2c**) indicates visibility from the route within 19.8km-45.0km. Relatively open, albeit distant, views looking across the sea and towards the site would be afforded from much of the route. In views south west from sections of the route within approximately 25km of the nearest turbine of the proposed development, the hubs and blades of up to 25 turbines would be seen across a small proportion of distant views, partially screened by intervening landform. The proposed development would increase the horizontal extent of turbines in the view, however proposed turbines would appear as a more distant feature than other operational wind turbines seen in views looking south west and west from the route. Similar views would be experienced from much of the route, however intervening landform screens views of the proposed development from the western extents of the route as it approaches Stornoway Harbour. Visibility of the turbines with visible lighting would be evident from this route as indicated by **Technical Appendix 7.5**, **Figure 7.5.2** and **Technical Appendix 7.5**, **Annex A**. The introduction of the proposed development would result in a small scale change to the view.
Overall Level of Effect and Significance	The overall magnitude of change is judged to be **low** and taking account of the **medium** sensitivity would result in a **minor (adverse)** and **not significant** visual effect.
Assessment of effects under Scenario 1 cumulative baseline	The consented Stornoway Wind Farm would extend across a relatively wide angle of distant successive views west. The consented Stornoway Wind Farm would be seen in a similar angle of the view as the operational Pentland Road and Beinn Ghrideag Community Wind Farms, although the consented turbines would appear perceptibly larger and would increase the horizontal extent of turbines in the view. The consented Druim Leathann would be screened by the intervening landform on An Rubha (the Eye Peninsula) in views north from westerly sections of the route, however more distant views of the consented development are afforded from easterly sections of the route. The proposed development would be seen in a separate angle of the view as both the consented Stornoway and Druim Leathann Wind Farms, and would appear perceptibly more distant than both consented developments. Though the introduction of the proposed development under this scenario would increase the overall horizontal extent of wind turbines in the view, there would be limited interaction between the proposed development and the consented schemes given the intervening distance between the developments. The magnitude of change to views under this scenario, which includes all consented developments, would remain **low** and the visual effect would be **minor (adverse)** and **not significant**, as for the primary assessment.
Assessment of effects under Scenario 2 cumulative baseline	The proposed Harris-Stornoway 132kV OHL replacement would pass 2.2km to the west of this route at its closest point, therefore **no additional cumulative effects** are predicted to occur under this scenario. The level of effect will therefore remain as identified in the primary assessment and Scenario 1.

Combined Cumulative Effects

7.108 GLVIA3 refers to the focus of cumulative LVIA being either "*additional effects of the main project under consideration, or on the combined effects of all the past, present and future proposals* *together with the new project*" (paragraph 7.18), but in doing so acknowledges that "*…assessing combined effects involving a range of different proposals at different stages in the planning process can be very complex. Furthermore the assessor would not have assessed the other schemes and cannot therefore make a fully informed judgement. A more comprehensive overview of the cumulative effects must rest with the competent authority*."

7.109 Therefore, this type of cumulative effect is only described where it is considered likely to be a relevant consideration in the determination of the proposed development. In considering the detailed cumulative landscape and visual effects assessed in the LVIA, broad observations are made within the summary of effects relating to how the combined cumulative effects of multiple future wind farm developments may influence landscape character, views and visual amenity and designated landscapes.

7.110 As outlined in the definition of the cumulative scenarios set out in paragraph 7.79, future baseline situations where all or different permutations of other wind farm developments are present in the landscape can be highly speculative, and a decreasing level of certainty can often be applied to these as more developments are included. Where cumulative Scenario 1 and Scenario 2 considers the additional effects arising from the introduction of the proposed development, these effects are assessed on the basis of a 'worst' or 'maximum' case scenario where all developments are assumed to be present. When considering the potential for combined cumulative effects the same approach must be adopted, which may often represent both a highly speculative and unrealistic future baseline situation.

7.111 Nevertheless, in order to assist stakeholders and the decision maker in understanding the likely combined effects of all existing, consented, and proposed wind farms (as defined in the Scenario 2 baseline), the following observations and high level assessment considers the likely combined landscape and visual effects of all built (operational, and those currently under construction) and unbuilt (consented or proposed) wind farms and other infrastructure (as set out in **Table 7-8**), including the proposed development.

7.112 With regard to combined cumulative effects on landscape character, and when looking at the broad pattern of wind farm development and presence of other infrastructure which may give rise to similar landscape and visual effects, there are areas across the study area where the combined effects of all operational, consented, and proposed developments would notably influence landscape character. These areas include areas of the Boggy Moorland LCT (322) to the west of Stornoway and near Tolsta at the far north of the Isle of Lewis. Given the intervening distance between the consented Stornoway Wind Farm and consented Druim Leathann Wind Farm, combined effects would be limited to relatively localised extents of the LCT, where these wind farms will have a characterising effect on landscape. The proposed development is located further south in a different LCT, and although some indirect effects on a unit of the Boggy Moorland LCT would arise (as detailed in Table 7-14). However, this unit is not physically or visually connected to the unit of the Boggy Moorland LCT in which the consented Stornoway Wind Farm and consented Druim Leathann Wind Farm are located.

7.113 In terms of combined cumulative visual effects, and in broad terms, it is generally from the more elevated and open locations, such as hill tops, ridges and elevated slopes, where several operational, consented, and proposed developments would be visible. However, most of these elevated locations are located within South Lewis and North Harris, where the consented Stornoway Wind Farm and consented Druim Leathann Wind Farm would appear as relatively distant features. The proposed Harris-Stornoway 132kV OHL replacement would appear closer in many of these views although passing at lower elevations as it crosses lower lying terrain in proximity to the existing wood pole OHL which it will replace. Given the intervening distance, the OHL replacement is unlikely to notably influence elevated views. In views from these locations, including VP15: An Cliseam, the consented Stornoway Wind Farm, operational Pentland Road and Beinn Ghrideag Community Wind Farms would appear as one continuous development in distant views. The consented Druim Leathann would form a more distant feature beyond the consented Stornoway Wind Farm. The proposed development would be seen in a separate angle of the view. Given the relatively distant nature of the consented Stornoway Wind Farm, consented Druim Leathann, operational Pentland Road and Beinn Ghrideag Community Wind Farms, and the perception of the proposed development as a separate cluster of turbines, potential for combined cumulative effects would be limited, and much of the available view to the west, south and south east would not be influenced by commercial scale wind turbines, which would prevent the perception of 'encirclement' of the view by turbines.

7.114 In views from the Stornoway War Memorial (VP17), operational wind farm development forms an existing influence in views looking south and west. This would be exacerbated most notably by the consented Stornoway Wind Farm, which would extend across a wide angle of views west. The consented Druim Leathann Wind Farm would be seen in a separate angle of the view and would form a more distant feature in views north east. Should the existing stand of commercial forestry to the south west of this location be felled, the proposed development would form a distant feature in a separate angle of the view as the consented Stornoway and Druim Leathann Wind Farms, although proposed turbines would be seen beyond the operational Arnish Moor and would increase the horizontal extent of turbines in views south west. In a future scenario where all operational, consented, and proposed wind farms are present, emerging clusters of wind turbines would be seen across various angles of the view. However, much of the available views to the north east, east and south east would not be influenced by wind turbines which would prevent the perception of 'encirclement' of the view by turbines.

7.115 Sequential combined effects would be experienced by road users on the A859. Operational wind farms including Pentland Road, Arnish Moor and Beinn Ghrideag Wind Farm exert an existing influence on views experienced from the road, which would be exacerbated by the consented Stornoway Wind Farm, which would appear across a wide angle of relatively close views west from extents of the road within approximately 5km of Stornoway. The proposed development would increase the horizontal extent of wind turbines in views from the A859 and would influence the experience of travelling south on the road. However, the proposed development would be seen at a greater intervening distance than the emerging cluster of turbines to the west of Stornoway.

7.116 In terms of combined cumulative effects for designated landscapes and wild land areas, wind farm development across the study area would mostly be focused to the north of the South Lewis, Harris and North Uist NSA and Eisgein WLA 31. The proposed development would locate turbines closer to both the NSA and WLA, however existing, consented, and proposed wind turbines (including other operational and consented wind farms) would be seen in middle to longer distance views from elevated extents of the NSA and WLA. Turbines would appear in relatively discrete and separate clusters in outward views from the NSA and WLA, and the focus of views within or across the NSA and WLA would not be altered by combined views of multiple wind farms. The CZTV shown on **Figure 7.3.3** indicates areas of combined visibility (shown in blue) across the north of the NSA, though these are predominantly focused across elevated areas and hill summits within the NSA, whilst large geographical extents of the NSA would remain unaffected by visibility of wind turbines. In comparison with areas of existing visibility of operational wind farms (shown in yellow on **Figure 7.3.2)**, areas of introduced visibility (additional areas shown in yellow and green on **Figure 7.3.3**)) resulting from the consented wind farms and the proposed Uisenis Wind Farm are very localised. The CZTV shown on **Figure 7.4.8** indicates areas of combined visibility focused predominantly within the elevated extents in the north east of WLA 31 (shown in blue). In comparison with areas of existing visibility of operational wind farms (shown in yellow on **Figure 7.4.7**), areas of introduced visibility resulting from the consented wind farms and the proposed Uisenis Wind Farm are localised (additional areas shown in yellow and green on **Figure 7.4.8**).

STATEMENT OF SIGNIFICANCE

7.117 As set out in the LVIA methodology (**Technical Appendix 7.1**), mitigation of landscape and visual effects was undertaken through design modifications and input to the design process. The design evolution is set out in **Chapter 2: Site Description and Design Evolution** of the EIA Report. As all mitigation for landscape and visual effects is embedded within the final design for the proposed development, all effects identified in this chapter are residual effects.

7.118 **Table 7-52** below summarises the predicted effects of the proposed development on landscape and visual amenity within the Site and study area.

Table 7-52: Summary of Effects

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
Construction Phase				
The Site	High	High **Major (adverse) significant**	n/a	n/a
Operational Phase				
Landscape and Coastal Character				
The Site	High	High **Major (adverse) significant**	n/a	n/a
Prominent Hills and Mountains (LCT 326)	High	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment)	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment and Scenario 1)
Rocky Moorland – Outer Hebrides (LCT 323)	High	Medium locally, low for LCT as a whole	Medium locally, low for LCT as a whole	Medium locally, low for LCT as a whole

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
		Moderate (adverse) and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole	**Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment)	**Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment and Scenario 1)
Dispersed Crofting (LCT 319)	High	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment)	n/a
Boggy Moorland – Outer Hebrides (LCT 322)	Medium	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment)	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment and Scenario 1)
Linear Crofting (LCT 318)	Medium	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole	Medium locally, low for LCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the LCT as a whole (as for primary assessment)	n/a
Cnoc and Lochan (LCT 324)	High	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant (as for primary assessment)	n/a
Gently Sloping Crofting (LCT 317)	Medium	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
			(as for primary assessment)	(as for primary assessment and Scenario 1)
Low Rocky Island Coasts (CCT 13)	High	Medium locally, low for CCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the CCT as a whole	Medium locally, low for CCT as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the CCT as a whole (as for primary assessment)	n/a
Views and Visual Amenity				
Viewpoint 1 - Orasaigh (Orinsay)	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Viewpoint 2 - B8060, east of the Site	Medium	High **Major (adverse)** and **significant**	n/a	n/a
Viewpoint 3 - Beinn Mhòr	High	High **Major (adverse)** and **significant**	High **Major (adverse)** and **significant** (as for primary assessment)	n/a
Viewpoint 4 - Taobh a' Ghlinne (Glenside)	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Viewpoint 5 - B8060 near Tabost (Habost) Church	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	n/a
Viewpoint 6 - Leumrabhagh	High	Low Minor (adverse) and not significant	n/a	n/a
Viewpoint 7 - Uisinis	High	High **Major (adverse)** and **significant**	n/a	n/a
Viewpoint 8 - Baile Ailein	High	Low Minor (adverse) and not significant	n/a	Low Minor (adverse) and not significant
Viewpoint 9 - A859 near Lacasaigh (Laxay) Cemetery	High	Medium **Moderate (adverse)** and **significant**	n/a	Medium **Moderate (adverse)** and **significant** (as for primary assessment)

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
Viewpoint 10 - Todun	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	n/a
Viewpoint 11 - Liurbost	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Viewpoint 12 - Liuthaid	High	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant (as for primary assessment)	n/a
Viewpoint 13 - A859 near Liurbost	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	Medium **Moderate (adverse)** and **significant** (as for primary assessment and Scenario 1)
Viewpoint 14 - Acha Mor (Achamore)	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Viewpoint 15 - An Cliseam	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	n/a
Viewpoint 16 - Calanais Standing Stones	High	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant (as for primary assessment)	n/a
Viewpoint 17 - Stornoway War Memorial	High	Negligible Minor (adverse) and not significant	Negligible Minor (adverse) and not significant (as for primary assessment)	n/a
Viewpoint 18 - An-Cnoc (Knock)	Medium	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant (as for primary assessment)	n/a
Settlements				
Leumrabhagh (Lemreway)	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Orasaigh (Orinsay)	High	Medium	n/a	n/a

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
		Moderate (adverse) and **significant**		
Taobh a Ghlinne (Glenside)/ Grabhair (Gravir)	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a
Gearraidh Bhaird (Garyvard)/ Caersiadair (Kershader) and Tabost (Habost)	High	Medium locally, low for communities as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the communities as a whole	Medium locally, low for communities as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the communities as a whole (as for primary assessment)	n/a
Baile Ailein (Balallan)	High	Medium locally, low for settlement as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the settlement as a whole	n/a	Medium locally, low for settlement as a whole **Moderate (adverse)** and **significant** locally, reducing to minor (adverse) and not significant for the settlement as a whole (as for primary assessment)
Lacasaigh (Laxay)	High	Medium **Moderate (adverse)** and **significant**	n/a	Medium **Moderate (adverse)** and **significant** (as for primary assessment)
Ceos (Keos)/ Glib Cheos (Keose Glebe)	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	n/a
Liurbost/ Griomsiadar (Grimshader)/ Ranais/ Crosbost	High	Medium **Moderate (adverse)** and **significant**	Medium **Moderate (adverse)** and **significant** (as for primary assessment)	n/a
Achamore	High	Medium **Moderate (adverse)** and **significant**	n/a	n/a

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
Routes				
A859	Medium	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole (as for primary assessment)	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole (as for primary assessment and Scenario 1)
A858	Medium	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole (as for primary assessment)	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole (as for primary assessment and Scenario 1)
B8060	Medium	High locally, medium for the route as a whole **Major (adverse)** and **significant** locally, reducing to **Moderate (adverse)** and **significant** for the route as a whole	High locally, medium for the route as a whole **Major (adverse)** and **significant** locally, reducing to **Moderate (adverse)** and **significant** for the route as a whole (as for primary assessment)	High locally, medium for the route as a whole **Major (adverse)** and **significant** locally, reducing to **Moderate (adverse)** and **significant** for the route as a whole (as for primary assessment and Scenario 1)
Hebridean Way Walking and Cycling Routes/ NCN Route 780	High	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole (as for primary assessment)	Medium locally, low for the route as a whole **Moderate (adverse)** and **significant** locally, reducing to Minor (adverse) and not significant for the route as a whole

Receptor	Sensitivity of Receptor	Magnitude of Change and Significance of Effect (Primary Assessment)	Significance of Effect: Scenario 1	Significance of Effect: Scenario 2
				(as for primary assessment and Scenario 1)
Pairc Trust Steimreway Path	High	High **Major (adverse)** and **significant**	n/a	n/a
Stornoway – Ullapool ferry route	Medium	Low Minor (adverse) and not significant	Low Minor (adverse) and not significant (as for primary assessment)	n/a
Designated Landscapes and Wild Land Areas				
South Lewis, Harris and North Uist NSA (Technical Appendix 7.3)	High	**Moderate** (**significant**) effects on one SLQ within localised extents. The integrity of the NSA and the reasons for its designation will not be significantly affected by the proposal.	**Moderate** (**significant**) effects on one SLQ within localised extents. (as for primary assessment)	**Moderate** (**significant**) effects on one SLQ within localised extents. (as for primary assessment and Scenario 1)
Eisgein (WLA 31) (Technical Appendix 7.4)	High	**Moderate** (**significant**) effects on two wild land qualities within localised extents. The integrity of the WLA and the reasons for its protection will not be significantly affected by the proposal.	n/a	n/a

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CONTENTS

INTRODUCTION

8.1 This Chapter considers the current nature conservation interest of the Site and surrounding area. It goes on to assess the potential effects of the proposed development on important habitats and species and, where necessary, to describe proposed mitigation, compensation and enhancement measures. This Chapter considers habitats and non-avian animal species only. Potential effects on birds are considered separately in **Chapter 9: Ornithology**. Together **Chapters 8** and **9** provide an assessment of the potential effects of the proposed development on biodiversity.

8.2 This Chapter was drafted prior to the publishing of the Naturescot guidance 'Advising on peatland, carbon-rich soils and priority peatland habitats in development management' (June, 2023) and that this may affect some of the assessments however given that this Chapter was largely complete at time of publishing, this guidance was not taken into account in the assessment covered within this Chapter.

8.3 The specific objectives of the Chapter are to:

- describe the ecological 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 and compensation measures proposed to address likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation and compensation and identify biodiversity enhancements.

8.4 This Chapter is supported by the following Technical Appendices:

- **Technical Appendix 8.1: UK Habitat Classification (UKHab) and National Vegetation Classification (NVC) Report**;
- **Technical Appendix 8.2: Otter Survey Report**;
- **Technical Appendix 8.3: Bat Survey Report**;
- **Technical Appendix 8.4: Fish Habitat Survey Report**;
- **Technical Appendix 8.5: Outline Habitat Management Plan**; and
- **Technical Appendix 8.6: Consultation**.

SCOPE AND CONSULTATION

Scoping Responses

8.5 A Scoping Report (SLR, 2022) was submitted to Comhairle nan Eilean Siar (CnES) in July 2022. Scoping responses containing comments related to non-avian ecology and nature conservation were received from the following organisations:

- NatureScot;

- Scottish Environment Protection Agency (SEPA);
- Fisheries Management Scotland (FMS); and
- CnES - Western Isles Council.

8.6 A summary of the key points from the relevant scoping responses and details of how comments have been addressed in the EIA report are provided in **Table 8-1.**

Table 8-1: Scoping Key Issues

Consultee	Issue Raised	Response/Action Taken
NatureScot	NatureScot referred to their online guidance relating to otters and wind farms which gives an indication of the level of survey they would expect to see. NatureScot noted that although most otter holts are close to water, they are not restricted to the riparian zone and otters may excavate holes in the peat some distance from water.	SLR undertook surveys for otter, the details of this survey are provided in **Technical Appendix 8.2.** A summary of proposed mitigation relating to otter is detailed in paragraphs 8.112-8.114.
	NatureScot noted that Freshwater Pearl Mussel is also of high conservation value. The scoping report commits to freshwater habitat assessment to inform any requirement for further survey effort aimed at detecting this species. NatureScot considered this to be proportionate.	Results of the 2010 and 2012 (Alba Ecology Ltd.) FWPM habitat surveys show that there is very little suitable habitat on site. And FWPM surveys did not return any records of FWPM present on site. The fish habitat survey carried out (See **Technical Appendix 8.4**) suggests that there have been no major changes in habitat since previous surveys were conducted, it is concluded that FWPM are unlikely to be present on site.
SEPA	SEPA noted and welcomed the proposal to carry out new National Vegetation Classification (NVC) survey. They referred to section 4 of detailed scoping requirements attached to the scoping response in relation to groundwater dependant terrestrial ecosystems (GWDTE). SEPA stated that they much welcome further consultation once the NVC survey has been undertaken and potential GWDTE identified and further thoughts on the location of supporting infrastructure such as tracks. SEPA stated that they would also be happy to provide advice on any GWDTE assessment completed at that stage to help determine which potentially groundwater dependant habitats are dependant in that location.	SLR undertook a UK Habitat Classification (UKHab) and NVC survey of the Site. These details are provided in **Table 8-4** and **Technical Appendix 8.1.** Details of potential GWDTE noted during these surveys are provided within paragraph 8.125 – 8.126. Full assessment of GWDTE is provided in **Chapter 10 Hydrology, Hydrogeology and Geology.**
	SEPA stated that compensatory restoration and additional enhancement proposals should also be provided to address any direct or indirect impacts to the environment. They recommended that this takes the form of an Outline Habitat Management Plan, which should include a clear drawing showing areas that can be restored. They stated that	Details of proposed restoration can be found in paragraphs 8.146 – 8.151. An Outline Habitat Management Plan (OHMP) can be found in

Consultee	Issue Raised	Response/Action Taken
	proposals should investigate opportunities to reuse excavated peat within historic peat cuttings on site which allow existing turves to be utilised and reduces double handling of catotelmic peat and that all areas within the site that contain historic peat extraction areas should be shown on a site plan with the NVC survey overlaid. SEPA also suggested that there may also be opportunities nearby but outwith the site boundary that should be considered for peat re-use and that they would welcome early discussion about this if it is an option.	**Technical Appendix 8.5. Figure 8.5.1** within **Technical Appendix 8.5** shows areas with the potential to be restored.
CnES - Western Isles Council	Comhairle nan Eilean Siar deferred to the views of NatureScot in respect of the content of this Chapter and their views as to the duration and nature of survey information required and what should be scoped in or out.	Surveys undertaken in line with NatureScot scoping response.
	Trees & Woodland – CnES stated that although the Ecology Desk Study Report (see Section 3 of **Technical Appendix 8.2**) stated there are no ancient woodlands present within 10km of the site, the development site is within a Native Woodland Core Development Area and noted that the Scoping Report does not mention how the development will impact native woodland, pockets of which are spread throughout the development site. CnES quoted Policy NBH3 in their response: Trees and Woodland, In order to minimise any adverse impacts on amenity, biodiversity or landscape value, developers will be required to incorporate existing trees and woodland into developments through sensitive siting and design. Where loss is unavoidable, appropriate replacement planting should be sought using planning conditions or through a legal agreement if appropriate.	There are few pockets of woodland present on site, centred around the Eishken Estate (**See Technical Appendix 8.1)**. No felling is required for the proposed development and therefore no impacts on woodland are predicted.
	CnES stated that the EIA Report should provide appropriate information on the potential impacts on native woodland and any mitigation strategy intended to reduce impacts on this resource. They noted that page 40-41 [of the scoping report] states that The Ecological Impact Assessment that will be presented in the EIA Report will include identifying opportunities for biodiversity enhancements. CnES stated that they would expect the Developer to ensure that activities not only maintain the balance that exists but enhance the biodiversity in the area and in order to address compensatory planting in accordance with the Scottish Government's Control of Woodland Removal Policy it is recommended that to encourage biodiversity and mitigate against the loss of forestry that native species are planted and that a Habitat Management Plan is provided to facilitate this purpose. CnES noted there is no consideration of native woodland in the scope of the EIA.	As above, no impacts on native woodland are predicted. Details of biodiversity restoration and enhancement measures can be found in paragraphs 8.146 – 8.151 and full details are found in **Technical Appendix 8.5 Outline Habitat Management Plan.** This includes riparian woodland planting.
FMS	FMS noted that the proposed development straddles the river catchments relating to the Western Isles DSFB and Outer Hebrides Fisheries Trust. They stated that it is important that the proposals are conducted in full	The guidelines have been considered within the assessment. The Outer Hebrides Fisheries Trust has been consulted

Consultee	Issue Raised	Response/Action Taken
	consultation with the Board/Trust, and they would be grateful if they could be involved in the project proposals. FMS copied their response to the relevant personnel at both organisations. FMS stated that due to the potential for such developments to impact on migratory fish species and the fisheries they support, they have developed, in conjunction with Marine Scotland Science, advice for DSFBs and Trusts in dealing with planning applications. FMS strongly recommended that these guidelines are fully considered throughout the planning, construction and monitoring phases of the proposed development.	(See **Technical Appendix 8.6** for full details). A fish habitat assessment of the Site was undertaken by OHFT, the results of which are detailed in paragraphs 8.89 – 8.91. Full details can be found in **Technical Appendix 8.4.**

Effects Scoped Out

8.7 This assessment concentrates on the effects of construction and operation of the proposed development upon important ecological receptors (decommissioning is scoped out of the assessment – see **Chapter 6: Scoping and Consultation**). Ecological receptors have been scoped out of further assessment where there is no potential for significant effects upon the ecological receptor or where the ecological receptors is not considered important at a local or greater level (See **Table 8-4** and **Table 8-6**), is not a GWDTE and/or is not subject to legal protection.

8.8 Impacts on designated sites for nature conservation (sites designated for their habitat or non-avian species interests) have been scoped out, due to the fact that the only designated sites within 10km of the Site are designated either for their marine receptors or habitat receptors that occur far enough away that works would not impact the qualifying features. Specifically, the Inner Hebrides and the Minches Special Area of Conservation (SAC) is adjacent to the southern boundary but is designated for its harbour porpoise (P*hocoena phocoena)* population, which would not be affected by the proposed development. The Lewis Peatlands Ramsar site occurs approximately 954m to the north west of the Site at its nearest point and approximately 7.2km from the Turbine Developable Area and is designated for blanket bog, oligotropic lochs, dystrophic lochs, lochans and pools, and wet heath. No pathways for potential effects have been identified given the intervening distance and lack of hydrological connection. NatureScot did not raise any concern regarding this approach in their scoping response.

8.9 Impacts upon areas classified on the Ancient Woodland Inventory have also been scoped out, due to the fact that there is no ancient woodland within 10km of the Site.

8.10 In accordance with the assessment methodology used (see paragraphs 8.37-8.53), habitats which are considered to be of relatively low ecological value (see **Table 8-4)** or would not be impacted upon by the proposed development have been scoped out of the detailed assessment. These habitats are as follows:

- woodland – woodland will not be impacted by the proposed development; and
- rhododendron scrub – any loss of this habitat would be in line with HMP objectives (see **Technical Appendix 8.5: Outline Habitat Management Plan**).

8.11 Based on the desk study (see Section 3 of **Technical Appendix 8.2**) and consideration of the extent and nature of the proposed development, effects on the following species or species groups have been scoped out of the assessment. For more information on each species/group, please refer to **Table 8-6**.

- water vole (*Arvicola amphibius*), red squirrel (*Sciurus vulgaris*), badger (*Meles meles*) and pine marten (*Martes martes*): there are no historical records of water vole, red squirrel, badger or pine marten on Lewis and it is considered that they are absent from the island, therefore impacts have been scoped out;
- invertebrates and reptiles: given that standard mitigation is thought sufficient to avoid any significant environmental effects on invertebrates and reptiles, no species-specific surveys were undertaken for these species, in accordance with current NatureScot (2022) guidance. Presence of reptiles was noted during the protected mammal surveys. An assessment of potential impacts on reptiles and proposed mitigation requirements during construction are included;
- amphibians: no native amphibians are known on Lewis, any frogs, newts or toads have been introduced. No species-specific surveys have been undertaken and assessment of potential impacts has been scoped out; and
- marine species: impacts on marine species have been scoped out. Although the Site is adjacent to Loch Sealg, due to the positioning of infrastructure and the embedded mitigation, no impacts are predicted.

Additional Consultation

8.12 Mark Macdonald of NatureScot was contacted on several dates between May and November 2022 to discuss the approach to bats at the Site. Given the presence of suitable bat habitat round the Eishken Lodge area within the Site, and informal records of bats in this area (pers comms, estate manager), it was initially agreed that a transect survey would be carried out in this area in July 2022.

8.13 Mark Macdonald was contacted again once the transect survey confirmed bat presence, to discuss appropriate next steps. It was agreed that although impacts on bats unlikely due to habitat present in the location of the proposed infrastructure, an ‘informal’ ground-based bat activity survey using static detectors would be undertaken at the locations of the six proposed turbine locations nearest to the Eishken Lodge. Bat activity data was collected during August 2022. Review of data collected confirmed low bat activity and therefore no further surveys for bats were carried out, as agreed. This was communicated in a letter report submitted to Mark Macdonald in November 2022 (refer to **Technical Appendix 8.3** and **Technical Appendix 8.6**).

8.14 The Outer Hebrides Fisheries Trust (OHFT) was contacted in August 2022 to discuss the scope of fish surveys. It was agreed to conduct fish habitat surveys at this stage, with the understanding that electrofishing and aquatic invertebrate surveys would be a likely pre-construction requirement. An email was sent to Mark Macdonald of NatureScot stating that this was the intention (see **Technical Appendix 8.6**).

APPROACH AND METHODS

8.15 This Chapter takes an appropriate and topic-specific approach to assessment of the proposed development within the parameters identified in **Table 3-1** of **Chapter 3: Description of Development.** This Chapter provides a worst-case assessment for non-avian ecology and aims to present enough information for consultees and the decision makers to comment on and determine the application within the parameters of the proposed development.

Study Area

8.16 The study area used for the EIA varies according to the ecological receptor in question, based on relevant good practice guidance. The study area used for habitats and vegetation is shown on **Figure 8.1.2** within **Technical Appendix 8.1** and includes all areas within the Site and an associated buffer zone that ensures coverage of wetland habitats within 250m of all proposed turbines and borrow pits and 100m from all other proposed infrastructure, including the access route from the A859. SEPA guidelines (SEPA, 2017) stipulate survey of a 250m buffer from excavations deeper than 1m, and a 100m buffer for excavations of less than 1m.

8.17 The study areas for relevant faunal species are summarised in the 'Field Survey Methodology' Section below and are described in more detail within **Technical Appendices 8.2 – 8.4**. For ease of reference the study areas included all suitable habitat within the Site including all areas within the site, as well as watercourses within 250m of proposed infrastructure (where this lies outside of the application boundary) for mammals (excluding bats) and the Fish Habitat Assessment.

8.18 Bat transect survey took place around the Eishken Lodge area (see **Figure 8.3.1** within **Technical Appendix 8.3).** As agreed with NatureScot (see paragraph 8.12 and 8.13), due to low levels of bat activity picked up during the transect, bat activity surveys subsequently took place at the six turbine locations closest to the Eishken lodge that were under consideration at that time.

Information and Data Sources

8.19 An ecological desk study was undertaken to collate available ecological information in relation to the proposed development and surrounding environment (see Section 3 of **Technical Appendix 8.2)**. The desk study was conducted prior to the Eishken Road being added to the Site boundary therefore the desk study does not cover the Eishken Road and the distances quoted below refer to the Turbine Developable Area. Desk study data relating to protected and notable species were acquired from the following sources:

- Outer Hebrides Biological Recording Group (OHBRG) was commissioned in June 2022 to provide data relating to records of protected and notable species within the Site and a 10km of it for all bat species, and a 2km radius for all other protected/notable species;
- Multi-Agency Geographic Information for the Countryside (MAGIC): Information relating to statutory designated nature conservation sites within an approximate 15km radius of the centre point of the Site;
- NatureScot's Carbon and Peatland 2016 Map (SNH, 2016c) was reviewed, which gives a value to indicate the likely presence of carbon rich soils, deep peat and priority peatland habitat for the Site, at a coarse scale across Scotland; and

- Ancient Woodland Inventory Scotland: A search was made for woodlands listed on the Ancient Woodland Inventory (Ancient Woodland Inventory - Natural Spaces - NatureScot (snh.gov.uk) within a 10km radius of Site.

8.20 A search through the CnES Planning Portal for relevant reports to inform this assessment revealed that there were no proposed developments within 10km of the site.

8.21 Additionally, the following Environmental Statements (ES) and Supplementary Environmental Information (SEI) submitted as part of previous applications at the Site were reviewed:

- Land Use Consultants (2004). Muaitheabhal Wind Farm: ES (ECU ref. E00005222);
- Land Use Consultants (2006). Muaitheabhal Wind Farm: SEI;
- Land Use Consultants (2009). Muaitheabhal Wind Farm: SEI;
- Land Use Consultants (2011). Muaitheabhal Wind Farm East Extension: ES; (ECU ref. EC00005223);
- Land Use Consultants (2011). Muaitheabhal Wind Farm East Extension: SEI; and
- Land Use Consultants (2013). Muaitheabhal Wind Farm South Extension: ES (ECU ref. EC00002096).

8.22 Eishken Road was added to the Site boundary after the Desk Study was completed. A search of nearby designated sites was conducted with the updated red line boundary. On the basis of limited impacts it was decided that the data described in paragraphs 8.19, 8.20 and 8.21 were sufficient to inform the scoping study for the proposed development.

Field Surveys

8.23 A UKHab and NVC survey was undertaken within the part of the Site where turbines are proposed (Turbine Developable Area) in June and July 2022, and on the minor road from the A859 and areas within the Site previously not accessible, in November 2022. Surveys were carried out within the Site and buffers detailed within paragraphs 8.16 – 8.17. The survey areas are shown on **Figure 8.1.2** of **Technical Appendix 8.1.**

8.24 A survey for protected and notable species (focused on otter (*Lutra lutra*) due to the Site having low suitability for other protected or notable terrestrial mammals, as detailed in paragraph 8.11) was undertaken in July 2022 in the Turbine Developable Area. Surveys were carried out along the minor road (Eishken Road) from the A859 in October 2022. Surveys were carried out within all suitable habitat within 250m of the proposed infrastructure, further details are provided in **Technical Appendix 8.2.** While bat surveys were originally scoped out, following discussions with NatureScot, a pared down activity survey was conducted in August 2022 due to confirmation of bat presence around the Eishken Lodge area of the Site. Full details are provided in **Technical Appendix 8.3.**

8.25 A fish habitat survey was undertaken by the Outer Hebrides Fisheries Trust between October and November 2022. The survey was undertaken at six locations following methodology outlined in Scottish Fisheries Coordination Centre (SFCC, 2007). Further details can be found in **Technical Appendix 8.4.**

8.26 The scope of the surveys described in paragraphs 8.23 to 8.25 was agreed with NatureScot as part of the Scoping process and further consultation was undertaken after the bat transect as described in paragraph 8.13. The methodologies for the survey work are briefly outlined below, for full methodologies please refer to **Technical Appendices 8.1-8.4.**

Vegetation Surveys

UK Habitat Classification Survey

8.27 A UKHab (Butcher *et al.,* 2020) survey of the Turbine Developable Area was undertaken in June and July 2022, and the minor road from the A859 and areas within the Site previously not accessible, in November 2022.

National Vegetation Classification (NVC) Survey

8.28 An NVC survey of all habitats was undertaken simultaneously within the UKHab survey in June and July 2022, and again in November 2022. The NVC survey was undertaken on semi-natural habitats using the NVC system (Rodwell 1991 *et seq*., 5 volumes) and in accordance with NVC guidelines (Rodwell, 2006) (see **Technical Appendix 8.1**). Habitats around the Eishken lodge were undertaken to UKHab level only as these were primarily not semi-natural habitats.

8.29 Following the NVC survey, potential GWDTEs were identified in terms of their high, moderate or low potential groundwater dependence, based on SEPA (2017). A more detailed assessment of the likely groundwater dependence of these communities was then undertaken as part of the hydrogeology assessment (**Chapter 10: Hydrology, Hydrogeology and Geology**).

Mammal Survey

8.30 A survey for protected and notable species of terrestrial mammal (excluding bats) was undertaken in June 2022 and October 2022 (see **Technical Appendix 8.3).** The species specifically targeted were based on the likelihood of occurrence, ascertained from known species distribution and habitat suitability. The mammal survey particularly focussed on otter, however the survey recorded evidence of all protected or notable mammal species encountered.

8.31 Surveys followed standard methodologies in place at the time of survey, e.g., Chanin (2003), Ward *et al*. (1994), Neal and Cheesman (2006) and Velander (1983). The study area encompassed all potentially suitable habitats within the Site, as well as watercourses within 250m of potential infrastructure locations (where this encompassed land outside of the application boundary), in line with relevant guidance (e.g., SNH, 2016b).

Bat Survey

8.32 A transect survey was conducted in July 2022 confirming bat presence around the Eishken Lodge within the Site. Further surveys using static detectors were therefore carried out in August 2022 at the six proposed turbine locations within 200m of Eishken Lodge, as agreed with NatureScot. Full details can be found within **Technical Appendix 8.3**.

8.33 Static detector units (SM4 full spectrum detectors, Wildlife Acoustics) were deployed at the six proposed turbine locations under consideration at that time that were located closest to Eishken

Lodge. Detectors were deployed once in August 2022 over a period of 14 nights. Since this time, turbine locations have changed, however the detector locations are representative of the turbine locations now proposed, and therefore this change does not affect the validity of the results. Further details and a map showing static detector locations are provided in **Technical Appendix 8.3.**

Fish Habitat Assessment

8.34 A fish habitat assessment was undertaken by OHFT in October and November 2022 (see **Technical Appendix 8.4**), to assess the potential for fish species of conservation concern (e.g. salmonids and European eel) to be present in watercourses within the study area. The survey was based on an adapted version of the Scottish Fisheries Co-ordination Centre (SFCC) *Habitat Survey Methodology* (SFCC, 2007). Full details can be found in **Technical Appendix 8.4.**

8.35 Previous habitat assessments for FWPM were undertaken to inform Muaitheabhal Windfarm Eastern Extension (Alba Ecology Ltd, 2010) and the Muaitheabhal Windfarm Southern Extension (Alba Ecology Ltd, 2012). These habitat assessments found very little suitable habitat within the Site, and the subsequent FWPM surveys undertaken to inform the Muaitheabhal EIA found no individuals. The fish habitat assessment undertaken in November 2022 by OHFT suggested very little change in habitat since the previous surveys were undertaken, therefore it was concluded that FWPM are unlikely to be present, therefore, no FWPM were undertaken as part of this assessment.

Incidental Sightings

8.36 During all ecological surveys, incidental sightings of other notable flora and fauna were also recorded.

Assessment Methods

8.37 CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018 updated 2022) (henceforth referred to as the CIEEM guidelines) form the basis of the impact assessment presented in this Chapter. The CIEEM guidelines have been endorsed by NatureScot.

Sensitivity of Receptor

8.38 In accordance with the CIEEM guidelines, only ecological receptors (habitats, species, ecosystems and their functions/processes) which are considered to be important and potentially affected by the proposed development should be subject to detailed assessment. It is not necessary to carry out detailed assessment of receptors that are sufficiently widespread, unthreatened and resilient to impacts from the proposed development and will remain viable and sustainable. For this assessment effects have been assessed for receptors of Local value or greater, plus any additional receptors subject to legal protection.

8.39 Ecological receptors should be considered within a defined geographical context. For this assessment the following geographic frame of reference has been used:

- International;

- National (i.e. Scotland);
- Regional (i.e. Highlands and Islands);
- Natural Heritage Zone (NHZ) (i.e. Coll, Tiree & The Western Isles);
- Local (i.e. within approximately 5km); and
- Less than local.

8.40 For designated sites, importance should reflect the geographical context of the designation. For example, a Site of Special Scientific Interest (SSSI) would normally be considered nationally important.

8.41 In accordance with CIEEM guidelines the value of habitats has been measured against published selection criteria and other relevant data where available. Examples of relevant criteria include Annex 1 of the Habitats Directive, the Scottish Biodiversity List (SBL), and Western Isles Local Biodiversity Action Plan (Development for Sustainable Communities, 2004).

8.42 In assigning a level of value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records. Reference has therefore been made to published lists and criteria where available. Examples of relevant lists and criteria include: species of European conservation importance (as listed on Annexes II, IV and V of the Habitats Directive); species considered to be of principal importance for biodiversity in Scotland as listed on the SBL; and priority species listed on the Western Isles BAP.

Magnitude of Change

8.43 The ecological impact assessment process involves the following steps:

- identifying and characterising impacts;
- incorporating measures to avoid and mitigate (reduce) these impacts;
- assessing the significance of any residual effects after mitigation;
- identifying appropriate compensation measures to offset significant residual effects (if required); and
- identifying opportunities for ecological enhancement.

8.44 When characterising ecological impacts, reference has been made to the following characteristics, as appropriate:

- positive or negative;
- extent;
- magnitude;
- duration;
- timing;
- frequency; and
- reversibility.

8.45 Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action, e.g., the physical loss of habitat during the construction process. Indirect ecological impacts are attributable to an action, but which affect ecological resources through effects on an intermediary ecosystem, process, or receptor, e.g., the creation of access tracks which cause hydrological changes, which, in the absence of mitigation, could lead to the drying out of adjacent peatland habitats.

8.46 This assessment has been carried out in accordance with CIEEM guidelines, which seeks to quantify the magnitude of the change and therefore the magnitude of the impact where possible, rather than use a matrix to determine significance.

Significance of Effect

8.47 For the purposes of this assessment, in accordance with CIEEM guidelines, a 'significant effect' is defined as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological receptors' or for biodiversity in general. Conservation objectives may be specific (e.g., for a designated site) or broad (e.g. national/local nature conservation policy). Effects can be considered significant at a wide range of scales from international to local. For example, a significant effect on a SSSI is likely to be of national significance whilst a significant effect on a regionally important population of a species is likely to be of regional significance.

8.48 Consideration of conservation status is important for evaluating the effects of impacts on individual habitats and species and assessing their significance:

- habitats – conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions, as well as its distribution and its typical species within a given geographical area; and
- species -conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

Avoidance, Mitigation, Compensation and Enhancement

8.49 A sequential process has been adopted to avoid, mitigate, and compensate for ecological impacts. This is often referred to as the 'mitigation hierarchy'.

8.50 It is important for the EIA to clearly differentiate between avoidance, mitigation, compensation and enhancement and these terms are defined here as follows:

- avoidance is used where an impact has been avoided, e.g., through changes in scheme design
- mitigation is used to refer to measures to reduce or remedy a specific negative impact *in situ*;
- compensation describes measures taken to offset residual effects, i.e., where mitigation *in situ* is not possible; 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.

Cumulative Effects

8.51 Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a particular location. The potential for cumulative effects with other development proposals has been assessed here.

8.52 For aquatic receptors potential cumulative effects are only likely to be significant for other developments located relatively close by (i.e. within 5km) and within the same hydrological sub-catchments. For (non-avian) terrestrial receptors potential cumulative effects are only likely where other developments are located within the regular range of more mobile species, e.g., bats. Cumulative effects on bats are likely to be limited to other wind farm developments and as such, for bats, the cumulative assessment has been restricted to other developments within 10km. The assessment includes operational projects, projects under construction, consented projects which are not yet under construction, and projects for which planning applications have been submitted.

8.53 Mitigation is embedded and therefore accounted for in the initial assessment. On this basis there is no separate residual effects assessment post mitigation.

Assumptions, Limitations and Confidence

8.54 Presented here is a summary of limitations detected during the surveys, further details are presented in **Technical Appendices 8.1-8.4**. It should be noted that none of these limitations are considered likely to significantly affect the assessment.

8.55 The UKHab and NVC surveys in the vicinity of Eishken Road from the A859 and areas of the Turbine Developable Area that were not accessible previously (due to eagle nesting buffers), were undertaken in November 2022, which is outwith the optimal survey season. However, given that most of the Turbine Developable Area had been surveyed within the optimal survey season and the same habitats occur around the Eishken Road and the fact that most key species for bog and heath habitats would still be identifiable to an experience botanist in November, we are confident that the timing of the additional surveys did not impact the results and is not likely to significantly affect the assessment.

8.56 The deployment of detectors as described in paragraphs 8.32 and 8.33 was targeted for periods where the weather forecast indicated the best possible chance for suitable weather conditions as per NatureScot *et al*. guidance (2021). Unfortunately, it was not possible to obtain 10 nights of data during optimal weather conditions, with wind speed exceedances on the majority of nights and rainfall exceedances on half. Overall, given the location of the Site and habitat present (it is unlikely that it would be possible to get 10 nights of optimal weather on Lewis) it is therefore concluded that sufficient bat data has been collected in suitable conditions, so as to be able to assess the potential impacts of the proposed development upon bats.

8.57 The fish habitat survey described in paragraph 8.34 was conducted outwith the SFCC optimal survey times (mid-May to September) when instream and bankside vegetation is fully developed, rivers are more likely to be in consistently low flow conditions and weather is more favourable. According to SFCC guidance this may result in an underestimation of the actual habitat status due to vegetation die-back on the banks and from river substrate being obscured by higher flow rates. Additionally, peat staining of the water throughout survey locations may have prevented accurate assessment of substrate types and instream cover in areas of deeper water. Previous survey work conducted in both 2010 and 2012 to inform the Muaitheabhal Wind Farm East Extension ES (2011) and the Muaitheabhal Wind Farm South Extension ES (2013) respectively were reviewed prior to these surveys being conducted and given the access to the previous survey data, combined with the recent survey data, we are confident that the surveys provide sufficient data to inform this EIA.

8.58 The coastline along the northern bank of Loch Sealg (the southern boundary of the Site) is extremely steep and therefore some sections could not be surveyed safely.

8.59 Rainfall and high wind speeds are common weather patterns on Lewis; therefore, it is likely that field evidence of otter such as spraints may be under recorded as there are often periods of high water level rises and this may wash field signs away.

8.60 Although the limitations detailed in paragraph 8.54 and 8.59 may mean some signs of otter weren't recorded (e.g. sprainting sites), it is unlikely that these limitations led to the under recording of natal holts due to the unsuitability of the habitat that was unable to be surveyed. Additionally, we have reviewed the previous otter survey results undertaken to inform Muaitheabhal Wind Farm (Land Use Consultants, 2004,2009, 2010, 2013) and therefore conclude that the assessment contained in this chapter is valid.

8.61 An ecological survey provides only a 'snapshot' of the conditions prevailing at the time of survey. Whilst it is considered unlikely that any significant evidence of protected or otherwise notable species were overlooked during the survey work, due to the nature of the subjects of ecological surveys, it is feasible that species that use the Site may not have been recorded by virtue of their seasonality, cryptic behaviour, habit, or random chance. This is a standard limitation that is common to all ecological survey work. It is considered unlikely, however, that additional surveys of the Site would materially alter the conclusions of the baseline survey work. Pre-construction surveys are proposed for otters (see paragraph 8.176) which intend to address any issues resulting from future changes in the distribution of otter.

8.62 Construction phase monitoring (including a baseline survey pre-construction) is proposed for fish to allow any changes due to construction of the proposed development to be monitored (see paragraph 8.175).

BASELINE CONDITIONS

Current Baseline

Desk Study

Statutory Designated Sites

8.63 There are no ecologically designated sites within the Site boundary. There are two statutory designated sites with non-avian qualifying features within 10km of the site boundary, as detailed in **Table 8-2** and illustrated on **Figure 8.1.**

Table 8-2. Statutory Designated Sites within 10km

Site Name	Designation	Approximate Distance and Direction from Site	Reason for Designation
Inner Hebrides and the Minches	Special Area of Conservation (SAC)	Adjacent to the southern Site boundary	Harbour porpoise
Lewis Peatlands	RAMSAR	Approximately 7.2km to north of Turbine Developable Area and approximately 954km north west of the Eishken Road	Blanket bog, oligotrophic lochs, dystrophic lochs, lochans and pools, wet heath

8.64 The only designated sites within 10km are designated either for marine features or due to the nature of the works and the distance from the designated site, it is unlikely that there would be any impacts on features for which these sites are designated. This approach was included within the scoping report and NatureScot did not raise any objections to this approach.

8.65 There are no statutory designation containing ornithological receptors within the Site boundary; however, the Site is within 20km of four Special Protection Areas (SPAs) and associated Sites of Special Scientific Interest (SSSIs) and Ramsar sites for birds which are covered in **Chapter 9: Ornithology.**

Non-statutory Sites

8.66 The proposed development Site lies within a Native Woodland Core Development Area (Western Isles Council, 2004); a designated area of land that is managed with the specific aim of restoring and enhancing native woodland habitats. These areas are typically chosen because they have the potential to support a significant amount of native woodland biodiversity and are often connected to other areas of woodland or habitat, creating an important ecological network.

8.67 There is no ancient woodland within 10km of the Site.

Existing Records of Protected and Notable Species

8.68 **Table 8-3** provides a summary of the results of the protected and notable species search (excluding avian species) (Section 3, **Technical Appendix 8.2**) within a 2km radius of the Turbine Developable Area and thorough review of ESs and EIA Reports for other nearby development proposals.

Table 8-3: Existing Records of Protected and Notable Non-avian Species[1]

Species	Status*	Notes
Fish		
European eel (*Anguilla Anguilla*)	SBL	Records within the Site (Land Use Consultants 2004, 2011, 2013)
Atlantic salmon (*Salmo salar*)	SBL, LBAP, SFF	Records within the Site (Land Use Consultants 2004, 2011, 2013)
Brown/ sea trout (*Salmo trutta*)	SBL, LBAP	Records within the Site (Land Use Consultants 2004, 2011, 2013)
Stickleback (*Gasterosteida* sp.)		Records within the Site (Land Use Consultants 2004, 2011, 2013)
Herpetofauna		
Slow Worm (Anguis fragilis)	LBAP	Records of slow worm within Eishken Estate, north of Loch Sealg (Land Use Consultants 2004, 2011, 2013)
Mammals		
Otter (*Lutra lutra*)	HR Sch2, WCA Sch5, SBL, LBAP	Records within the Site (Land Use Consultants 2004, 2011, 2013)
Seals	SBL (Common Seals)	Historic records indicating that Loch Seaforth and Loch Sealg are well frequented by seals. Species unconfirmed however both common seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*) are known to be present around the Outer Hebrides (Land Use Consultants, 2009)
Harbour porpoise (*Phocoena phocoena*) and Minke whale (*Balaenoptera acutorostrata*)	HR Sch2, WCA, SBL (Minke whale)	Both harbour porpoise and minke whale have been recorded within Loch Sealg and Loch Seaforth (Land Use Consultants, 2009)
Red Deer	n/a	Around 1800 red deer are known to roam the Eishken Estate (Chris Macrae, Estate Manager, Pers Comms).
**Table Key: Status*		

[1] Including species protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended in Scotland), Schedule 2 of the Conservation (Natural Habitats &c) Regulations 1994 (as amended in Scotland), listed on the SBL (Scottish Government, 2013) and *Western Isles Local Biodiversity Action Plan (Development for Sustainable Communities, 2004.*

Species	Status*	Notes
HR Sch2 = Included on Schedule 2 of the Conservation (Natural Habitats &c) Regulations 1994 (as amended in Scotland) *WCA Sch5 = Listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended in Scotland)* *SFF = Salmon spawning beds protected under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003* *SBL = listed on Scottish Biodiversity List (SBL) (Scottish Government, 2013)* *LBAP = Western Isles Local Biodiversity Action Plan (Development for Sustainable Communities, 2004)*		

Vegetation Baseline

Evaluation of Floral Receptors

8.69 The Site predominantly lies on peatland, including some Class 1 peat (NatureScot, 2016c), which is described as *"nationally important carbon-rich soils, deep peat and priority peatland habitats. Areas likely to be of high conservation value"*. Site specific information relating to carbon-rich soils and deep peat (including a peat depth survey) is contained in **Chapter 10: Hydrology, Hydrogeology and Geology**. A description and evaluation of the habitats present on site is contained within **Table 8-4.**

8.70 Habitats identified under the UKHab classification and NVC communities within the study area are shown in **Table 8-4** with more detailed habitat descriptions and quadrat data provided in **Technical Appendix 8.1**. The mapped results are shown on **Figures 8.1.2 and 8.1.3** within **Technical Appendix 8.1** (with proposed infrastructure locations overlain).

8.71 **Table 8-4** also summarises the conservation status for each habitat/community and evaluates the importance of each habitat/community within the study area. For habitats recorded in mosaic, the mosaics have been evaluated based on their floristic composition, underlying substrate and occurrence within the study area.

8.72 No plant species listed on Schedule 8 of the Wildlife and Countryside Act 1981 were recorded. Lesser butterfly orchid (*Platanthera bifolia*), listed on the SBL was recorded on site. No Western Isles BAP higher plant, moss or liverwort priority species were recorded during the botanical surveys in 2022.

Table 8-4: Evaluation of UKHab Habitats and NVC Communities present within the Study Area

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
g1b6 Other upland acid grassland	23.5	-	U4 *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland	No	U4 and U6 grasslands found in mosaic along the verges of the access road and on summits of hilltops and rocky outcrops within the study area. Some of the acid grassland communities are SBL priority habitats, however given the small and fragmented nature of these habitats, and the lack of significant species associated with them, they are considered to be of no more than local value. Potential groundwater dependence is assessed in **Chapter 10: Hydrology, Hydrogeology and Geology**.	Local value
		SBL	U6 *Juncus squarrosus - Festuca ovina* grassland	Moderate		
g3c Other Neutral Grassland	1.00	-	N/A	-	Small areas of managed neutral grassland are present within the Eishken Lodge area as part of the gardens associated with the housing. These areas have been assessed as having less than local value.	Less than local value
w1h5 Other woodland, Mixed:	0.5	-	N/A			

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
Mainly broadleaved					Woodland habitats were mainly recorded around the Eishken Lodge area in small pockets, with an area of larch plantation to the south of Eishken Lodge. Due to its limited extent and non-exceptional species assemblage on the site, it has been assessed as having less than local value.	Less than local value
w2c Other coniferous woodland	1.7	-	N/A			
h1b5 Dry heaths; upland	20.8	Annex 1, SBL, LBAP	H9c *Calluna vulgaris – Deschampsia flexuosa* heath	-	Dry heath was found throughout the site, primarily on high plateaus, rock outcrops and close to sea cliffs. This community was often found in mosaic with wet heath on the high ground. The rarer H21 community was found in small pockets in sheltered hollows on north facing slopes on free draining soil where the snow often lies late in the season. There is an estimated 1.7 to 2.5 million ha of upland heathland in Scotland (SNH n. d.), and heathland is considered widespread in the western isles, often in a mosaic with wet heath and blanket bog. H9, H10 and	Local value
			H10 *Calluna vulgaris – Erica cinerea* heath	-		
			H21 *Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium* heath	-		

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
			H12 *Calluna vulgaris - Vaccinium myrtillus* heath	-	H12 are the most common forms of dry heath in Scotland (SNH n.d.). Given the limited and fragmented amount of these habitats on the site, and the very small proportion of the Scottish heathland resource, it is assessed as being of no more than local value.	
h1b6 Wet heaths; upland	1107.3	Annex 1, SBL, LBAP	*M15 Trichophorum germanicum – Erica tetralix* wet heath	Moderate	M15 wet heath communities are typically found on shallow, acidic soils on slopes and around rocky outcrops within the study area. This community was found in mosaic with blanket bog and dry heath throughout the site. This habitat represents one of the dominant habitats on site, which is typical for this area of Lewis. Some areas of wet heath have undergone erosion on the steeper slopes, with areas of exposed peat visible. However much of this habitat is intact and in moderate condition, with good species diversity and most indicator species consistently present across the site. There is an estimated 462,000 ha of wet dwarf shrub heath in the UK (JNCC, 2011). Given the extent of this habitat and the species diversity represented within this habitat, it is assessed as being of regional value.	Regional value

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
					These habitats are not considered to be groundwater dependent, as assessed in **Chapter 10: Hydrology, Hydrogeology and Geology**.	
h3e Gorse scrub	1.9	-	W23 *Ulex europeaus - Rubus fruiticosus* scrub	-	A couple of stands of dense gorse scrub and scattered gorse are present along the banks of Loch Sealg. Due to its limited extent and non-exceptional species assemblage on the site, it has been assessed as having less than local value.	Less than local value
h3g Rhododendron scrub	0.7	Invasive non-native species	N/A	-	Found around the Eishken Lodge area. Rhododendron is an invasive non-native species and therefore this community has been assessed as being of less than local value.	Less than local value
h3h Mixed scrub	2.9	-	N/A	-	Mixed scrub was recorded in the Eishken Lodge area, with a species poor mix of gorse and self-set trees.	Less than local value

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
					Due to its limited extent and non-exceptional species assemblage on the site, it has been assessed as having less than local value.	
f1a5 Blanket bog	758.2	Annex 1, SBL, LBAP	M1 *Sphagnum denticulatum*	-	There is an estimated 2.2 million ha of blanket bog in the UK (BARS, 2012), and 1.8 million ha in Scotland, representing an estimated 23% of the Scottish land area (Bruneau and Johnson, 2014). Blanket bog is a rare habitat globally, and Scotland holds a significant proportion of the world resource (Bruneau and Johnson, 2014). Blanket bog is one of the dominant habitat types within the Site, which is typical for this area of Lewis, with the Lewis Peatlands RAMSAR occurring 954km north of the minor road that leads to the A895. Blanket bog on site is primarily in good condition, with a high water table, diverse cover of blanket bog indicator species and minimal erosion. Some areas on site have been classified as degraded where they have been dug out (see fla6 below), in these areas the water table is	Regional Value
			M2 *Sphagnum cuspidatum/fallax* bog pool community	-		
			M3 *Eriophorum angustifolium*	-		
			M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire	-		

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
			M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire	-	lower than expected for good quality blanket bog, with poor species cover in drained areas, but species diversity is still high with potential for restoration. Due to the extent of blanket bog on Site, and the national importance of the habitat in the area, blanket bog habitat has been assessed as having regional value. Degraded blanket bog has been assessed as having local value due to the disturbed and degraded nature of this habitat.	
f1a6 Degraded Blanket Bog	114.5	SBL, LBAP	M15* *Trichophorum germanicum - Erica tetralix* wet heath	-		Local value
			M17 *Trichophorum germanicum – Eriophorum vaginatum* blanket mire	-		
			M19 *Calluna vulgaris – Eriophorum vaginatum* blanket mire	-		
f2b Purple moor grass and rush pasture	54.7	-	M23 *Juncus effusus/ acutiflorus – Galium palustre* rush pasture	High	Small, often linear stands identified close to the existing access road and tracks associated with Eishken Lodge. This is a species poor version of M23, derived	Less than local value

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
					from damp acidic conditions where grazing has taken place. Due to its limited extent and non-exceptional species assemblage on the site, it has been assessed as having less than local value. These habitats are not considered to be groundwater dependent, as assessed in **Chapter 10: Hydrology, Hydrogeology and Geology**.	
		-	M25 *Molinia caerulea* – *Potentilla erecta* mire	Moderate	This community was found primarily on sloping ground across the site. The areas were dominated by *Molinia caerulea*, with *Sphagnum* species present and sometimes dominant in the ground layer. This is a widespread community that is usually found on degraded wet heath or blanket bog, where *Molinia caerulea* has been allowed to dominate. In this case the habitat is present throughout the site with species indicative of blanket bog and wet heath still present, therefore has been assessed as having local value. These habitats are not considered to be groundwater dependent, as assessed in **Chapter 10: Hydrology, Hydrogeology and Geology**.	Local value

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
f2c Upland flushes, fens and swamps	0.86	-	M29 *Hypericum elodes – Potamogeton polygonifolius*	High	Flushes were located throughout the site, including the acidic M6 and M29 flush communities, and base rich M10 flush communities that tend to have higher species richness than their surrounding acidic habitats. These flush communities are common throughout the Scottish uplands and have been assessed as having local value. These habitats are not considered to be groundwater dependent, as assessed in **Chapter 10: Hydrology, Hydrogeology and Geology**.	Local value
			M6 *Carex echinata – Sphagnum fallax/ denticulatum* mire	High		
			M10 *Carex dioica – Pinguicula vulgaris* mire	High		
u1b5 Buildings	1.53	-	N/A	-	Eishken Lodge and associated buildings.	N/A
u1e Built linear receptors	0.54	-	N/A	-	Single track tarmac road (existing Eishken Road), connecting Eishken Lodge to A859 to the north.	
t2h - Beach	1.3	-	N/A	-	Located on the edge of the loch where the inlet comes in. While no priority species were recorded in this area, the area provides habitat for marine and coastal species. This area has been assessed as having local value.	Local value

UKHab Habitat Type	Area (ha)	Conservation Status*	NVC Community Name	Likely Groundwater Dependency	Description and Reason for Evaluation	Evaluation
r1c7 Acid peat-stained lakes and ponds r2b Rivers	166.13 109.58	Annex 1, SBL, LBAP	N/A N/A	-	Multiple lochans connected by a series of watercourses provide habitat for a range of fish, mammal and invertebrate species. These have been assessed as having local value.	Local value
Annex 1 – Wildlife and Countryside Act 1981 SBL – Scottish Biodiversity List LBAP – Local Biodiversity List						

Faunal Baseline

8.73 A summary of the protected or otherwise notable non-avian faunal species recorded within the relevant study areas during the various ecological surveys and/or for which records were provided during the desk study is provided below. Further details are provided in **Technical Appendices 8.2** - **8.4.**

Otter

8.74 Evidence of otter was recorded during the protected species surveys for the Muaitheabhal Wind Farm, to the south of the study area, with the majority of signs recorded within 200m of the southern bank of Loch Sealg. Otter have been historically seen using the Tòb Eisgein inlet for commuting and foraging and young otter have been observed using Loch Seaforth for foraging (Chris Macrae, pers comm).

8.75 Evidence of otter was found during the 2022 surveys, with one otter holt found next to a burn within 50m upstream of Loch Sealg. One otter couch was recorded on Loch Eishken, one on the northern bank of Loch Seaforth and one on the southern bank of Loch Seaforth.

8.76 Five spraints were found on the northern bank of Loch Sealg which would indicate that otter are active within the brackish environment where the burns meet the sea inlet. Old and ancient spraints were found on the inland lochans including Loch an Eilein Liatha and Loch na Muilne which indicates the historical use of the area by otter as an established habitat for foraging and shelter (see **Figure 8.2.1** of **Technical Appendix 8.2).**

8.77 The habitat at the southern end of the Site is of high value for supporting otter. The mix of freshwater watercourses and sea lochan provides opportunities for fur cleaning and foraging for fish and crustaceans, of which feeding remains were recorded. Unnamed watercourses draining south from the summits of Creag na Beirighe and Cleite Catriona provide multiple routes to commute inland along the blue network. Rocky crags and the exposed roots of semi-mature goat willow *Salix caprea* provides potential shelter along the southern rockface leading down to Loch Sealg, and the sloped aspect is also better sheltered than at the northern side of the Site, with heather hummocks overhanging unnamed watercourses that provides lay-up opportunities and access into other areas of the Site.

8.78 The northern part of the Site is dominated by boggy peatland and lochans were exposed with very few features that would provide long term shelter due to the boggy conditions, inappropriate wind breaks from rock cover and concave overhanging banks that were often filled with water. However, potential short-term lay-ups, i.e. lay-ups that are raised above the water level and could be used for resting and fur cleaning with no indication of otter use by territorial marking, were found. The waterbody with the greatest potential for frequent use by otter within 100m of the Eishken Road is Loch Seaforth (Shiphoirt) as it is categorized as a high value habitat for otter due to the foraging opportunity it provides, its connectivity to the larger blue network of freshwater lochs including Loch Sgiobacleit to the east and Loch na Muilne to the north. The overhanging banks onto a well-drained, stone beach provides short term shelters and lay-ups on the southern side of the loch and foraging remains of crustaceans and bivalve molluscs were found to be scattered along all edges of the waterbody.

8.79 Two large freshwater lochs, Loch na Muilne measuring approximately 8.4ha and Loch an Lar measuring approximately 5.2ha are located at the northern end of the Site. Due to their connectivity to Loch Seaforth, their varied bankside habitat of steep slopes, mixed boulder and rock sizes and potential foraging opportunities it is considered that these lochs would be used by otter. There is also an established connection to lochs further north, outside of the study area via the Abhainn Loch na Muilne watercourse.

Bats

8.80 No historical records of bats were returned within 10km of the Site during the desk study data search, and bats were originally scoped out of the assessment. However, it was communicated to SLR that bats were active around the Eiskhen Lodge area within the Site (Chris Macrae, pers comms).

8.81 A bat transect was walked round the Eishken Lodge area as detailed in paragraphs 8.32 – 8.33. Bat presence (common pipistrelle (*Pipistrellus pipistrellus*) was confirmed (see **Technical Appendix 8.3** for full details) and bats were observed foraging around the buildings and woodland.

8.82 Other than the woodland habitat around Eishken Lodge, there is limited habitat for bat roosting or foraging features within the rest of the Site.

8.83 **Table 8-5** summarises the results of the static bat detector survey, for the six recording locations close to Eishken Lodge. For a more detailed breakdown of survey results, refer to the results table in **Technical Appendix 8.3**.

8.84 A total of 13 bat passes were recorded over a total of 15 nights of recording during August 2022.

Table 8-5: Bat Activity Results Summary

Species	Nights of Survey Data	Total Bat Passes (all locations combined)	Mean Passes per Night (all locations combined)	Median Passes per Night
Common pipistrelle	15	13	0.8	0

8.85 Common pipistrelle is classified within current guidelines (NatureScot *et al*., 2021) as being of high collision risk, but because it is a relatively common species, its overall population vulnerability is classified as medium (refer to Appendix 1 in **Technical Appendix 8.3** for the collision risk, relative abundance and overall population vulnerability of bat species in Scotland).

8.86 Due to the small number of recorded passes at locations closest to Eishken Lodge over a 15 night period in the summer season, it is likely that bat activity further away from the suitable habitat of Eishken Lodge, in similarly low value habitats is likely to be even lower.

8.87 Although wind speed during the survey exceeded the speed stated in the current guidelines (NatureScot *et al*, 2021), conditions were otherwise good. High wind speeds are likely to be a factor throughout the year for this area, and therefore is unlikely to have substantially reduced bat activity compared with other periods. It's reasonable to expect bat activity in this location to be highest in the summer (when it is warmer) and significant dispersal/migration during spring and autumn are considered unlikely in this location. The data collected are therefore considered a reasonable representation of bat activity in this location throughout the bat active season, and bat activity in other seasons (spring/autumn) is unlikely to be significantly higher.

8.88 Given that the habitat present is of low suitability for bats, and the fact that the project is of 'medium' size under the BCT guidelines (2021), the Site constitutes as 'low risk' bat habitat (see Table 3a in BCT guidelines.

Fish

8.89 An assessment of habitat suitability for fish species of conservation importance is provided in **Technical Appendix 8.4.** Survey locations on or discharging into the Allt Cheothadail, which bisects the Site and flows into Loch an Eilein Liatha, were ranked as either High or Moderate fish habitat quality with Optimal or Sub-Optimal spawning habitat potential. Survey locations on Abhain Scrihascro, found further north in the Site and discharging into Loch Eishken were ranked as Moderate for fish habitat suitability and sub-optimal for spawning habitat. Similarly, the survey locations on Abhainn Clearn Airighean Dhomhnail, situated slightly outside of the southern boundary of the Site but with the potential to be impacted by works, was ranked as having Moderate suitability for fish, but classed as not suitable in terms of spawning habitat.

8.90 Overall, the Site does contain some habitat suitability to support fish and fish spawning with the highest quality habitat situated on or around the Allt Cheothadail.

8.91 Surveys to support previous applications found European eel, Atlantic salmon, brown/sea trout and stickleback present, as detailed in **Table 8-3.**

Reptiles

8.92 The slow worm is the only species of reptile recorded on Lewis. Slow worm was recorded incidentally in three locations during the protected mammal surveys in July 2022. These sightings took place within long grassland on the north bank of Loch Eishken and on the northern bankside of the Abhainn Cheothadail.

Deer

8.93 The Site falls within the Eishken Estate which is used recreationally for hunting, fishing and deer stalking.

8.94 The estimated density of red deer on the wider Eishken Estate is 10.8 deer/km^2. The main form of deer management is shooting. In 2022 around 50 stags and 55 hinds were shot (Chris Macrae, Pers Comms).

Evaluation of Faunal Receptors

8.95 An evaluation of the non-avian faunal receptors which are either known to be present or considered likely to be present within the study area, is provided in **Table 8-6.**

Table 8-6: Evaluation of Faunal Receptors

Receptor	Legal / Conservation Status*	Reason for Evaluation	Evaluation
Otter	HR Sch2, WCA Sch5, SBL	An otter holt, couches and spraints were identified during the July 2022 surveys, confirming otter presence within the Site. The larger watercourses within the Site (Allt Cheothadail and Abhainn Clearn Aiighean Dhomhnail) and the banks of Loch Sealg and Loch Eishken provide suitable shelter opportunities, commuting and foraging habitat. The other watercourses on Site (Ahbhain Glas and Abhain Scihascro) and smaller lochs and lochans on Site provide some habitat suitable for commuting and foraging but with limited opportunity for shelter creation. The lochans to the north of the site associated with Loch Seaforth (Shiphoirt) and the banks of Loch Sealg in the south of the site area assessed as having high value habitat for otters, and are therefore assessed as being of regional value to otter. Due to the abundance of good quality habitat within the surrounding area, and relatively low number of otter rest sites and signs on Site, the Turbine Developable Area is assessed to be of no more than local value to otter.	Natural Heritage Zone Value (Loch Seaforth and Loch Sealg only) Local value (rest of site)
Bats: Common pipistrelle	HR Sch2, WCA Sch5, SBL	Common pipistrelle is a common and widespread species, with an estimated UK population of 2,430,000 (Battersby *et al*, 2011). Common pipistrelle is the only species of bat known to be present on the Isle of Lewis, previously known to only occur around Stornoway (CnES Website). Although presence was confirmed on the Site (around the Eishken Lodge area) during the transect survey conducted in July 2022, the only potential roosting habitat was recorded in the woodland and buildings at the Eishken Lodge, which is within the Eishken Lodge works exclusion area, therefore well outwith 200m plus rotor radius of the turbine locations. However, given the limited number of confirmed colonies on Lewis, the area around Eishken Lodge is considered to be of Regional value for bats. Bat activity elsewhere on site was very low and the habitat has low suitability for foraging and commuting bats. The rest of the site is therefore considered to be of no more than local value for bats.	Natural Heritage Zone Value (colony at Eishken Lodge only) Local (rest of the site, based on lack of suitable habitat and survey results)

Receptor	Legal / Conservation Status*	Reason for Evaluation	Evaluation
Fish: Brown Trout, Atlantic salmon, European eel	SBL, LBAP, SFF	Brown Trout, juvenile Atlantic Salmon and European eel were recorded during surveys carried out to inform previous ESs (2004). The Allt Cheothadail has been highlighted as having high suitability fish habitat with both optimal and sub optimal spawning habitat present, and the Abhainn Clearn Airighean Dhomhnail has moderate suitability fish habitat. These watercourses are assessed as being of local value to salmonids and European eel. The remaining watercourses within the Site are assessed as being of less than local value to salmonids and European eel due to the less optimal habitat present.	Local Value (Allt Cheothadail and Abhainn Clearn Airighean Dhomhnail only)
Slow worm	WCA Sch5 (in respect of Section 9(1) and 9(5) only), SBL	Slow worm was recorded incidentally on Site in 2022 and previously during surveys for the Muaitheabhal wind farm in 2004. Much of the Site comprises heathland and rough grassland habitats, which are suitable habitats for slow worm (the only reptile species known to be present on Lewis). Slow worms are described as being common across Scotland (NatureScot, website) and the only reptile species known to occur in the Outer Hebrides. Given the size of Site, the low number of incidental records and the abundance of suitable habitat in the surrounding area, the Site is not assessed as being of higher than local value for slow worm.	Local value
Deer	-	The Site lies within the Eishken Estate which is used for deer stalking, therefore red deer are known to be present both within Site and in the wider area at a density of around 10.8/km^2. Given the importance of deer to the estate, the Site is assessed as being of local value for deer.	Local Value

**Table Key: Status*
HR Sch2 = Included on Schedule 2 of the Conservation (Natural Habitats &c) Regulations 1994 (as amended in Scotland)
WCA Sch5 = Listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended in Scotland)
SFF = Salmon spawning beds protected under the Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003
SBL = listed on Scottish Biodiversity List (SBL) (Scottish Government, 2013)
LBAP = Western Isles Local Biodiversity Action Plan (Development for Sustainable Communities, 2004).

Cumulative Situation

8.96 When undertaking the cumulative effects assessment, it is important to consider only those projects which could potentially contribute to significant cumulative effects with the proposed development. As set out in paragraphs 8.51 and 8.52, for this assessment potential cumulative effects have been assessed for the following receptors and developments:

- cumulative effects on aquatic receptors within the same sub-catchments; and
- cumulative effects on bat populations, which are possible in combination with other wind farms within a 10km radius of the Turbine Developable Area.

8.97 Other projects considered for inclusion in the cumulative effects assessment are detailed in **Table 8-7**. These include all other developments within the relevant study areas which are either operational, under construction, consented or for which a planning application has been submitted.

Table 8-7: Other Projects Considered in Cumulative Effects Assessment

Project	Status	Distance from Site (km)	Number of Turbines
Lemreway Wind Turbine	Operational	3.9	1 (42m tip height)
North Harris Wind Farm	Operational	14.8	3 (86m tip height)
Arnish Moor Wind Farm	Operational	16	3 (76m tip height)
Creed Budiness Park Wind Turbine	Operational	19	1 (61.14m tip height)
Beinn Ghrideag Community Wind Farm	Operational	19	3 (125m tip height)
Pentland Road Wind Farm	Operational	21.3	6 (121.2m tip height)
Horshader (Cnoc Airigh Mcic Crishnidh) Wind Turbine	Operational	31.5	1 (81m tip height)
Tolsta Wind Turbine	Operational	37.8	1 (77m tip height)
Baile an Truseil Wind Farm	Operational	38	3 (81m tip height)
Stornoway Wind Farm	Consented	17	33 (180m tip height)
Druim Leathann Wind Farm	Consented	36.7	14 (140m tip height)
Harris-Stornoway 132kV overhead line (OHL) replacement (electricity transmission infrastructure)	At Application	7.4	N/A

Future Baseline

8.98 In the absence of the proposed development, the Site is likely to remain as open moorland (with blanket bog and heath habitats) primarily used for fishing, game shooting and deer stalking.

8.99 In the absence of the proposed development, it is likely that otter will continue to utilise suitable habitat within the Site. To allow for possible changes in the distribution of protected species, a pre-construction survey for otter is proposed to ensure legislative compliance during construction, as detailed in paragraph 8.107.

8.100 In the absence of the proposed development, common pipistrelle bats are likely to continue to utilise the woodland and buildings around the Eishken Lodge area, occasionally utilising the wider area for foraging at low levels.

8.101 In the absence of the proposed development the usage of the Site by slow worm is likely to stay at relatively low levels.

8.102 Climate change is predicted to result in complex changes to biodiversity. This may result in changes to the vegetation present or the potential for new species to colonise the Site, which potentially includes non-native species, although the extent of any such changes cannot be accurately predicted at this time. However, in the absence of any detailed, quantifiable information it has been assumed that in the absence of the proposed development the ecological condition of the Site is unlikely to change significantly over the next 30 years.

ASSESSMENT OF EFFECTS

8.103 The assessment of effects is based on the information outlined in **Chapter 3: Description of Development.**

Embedded Measures

8.104 The proposed development has been subject to a number of design iterations and evolution in response to the constraints identified as part of the baseline studies, to reduce environmental effects (see **Chapter 2: Site Description and Design Evolution** and **Chapter 3: Description of Development**). With respect to ecology the following changes have been incorporated to avoid or minimise negative effects:

- it was not possible to avoid Annex 1 blanket bog and heath habitats, as these comprise the majority of the Site. However, flush habitats, bog pools, watercourses and areas of deepest peat have been avoided as far as possible;
- a distance of at least 50m between turbine blade tip and the nearest woodland has been established as per current bat guidance (Naturescot, 2021);
- a 75m micrositing tolerance for turbines and all other infrastructure would be applied to the proposed development enabling impacts on higher quality areas of habitat to be reduced or avoided; and
- track length was minimised as far as possible to minimise land take.

Good Practice Measures

Good Practice Mitigation Measures

8.105 Full details of construction mitigation measures would be provided in a Construction Environmental Management Plan (CEMP). An outline CEMP is included as **Technical Appendix 3.1**. Good practice measures in relation to pollution risk and sediment management to be adopted during the construction and operation phases are also set out in **Chapter 10: Hydrology, Hydrogeology and Geology**. During the construction phase, good practice techniques with respect to peatland environments, as contained within 'Good Practice during Windfarm Construction' (SNH, 2019), would be implemented. Further details on peat and water management during construction are provided in **Chapter 10: Hydrology, Hydrogeology and Geology, Technical Appendix 3.1: Outline CEMP** and **Technical Appendix 10.2: Peat Management Plan**.

8.106 Good practice measures to protect retained habitats during the construction phase would be implemented, including the erection of temporary protective fencing demarcating the working footprint, to be overseen and policed by the Ecological Clerk of Works (ECoW) (also see paragraph 8.108 and 8.109); further details are provided in the outline CEMP. Good practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction as soon as is practicable.

Pre-Construction Surveys

8.107 Due to the time that will have elapsed since the last surveys and the possibility that otter activity could have changed in the intervening period, a pre-construction survey for otter would be undertaken. This would cover all watercourses and other suitable habitat within 250m of wind farm infrastructure (including the Eiskhen Road). The results of the pre-construction survey would inform the need for further mitigation (if required) in respect of working practices, or consultation with NatureScot, if required.

Ecological Clerk of Works

8.108 A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to ensure natural heritage interests are safeguarded, although this may not necessarily be a full-time role throughout. The role of the ECoW would include the following tasks:

- to give toolbox talks to all staff onsite, e.g., an ecological induction, so staff are aware of the ecological sensitivities on the Site and the legal implications of not complying with agreed working practices;
- to undertake pre-construction surveys and checks for otter and advise on ecological issues where required; and
- to carry out pre-construction inspections of areas which require reptile mitigation and supervision of mitigation works, where required.

8.109 The ECoW would also undertake additional roles such as assisting with hydrological measures or checking for nesting birds (see **Chapter 9: Ornithology** and **Chapter 10: Hydrology, Hydrogeology and Geology**).

Reptiles

8.110 In order to comply with the Wildlife and Countryside Act 1981 (as amended in Scotland) mitigation would be employed to reduce the chances of inadvertently killing or injuring individual reptiles during construction works. Given the low numbers of reptiles likely to be present, the large areas of suitable habitat that would remain unaffected by the works and given also the large spatial scale of the works, fencing and translocation are not considered appropriate. Proposed mitigation therefore would involve identification/removal of potential refugia and hibernacula within areas of suitable habitat, if present. The proposed Site speed limit of 15mph would also reduce the likelihood of accidental injury/killing of reptiles by construction traffic.

8.111 Where appropriate and safe to do so, during the active season (typically April to October) all potential refuges within construction working areas will be removed, and construction works will employ a 'soft start' to allow any individuals to exit the area. Out with the active season, checks and removal of hibernacula will be conducted. These checks will be conducted under the guidance of the ECoW.

Otters

8.112 During construction, Site speed limits of 15mph would reduce the likelihood of accidental injury/killing or otter by construction traffic.

8.113 All potentially dangerous substance or materials within the temporary construction compound would be carefully stored to prevent then causing any harm to otters which may enter the compound at night.

8.114 During construction all excavations greater than 1m depth would either be covered at night or designed to include a ramp to allow otter and other animals a means of escape should they fall in.

Construction Effects

Potential Effects

8.115 Potential effects, assuming that the good practice mitigation measures outlined in paragraphs 8.107-8.114 are implemented, are addressed for each receptor in turn in paragraphs 8.116-8.152. Effects have been assessed only for important ecological receptors (i.e. those with a value of Local level or above, potential GWDTEs and/or legally protected species). These comprise:

- Upland acid grassland, upland wet heath, upland dry heath, blanket bog, upland flushes, fens and swamps, beach, acid peat stained lakes and ponds and rivers and streams;
- bats, otter, reptiles and fish.

Habitats

8.116 Impacts on habitats are categorised as follows:

- direct habitat loss – this includes habitats present under the footprint of the proposed development and includes areas which would be subject to cut and fill, grading and potential cable laying; and
- indirect/temporary habitat loss – indirect loss has been calculated for peatland habitats which lie within 10m of the direct habitat loss areas; the allowance of 10m is to allow for drying effects and vegetation changes due to construction works[2]. For other habitats an allowance for temporary loss of 5m is included to allow for possible temporary loss due to damage during construction.

8.117 For the purposes of the assessment a precautionary approach has been taken which assumes that direct habitat loss and indirect loss of peatland habitats represents a permanent, irreversible negative effect, although in practice some areas indirectly affected may be able to be restored, e.g. during reinstatement following construction.

8.118 **Table 8-8** details the estimated direct and indirect/temporary land take for habitats present on Site, and potential GWDTE communities.

Table 8-8: Summary of Habitat Loss by UKHab Type

UK Hab Type	Direct Habitat Loss (ha)	Infrastructure causing Direct Habitat Loss	Indirect or Temporary Habitat Loss (ha)	Total Loss (ha)
Upland Acid Grassland (g1b6)*	0.73	Eishken Road widening, borrow pit, hardstanding	0.28	1.02
Neutral Grassland (g3c)	0.03	Eishken Road widening	0.29	0.32
Mixed woodland (w1h5)	0.00	N/A	<0.01	<0.01
Upland Dry Heath (h1b5) – Annex 1 (H4030)	0.02	Eishken Road widening	2.99	3.01
Upland Wet Heath (h1b6) – Annex 1 (H4010)*	21.99	Eishken Road Widening, borrow pit, access tracks, hardstanding, substation, turbine foundation, temporary compound	12.05	34.04
Rhododendron Scrub (h3g)	<0.01	N/A	0.01	0.02
Mixed Scrub (h3h)	0.04	Eishken Road widening	0.20	0.24
Blanket Bog (f1a5) – Annex 1 (H7130)	14.36	Eiskhen Road widening, borrow pits, access tracks, hardstanding, temporary compound, turbine foundation	25.42	39.78

[2] This figure is in line with similar assessments for other projects, and although arbitrary, is considered precautionary based on experience at other sites.

UK Hab Type	Direct Habitat Loss (ha)	Infrastructure causing Direct Habitat Loss	Indirect or Temporary Habitat Loss (ha)	Total Loss (ha)
Degraded Blanket Bog (f1a6)*	1.92	Eishken Road widening, access tracks, hardstanding, turbine foundation	6.28	8.19
TOTAL	**39.08**		**47.52**	**86.62**

8.119 The proposed development would result in the potential maximum loss of habitat as follows:

- Annex 1 blanket bog communities (M17 mire community): direct loss of 14.36ha and the indirect loss of 25.42ha;
- degraded blanket bog: 1.92ha and indirect loss of 6.28ha;
- Annex 1 upland wet heath (M15): direct loss of 21.99ha and indirect loss of 12.05ha;
- Annex 1 upland dry heath (H14): direct loss of 0.02ha and indirect loss of 2.99ha.

8.120 The direct and indirect loss of up to 39.78ha of regionally important Annex 1 blanket bog habitat and 34.04ha of regionally important wet heath habitat is likely to constitute a significant negative effect at a regional level.

8.121 The loss of 8.19ha of degraded blanket bog is likely to constitute a significant negative effect at the local level.

8.122 The loss of 3.01ha of Annex 1 upland dry heath is likely to constitute a significant negative effect at the local level.

8.123 The small-scale loss of 1.02ha of acid grassland is not large enough to be significant.

8.124 All infrastructure is situated a minimum of 50m away from watercourses, other than those listed in paragraph 8.128 (see **Chapter 3: Description of Development** for full details). Assuming that best practice pollution prevention measures are adopted, no significant effect is predicted on the running water environment. An assessment of effects specific to fish and otter is addressed separately in paragraphs 8.127 to 8.129 and 8.133 to 8.135.

GWDTE Communities

8.125 **Table 8-8** shows the habitat loss (direct and indirect/temporary) for all potential GWDTE communities. The communities marked with an asterisk in **Table 8-8** have conferred upon them a potential to have a high or moderate groundwater dependency (based on SEPA (2017) guidance).

8.126 For a detailed assessment of the groundwater dependency of these habitats, please refer to **Chapter 10: Hydrology, Hydrogeology and Geology.** In summary, the GWDTE assessment presented in **Chapter 10** concludes that all areas of potential GWDTE are sustained by surface water rather than groundwater. As such, no GWDTEs would be affected by the proposed development.

Fauna

Fish

8.127 The main watercourses within the Site have some potential for fish, with their tributaries having lower quality suitable habitat. The Allt Cheothadail flows west to east through the Site, discharging into Loch Feoir (which runs into Loch Eishken). The Abhain Ghlas runs in the north of the Site and discharges into the Loch an Eilein Lichna, and the Abhain Scrihascro runs north to south down the middle of the Site and discharges into Loch Eishken. The Abhainn Clearn Airighean Dhomhnail runs just outwith the southern boundary and discharges into Loch Sealg. The main stretch of Allt Cheothadail, the Abhain Scrihascro and the Abhainn Clearn Airighean Dhomhnail all have either High or Good categorisation for fish habitat. The Abhainn Ghlas was categorised as having Moderate categorisation for fish habitat.

8.128 As detailed in paragraph 8.124, a minimum 50m buffer has been ensured between all proposed infrastructure and the watercourses other than those listed below:

- 54 watercourse crossings;
- Small areas of proposed clearance area and temporary hardstanding at T1, T2 and T10; and
- Small area of proposed clearance area and temporary and permanent hardstanding at T24.

8.129 With the implementation of good practice pollution prevention measures (**Chapter 10: Hydrology, Hydrogeology and Geology**) the likelihood of a pollution event affecting fish within downstream watercourses is considered to be low. Therefore, no significant effect on salmonids or other fish species of conservation concern is likely.

8.130 Pre-construction electrofishing surveys are proposed to establish a baseline against which proposed construction and post-construction phase monitoring can be compared, so that any impacts on salmonid populations can be monitored during and after construction (see paragraph 8.175).

Reptiles

8.131 Slow worm has been recorded on the Site, but no other reptile species are recorded as being present on Lewis. The construction of the wind farm would result in the direct loss of up to 22ha of potentially suitable habitat for this species. This loss is not considered significant, given the extensive availability of similar suitable habitats within the Site and the wider area and the likely low population of slow worms present. Indirect/temporary loss of habitat has not been considered here, as it is anticipated that areas subject to drying or other temporary damage would still be used by slow worms for activities such as basking and potentially foraging (following habitat reinstatement).

8.132 Good practice mitigation measures aimed at reptiles (see paragraphs 8.105-8.114), would be implemented during the construction phase, to prevent the inadvertent injury or killing of individuals. On the basis that the proposed measures are implemented, no significant effects are predicted, and no contravention of the relevant legislation is likely.

Otter

8.133 One holt was found on the northern bank of Loch Sealg in the south of the Site, a further three potential couches were recorded within the study area, and multiple spraints were found, mainly beside Loch Sealg and Loch Eishken.

8.134 The death or injury of an individual otter during construction could potentially have a significant effect on the conservation status of this species in the local area. However, following implementation of the good practice measures outlined in paragraphs 8.105-8.114, death or injury to otters during construction is not likely. As such, no significant effects would be likely to occur.

8.135 Construction activities have some potential to cause temporary disturbance to otters which may use some of the watercourses and waterbodies on and around the Site for foraging and commuting. This disturbance would likely be via noise and human presence. However, there is a 50m minimum stand off to infrastructure to watercourses other than those instances listed in paragraph 8.128 and the Site lies within the Eishken Estate which is utilised for game shooting, fishing and deer stalking, so may be subject to some very low level disturbance already. Otters have large home ranges and are able to adapt to a certain level of human disturbance (Chanin, 2003) and as such, the likelihood of potential disturbance to otter is low, and no significant effects are predicted.

Bats

8.136 No potential bat roosting habitat would be affected by the proposed scheme (i.e., no building or underground sites would be affected, and no trees felled), and as such there would be no direct effect on roosting bats during construction.

8.137 The bat survey results indicate that the proposed turbine locations nearest to the only suitable bat roosting habitat in the area (Eishken Lodge, approximately 1km away) are subject to very low levels of usage by bats. Construction would mainly take place during daylight hours during the season when bats are active (April to October, 0700 to 1900 hrs). Any disturbance to foraging bats during construction is therefore likely to be minimal and not significant.

8.138 The proposed development would cause the direct habitat loss of 39.45ha. The loss of this sub-optimal foraging habitat, when compared with the availability of foraging habitat within the wider area, is unlikely to have a significant effect on the conservation status of the local bat population.

Deer

8.139 The Eishken Estate is used for deer stalking. Red deer are known to be present on site, with the density on the wider Eishken Estate approximated to be around 10.8/km^2.

8.140 Construction activities have the potential to impact the local wild deer population through displacement during construction. However, it is unlikely that construction activities would displace wild deer to an extent that deer could cause damage on neighbouring land, that deer welfare would be adversely affected, or that other significant impacts would be caused such as increased road traffic collisions. This is due to the fact that construction activities will be restricted to the proposed access tracks and turbine infrastructure areas, with large areas of moorland within the wider Eishken Estate, which do not form part of the construction footprint, still be available for deer to use during construction. The fact that red deer are primarily crepuscular (i.e. most active at dawn and dusk), and therefore likely to be most active outside of the core construction hours, further reduces the extent to which wild deer are likely to be displaced off-site during construction.

8.141 Deer welfare is unlikely to be significantly affected by construction activities, as deer don't tend to occur within the Site (Chris Macrae, pers comms) and the surrounding areas will continue to offer places for food and shelter such as the moorland areas within the Site away from the construction footprint. Good practice measures put in place for otter during construction, specifically safe storage of materials and covering of excavations/providing a means of escape (paragraphs 8.113-8.114) would also protect deer from harm during construction. It is also unlikely that construction activities would cause increased road traffic collisions. This is because the majority of the site is distant from any public roads, and because the number of deer potentially displaced would be low. The existing Eishken Road joins the A859 road to the north, however there is a large area of suitable habitat between the Site and the road, such that deer would be unlikely to be displaced onto the road. There would also be an increased presence of construction vehicles on the existing track, however a Site speed limit of 15mph would be implemented, which would minimise the likelihood of deer traffic collisions within the Site.

Cumulative Effects

8.142 For the cumulative effects on aquatic receptors during construction, the only potential for significant cumulative effects would be via the discharge of particulate matter into watercourses, or through a pollution incident. Wind farms which are already operational are not likely to give rise to significant cumulative effects and therefore the assessment has been restricted to wind farms and other developments within the same catchment which are yet to be constructed.

8.143 The watercourses onsite fall into three water catchments; the Sgiobacleit catchment, the Eishken catchment and the Loch Sealg catchment (for full details see **Technical Appendix 8.4).** None of the other developments listed in **Table 8-6** lie within the same hydrological catchments as the proposed development, and therefore there is no potential for cumulative effects.

8.144 With regards to the cumulative effects on bats, given the low level of bat activity within the Turbine Developable Area and the presence of only one other wind development (a single turbine 42m to tip at Lemreway) within 10km of the proposed development, there is no potential for significant cumulative effects.

Mitigation, Compensation and Enhancement

8.145 Embedded mitigation and good practice measures are detailed in paragraphs 8.104-8.114**,** as well as in the outline CEMP (**Technical Appendix 3.1**) and **Chapter 10: Hydrology, Hydrogeology and Geology**. No further mitigation measures are proposed to mitigate against potentially significant effects upon important ecological receptors during construction. However, a Habitat Management Plan (HMP) would be produced and agreed with CnES post consent. This would detail measures to compensate for the significant residual effects of habitat loss associated with the proposed development and provide significant biodiversity enhancement, in accordance with the fourth National Planning Framework (NPF4). An Outline HMP is provided in **Technical Appendix 8.5**, and a summary is provided in the following section (paragraphs 8.146 – 8.153).

Habitat Restoration and Management

8.146 Peatland has been identified as a national conservation priority within Scotland's National Peatland Plan (SNPP), for its importance for biodiversity, water quality, and as a carbon store (SNH, 2015a). The SNPP states that peatland restoration is one of the priority projects highlighted in the Scottish Biodiversity Strategy Route Map towards meeting the European Union (EU) biodiversity target of restoring at least 15% of degraded ecosystems. The most extensive deepest peat soils occur under blanket bog and raised bogs, and these habitats are recognised as internationally important under the EU Habitats Directive (as priority habitats listed on Annex 1).

8.147 The broad principle aim of the Outline HMP is to outline the proposed habitat restoration and management measures in relation to the proposed development. It details the habitat management and monitoring that is proposed to compensate for the direct and indirect loss of sensitive natural/semi-natural habitats, notably blanket bog and wet heath, as a result of construction of the wind farm and to provide significant biodiversity enhancements, in accordance with NPF4.

8.148 The focus of the OHMP is features for which compensation is required due to potential impacts from the proposed development (e.g. habitat loss), however, consideration is also given to habitat enhancement for features with particularly high conservation value that occur on Site, for example waterways, especially where declines may be anticipated in the absence of the HMP (see **Technical Appendix 8.5: Outline HMP** for further details).

8.149 The OHMP sets out the following management goals:

- restore habitats disturbed during construction: through restoration of borrow pits and reinstatement of wet heath that is disturbed during construction in accordance with the Peat Management Plan (**Technical Appendix 10.2**).
- enhance upland habitat condition: via ditch blocking to restore blanket bog in five areas on site and exclusion of grazers from high and steep ground in the south and west of the site between October and March to reduce erosion and restore wet heath in these sensitive areas
- enhance riparian habitat for aquatic species including spawning fish and otter: through planting of native trees in riparian areas;
- protect and enhance habitat for ornithological species: including removal of carcases from turbine area to reduce foraging in turbine area, and provide nesting platforms for divers on appropriate lochans to increase breeding success of diver species (see also **Chapter 9: Ornithology**).

8.150 There are no known adjoining protected areas for priority habitats managed to reduce deer numbers. The immediately surrounding areas appear to consist of similar habitats to those found on the Site (primarily blanket bog). The relevant guidance (SNH, 2016a) states that sustainable deer densities for more sensitive habitats such as woodland establishment and blanket bog sites is <3-5 deer/km^2, while <8-12 deer/km^2 may be appropriate for some less susceptible moorland habitats. There is some evidence of current grazing pressure on site causing erosion of wet heath habitat, particularly on steeper slopes and on higher parts of the site where the soil is naturally thin. Therefore, a reduction in grazing pressure on steep ground between October and March is proposed within the OHMP (**Technical Appendix 8.5**).

8.151 The success of the management objectives set out in paragraph 8.149 will be monitored through a variety of habitat and species monitoring methods, see **Technical Appendix 8.5** for full details.

Residual Effects

8.152 During the construction phase, the permanent loss of up to 14.36ha and indirect loss of 25.42ha of bog habitats (Annex 1 blanket bog) is considered to constitute a significant negative effect at the regional level, and the permanent loss of up to 21.99ha and indirect loss of 12.05ha of wet heath habitats would constitute a significant negative effect at the regional level. The permanent loss of 1.92ha and indirect loss of 6.28ha of degraded blanket bog and the permanent loss of up to 0.02ha and indirect loss of 2.99ha of dry heath habitats would constitute a significant negative effect at the local level.

8.153 Assuming the proposed good practice mitigation measures are implemented, no significant residual effects are likely upon other important ecological receptors during the construction phase.

Operational Effects

Potential Effects

8.154 Operational effects (assuming that the stated good practice mitigation measures, as set out in **Chapter 10: Hydrology, Hydrogeology and Geology**, are implemented), are addressed for relevant receptors in paragraphs 8.155-8.173.

Habitats

8.155 During the operational phase, no significant effects on retained habitats are predicted. Infrastructure would be in place and only occasional service vehicles would be present on the Site, with the potential for incidents and spillages affecting sensitive habitats would be very low. In addition to this, good practice measures would be implemented further reducing the risk of an incident occurring.

Fish

8.156 During the operational phase, maintenance traffic would be minimal. No hazardous chemicals would be stored on the Site during the operational phase. During major maintenance events, temporary storage of hazardous chemicals could occur on Site, but would be subject to implementation of standard pollution prevention control measures. Several of the watercourses and waterbodies that occur on Site have the potential for fish however there is a 50m standoff between infrastructure and watercourse (other than the instances listed in paragraph 8.128), as a result there would be limited mechanisms for causing water pollution, and as such no significant effects upon fish are predicted.

Reptiles

8.157 During the operation of the wind farm, only minimal maintenance traffic would be present on the Site and this would be restricted to driving along on Site access tracks only, with an applied speed limit. As a result of this, no effects upon reptiles are predicted.

Otter

8.158 Human activity associated with wind farm maintenance would be limited to the permanent infrastructure areas and only minimal maintenance traffic would be present, which would be restricted to the access tracks and subject to similar speed limits to those in place during construction. As discussed in the 'Construction Effects' section, paragraph 8.114, there is some evidence of otter using the Site however most activity is concentrated around Loch Sealg to the south of the Site, away from the main works. On that basis, otter presence within the Site and within 250m of proposed infrastructure is likely to be occasional and therefore the potential for otter to be affected during wind farm operation is low.

8.159 No hazardous chemicals would be stored on the Site during the operational phase, and activities involving excavations would have ceased. During major maintenance events, temporary storage of hazardous chemicals could occur onsite, but would be subject to implementation of standard pollution prevention control measures and works would not take place within 50m of any watercourses (other than the instances listed in paragraph 8.128). As a result, there would be limited mechanisms present for causing water pollution.

8.160 Based on the above, assuming that all stated good practice measures are implemented, no significant effects on otter are likely during the operational phase.

Bats

8.161 Operational wind turbines can affect bats in a number of ways, although the main concerns relate to collision mortality, barotrauma and other injuries resulting from collision with, or flying in very close proximity to, moving turbine blades (NatureScot *et al*., 2021).As described in paragraph 8.32-8.33, an informal activity survey was undertaken with static detectors deployed at the six proposed turbine locations under consideration at that time closest to the Eishken Lodge, and the results indicated very low levels of bat activity.

8.162 Outwith the Eishken Lodge area (which is subject to a works exclusion buffer and is located approximately 980m from the closest turbine) the habitat on Site is considered to be of very low value to bats, due to the lack of roosting habitat, the lack of prominent linear features and habitat connectivity likely to be used extensively by foraging bats, and the low quality of the habitat on the Site for foraging, primarily exposed moorland habitat.

8.163 Given the low quality of habitat (away from Eishken Lodge) and the very low levels of bat activity recorded during the survey undertaken, the conclusion from this assessment is that the level of risk to common pipistrelle is low. As such, significant effects upon common pipistrelle during the operational phase are unlikely.

8.164 To comply with the Civil Aviation Authority (CAA) requirements, wind turbines would be fitted with visible medium intensity (2,000 candela) red coloured light fittings. Aviation lighting has the potential to affect bats' insect prey species and therefore increase bat activity in the vicinity of the turbines. Arnett *et al*., (2008) reviewed findings from 21 post-construction monitoring studies in the USA and Canada and found no significant difference between bat fatalities with aviation lighting and those without lights. Based on this, and given the very low level of bat activity, and the distance between bat habitat and the turbine locations, no significant effects on bats are likely as a result of proposed aviation lighting.

8.165 Given the low risk to bats at the Site, no specific mitigation (e.g. turbine curtailment) or monitoring is considered necessary, in line with current guidelines (NatureScot *et al*, 2021).

Deer

8.166 Potential impacts in relation to deer during the operational phase relate to possible changes in grazing areas resulting from the measures outlined in **Technical Appendix 8.5**, and collision risk with Site traffic/maintenance vehicles.

8.167 Current grazing pressure has led to erosion of wet heath habitats on steeper slopes and higher parts of the site. A reduction in grazing from October to March in these areas is proposed (see **Technical Appendix 8.5: OHMP**). Given the availability of suitable grazing habitat within the wider Eishken Estate, and the fact that the exclusion is only for part of the year, the exclusion of deer from the areas suggested in the OHMP wont' have a significant effect on deer. As detailed in **Technical Appendix 8.5,** the Habitat Management Areas would be subject to botanical monitoring, which includes monitoring grazing impacts on vegetation, such that a mechanism would be in place to identify the need for remedial action if required.

8.168 Only minimal maintenance traffic would be present during the operational phase, which would be subject to the 15mph Site speed limit, such that increased traffic collision risk would be minimal. Significant displacement, and therefore any impacts on neighbouring habitats and roads, is not likely during the operational phase due to minimal disturbance.

8.169 Overall, no significant adverse effects are predicted upon wild deer, or resulting from wild deer, during the operational phase. Given that no significant adverse effects are predicted for both the construction and operational phases, a draft deer management statement is not required, following the criteria within the relevant SNH (2016a) guidelines.

Cumulative Effects

8.170 None of the other developments listed in **Table 8-6** lie within the same hydrological catchments as the proposed development, and therefore there is no potential for cumulative effects on aquatic receptors during operation.

8.171 With regards to the cumulative effects on bats, given the low level of bat activity within the Turbine Developable Area and the presence of only one other wind development (a single turbine 42m to tip at Lemreway) within 10km of the proposed development, there is no potential for significant cumulative effects.

Mitigation, Compensation and Enhancement

8.172 No specific mitigation measures are required for the operational phase. However, compensation and enhancement measures provided as part of the HMP (paragraphs 8.146 to 8.153 and **Technical Appendix 8.5)** would remain in place during the operational phase.

Residual Effects

8.173 No significant residual effects are anticipated during the operational phase.

FURTHER SURVEY REQUIREMENTS AND MONITORING

Habitat Monitoring

8.174 Vegetation monitoring would be undertaken as part of the HMP, as detailed in **Technical Appendix 8.5**, summarised below:

- common Standards Monitoring (CSM) Vegetation Condition Quadrats;
- grazing assessment;
- woodland planting monitoring; and
- rhododendron removal monitoring.

Species Monitoring

8.175 Fish monitoring will take place pre construction, throughout construction and post construction to monitor the effect of construction activities on fish populations on Site.

8.176 Pre-construction surveys will be undertaken to take account of any changes in distribution of otter.

8.177 For full details of further monitoring proposed, see **Technical Appendix 8.5 Outline Habitat Management Plan.**

Hydrological Monitoring

8.178 Hydrological monitoring via dipwells will take place pre-construction (to provide a baseline) and at regular intervals post-construction to monitor water table height within proposed peatland restoration areas to monitor the efficacy of the habitat restoration measures employed, and inform the requirement for remedial measures.

8.179 In order to monitor the effectiveness of the ditch blocking methods, checks will also be made to monitor for damage to peat dams and highlight required maintenance.

8.180 Full details of the hydrological monitoring proposed are contained within **Technical Appendix 8.5 Outline Habitat Management Plan.**

SUMMARY OF PREDICTED EFFECTS

Proposed Development

8.181 **Table 8-9** provides a summary of effects on important ecological receptors, mitigation, compensation and enhancement measures and residual effects.

Table 8-9: Summary of Effects on Important Ecological Receptors

Receptor	Potential Effect	Embedded Mitigation/Good Practice	Significance of Effect	Additional Mitigation/Compensation	Residual Effect
Construction Phase					
Blanket bog	Permanent loss (direct and indirect) of up to 39.78ha of Annex 1 blanket bog habitat.	Avoidance of blanket bog where possible.	Significant at a regional level	Compensation of blanket bog loss and restoration and enhancement of upland habitats via the HMP.	Significant negative effect at a regional level but offset through proposed habitat restoration and enhancement within the OHMP.
Degraded Blanket Bog	Permanent loss (direct and indirect) of up to 8.19ha of degraded blanket bog habitat.	Avoidance of degraded blanket bog where possible.	Significant at local level.	Compensation of degraded blanket bog loss and restoration and enhancement of upland habitats via the HMP.	Significant negative effect at a local level but offset through proposed habitat restoration and enhancement within the OHMP.
Heathland Habitat	Permanent loss (direct and indirect) of up to 37.05ha of Annex 1 heathland habitat (upland dry heath and upland wet heath).	Avoidance of heathland habitat where possible.	Significant at a regional level	Restoration of habitats disturbed during construction and enhancement of habitat conditions via the HMP.	Significant negative effect at regional level, but offset through proposed habitat restoration and enhancement as detailed in the OHMP.
Acid Grassland	Permanent loss of 0.73ha ha of acid grassland.	Avoidance of acid grassland where possible.	Not significant	None	Not significant
Water environment	Water quality impacts (running water), including impact on fish habitat within the Site and downstream of the Site.	Hydrological and pollution prevention measures (detailed in **Chapter 10** and the outline	Not significant	50m watercourse buffer zone (other than instances listed in paragraph 8.128).	Not significant

Receptor	Potential Effect	Embedded Mitigation/Good Practice	Significance of Effect	Additional Mitigation/Compensation	Residual Effect
		CEMP); including adherence to SEPA PPGs/GPPS			
Fish	Water quality impacts on fish habitat.	Hydrological and pollution prevention measures (detailed in Chapter 10 and the outline CEMP); including adherence to SEPA PPGs/GPPS	Not significant	50m watercourse buffer zone (other than instances listed in paragraph 8.128).	Not significant
Reptiles and bats	Loss of up to 22ha of suitable habitat for reptiles and low quality habitat for foraging bats.	Removal of hibernacula / 'soft start' construction activities.	Not significant	Reinstatement of habitat subject to temporary loss.	Not significant
Otter	Inadvertent disturbance, injury and/ or death of otter.	Covering/ramping of excavations. Site speed limit of 15mph. Suitable storage of materials.	Not significant	Pre-construction surveys.	Not significant
Deer	Loss of suitable grazing habitat		Not Significant	None.	Not Significant

Receptor	Potential Effect	Embedded Mitigation/Good Practice	Significance of Effect	Additional Mitigation/Compensation	Residual Effect
Operational Phase					
Bats	Collision with moving turbines/barotrauma.	Turbines sited away from bat habitat	Not significant	None	Not significant
Otter and Reptiles	Damage to habitats and disturbance/ injury/killing of otter and reptiles.	Speed limit on Eishken Road and access tracks.	Not significant	None	Not significant
Fish	Water quality impacts to fish habitat	Appropriate road drainage along access tracks and Eishken Road	Not significant	None	Not significant
Deer	Inadvertent displacement due to HMP and road collision of deer	Speed limit on Eishken Road and access tracks.	Not significant	None	Not significant

Cumulative Effects

8.182 Significant cumulative effects, during both the construction and operational phases, are unlikely, as detailed further in paragraphs 8.142-8.144 and 8.170-8.171.

STATEMENT OF SIGNIFICANCE

8.183 Following the avoidance of important receptors during the project design where possible, and with the implementation of the proposed good practice measures and additional mitigation, impacts would be minimised as far as possible.

8.184 The proposed development would result in a significant negative effect for the loss of blanket bog and wet heath at the regional level, and for the loss of degraded blanket bog and dry heath at the local level. However, this habitat loss would be compensated by a significant positive effect through the peatland restoration proposed, to be delivered via an HMP.

8.185 With the implementation of continued good practice measures and the implementation of the proposed HMP, no significant negative effects are predicted during the operation phase.

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CONTENTS

INTRODUCTION

9.1 This Chapter of the Environmental Impact Assessment (EIA) Report evaluates the potential effects of the proposed development on ornithological features. The assessment was undertaken by MacArthur Green, and all staff contributing to this Chapter have professional experience in carrying out ecological impact assessments and ornithology surveys. The Chapter includes the following elements:

- scope and consultation;
- approach and methods;
- baseline conditions;
- assessment of effects;
- mitigation and residual effects;
- cumulative effects;
- statement of significance; and
- further survey requirements and monitoring.

9.2 This Chapter of the EIA Report is supported by the following documents provided in Volume 4: Technical Appendices:

- **Technical Appendix 9.1: Ornithology**;
- **Technical Appendix 9.2: Confidential Ornithology**;
- **Technical Appendix 9.3: White-tailed Eagle Population Model**;
- **Technical Appendix 9.4: Golden Eagle Population Model**; and
- **Technical Appendix 9.5: Consultation**.

9.3 This Chapter of the EIA Report is supported by the following Figures provided in Volume 3:

- **Figure 9.1: Vantage Points and Viewsheds 2022-23**;
- **Figure 9.2: Site Boundary and Study Areas**;
- **Figure 9.3: Flight Activity 2022 Breeding Season: Red-throated Diver**;
- **Figure 9.4: Flight Activity 2022 Breeding Season: Golden Eagle**;
- **Figure 9.5: Flight Activity 2022-23 Non-breeding Season: Golden Eagle**;
- **Figure 9.6: Flight Activity 2022 Breeding Season: White-tailed Eagle**;
- **Figure 9.7: Flight Activity 2022-23 Non-breeding Season: White-tailed Eagle**;
- **Figure 9.8: Non-breeding Golden Eagle Density 2020 to 2022**;
- **Figure 9.9: Non-breeding White-tailed Eagle Density 2020 to 2022**;
- **Figure 9.10: Golden Plover Breeding Season Activity 2022**;
- **Figure 9.11: Dunlin Breeding Season Activity 2022**;

- **Figure 9.12: Cumulative Wind Farm Projects within NHZ 3**;
- **Figure 9.13: Flight Activity 2018 Breeding Season: Golden Eagle**;
- **Figure 9.14: Flight Activity 2017-2019 Non-breeding Seasons: Golden Eagle**;
- **Figure 9.15: Flight Activity 2018 Breeding Season: White-tailed Eagle**;
- **Figure 9.16: Flight Activity 2017-2019 Non-breeding Seasons: White-tailed Eagle**;
- **Figure 9.17: Golden Plover Breeding Season Activity 2018**; and
- **Figure 9.18: Dunlin Breeding Season Activity 2018**.

9.4 The following Confidential Figures supporting this Chapter are presented in **Technical Appendix 9.2: Confidential Ornithology** and have restricted availability due the sensitive nature of nest site locations shown:

- **Figure C9.1: Golden Eagle Nest and Roost Sites**;
- **Figure C9.2: Breeding Golden Eagle Density 2020 to 2022**;
- **Figure C9.3: GET Model Output**;
- **Figure C9.4: White-tailed Eagle Nest and Roost Sites**;
- **Figure C9.5: Black-throated Diver Breeding Season Activity 2022**;
- **Figure C9.6: Merlin Breeding Season Activity 2022**;
- **Figure C9.7: Greenshank Breeding Season Activity 2022**;
- **Figure C9.8: Diver Activity 2018**;
- **Figure C9.9: Merlin Breeding Season Activity 2018**; and
- **Figure C9.10: Greenshank Breeding Season Activity 2018**.

SCOPE AND CONSULTATION

9.5 This Chapter considers the potential effects on ornithology associated with the construction, operation and decommissioning of the proposed development. The specific objectives of the Chapter are to:

- describe the ornithological baseline;
- describe the assessment methodology and significance criteria used in completing the assessment;
- describe the potential significance of unmitigated effects (direct or indirect) on identified Important Ornithological Features (IOFs) (CIEEM, 2018);
- describe the mitigation measures proposed to address any likely significant effects; and
- assess the residual effects remaining following the implementation of mitigation and enhancement, including cumulatively with other projects.

Consultation and Scoping Responses

9.6 Consultation for this EIA Report topic was undertaken with the organisations shown in **Table 9-1**.

Table 9-1: Scoping Key Issues

Consultee	Summary of Response	Where Addressed in Chapter
Scottish Government Scoping Opinion 05 October 2022	It is recommended by the Scottish Ministers that decisions on bird surveys – species, methodology, vantage points, viewsheds and duration – site specific and cumulative – should be made following discussion between the Company, Comhairle nan Eilean Siar, NatureScot and RSPB Scotland.	The scope and methodology of the ornithology baseline survey programme was agreed with NatureScot in advance of survey commencement in 2022. A summary was provided for comment by all consultees in the Scoping Report. Comhairle nan Eilean Siar agreed that the surveys were appropriate (no response was received from RSPB Scotland).
	The EIA report should provide a baseline survey of the animals (mammals, reptiles, amphibians, etc) present on site. It needs to be categorically established which species are present on the site, and where, before a future application is submitted.	Baseline ornithology surveys have been carried out following standard NatureScot (SNH, 2017) guidance. Full details of methods and results are presented in **Technical Appendix 9.1** to the EIA Report, with a baseline summary description presented in the Baseline Conditions section.
NatureScot Pre-scoping consultation 12 May 2022 (See **Technical Appendix 9.5**)	Confirmation that 2022-23 ornithology survey programme is suitable and sufficient. NatureScot would ideally like to see eagle surveys start from February but understand that sometimes delays occur.	Noted. Surveys commenced in March 2022 but did cover the early part of the 2023 eagle breeding season. All known eagle eyries were checked in 2022 so no early failed breeding attempt would have been missed.
NatureScot Scoping Opinion 12 September 2022	There is both seasonal variation and a general ongoing increase in white-tailed eagle activity and presence of roosts in the area. The final assessment should take account of any material changes in white-tailed eagle activity in the area since the data was collected.	Baseline surveys carried out in 2022-23 have provided an up-to-date indication of levels of white-tailed eagle activity and distribution on site. This can be compared with previous survey effort in 2017-19, historic data obtained, and baseline survey data for the consented scheme.
	There may be scope for impacts on more than one golden eagle range given the general location, and there are a number of white-tailed eagle territories that overlap the site to some degree. The assessment should include reference to how many ranges of each species overlap with the proposal and assess them accordingly.	Effort has been made to obtain data on numbers and locations of white-tailed eagle and golden eagle breeding attempts within the Site and in the wider area over the longer term, to help build up a clearer picture on ranges, productivity and likely population trends in the area. From the combined data, an evaluation has been made to determine how many eagle ranges may be affected, and to what extent, by the proposed development.
	We would also expect to see focal work for breeding divers.	Specific diver breeding surveys were carried out in 2022, but no confirmed breeding attempts were recorded (or any attempts failed at a very early stage). As such, no focal diver flight activity surveys, as recommended by NatureScot (SNH, 2017) guidance, were therefore required. Focal surveys were carried for divers during the 2018 breeding season.
	Cumulative assessment is going to be a critical aspect of this proposal, given that the consented developments in the [Natural Heritage Zone] NHZ are already predicting relatively high levels of impacts on this	A cumulative assessment for eagles, and any other relevant species, has been carried out at an NHZ scale in the Cumulative Effects section. The Assessment of Effects section includes screening as part of the Habitats Regulations Appraisal

Consultee	Summary of Response	Where Addressed in Chapter
	metric, particularly for golden eagle. Consideration should be given to how any NHZ-level population impact could affect the Lewis Peatlands and North Harris Mountains Special Protection Areas (SPA).	process to determine whether any likely significant effects on SPAs due to the proposed development may occur, both alone and in-combination with other projects.
	Careful consideration will need to be given to the practicality and likelihood of success of any proposed mitigation measures.	Mitigation and enhancement measures, as outlined in the Mitigation section have been determined based on suitability, likely effectiveness, practicality of implementation, and evidence of success.
NatureScot Pre-application consultation 21 December 2022 (See **Technical Appendix 9.5**)	NatureScot considered potential impacts on golden eagles in the Outer Hebrides in light of the Golden eagle and White-tailed eagle NHZ3 [Population Viability Analysis] PVA report from Natural Research Projects [Appendix 8F of the Stornoway Wind farm Additional Information Report] and taking the predicted renewables impacts on NHZ3 golden eagles from that report into account (c.1 bird per year collision risk and 2-3 ranges potentially being lost), and concluded that the NHZ3 population could withstand these impacts, for the following reasons: 1. The breeding population is at an all-time high which now exceeds the theoretical cap put on it for the Golden Eagle Conservation Framework and is effectively at carrying capacity or very near it (95 occupied territories in 2015 national survey and possibly higher now). 2. Productivity on average is still above 0.3 [fledged chicks per] pair, so high enough to maintain the population. 3. Emerging evidence from satellite tagged Scottish golden eagles that they avoid wind farms in general and therefore collision risk predictions are unlikely to be fully realised.	Noted. The impact assessment on golden eagle in Assessment of Effects section is in general consistent with NatureScot's conclusions. A population model for golden eagle, evaluating predicted mortality impacts on the NHZ 3 population, is presented in **Technical Appendix 9.3**.
	The [Confidential Fielding (2022) report prepared for Eurowind] using the [Golden Eagle Topographical (GET) model] still predicts potential significant range loss with abandonment risks and is fairly comparable with the previous [Predicting *Aquila* Territories (PAT) model] based assessment, so overall it isn't suggesting in terms of displacement/habitat loss a worse case than previously.	The possible impacts of range loss on breeding golden eagles due to the consented layout was considered in the Fielding (2022) confidential report, primarily using the GET model. A previous PAT model report was undertaken for the consented development (Muaitheabhal Wind Farm South Extension EIA Report). Displacement impacts and range loss are predicted to be lower under the proposed development layout (see **Project Comparison Report**).
	Avian influenza could affect the assessment. Two dead golden eagles in Harris have tested positive this year [2022], and	The evidence to date, and future impacts of avian influenza on eagles have been considered in the

Consultee	Summary of Response	Where Addressed in Chapter
	indications are that it has been a very poor breeding season. Whether the latter is an avian influenza impact is unclear at the moment (there have been similarly poor breeding seasons before attributed to weather and this year's weather was poor). We don't have evidence of large scale die off in eagles, and the satellite tagged birds in the Outer Hebrides are still behaving as normal. The big unknown is whether they can get avian influenza and recover and whether there may be any lingering physiological issues (e.g. reduced fertility) as a result of this. We may not know this for a few years. There would have to be a significant die off of breeding adults and/or several poor breeding seasons to significantly change the assessment.	Baseline Conditions and Assessment of Effects section respectively.
	We are still working on draft guidance on interpreting the GET model for wind farm assessment. Much of what's in the [Fielding, 2022] report here is likely to be what we will have in the guidance, so we don't disagree with the assessment overall.	Noted. It should be noted that the Fielding (2022) confidential report is based on the consented layout, which is predicted to have a lower impact than the proposed development (see **Project Comparison Report**).
	That said, the impact on sub-adult habitat is said to be small because they wander large distances and tend to avoid high densities of eagles. This is probably true on the mainland, but we know that NHZ3 birds tend to stay within the NHZ whilst dispersing. The high density of breeding eagles means they do have to spend time in areas used by territorial birds. Were 1 or 2 ranges to become abandoned it is likely that sub-adult use of any 'gap areas' without territorial adults will increase.	Noted. This has been considered in the assessment of displacement impacts.
	In such a high-density area there may well be much higher levels of territorial interaction, be it with neighbours or intruding sub-adults and risk of collision should not be discounted, especially as the layout proposed has some outer turbines on areas of high GET score. There have been, as far as we know, 5 golden eagle collisions in Scotland and all of these are since 2015 including one at wind farm where golden eagle activity was trivial in the EIA and it's not on particularly high GET scores.	It is acknowledged that despite evidence of golden eagles avoiding wind turbines in Scotland, there remains a residual risk of collisions, even once mitigation measures have been implemented. This has been evaluated in the Collision Risk section of the Potential Operational Effects. It should be noted that the Fielding (2022) confidential report was based on the consented layout, and effort has since been made to reduce the potential impacts on eagles for the proposed development, by having fewer turbines, and moving proposed turbine locations away from higher suitability areas for eagles, using GET model outputs as well as results of baseline surveys.

Consultee	Summary of Response	Where Addressed in Chapter
	Therefore, the advice on golden eagle here is without prejudice to seeing the full EIA and potential collision risks, as flight line data doesn't always match the GET model (e.g. potential food source making an area of lower scores important or for unknown reason an area of predicted high activity not be in reality).	Noted. Flight activity data has been used in combination with satellite tag data and GET model outputs to evaluate the potential impacts on eagles.
	The report does make some recommendations about reducing the impact of the layout on golden eagles and these do seem sensible, and we would strongly encourage the applicant to consider these.	It should be noted that the Fielding (2022) confidential report was based on the consented layout, and effort has since been made to reduce the potential impacts on eagles for the proposed development, by having fewer turbines, and moving proposed turbine locations away from higher suitability areas for eagles, using GET model outputs as well as results of baseline surveys (see **Project Comparison Report**).
NatureScot Pre-application consultation 28 March 2023 (See **Technical Appendix 9.5**)	***Does NatureScot agree with the general approach to the assessment of white-tailed eagle collision risk for the EIA?*** Yes, we are content for you to present CRM results at a range of avoidance rates, and with a range of mitigation scenarios, including reduction in blade diameter and hub height, and blade painting. Our position continues to be to recommend that an avoidance rate of 95% be used for calculating collision risk for white-tailed eagle. If in your submission you are able to marshal the evidence to sustain your contention for using a different figure, then we will consider that.	Noted. The collision risk assessment provides results of modelling conducted under a variety of scenarios and model inputs and presents evidence to determine which values are considered to be the most realistic to base the assessment on.
	Does NatureScot agree that the painting of blades can be considered as appropriate and effective mitigation as part of the EIA process? We consider the evidence from Smøla on this to be interesting and encouraging. We think more work needs to be done to give confidence that this is a repeatable measure which could be relied on to produce similar results in Scotland. Again, we are content for you to make the case in the submission for the effectiveness of this measure, and will consider that on its merits.	Information pertaining to the painting of turbine rotor blades as a form of mitigating collision risk for white-tailed eagle is presented in the Mitigation and Residual Effects section, and is used to inform the assessment of residual collision impacts.
	If considered appropriate and effective mitigation, does NatureScot believe the seven turbines selected are the best for mitigation? Given the information available to you, we think you should be in a better position at present to judge this. The accompanying	The prioritisation of the seven southernmost turbines for collision mitigation in the form of painted rotor blades has been informed by the results of flight activity surveys, satellite tag data, and GET modelling (the authors of the model suggest suitability for large raptor species, not just golden eagles). The evidence presented in this

Consultee	Summary of Response	Where Addressed in Chapter
	figure in your note does not appear to be conclusive in demonstrating that these seven turbines are necessarily the most appropriate for applying this mitigation measure to.	assessment suggests that these seven turbines are in an area that is proportionately likely to be of greater risk to white-tailed eagles.
	If considered appropriate and effective mitigation, does NatureScot consider that the painting of a single blade is a suitable method, or are there any alternative options that may be preferable (whilst considering any Landscape & Visual implications)? We consider that the best way forward on this is for you to present a review of the evidence for single-blade painting and alternatives, and evaluate the site-specific factors which are likely to influence their success or otherwise at Uisenis.	Information on the suitability of painting rotor blades as a form of mitigation for collision risk is presented in the Mitigation and Residual Effects section, and used to inform the impact assessment of residual collision impacts for white-tailed eagle (and other species) within the Site.
	Does NatureScot consider the planned interpretation of the population model is appropriate, or are there an alternative outputs and interpretation that would be more suitable? Yes, your proposed approach is appropriate. The outputs from this, and their significance, will be key in leading us to our position in relation to the Uisenis proposal.	Noted. The population model for white-tailed eagle is presented in **Technical Appendix 9.2** and for golden eagle in **Technical Appendix 9.3**.
RSPB Pre-application consultation 26 January 2023	In terms of biodiversity enhancement/Biodiversity Net Gain, RSPB has 10 principles which we believe any framework needs to comply with to be effective.	Noted. See Mitigation and Residual Effects section in this chapter, and Outline Habitat Management Plan (**Technical Appendix 8.6**) for consideration of these principles.
RSPB Pre-application consultation meeting 15 June 2023	RSPB asked for the collision risk modelling for the consented scheme(s) to be updated using the recent baseline data and compared with results for the proposed development.	This has been undertaken and is presented in the **Project Comparison Report**.
	Any Population Viability Analysis should be presented as a counterfactual i.e., impacts on population trends associated with the proposed development compared to predicted trends if the proposed development was not consented.	This has been conducted in **Technical Appendix 9.2** for white-tailed eagle, and **Technical Appendix 9.3** for golden eagle.
	Requested any data from years prior to 2022-23 baseline period to be considered.	Baseline survey data collected by Natural Research from 2017 to 2019 has been considered throughout and used to inform a realistic worst-case for the assessment.
	RSPB advised on a protocol for the monitoring and reporting of bird collisions.	A systematic carcass search programme would be implemented at the start of the operational phase (see Mitigation and Residual Effects section).

Consultee	Summary of Response	Where Addressed in Chapter
		There would also be a protocol provided to the operational wind farm team so they would know what to do should personnel find any collision victims when working near wind turbines. Any recoveries would be reported each year alongside those found during the monitoring programme.

Effects Scoped Out

9.7 No potential impacts on ornithological features were scoped out prior to commencement of surveys.

9.8 NatureScot (SNH 2018a) guidance provides a list of species potentially at risk of impacts from onshore wind farms in Scotland, either because they are rare or vulnerable or they are dependent on habitats which are limited or subject to land use change. Other non-target species recorded during baseline surveys which are considered to be of Low Nature conservation importance, as defined by **Table 9-2** below, were generally omitted from surveys and have been scoped out of the assessment.

APPROACH AND METHODS

Study Area

9.9 The assessment focuses on the Site and appropriate study areas, based on NatureScot survey and assessment guidance (SNH 2016a; 2017; SNH 2018a,b,c) (see **Technical Appendix 9.1** for further details). The specific study areas associated with this assessment are as follows:

- flight activity surveys: within the proposed wind turbine area and a 500m buffer of the outermost turbine locations, referred to for collision risk modelling (CRM) purposes as the Collision Risk Analysis Area (CRAA) (see **Technical Appendix 9.1, Annex E** and **Figure 9.1**).
- ornithological designated sites: within 20km of the Site;
- scarce breeding birds[1] (Schedule 1, Annex I raptor species, excluding eagles): up to a 2km buffer around the Site (**Figure 9.2**);
- breeding divers and greenshank: up to a 1km buffer around the Site (**Figure 9.2**); and
- breeding birds (primarily waders): up to 500m around the Site (**Figure 9.2**).

Information and Data Sources

9.10 In addition to the ornithology field surveys carried out in 2022-23, the following sources of information and data have been used to inform this impact assessment:

[1] Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the proposed development consists of any raptor, diver, wader or owl species listed on either Annex 1 or Schedule 1.

- results of ornithology surveys carried out from September 2017 to March 2019 by Natural Research, covering the extent of the larger consented development;
- NatureScot's SiteLink website[2] for designated sites;
- Fielding, A. (2022). Eishken Uisenis Renewable Energy Development – An analysis of potential golden eagle habitat loss using the GET Model. Confidential report prepared for LUC Ltd.;
- Robin Reid (Lewis & Harris Raptor Study Group): provision of historic golden eagle *Aquila chrysaetos* and white-tailed eagle *Haliaeetus albicilla* known nest sites in central Lewis area, and breeding data from 2017 to 2022;
- satellite data from breeding and non-breeding golden eagles and non-breeding white-tailed eagles tagged as part of a programme conducted by Natural Research Projects and associates. This comprises full range use data of a local territorial golden eagle male; use of the Site and local area by five non-territorial golden eagles tagged as nestlings in 2019 and a non-territorial bird tagged as adult in November 2021; and by four non-territorial white-tailed eagles tagged as nestlings in 2020.
- consented development EIA Reports and associated documents:
    - Land Use Consultants (2004). Muaitheabhal Wind Farm: Environmental Statement (ES);
    - Land Use Consultants (2006). Muaitheabhal Wind Farm: Supplementary Environmental Information (SEI);
    - Land Use Consultants (2009). Muaitheabhal Wind Farm: SEI;
    - Land Use Consultants (2011). Muaitheabhal Wind Farm East Extension: ES;
    - Land Use Consultants (2011). Muaitheabhal Wind Farm East Extension: SEI; and
    - Land Use Consultants (2013). Muaitheabhal Wind Farm South Extension: ES.

Field Surveys

9.11 Ornithological surveys for the proposed development commenced in March 2022 and were completed in February 2023. All ornithology field surveys were undertaken in line with the appropriate guidance (SNH 2017, Hardey *et al.* 2013, Gilbert *et al.* 1998).

9.12 All survey areas were created using survey-specific buffers based on a maximum developable turbine area (larger than the final proposed development layout) provided at the time of survey commencement (see **Figure 9.2**). Surveys comprised:

- flight activity surveys: five Vantage Point (VP) locations, September 2017 to March 2019 and March 2022 to March 2023 (two breeding seasons and three non-breeding seasons; minimum of 36 hours per season as per SNH 2017);
- scarce breeding bird surveys (raptors and divers): up to 2km survey area, monthly from February to July 2018 and March to August 2022;
- diver flight activity surveys: four VP locations (additional to those for the flight activity surveys), April to July 2018;

[2] https://sitelink.nature.scot/home

- breeding wader surveys: 500m survey area (up to 1km for greenshank in 2022), monthly from April to June 2018 and April to July 2022; and
- winter walkover surveys: 500m survey area, monthly from September 2017 to March 2018, and in November 2022 and January and February 2023.

Assessment Methods

9.13 This section defines the methods used to assess the significance of effects through the process of an evaluation of the sensitivity of an ornithological feature (a combination of nature conservation importance and conservation status) and magnitude of change due to each impact. The assessment focuses on a 'worst-case' proposed development as described in **Chapter 3: Description of Development**.

9.14 The evaluation involves the following process:

- identifying the potential impacts associated with the proposed development;
- considering the likelihood of occurrence of potential impacts where appropriate;
- defining the nature conservation importance and conservation status of the bird populations present to establish level of sensitivity;
- establishing the magnitude of change due to the impact (both spatial and temporal);
- based on the above information, making a judgement as to whether or not the resultant unmitigated effect is significant with respect to the EIA Regulations;
- if a potential effect is determined to be significant, suggesting measures to mitigate or compensate the effect where required;
- considering opportunities for enhancement where appropriate; and
- confirming residual effects after mitigation or enhancement are considered.

Sensitivity of Ornithological Features

9.15 Determination of the level of sensitivity of an ornithological feature is based on a combination of the feature's nature conservation importance and conservation status. There are three levels of nature conservation importance as detailed in **Table 9-2**.

Table 9-2: Determining factors of a feature's nature conservation importance

Importance	Description
High	Populations receiving protection by an SPA, Ramsar Site, Site of Special Scientific Interest (SSSI) or which would otherwise qualify under selection guidelines. Species present in nationally important numbers (>1% national breeding or wintering population).
Medium	The presence of breeding species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). The presence of breeding species listed in Annex I of the Birds Directive (but population does not meet the designation criteria under selection guidelines). The presence of rare, Red-listed breeding species noted on the latest Birds of Conservation Concern (BoCC) Red list (Stanbury et al. 2020) or identified as being sensitive to Wind Farm development in SNH (2018a).

Importance	Description
	Regularly occurring migratory species, which are either rare or vulnerable, or warrant special consideration on account of the proximity of migration routes, or breeding, moulting, wintering or staging areas in relation to the Development Site. Species present in regionally important numbers (>1% of NHZ or appropriate reference breeding population).
Low	All other species' populations not covered by the above categories.

9.16 IOFs (as per CIEEM 2018) taken forward for assessment are those species of high and medium nature conservation importance.

9.17 As defined by NatureScot (SNH 2018a), the conservation status of a species is "*the sum of the influences acting on it which may affect its long-term distribution and abundance, within the geographical area of interest*". Conservation status is considered to be 'favourable' under the following circumstances:

"*population dynamics indicate that the species is maintaining itself on a long-term basis as a viable component of its habitats;*

the natural range of the species is not being reduced, nor is likely to be reduced for the foreseeable future; and

there is (and probably will continue to be) a sufficiently large habitat to maintain its population on a long-term basis".

9.18 NatureScot (SNH 2018a) recommends that "*the concept of favourable conservation status of a species should be applied at the level of its Scottish population, to determine whether an impact is sufficiently significant to be of concern. An adverse impact on a species at a regional scale (within Scotland) may adversely affect its national conservation status*". Thus, "*An impact should therefore be judged as of concern where it would adversely affect the existing favourable conservation status of a species or prevent a species from recovering to favourable conservation status, in Scotland*."

9.19 In the case of non-designated sites in Scotland, the relevant regional scale for breeding species is usually considered to be the appropriate NHZ which the site falls within. The proposed development is within NHZ 3 (Coll, Tiree & The Western Isles). For some species, other distinct geographic areas may be more appropriate, for example if a species has been subject to a reintroduction programme, or if national censuses have used particular regions based on ecological principles.

9.20 For wintering or migratory species, the national UK population or flyway population is usually considered to be the relevant scale for determining effects on the conservation status, although again a species-specific approach is taken.

Magnitude of Change

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

9.22 An impact is defined as a change of a particular magnitude to the abundance and/or distribution of a population as a result of the proposed development. Impacts can be adverse, neutral or beneficial.

9.23 In determining the magnitude of change, the resilience of a population to recover from temporary adverse conditions is considered in respect of each potentially affected population.

9.24 The magnitude of change is judged in terms of magnitude in space and time. There are five levels of spatial and temporal magnitude as detailed in **Table 9-3** and **Table 9-4** respectively.

Table 9-3: Spatial magnitude of change

Spatial Magnitude	Description
Very High	Total/near total loss of a bird population due to mortality or displacement. Total/near total loss of productivity in a bird population due to disturbance. Guide: >80 % of population lost or increase in additive mortality.
High	Major reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 21-80 % of population lost or increase in additive mortality.
Medium	Partial reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 6-20 % of population lost or increase in additive mortality.
Low	Small but discernible reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Guide: 1-5 % of population lost or increase in additive mortality.
Negligible	Very slight (or no discernible) reduction in the status or productivity of a bird population due to mortality or displacement or disturbance. Reduction barely discernible, approximating to the “no change” situation. Guide: <1 % of population lost or increase in additive mortality.

Table 9-4: Temporal magnitude of change

Temporal Magnitude	Description
Permanent	Effects continuing indefinitely beyond the span of one human generation (taken as approximately 25-30 years), except where there is likely to be substantial improvement after this period. Where this is the case, long-term may be more appropriate.
Long-term	Approximately 15-25 years or longer.
Medium-term	Approximately 5-15 years.
Short-term	Up to approximately 5 years.
Negligible	<12 months.

Significance of Effects

9.25 The sensitivity of the IOF and the magnitude of change of the predicted impact will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects. Effects predicted to be of major or moderate significance are considered to be ‘significant’ in the context of the EIA Regulations, whereas those of minor or negligible.

Mitigation

9.26 Mitigation will be required if the potential effect determines that there is an unmitigated moderate adverse or major adverse and therefore potentially significant effect on any IOF identified in this Chapter.

Cumulative Effects

9.27 The Cumulative Effects assessment presents information about the potential cumulative effects of the proposed development combined with other operational, consented or proposed projects.

9.28 NatureScot (SNH 2018b) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.

9.29 Cumulative effects may include cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects. Some cumulative effects, such as collision risk, may be summed quantitatively, but according to NatureScot (SNH 2018b) "*In practice, however, some effects such as disturbance or barrier effects may need considerable additional research work to assess impacts quantitatively. A more qualitative process may have to be applied until quantitative information becomes available for developments in the area, e.g., from post-construction monitoring or research*".

9.30 The main projects likely to cause similar impacts on ornithological features are other operational wind farm developments, or those under construction, consented, or in the planning process, located within NHZ 3 or appropriate geographical reference area.

Residual Effects

9.31 If a potential effect is determined to be significant, measures to mitigate the effect to a non-significant level will be required, and the revised significance of residual effects after mitigation (and/or enhancement) will be assessed.

Assumptions, Limitations and Confidence

9.32 Survey methods followed NatureScot guidance (SNH 2017), and survey effort either met or exceeded the minimum requirements, with weather conditions appropriate for the surveys/surveys suspended (or additional surveys undertaken) where weather conditions deteriorated (refer to **Technical Appendix 9.1, Annex C** for all weather data). As confirmed with NatureScot during consultation (**Table 9-1**) the data available are considered sufficient and appropriate for a robust assessment.

9.33 Limitations exist on the knowledge base on how some species, and the populations to which they belong, react to particular impacts caused by onshore wind farms. A precautionary approach is taken in these circumstances, and as such it is considered that these limitations do not affect the robustness of this assessment.

BASELINE CONDITIONS

Designated Sites

9.34 There are no statutory designations containing ornithological features within the Site boundary; however, the Site is within 20km of four SPAs and associated SSSIs and Ramsar sites, as listed below.

- Lewis Peatlands SPA (underpinned by the Lewis Peatlands Ramsar site) – approximately 954m to the north west of the Site at its nearest point (existing road to estate) and approximately 7.2km to the north west of the part of the Site where turbines are located (Turbine Developable Area). The SPA is designated for breeding black-throated diver *Gavia arctica*, dunlin *Calidris alpina schinzii*, golden eagle, golden plover *Pluvialis apricaria*, greenshank *Tringa nebularia*, merlin *Falco columbarius* and red-throated diver *Gavia stellata*.
- Shiant Isles SPA (underpinned by the Shiant Islands SSSI) – approximately 10.1km to the south east of the Site at its nearest point and approximately 10.8km to the south east of the Turbine Developable Area. The SPA is designated for breeding fulmar *Fulmarus glacialis*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, puffin *Fratercula arctica*, razorbill *Alca torda*, shag *Phalacrocorax aristotelis*, breeding seabird assemblage and non-breeding Greenland barnacle goose *Branta leucopsis*.
- North Harris Mountains SPA – approximately 13km to the west of the Site at its nearest point and designated for golden eagle.
- West Coast of the Outer Hebrides marine SPA (mSPA) – approximately 16km to the south west of the Site at its nearest point and designated for non-breeding black-throated diver, eider *Somateria mollissima*, great northern diver *Gavia immer*, long-tailed duck *Clangula hyemalis*, red-breasted merganser *Mergus serrator*, Slavonian grebe *Podiceps auritus* and breeding red-throated diver.

Ornithological Activity

Flight Activity Surveys

9.35 A summary of the flight activity survey effort conducted in 2017-19 (two non-breeding seasons and one breeding season) and 2022-23 (one breeding season and one non-breeding season) is presented in **Table 9-5**. **Table 9-6** presents a summary of flight activity survey results (see **Technical Appendix 9.1, Annexes C** and **D** for further detail on 2022-23 surveys). This includes all flight records regardless of location, i.e., not just those flights that would qualify for inclusion in the collision risk model. For a small, non-significant proportion of flights recorded in 2017-19 (mainly wader species), insufficient information was provided for use in collision risk modelling, and so these have been excluded from **Table 9-6**.

Table 9-5: Flight activity survey effort (hours) in breeding (BR) and non-breeding (NBR) seasons

VP	2017/2018 NBR	2018 BR	2018/2019 NBR	2022 BR	2022/2023 NBR
1	36	36	35.5	36	36
2	36	36	36	36	36
3	36	36	36	36	36

VP	2017/2018 NBR	2018 BR	2018/2019 NBR	2022 BR	2022/2023 NBR
4	36	36	36	36	36
5	36	36	38	36	36

Table 9-6: Flight activity survey results 2017-19 and 2022-23

Species	Total Flights		Total Birds Recorded		Total Bird Seconds Recorded*	
	2017-19	2022-23	2017-19	2022-23	2017-19	2022-23
Black-throated diver	2	-	5	-	133	-
Curlew	-	1	-	1	-	46
Dunlin	-	1	-	2	-	70
Golden eagle	473	76	566	96	110718	17661
Golden plover	1	26	1	38	191	2180
Greenshank	-	15	-	20	-	1094
Greylag goose	-	1	-	55	-	6600
Hen harrier	2	6	2	6	296	409
Herring gull	-	5	-	7	-	696
Merlin	10	9	11	9	537	492
Peregrine falcon	-	1	-	1	-	73
Red-throated diver	6	12	10	15	811	936
White-tailed eagle	160	83	176	106	41208	19121
Whooper swan	4	-	27	-	446	-

'-' = not recorded; * total bird seconds is calculated by multiplying the number of birds within each flight event (e.g. a flock of five birds) by the duration of that flight event.

9.36 CRM was undertaken using the 2017-19 and 2022-23 flight activity survey data (**Tables 9-7** and **9-8**, see **Technical Appendix 9.1**, **Annex E** for further detail on 2022-23 surveys). The annual collision rate for 2022-23 was calculated by summing the breeding season and non-breeding season collision rates. For 2017-19, the mean annual rate was calculated by averaging the two non-breeding seasons and adding that value to the 2018 breeding season estimate.

9.37 A number of species were recorded during flight activity surveys, but no flights were considered to be 'at-risk' (i.e., the flights were outside of the CRAA and associated viewshed and/or were only recorded flying above or below lower rotor tip height) and are therefore not included in **Tables 9-7** or **9-8**.

9.38 The avoidance rates used for each species in the collision model (a determination of what proportion of flight activity around operational turbines would be reduced due to birds taking avoiding action) and presented in **Table 9-7** and **Table 9-8** followed NatureScot guidance (SNH, 2018d). Where alternative avoidance rates have been considered for a species, the associated predicted collision rates are presented in the assessment section.

9.39 For the purposes of the CRM, it was assumed that all of the 25 turbines would have a 155m rotor diameter, with 122.5m hub height and 200m upper rotor tip height. This was considered suitably representative, and should any individual turbine vary in hub height, this is unlikely to significantly alter overall predicted risk for any species. The results of the CRM are presented in **Table 9-7** and **Tables 9-8**.

Table 9-7: Collision risk modelling results 2022-23

Species	Avoidance Rate	2022 Breeding Season	2022-23 Non-breeding Season	Annual collision rate	Years per collision
Golden eagle	99 %	0.112	0.189	0.301	3.3
Greenshank	98 %	0.0004	0	0.0004	2851
Herring gull	98 %	0.036	0	0.036	28
Merlin	98 %	0	0.014	0.014	73
Peregrine falcon	98 %	0.002	0	0.002	560
Red-throated diver	99.5 %	0.008	0	0.008	119
White-tailed eagle	95 %	1.180	1.350	2.530	0.40

Table 9-8: Collision risk modelling results 2017-19

Species	Avoidance Rate	2017-18 Non-breeding Season	2018 Breeding Season	2018-19 Non-breeding Season	Mean annual collision rate	Years per collision
Black-throated diver	99.5 %	0	0.008	0	0.008	131
Golden eagle	99 %	0.938	0.866	0.390	1.530	0.65
Golden plover	98 %	0.021	0	0	0.010	95
Hen harrier	98 %	0	0	0.007	0.004	273
Merlin	98 %	0.003	0.005	0.005	0.009	110
Red-throated diver	99.5 %	0.004	0.011	0	0.013	76
White-tailed eagle	95 %	1.004	1.254	1.296	2.404	0.42

Wildfowl

9.40 Wildfowl observations were uncommon during the baseline periods, with a small number of whooper swan *Cygnus cygnus* and pink-footed goose *Anser brachyrhynchus* flights recorded in 2017-19. In the 2022-23 period, only one greylag goose *Anser anser* flock of 55 birds was recorded in flight.

Divers

9.41 Three diver species were recorded during baseline surveys: black-throated diver, red-throated diver and great northern diver.

9.42 Both red-throated divers and black-throated divers are present on waterbodies within the Site and wider study area during the breeding season (see **Figure 9.3** and Confidential **Figures C9.5** and **C9.8**).

9.43 In 2018 and 2022, a black-throated diver pair attempted to breed on the same loch within the Site boundary. Breeding was successful in 2018 but the pair failed at an early stage in 2022. A second pair bred successfully in 2018, on a loch north of the Site, close to the proposed access route.

9.44 Black-throated divers were recorded using at least six different waterbodies within 2km of the Site in 2018, and seven in 2022. In 2018, feeding lochs were identified to the east and north of the Site, and flight activity was recorded mainly between waterbodies in and around the east of the Site.

9.45 In 2018, at least two pairs of red-throated diver showed signs of territorial behaviour on lochs within the Site, however no evidence of a breeding attempt was recorded (Confidential **Figure C9.8**). Birds were recorded using at least four different waterbodies within 2 km of the Site. In 2022 a 'pair' was regularly recorded on a loch within the 2km study area, but no breeding attempt was observed. Birds were also present on Loch Sealg to the south of the Site.

9.46 Single observations of great northern divers on Loch Sealg were made during the 2017-18 and 2022-23 winter periods.

Golden Eagle

9.47 The Site overlaps with two, and possibly three golden eagle territories with other occupied territories in the wider local area (see Confidential **Figures C9.1** and **C9.2**). In 2022, the three territories within the 2km study area (EA1 – south; EA2 – north; EA3 – southeast), and the five nearest neighbouring territories were monitored. All eight territories are traditional known territories, and all were occupied by adult pairs. Six pairs laid eggs but only two are known to have hatched young with two single chicks present on the last monitoring visits at 6 + weeks of age. Of the three territories potentially overlapping with the Site, pair EA1 had a single chick (fledging status unknown), pair EA2 failed during incubation, and pair EA3 made no breeding attempt.

9.48 The poor breeding success is consistent with a very poor golden eagle breeding season across Lewis and Harris in 2022. The poor weather is likely to have contributed to failures early in the season and at chick stage. However, avian influenza may have been another contributing factor. Avian influenza was confirmed in a dead golden eagle found on Harris in spring 2022 although it is not known if it was the cause of death. It is possible that even if not fatal to adult golden eagles, avian influenza could affect their breeding condition resulting in a lower proportion of the population making breeding attempts. It is also possible that young have died in the nest from avian influenza either through transmission from parents or infected prey.

9.49 Surveys in February 2023 indicated that the two main territories overlapping with the Site (EA1 and EA2) are again active with breeding activity recorded at the same nest sites as in 2022.

9.50 In the 2018 breeding season all three of the territories which potentially overlap with the Site were occupied. Pair EA2 fledged one young, pair EA1 failed at incubation stage, and pair EA3 again did not attempt to breed.

9.51 Satellite tag data and baseline surveys have shown that the Site is also used by immature and non-breeding individuals (**Figure 9.8**), which is consistent with the comments made by NatureScot during consultation (**Table 9-1**) that the high density of breeding eagles on Lewis means that non-breeders do have to spend time in areas used by territorial birds.

White-tailed Eagle

9.52 White-tailed eagle activity has increased in the local area in recent years, and it is considered that there are currently five territories within 6km of the Turbine Developable Area (Confidential **Figure C9.4**). Surveys in 2018 recorded three occupied territories with the 6km survey area, one of which bred successfully.

9.53 In 2022, all known white-tailed eagle territories on the Eishken Estate were monitored, and new territories searched for. Nine occupied territories were located. Seven were traditional previously known territories and two were newly occupied or establishing territories. Seven pairs laid eggs and at least four pairs hatched young. One pair failed at large chick stage and three single chicks reached 7+ weeks of age. The poor breeding success is consistent with a very poor breeding season across Lewis and Harris and the worst on record since the species first bred successfully on Lewis & Harris in 2003 following their re-introduction. As with golden eagle, avian influenza may have influenced the low breeding success. It was recorded in a white-tailed eagle carcass found on Skye and in a brood of two young at a Skye nest, both of which are suspected to have died from avian influenza.

9.54 Satellite tag data and flight activity survey results have shown that the Site is regularly used by foraging birds (**Figures 9.6, 9.7** and **9.9**), likely to be a combination of breeding and non-breeding individuals. Much of this activity is concentrated around higher slopes, lochs, and in particular around the Loch Sealg sea loch to the south of the Site.

Other Raptors

9.55 In 2018, one confirmed and one possible merlin breeding sites were located within the Site (Confidential **Figure C9.9**). Four fledged juveniles were observed in a similar area in 2022 (Confidential **Figure C9.8**).

9.56 No other raptor species was reported to be breeding within the 2km study area in 2018 or 2022, although a small number of peregrine and hen harrier flights were recorded in both survey periods.

Waders

9.57 Three target breeding wader species of higher conservation concern were recorded during the baseline survey periods: greenshank (Schedule 1), golden plover (Annex I) and dunlin (Annex I, Red-listed).

9.58 In 2018, a minimum of six greenshank, 45 golden plover, and ten dunlin territories were estimated within and adjacent to the Site and 500m survey area (observations shown on Confidential **Figure C9.10** and **Figures 9.17** and **9.18** respectively).

9.59 In 2022, there were judged to be between 16-34 golden plover, 2-6 dunlin and 7-13 greenshank territories (distribution of records shown on **Figures 9.10** and **9.11** and Confidential **Figure C9.7** respectively).

9.60 Other wader species recorded were common sandpiper (nine territories in 2018, four in 2022); oystercatcher (one territory in 2018 and 2022); and snipe (15 territories in 2018, 6-8 in 2022).

Cumulative Situation

9.61 **Table 9-6** identifies the wind farm projects in NHZ 3 that have been scoped into the cumulative assessment, and their latest known status. Their locations are shown on **Figure 9.12** (this does not show the distant Loch Carnan Wind Farm on South Uist). This information was obtained from a combination of the last updated version of the NatureScot wind farm database[3] (mid 2019) and an extensive search of the Comhairle nan Eilean Siar Council Planning portal[4] and Energy Consents Unit online search tool[5] for changes/new projects between 2019 and April 2023.

9.62 Wind farm projects at scoping stage have been scoped out of the cumulative assessment because either they do not have sufficient information on potential effects to be included; because the baseline survey period is ongoing; or because results have not been published.

9.63 Small wind farm projects with fewer than three turbines have also been scoped out from the cumulative assessment as often these projects are not subject to the same level of detail of ornithological assessment, and so there are no directly comparable data. Because of the small scale of such projects, effects are likely to be negligible on the IOFs assessed here.

Table 9-7: Other NHZ wind farm projects

Project	Status	Consented number of turbines	Information available (ES, EIA Report, NTS etc)
Stornoway	Consented	35	EIA Report; Section 36 Consent - Additional Information (January 2020)
Druim Leathann	Consented	14	EIA Report
Pentland Road	Operational	6	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Beinn Greidaig	Operational	3	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Monan	Operational	3	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Arnish	Operational	3	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Loch Carnan	Operational	3	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Baile an Truseil	Operational	3	Golden eagle info from Druim Leathann cumulative assessment in EIA Report
Loch Sminig	Operational	3	No information available

ASSESSMENT OF EFFECTS

Ornithological Features Scoped out of the Assessment

9.64 The impact assessment is applied to those scoped-in IOFs of medium or high nature conservation importance (**Table 9-2**) that are known to be present within the Site or surrounding area (as confirmed through survey results, historic data and consultations outlined above). For other target species, the data available suggest either that activity levels and Site usage is sufficiently infrequent, Site conditions are unsuitable, collision risks are so small and/or there is no connectivity to designated sites, that unmitigated significant effects are considered very unlikely. In such cases these features can be scoped out of the assessment.

[3] https://spatialdata.gov.scot/geonetwork/srv/eng/catalog.search#/metadata/b57cabf0-0551-4c57-ae39-d32720e22ab6
[4] https://www.cne-siar.gov.uk/planning-and-building/planning-service/planning-applications/view-a-planning-application/
[5] https://www.energyconsents.scot/ApplicationSearch.aspx

9.65 In the case of the proposed development, all designated sites have been scoped out due to a lack of potential connectivity, with the closest, Lewis Peatlands SPA and Ramsar site, approximately 954m to the north west of the Site at its nearest point and approximately 7.2km from the Turbine Developable Area. and the SPA is therefore beyond the likely foraging range of its qualifying features, based on guidance on SPA connectivity provided by NatureScot (SNH, 2016a), as well as known golden eagle territory locations. This is also true for the other designated sites within 20km, and thus, it can be reasonably assumed that birds utilising the Site are not connected to any designated site.

9.66 For all target species where no evidence of breeding was recorded within the appropriate study area during 2017-19 and 2022-23, Site usage was infrequent, if occurring at all, and results of the flight activity surveys (**Table 9-5**) and collision risk modelling (**Tables 9-6** and **9-7**) suggest that additional mortality due to collisions would be sufficiently small at a population level to allow exclusion from assessment. This includes red-throated diver, great northern diver, hen harrier, peregrine, all wildfowl species, curlew, common tern and herring gull. Amber-listed breeding wader species snipe and oystercatcher are scoped out due to low site presence, and lack of potential for significant effects within a population context.

9.67 In the case of the above scoped out species, embedded mitigation measures outlined in the Embedded Measures section will minimise the likelihood of an impact on a breeding attempt, should one take place within a potential risk area close to construction activities. Habitat management outlined in the Outline Habitat Management Plan (OHMP, **Technical Appendix 8.6**) will also generally improve foraging and nesting conditions within the Site for some of these species.

Important Ornithological Features Scoped in to the Assessment

9.68 The IOFs of medium or high nature conservation importance that have been scoped into the assessment, based on the baseline data available, are: black-throated diver, golden eagle, white-tailed eagle, merlin, greenshank, golden plover and dunlin (**Table 9-8**).

Table 9-8: Scoped-in IOFs

Feature	Nature Conservation Importance	Status
Black-throated diver	Medium	Annex I, Schedule 1, BoCC Red list
Golden eagle	Medium	Annex I, Schedule 1, BoCC Green list
White-tailed eagle	Medium	Annex I, Schedule 1, BoCC Amber list
Merlin	Medium	Annex I, Schedule 1, BoCC Red list
Greenshank	Medium	Schedule 1, BoCC Amber list
Golden plover	Medium	Annex I, BoCC Green list
Dunlin	Medium	Annex I, BoCC Red list

9.69 In addition to nature conservation importance, it is necessary to consider the species' conservation status when assessing its sensitivity. Relevant conservation status information for the scoped in IOFs is detailed within **Table 9-9**.

Table 9-9: Conservation Status of Scoped-in IOFs

Feature	Conservation Status	Information
Black-throated diver	Annex I, Schedule 1, BoCC Red list (BR, WR)	Black-throated Diver has consistently been Amber-listed on the UK Birds of Conservation Concern because it is a breeding rarity (under 300 pairs) and non-breeding rarity (under 900 individuals) in the UK. Woodward *et al.* (2020) estimated the national black-throated diver population to be 215 (190–250) pairs, using data from 2006. This represents a slight increase of 16% since the previous survey in 1994, with increases occurring throughout the Scottish range (Eaton et al. 2007). A 10% range expansion has also occurred between 1988–91 and 2008–11 (Balmer et al. 2013). There is insufficient historical data to assess the medium to long-term population trend and it is therefore unclear whether the population has always been small (Jackson 2005). Therefore, due to the lack of reliable data and small size, the national and regional population is considered to be in **unfavourable conservation status**. The NHZ 3 population was estimated to be 54 (range 40-66) pairs in 2006 (Wilson *et al*. 2015).
Golden eagle	Annex I, Schedule 1, BoCC Green list	The Scottish golden eagle population has shown signs of increasing, from a total of 442 breeding pairs estimated from the 2003 Scottish national census (Eaton *et al.* 2007) to 508 territories following the 2015 Scottish national census (Hayhow *et al.* 2017) and is therefore in favourable conservation status. The NHZ 3 golden eagle population was determined by Whitfield *et al.* (2008) to be in favourable conservation status with 81 ranges out of 93 known in 2003 occupied (c.87%) and reasonably high productivity of 0.35 fledged young per occupied territory. Hayhow *et al.* (2017) estimated a total of 132 out of 161 occupied home ranges (82 % occupation) in the Hebridean Islands (including Skye) and noted that on Lewis numbers of territorial pairs increased by 35% between 2003 and 2015. The Scottish Raptor Monitoring Scheme estimated the Outer Hebrides population to be at least 95 pairs in 2015 (out of 101 checked territories), which indicates that the NHZ 3 population remains in **favourable conservation status**. Information from the Scottish Raptor Monitoring Scheme annual report for 2015 (the most comprehensive survey in recent years) indicates that the current Outer Hebrides population is likely to be at least 95 pairs.
White-tailed eagle	Annex I, Schedule 1, BoCC Amber list (HDrec, BR)	Due to successful introduction projects, white-tailed eagle was moved from the BoCC Red to Amber list in the most recent review (Stanbury *et al.* 2020), remaining a breeding rarity (<300 pairs nationally). Roos *et al.* (2015) showed that the population increased nationally and regionally for the period 1983-2015, showing a steady population growth and range expansion. The Scottish Raptor Monitoring Scheme estimated the national population to be 127 pairs in 2020 (Challis *et al.* 2022) and Sansom *et al.* (2016) predicted strong continued growth and a possible increase to over 200 pairs by 2025. The national and NHZ 3 populations are therefore in **favourable conservation status**. The current Outer Hebrides (NHZ 3) breeding population has been estimated to be 50-55 pairs (2022 data from Robin Reid and RSPB).

Feature	Conservation Status	Information
Merlin	Annex I, Schedule 1, BoCC Red list (HD, ERLOB)	The last national merlin survey, carried out in 2008, suggested a national breeding population of around 1,159 breeding pairs with about 733 pairs in Scotland (Ewing *et al.* 2011). Comparison with the previous 1993-94 survey suggests an overall stable population, albeit with regional differences in success. The Scottish Raptor Monitoring Group species account for merlin[6] states that recording of merlin territories on the Outer Hebrides is patchy and so no population trends are discernible. From 2009 to 2018 up to 26 territories were checked for occupancy, but it is likely that the breeding population is larger. Analysis of data for the period 2009-2018 produced no national trends in breeding number and productivity. The NHZ 3 population was estimated to be 53 (range 42-69) pairs in 2008 (Wilson *et al*. 2015) and due to the lack of reliable data and small size, is considered to be in **unfavourable conservation status**.
Greenshank	BoCC Amber list (BL)	The UK greenshank breeding population was estimated to be 1,100 pairs in 1995 (Woodward *et al.* 2020). The Scottish breeding population has more recently been estimated as 1,297 pairs (range 851-1,792) by Wilson *et al.* (2015), although it was considered by the authors that this may be a significate underestimate. Humphreys *et al.* (2017) reported an apparent increase in the Scottish breeding population, with a moderate increase in winter numbers, suggesting that the species' national population is on balance, likely to be stable or favourable. The NHZ 3 population was given as 256 (range 163-358) pairs by Wilson *et al*. (2015), who stated that between the last two breeding bird atlases, occupancy rates of greenshank within its range increased by 5.2% which is equivalent to a numerical increase of approximately 20%, and in line with observed increases in NHZ 3. The national and NHZ 3 populations are therefore considered to be in **favourable conservation status**.
Golden plover	Annex 1, BoCC Green list	The UK golden plover breeding population was estimated to be 32,500-50,500 pairs in 2016 (Woodward *et al.* 2020), although Forrester *et al.* (2012) give a Scottish breeding population estimate of 15,000 pairs, stating that this represents 80% of the British breeding population. The NHZ 3 population was estimated by Wilson *et al.* (2015) to be 4,194 (range 3,876-4,511) pairs in 2005. The BTO BirdTrends website[7] states that there has been no population change in UK (1995–2020), and this is likely to reflect the regional/NHZ 3 population, which has some of the highest breeding densities in the UK. Overall, the national and regional breeding populations are considered to be in **favourable conservation status**.
Dunlin	Annex I, BoCC Red list	Dunlin recently moved to the BoCC Red list owing to a decline in the non-breeding population; there was no robust information available to

[6] https://raptormonitoring.org/wp-content/uploads/2023/01/Merlin-trends-2009-2018.pdf
[7] https://www.bto.org/about-birds/birdtrends/2019

Feature	Conservation Status	Information
	(WDp[2]; WDMp[1], BDMr[1], BL, WL)	determine a trend in breeding population size. Woodward *et al.* (2020) estimated the national breeding population to be 8,600–10,500 pairs, based on 2005-07 data. The BTO BirdTrends website states that UK population estimates have suggested stability, however, there is evidence that declines may have occurred. The NHZ 3 population was estimated by Wilson *et al.* (2015) to be 5,996 (range 2,634-13,520) pairs, based on surveys carried out between 1980 and 2000, suggesting that the Outer Hebrides is a stronghold for the species. Overall, due to a lack of sufficient data, the national and regional breeding populations are considered to be in **unfavourable conservation status**.
BoCC Red-list criteria (Stanbury et al. 2020) **BR =** Breeding rarity. Species qualified as rare breeders if the UK breeding population was <300 pairs. **WR =** winter rarity. Species qualified as rare non-breeder if the UK nonbreeding population was <900 individuals. **HD** = historical decline in the breeding population. **ERLOB:** threatened in Europe. **BoCC Amber-list criteria** WDp/WDMp: Non-breeding population decline. Defined as a severe decline of >50% (WDp), or moderate decline (>25% but <50% WDMp) in the UK population size over either of two assessment periods: 25 years (WDp1/WDMp1) or the longer term (WDp2/WDMp2). BDMr1: Moderate breeding range decline. BDMp1: moderate breeding population decline over 25 years/longer term. HDrec: Historical decline – recovery. Species previously Red-listed for historical decline, followed by an increase of at least 100% over 25 years or the longer-term period. BL & WL: Breeding and non-breeding localisation. Species were considered localised if more than 50% of the UK population was found at ten or fewer sites in either the breeding (BL) or the non-breeding (WL) season.		

Embedded Measures

9.70 Breeding locations and key foraging areas of target species were taken into consideration from the early stages of the proposed development design process, to minimise the risk of disturbance, displacement and collision effects. This included the results of baseline surveys as well as longer-term datasets gathered from various sources, as outlined in *Information and Data Sources* above. In summary, the following steps have been taken in the design process to minimise the risk of significant effects on IOFs:

- minimisation of the amount of infrastructure to be located within 1km of known golden eagle nest sites and within preferred foraging areas for both eagle species identified during surveys and modelling; and
- avoidance of locating wind turbines near black-throated diver loch by at least 300m.

9.71 In addition to the above considered during the design process, this Chapter has been prepared on the basis of the assumptions/embedded mitigation listed below.

- to ensure all reasonable precautions are taken to avoid impacts on birds during construction and decommissioning, Uisenis Power Ltd will appoint a suitably qualified Ecological Clerk of Works (ECoW) prior to the commencement of construction and decommissioning and they will advise Uisenis Power Ltd and the Principal Contractor on all ornithological matters (with the assistance of a suitably qualified/licenced ornithologist if required). The ECoW will be required to be present on Site during the construction and decommissioning periods and will carry out monitoring of works and briefings with regards to any ornithological sensitivities on the Site to the relevant staff within the Principal Contractor and subcontractors.

- a Bird Disturbance Management Plan (BDMP) will be implemented during construction of the Development. The BDMP will detail measures to ensure legal compliance and safeguard breeding birds known to be in the area and will include species-specific guidance where required. The BDMP shall include information on monitoring and good practice measures during construction. Pre and during-construction surveys will be undertaken to check for any new breeding bird activity in the vicinity of the construction works. The ECoW will oversee the implementation of the above measures.

Potential Construction Effects

9.72 The main potential impacts of construction activities due to the proposed development are the displacement and disruption of breeding, foraging or roosting birds as a result of noise and general disturbance over a short-term period (either the duration of a particular construction activity within working hours, or the duration of the whole construction period). impacts on breeding birds would be confined to areas in the locality of temporary construction compounds, turbines, tracks and other infrastructure.

9.73 Direct habitat loss would also occur due to the proposed development's construction, which would be both temporary (e.g., construction compounds) and longer term (access tracks, turbines and substation). This has the potential to impact on breeding or foraging individuals.

9.74 For a comparison of precited construction effects due to the proposed development and consented scheme, see the **Project Comparison Report**.

Black-throated diver

9.75 **Impact:** breeding or foraging black-throated divers may be displaced from the Site during construction, either by disturbance or direct habitat loss.

9.76 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and unfavourable conservation status (**Table 9-9**) and so overall, medium-high sensitivity.

9.77 **Magnitude of Change:** during summer months, black-throated divers use a number of lochs in the local area, mainly outside of the Site boundary (Confidential **Figures C9.5** and **C9.8**). Goodship & Furness (2022) rated the species as having a high overall likely sensitivity to disturbance and recommended a buffer distance of 500-750m from nest sites to avoid impacts. Based on this distance range, the main risk of construction disturbance is likely to relate to the breeding loch within the Site boundary (used in 2018 and 2022) which is within 300m of closest proposed infrastructure (and existing estate road), and birds regularly utilising lochs adjacent to the existing estate road / planned access route to the north of the Site, who may also be affected (no breeding was recorded there in 2022 but a breeding attempt was recorded on one loch in 2018).

9.78 Lochs within approximately 1km of the Site and access route would be monitored during the construction phase as part of the embedded mitigation of the BDMP. This means that should breeding evidence be found, seasonal restrictions to construction activities would be deployed to avoid disturbance to nesting black-throated divers, with exact buffer distances to be determined based on site-specific factors and the nature of work. Due to the regularity of occupation of the loch used for breeding (at least in 2018 and 2022) it is proposed that no extraction from Borrow pit 1 (within 200m of the loch) would take place during the black-throated diver breeding season (April to August) unless it can be determined that breeding has ceased, or will not take place that year, within potential disturbance range.

9.79 No breeding attempts would therefore be directly affected by disturbance to the nest. Restrictions to construction work along the Site access route to the north would also be in place from February to August for golden eagle (see below), and this would also minimise risks to divers.

9.80 In the wider area, it is possible that birds using lochs for feeding or loafing (either breeding or non-breeding birds) may be subject to temporary disturbance, either by being flushed by human presence, or avoiding parts of a loch near ongoing construction activities. It is possible that this may impact upon productivity of the local population during the construction phase, or temporarily depress local numbers as birds may avoid the area. Within the context of the NHZ 3 population, this is predicted to constitute a short-term low magnitude of change.

9.81 **Significance of Effect:** overall, the effect on the NHZ 3 black-throated diver population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Golden Eagle

9.82 **Impact:** breeding, foraging or roosting golden eagle may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.83 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and favourable conservation status (**Table 9-9**) and so overall, medium sensitivity.

9.84 **Magnitude of Change:** Goodship & Furness (2022) rate golden eagle as being of high overall likely sensitivity to disturbance and recommend a disturbance buffer of 750m to 1km during the breeding season, and 250 to 500m during the non-breeding season. NatureScot has previously recommended a 1km buffer as a safe operating distance of aircraft from active golden eagle nests (SNH, 2015).

9.85 There are two occupied territories (EA1 and EA2) that have nest sites within 1km of proposed infrastructure (Confidential **Figure C9.1**) and based on longer-term monitoring data, it is likely that these nests will continue to be used. Golden eagle will be a key species of the BDMP, and measures would be enforced to ensure that no construction activity would disturb birds at the nest. A commitment has been made to prohibit construction activity within 1km of golden eagle nest sites from February, potentially to August. This includes aspects such as upgrades of existing access roads, borrow pit extraction and use of temporary compounds. Monitoring during this period would determine whether nests are active, and construction work would only be allowed to commence within the buffer if it can be concluded that no breeding attempt is ongoing or could take place there that year. Monitoring would also determine whether any roost sites within the Site are regularly used, and if so, whether restrictions (up to 500m) would be required around dawn and dusk.

9.86 Construction activities may temporarily reduce the availability of foraging habitat of breeding and non-breeding golden eagles within the Site, but because of the likely localisation of work at any time, it is considered unlikely that this would affect the ability of birds to breed successfully, or survival rates.

9.87 Overall, when considering the embedded mitigation, an impact of short-term, negligible magnitude of change to the NHZ 3 population is predicted.

9.88 **Significance of Effect:** overall, the effect on the NHZ 3 golden eagle population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

White-tailed Eagle

9.89 **Impact:** breeding, foraging or roosting white-tailed eagle may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.90 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and favourable conservation status (**Table 9-9**) and so overall, medium sensitivity.

9.91 **Magnitude of Change:** Goodship & Furness (2022) rate white-tailed eagle as being of high overall likely sensitivity to disturbance but the level of sensitivity of individual pairs likely depends on the stage of the breeding cycle as well as exposure to and ability to cope with human presence; in remote areas this species may be scarce and unlikely to be encountered by people, which is likely to increase their sensitivity to disturbance. A disturbance buffer of 250-500m during the breeding and non-breeding seasons is recommended. NatureScot has previously recommended a 500-750m buffer as a safe operating distance of aircraft from active white-tailed eagle nests (SNH, 2015).

9.92 No known white-tailed eagle nest or roost sites are within 750m of proposed new infrastructure, although two previously used nest sites are within this distance from the existing road and proposed access route to the north of the Site. Similar to golden eagle, monitoring and restrictions to construction activities would be required during February to August to ensure no breeding attempts are affected. This includes excluding any track upgrades or other potentially disturbing activities along the access road to the Site, unless it can be confirmed that breeding has ceased, or there is no possibility of a breeding attempt at that location that year. Any occupied roost sites may also require restrictions within 500m around dawn and dusk.

9.93 Current levels of disturbance on Site are likely to be low, and so it is possible that some foraging birds may be temporarily displaced from an area around construction activities. Evidence from satellite-tagged individuals (**Figure 9.9**) however shows that key foraging areas are likely to be around lochs, particularly Loch Sealg to the south, and so any disturbance events are unlikely to affect any individual's ability to forage successfully, with birds being able to range widely. Overall, when considering the embedded mitigation, a short-term, negligible magnitude of change to the NHZ 3 population is predicted.

9.94 **Significance of Effect:** overall, the effect on the NHZ 3 white-tailed eagle population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Merlin

9.95 **Impact:** breeding or foraging merlin may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.96 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and unfavourable conservation status (**Table 9-9**) and so overall, medium-high sensitivity.

9.97 **Magnitude of Change:** Goodship & Furness (2022) rate merlin as being of medium overall likely sensitivity to disturbance and recommend a disturbance buffer of 300-500m during the breeding season. Surveys in 2022 suggested that one pair bred within the Site (Confidential **Figure C9.6**), and in 2018, one confirmed and one possible nest were recorded within the Site. As a Schedule 1 species, merlin would be a key species of the BDMP, and monitoring would aim to determine the location of any active nests. If recorded, a buffer of 300-500m would be enforced to ensure no disturbance at the nest. It is possible that foraging merlin may occasionally be affected by construction activities, although if a suitable buffer is enforced around a nest site, it is unlikely that that foraging birds would be affected to the extent that it would prevent a successful breeding attempt. Therefore, when considering the embedded mitigation, a short-term, negligible magnitude of change to the NHZ 3 population is predicted.

9.98 **Significance of Effect:** overall, the effect on the NHZ 3 merlin population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Greenshank

9.99 **Impact:** breeding or foraging greenshank may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.100 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and favourable conservation status (**Table 9-9**) and so overall, medium sensitivity.

9.101 **Magnitude of Change:** Goodship & Furness (2022) rate greenshank as being of medium/high overall likely sensitivity to disturbance and recommend a disturbance buffer of 300-500m during the breeding season. As a Schedule 1 species, greenshank would be a key species of the BDMP, and monitoring would aim to determine the location of any breeding attempts. If recorded, a buffer of 300-500m would be enforced to ensure no disturbance at an active nest, or to dependent young away from the nest.

9.102 Confidential **Figures C9.7** and **C9.10** show that the distribution of greenshanks was mainly on flatter boggy ground and near waterbodies, and so it is likely that turbine locations would not overlap key nesting and feeding habitats within the Site, meaning impacts of direct habitat loss would be minimal.

9.103 Greenshank foraging usually takes place within 1.5km of the nest, with birds occasionally foraging up to between 2.5km (Nethersole-Thompson & Nethersole-Thompson 1979) and 3.0km (Cramp & Simmons 1983), indicating that breeding adults may travel some distance to feed within the Site. It is therefore possible that construction activities could affect feeding birds in territories that can be in separate locations to breeding territories. The impacts are likely to be short-term and localised around a particular construction activity, and so only a small number of territorial birds may be affected at any one time. Therefore, when considering the embedded mitigation, a short-term, low magnitude of change to the NHZ 3 population due to construction disturbance is predicted.

9.104 **Significance of Effect:** overall, the effect on the NHZ 3 greenshank population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Golden Plover

9.105 **Impact:** breeding or foraging golden plover may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.106 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and favourable conservation status (**Table 9-9**) and so overall, medium sensitivity.

9.107 **Magnitude of Change:** Goodship & Furness (2022) rate golden plover as being of medium overall likely sensitivity to disturbance and recommend a disturbance buffer of 200-500m during the breeding season. Although not a Schedule 1 species, monitoring as part of the BDMP would aim to determine the location of any breeding attempts, with a suitable site-specific buffer enforced to ensure that nesting can continue.

9.108 Golden plovers can be sensitive to human disturbance, although during the breeding season, their response to disturbance varies between individuals depending on a number of factors, including habituation to disturbance, breeding stage, how conspicuous the disturbance is and the predictability of the source of disturbance (Finney et al., 2005; Yalden and Yalden, 1989). Breeding golden plover densities within some parts of the Site are relatively high (**Figures 9.10** and **9.17**) and so it is likely that some pairs may be affected during construction in spring and summer months. Many of the construction activities on Site will be largely predictable in nature, and restricted to particular locations, and so disturbance impacts are likely to be at the lower end of the distance range estimated by Goodship & Furness (2022). With the NHZ 3 breeding population relatively large in a national context, the temporary impacts on a relatively small number of pairs are considered to be of short-term, negligible magnitude of change.

9.109 **Significance of Effect:** overall, the effect on the NHZ 3 golden plover population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Dunlin

9.110 **Impact:** breeding or foraging dunlin may be displaced within the Site during construction, either by disturbance or direct habitat loss.

9.111 **Sensitivity:** medium nature conservation importance (**Table 9-8**) and unfavourable conservation status (**Table 9-9**) and so overall, medium-high sensitivity.

9.112 **Magnitude of Change:** Goodship & Furness (2022) rate dunlin as being of medium overall likely sensitivity to disturbance and recommend a disturbance buffer of 100-200m during the breeding season. Although not a Schedule 1 species, monitoring as part of the BDMP would aim to determine the location of any breeding attempts, with a suitable site-specific buffer enforced to ensure that nesting can continue.

9.113 Relatively small numbers of dunlin are likely to breed within the Site each year, as evidenced from surveys in 2018 and 2022 (up to ten pairs recorded in respective survey areas). In 2022 distribution was largely confined to a central part of the Site (**Figures 9.11** and **9.18**), and so based on the construction programme, it is likely that territories there would only be affected during one breeding season at the most. Due to the relatively small disturbance distances advised by Goodship & Furness (2022) it is likely that most pairs should be able to continue to breed unaffected. As such a short-term, negligible magnitude of change is predicted.

9.114 **Significance of Effect:** overall, the effect on the NHZ 3 dunlin population as a result of construction is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Potential Operational Effects

9.115 The following operational impacts are assessed in this section:

- displacement of birds around operational turbines and other infrastructure;
- collisions with turbines; and
- operational lighting of turbines.

9.116 For a comparison of precited operational effects due to the proposed development and consented scheme, see the **Project Comparison Report**.

Displacement

Black-throated diver

9.117 **Impact:** breeding and non-breeding black-throated divers may be subject to displacement from, or reduced access to lochs due to the presence of turbines or other infrastructure, thereby impacting on breeding success, productivity or survival rates.

9.118 **Sensitivity:** medium-high.

9.119 **Magnitude of Change:** baseline surveys in 2018 and 2022 recorded black-throated diver breeding attempts on a loch to the north of the Site, adjacent to the access route (2018 only); and on a loch on the edge of the Site (2018 and 2022) (see Confidential **Figures C9.5** and **C9.8**). Birds (either breeding or non-breeding individuals) were also recorded on other lochs to the north, as well as occasionally within and adjacent to the Site boundary, but these were not considered to be breeding lochs.

9.120 Being located over 1.2km from the nearest turbine, birds using breeding and non-breeding lochs to the north of the Site, adjacent to the access route, are considered unlikely to be affected by the operation of the proposed development. Vehicle movements along the road during operation are likely to be much less frequent than during construction and should not affect the ability of birds to continue to nest or forage.

9.121 The breeding loch just within the Site boundary is approximately 350m and 500m from the nearest two proposed turbine locations, and 400m from the proposed substation. There would be some natural screening within the landscape for nesting birds in relation to the closest turbine and substation, although it is likely that the turbine at 500m would be more visible (see Confidential **Figures C9.5** and **C9.8**).

9.122 There is little scientific evidence to suggest how tolerant black-throated divers may be to operational turbines, but some studies have looked at impacts on red-throated divers. On the island of Smøla, Norway, monitoring was carried out in relation to the construction and operation of a large terrestrial wind farm on that island. Before turbine construction began, three red-throated diver nest sites were within what became the wind farm area; all three nest sites were abandoned in the year in which construction occurred and were not all reoccupied up until at least five years after. It was however unclear whether these sites were abandoned due to the wind farm itself, or due to increased human disturbance consequent on the construction of new roads into this part of the island (Halley & Hopshaug, 2007). At the operational Cour Wind Farm in Argyll, there are three lochs within 1 km of the wind farm, two of which are within 500m of a turbine. Prior to construction, baseline surveys observed no black-throated divers, but birds were present at two of the lochs during the construction year, and in the first five years of operation, black-throated divers were recorded on all lochs. A pair attempted to breed on one loch within 500m in 2017, but no successful breeding has been recorded (this is consistent with findings monitoring across Kintyre in 2016-20, which recorded no successful breeding (Dewar & Lawrence, *in press*). Black-throated divers are also known to breed on a loch near Glenfinnan, Lochaber, which is 100m from a busy A-road (R. Dewar, *pers. obs.*).

9.123 Some tolerance of human presence is therefore likely to occur, albeit it is possible that there may be a short-term loss of breeding at the loch prior to birds becoming habituated to the wind farm. It is thought in Scotland there are many lochs within the range of the species that are suitable but vacant, possibly a reflection of the long-term small breeding population (Jackson, 2005), and so it is possible that alternative breeding locations could be sought by the pair if displaced. There is however some uncertainty in this outcome and so the worst-case loss of a breeding pair due to displacement would represent around 1.8% of the NHZ 3 breeding population (54 pairs). This would equate to a long-term low magnitude of change.

9.124 **Significance of Effect:** due to the unfavourable conservation status of the species and medium-high sensitivity rating the unmitigated effect on the NHZ 3 black-throated diver population as a result of operational displacement is considered to be **minor-moderate adverse** and therefore **Significant** in the context of the EIA regulations.

Golden Eagle

9.125 **Impact:** golden eagles may be at risk of displacement from nesting, roosting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.126 **Sensitivity:** medium.

9.127 **Magnitude of Change:** results from surveys in 2017-19 and 2022-23, as well as long-term nest monitoring data, satellite tag data and GET modelling have provided a good dataset to interpret golden eagle behaviour and territory extents within the Site and the wider local area. There are two established golden eagle territories that are likely to overlap with the Site (EA1 south, EA2 north), with a possible less-established pair present at a third territory (EA 3 southeast), which may overlap to a smaller extent (see Confidential **Figure C9.1** for nest site locations).

9.128 Satellite tag data were obtained for a territorial golden eagle male (1155) from the northern territory EA2 within the Site, covering a nine-month period from January to November 2022 (see Confidential **Figure C9.2**). Although it was suspected that the breeding attempt failed around the point of hatching, the data provide a clear indication of the likely territory extent for this pair. As would be expected, much of the activity was recorded around the nest outside of the Site boundary, but there was clear evidence that birds are likely to use the northern part of the Site for foraging.

9.129 Although no satellite tag data were available for the southern pair EA1, the distribution of tag records from male 1155, as well as flight activity survey data, provide good evidence to determine the likely extent of the southern territory. **Figures 9.4** and **9.5** show that much recorded activity within the south of the Site was concentrated along and to the west of the Site boundary, although it is likely that territorial birds also use the southwestern part of the Site, particularly parts closest to the nest.

9.130 Flight activity rates were comparatively low in the southeast part of the Site, which suggests that the Site is unlikely to form an important part of the EA3 territory (see Confidential **Figure C9.1**).

9.131 For territories EA2 and EA3, all known nest sites are over 1.2km and 2.3km from the nearest proposed wind turbine respectively, and it is considered very unlikely that birds would be displaced from nest sites based on distances involved. The nearest known roost site is approximately 950m from a turbine, and around 600m from the northern access road, and neither are likely to be lost due to the presence of the proposed development.

9.132 The closest proposed turbine would be approximately 750m-950m from the known nest sites of territory EA1, which is within the range of the disturbance buffers for breeding golden eagle recommended by Goodship & Furness (2022). Recent scientific articles using satellite tag data to investigate the behaviour of golden eagles in relation to Scottish wind farms (Fielding et al. 2021; 2022) have demonstrated that there is a high degree of avoidance of wind farms as a whole in Scotland (out to approximately a 300m range around turbines). Fielding *et al.* (2022) did however highlight that the Outer Hebrides population, perhaps the highest density of golden eagles globally (Hayhow *et al.* 2017), is genetically isolated from the rest of Scotland and unlike other areas, has a recent history of minimal persecution. With a resultant lower disposition of wariness around human presence, and due to high levels of competition for limited territories and resources, Fielding *et al.* (2022) noted that this may be the reason golden eagles have anecdotally been observed nesting close to turbines (within 250m) and human habitation (within 60m) in the Outer Hebrides. Based on the evidence provided, on balance it is therefore possible that birds from territory EA1 would continue to breed at their traditional nest sites during the operational period.

9.133 The likelihood of a territory being impacted sufficiently to result in it becoming unviable is also based on the loss of foraging habitat due to the presence of infrastructure. The actual impacts on a breeding pair are likely to depend on a range of factors such as experience of the pair, availability of alternative nest sites or territories, and the quality of foraging habitat within and outside of the wind farm area. Due to the high breeding density in the Outer Hebrides, and indeed the local area, it is likely that territory extents here are relatively small, although seemingly of sufficient quality in terms of prey resource.

9.134 Confidential **Figure C9.3** presents the outputs of the GET model, which assigns a score between 1 and 10 at a 50m pixel resolution. Habitat with a GET score of 6+ is a good indicator of potential golden eagle activity; habitat with a score of 5 or less is used infrequently by golden eagles. In general, the GET model results reflect the work undertaken during the design programme to ensure that many of the turbines, particularly those in the north/east are within land which has a score of <6 and therefore less preferred by golden eagles. The GET model also correlates well with both the results of the flight activity surveys in 2022-23 (**Figures 9.4** and **9.5**), 2017-19 (**Figures 9.14** and **9.15**) and the satellite tag data (**Figure 9.8** and Confidential **Figure 9.2**).

9.135 With regard to potential loss of territory for EA2 to the north, Confidential **Figure C9.2** indicates that quite a large extent may become unavailable due to displacement around turbines, although much of this is likely less frequently used, in areas of less preferred habitat. For EA1 to the south, although much foraging activity is likely to take place in preferred habitat (>6 GET model scores) to the west of the Site, it is also likely that some takes place over the southern part of the Site, and the area where the seven turbines T19 to T25 would be located. Turbines T12 and T13, in higher suitability habitat, may also be within EA1's core territory. For pair EA3 most foraging is likely to take place to the east of the Site, and although some of the easternmost turbines may overlap with the edge of the territory, loss of habitat is unlikely to be significant for the pair.

9.136 Although the exact territory extents for each pair are unknown, evidence suggests that they are constrained by neighbouring territories, and are relatively small. On the balance of evidence, and taking into consideration advice provided by Fielding (2022) during the design process (subsequently shared with NatureScot during consultation), it is probable that there will be a significant loss of habitat and range abandonment for territory EA1, with impacts on EA2 less clear. A scenario does however exist where it is possible that EA 1 is the only territory that is lost, as this would then provide opportunities for the surrounding ranges to expand. There is a clear connectivity in the good eagle habitat between EA1 and adjacent EA territories, beyond the influence of turbines, which could be exploited by the EA2 pair. This pair was considered by Fielding (2022) to probably be more robust given that, even after the habitat loss, the extent of good eagle habitat would still be more than that available to pair EA1 prior to construction.

9.137 Overall, given the high population density and high levels of competition for breeding territories, it is considered that the reasonable worst-case scenario would be the loss of one territory during the long-term (whole operational period). This would equate to just over 1% of the breeding population (approximately 95 pairs) of the Outer Hebrides, which equates to a long-term, low magnitude of change. Due to high current territory occupancy rates (82% in the Hebridean Islands in 2015, Hayhow *et al.* 2017) it is likely that favourable conservation status would be maintained despite the loss of a territory, and despite the potential for other impacts such as avian influenza. Although non-breeding birds are likely to also use breeding territories across the Outer Hebrides because of the high breeding densities, it is considered unlikely that the loss of accessibility to habitat within the Site would significantly affect any individual's ability to forage, and survival rates of the population. This would equate to a long-term low magnitude of change.

9.138 **Significance of Effect:** given the continued favourable conservation status of the Outer Hebrides (NHZ 3) population, the effect as a result of operational displacement is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

White-tailed Eagle

9.139 **Impact:** white-tailed eagles may be at risk of displacement from nesting, roosting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.140 **Sensitivity:** medium.

9.141 **Magnitude of Change:** All known white-tailed eagle nest and roost sites are at least 1km from proposed turbine locations and based on a disturbance range of out to 500m recommended by Goodship & Furness (2022), no displacement is likely to occur. One known nest site is just under 500m from the access route from the north, but during operation vehicle movements and pedestrian activity is likely to be low compared to the construction period, and nesting is unlikely to be affected.

9.142 Evidence from wind farms (e.g. Smøla, Bevanger et al. 2010) suggests that white-tailed eagles are relatively susceptible to collisions with turbines, and therefore are likely to display much lower behavioural avoidance of wind farms than golden eagles when foraging. Indirect impacts may however occur due to displacement of certain prey species, e.g., waders, thereby lowering food abundance within a wind farm area.

9.143 The satellite tag data of four non-territorial white-tailed eagles tagged as nestlings in 2020 (**Figure 9.8**) shows that most of the Site is likely to be relatively of lower importance for foraging compared to some areas outside of the Site, and in particular Loch Sealg to the south. Flight activity surveys did however record regular activity across the Site, in particular the southern part closest to Loch Sealg, and in general, distribution correlated well with the GET model (Confidential **Figure C9.3**) which Fielding *et al.* (2020) note, can also be applicable to other large, soaring raptor species. Based on GET model outputs, much of the Site is therefore likely to be topographically of lower suitability for white-tailed eagles to use. NatureScot advise that the core foraging range of white-tailed eagles is 5km, with a maximum range of 13km (SNH, 2016), and although it is possible that breeding birds in the area may use the Site for foraging, it also does indicate that due to their ability to forage over a wide area, localised losses of habitat around turbines are unlikely to affect any breeding attempts. Overall, a long-term, negligible magnitude of change is therefore predicted.

9.144 **Significance of Effect:** the effect on the NHZ 3 white-tailed eagle population as a result of operational displacement is considered to be **negligible** and therefore **Not Significant** in the context of the EIA regulations.

Merlin

9.145 **Impact:** merlin may be at risk of displacement from nesting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.146 **Sensitivity:** medium-high.

9.147 **Magnitude of Change:** compared to larger raptor species, merlin appear less sensitive to disturbance, based on the review provided by Goodship & Furness (2022). The suspected merlin nest location in 2022 was within 250m of the nearest proposed turbine and therefore within possible disturbance range (300-500m), albeit downslope, meaning that there is some degree of natural screening which may reduce the risk of displacement (Confidential **Figure C9.6**). In 2018 the confirmed and possible merlin nest sites were in the same area of the Site (Confidential **Figure C9.9**), but at a different location, suggesting there is a degree of flexibility in nest site selection, which may help breeding birds avoid turbines. Although SNH (2016) guidance suggests that merlin can range widely (up to 5km), the majority of foraging is likely to take place around the nest site. Merlin prey species, typically small passerines such as skylark and meadow pipit, have been shown to be largely unaffected by the presence of wind turbines (e.g. Pearce-Higgins *et al*. 2012), meaning that reduction in food availability due to turbine proximity is unlikely to be a relevant factor.

9.148 Overall, it is considered that over the long-term, a relocation of nest site rather than a loss to the population is more likely outcome of the impacts of any displacement to breeding merlin. As such, a worst-case long-term, negligible magnitude of change is predicted.

9.149 **Significance of Effect:** the effect on the NHZ 3 merlin population as a result of operational displacement is considered to be **negligible** and therefore **Not Significant** in the context of the EIA regulations.

Greenshank

9.150 **Impact:** greenshank may be at risk of displacement from nesting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.151 **Sensitivity:** medium.

9.152 **Magnitude of Change:** in 2022, baseline surveys recorded the bulk of greenshank activity around the bog pool complexes in the northern half of the Site (Confidential **Figure C9.7**), although similar to 2018, the species was distributed widely across other parts of the Site on flatter, higher ground.

9.153 There is a lack of scientific studies as to how tolerant greenshank may be around operational turbines, although Humphreys *et al.* (2017) report that some unpublished studies for NatureScot have suggested that greenshanks do not show a high level of behavioural displacement around wind turbines. During the Public Inquiry for the Achany Wind Farm in Sutherland, where greenshank was identified as an issue, a 200m zone of potential displacement was proposed, based on scientific evidence provided by Professor Des Thompson in his principal precognition (SNH, 2007).

9.154 Post-construction monitoring of the Bhlaraidh Wind Farm, Highlands, from 2018-20 recorded up to three territories within 500m of operational turbines (SSE Renewables, 2021) The Lochluichart Extension II Wind Farm EIA Report references evidence from post-construction monitoring for Lochluichart Extension which suggests that birds were not displaced by the presence of operational turbines, with four to five territories in the area around the Lochluichart wind farms and Corriemoillie Wind Farm. Displacement impacts, if they occur, are therefore likely to be at distances of under 500m.

9.155 Because greenshank may have separate breeding and feeding territories, it is not clear how many breeding pairs were present within the Site in 2022, and so the estimated range of 7-13 territories reflects this uncertainty. With an NHZ 3 population estimated to be 256 pairs, this would represent 2.7% to 5.1% of the breeding population. Evidence suggests that complete displacement of greenshank is unlikely, although numbers may be reduced within the Site due to the presence of operational turbines near nest or feeding areas. Overall, therefore, although some displacement may occur, losses are likely to be at the lower end of the estimated range, and therefore would be of long-term, low magnitude of change on the NHZ 3 population.

9.156 **Significance of Effect:** As greenshank is of medium sensitivity, the unmitigated effect from operational displacement is classified as **minor adverse** and is therefore **Not Significant** in the context of the EIA Regulations.

Golden Plover

9.157 **Impact:** golden plover may be at risk of displacement from nesting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.158 **Sensitivity:** medium.

9.159 **Magnitude of Change:** breeding golden plover distribution in 2022 was similar to that of greenshank, being found in bog pool complexes and on flatter, higher ground across the Site, albeit in higher numbers (**Figure 9.10**). Goodship & Furness (2022) rated the species as being of medium sensitivity to disturbance, although the likelihood and extent of any displacement on breeding golden plover due to operational turbines is uncertain. Sansom *et al.* (2016) showed that in their study, breeding golden plover abundance may be reduced by 79% up to 400m away from operational turbines, although hatching and fledging success were not affected by proximity to turbine locations. Pearce-Higgins *et al.* (2012) in contrast found population densities of golden plover were not affected by the presence of wind farms, and years since construction and the relative overlap between the survey area and the wind farm were unrelated to golden plover densities. A lack of displacement effects for breeding golden plovers has been reported for Beinn Tharsuinn Wind Farm (Douglas *et al*. 2011) and Farr Wind Farm (Fielding & Haworth 2013).

9.160 In 2022 a range of 16-34 pairs were estimated from baseline survey results, albeit some are likely to be present over 500m from the nearest proposed turbine. A 79% reduction in abundance (as per Sansom *et al.* 2016) would result in the displacement of 12 to 27 pairs from the area around the turbines. It is likely that some pairs could move within the local area without being lost to the NHZ population, but as a worst case, the loss of up to 27 out of 4,194 pairs would represent 0.6% of the population. As the NHZ 3 population is likely to be in favourable conservation status, despite the potential for other impacts such as avian influenza, an unmitigated negligible long-term magnitude of change within the context of the NHZ population is predicted.

9.161 **Significance of Effect:** the effect on the NHZ 3 golden plover population as a result of operational displacement is considered to be **minor adverse** and therefore **Not Significant** in the context of the EIA regulations.

Dunlin

9.162 **Impact:** dunlin may be at risk of displacement from nesting or foraging habitat, thereby impacting on productivity, fitness and survival rates.

9.163 **Sensitivity:** medium.

9.164 **Magnitude of Change:** like greenshank and golden plover, dunlin activity during the 2022 breeding season was concentrated in the bog pool complexes within the northern central part of the Site

(**Figure 9.11**). Goodship & Furness (2022) recommended a buffer zone of 100m-200m to protect nesting dunlin, depending on the level of habituation to disturbance, although there is relatively little evidence to suggest how birds react to the presence of turbines. Fielding & Haworth (2015) found no decline in the number of dunlin territories and no systematic or significant changes in distribution due to the presence of the operational Farr Wind Farm, with mean distances to the nearest turbines in 2002 (before construction) and 2015 (operational since 2006) being 257m and 260m respectively. The number of territories in the wind farm was reasonably constant over the study period, with the exception of 2005 when there was construction activity.

9.165 With a core foraging range of around 500m (SNH, 2016), displacement impacts on dunlin are therefore likely to be very localised. Up to six dunlin territories were estimated from 2022 surveys, and this would represent 0.1% of the NHZ 3 population (5,996 pairs). As such, even in the unlikely worst-case scenario of a loss of all pairs, a long-term negligible magnitude of change would be predicted.

9.166 **Significance of Effect:** the effect on the NHZ 3 dunlin population as a result of operational displacement is considered to be **negligible** and therefore **Not Significant** in the context of the EIA regulations.

Collision Risk

9.167 Birds that utilise the airspace within the proposed development at potential collision heights would be at risk of collision with wind turbines. For the CRM methods used see **Technical Appendix 9.1, Annex E**.

Golden Eagle

9.168 **Impact:** birds flying within the Site may be subject to a collision risk with turbines, thereby increasing the annual mortality rate of the population above background levels.

9.169 **Sensitivity:** medium.

9.170 **Magnitude of Change:** as shown in **Table 9-7**, the predicted mean annual collision rate for golden eagles in 2022-23 was 0.301 birds, or one collision every 3.3 years. For the 2017-19 survey period, the predicted mean annual collision rate was 1.365 individuals (**Table 9-8**). This difference in predicted collision rates between survey periods may be due to a number of factors.

9.171 During the 2018 and 2022 breeding seasons, breeding status of the three local golden eagle pairs was similar, i.e., one pair raised a chick, one failed during incubation and one did not breed. It was the case however that in 2018, the pair that fledged a chick was EA1, which, as described in the Operational Displacement assessment section above, with a nest site closer to turbines, likely has a larger overlap of its core territory with the wind farm than EA2 or EA3. It is therefore possible that the higher predicted collision rate for the 2018 breeding season was reflective of the higher activity required by pair EA1 to successfully rear a chick. In 2022, pair EA2 probably fledged one chick, while EA1 failed at incubation stage, and the lower predicted collision rate during the 2022 breeding season may be reflective of a smaller overlap of EA2's core territory with the Site, and lower activity rates from EA1 after failure.

9.172 This difference in predicted collision rates between survey periods was also however shown when comparing non-breeding seasons, with higher collision rates predicted for the 2017-18 and 2018-19 non-breeding seasons than in the 2022-23 non-breeding season. Whether this is a true reflection of changes in golden eagle flight activity within the Site is unclear – it is possible that it may be in part due to differences in survey methods (for example, VP 5 was in a different location in 2022-23) or data processing: the method of survey data entry carried out by Natural Research was different to that of MacArthur Green (see e.g. **Figure 9.13** where 'flight areas' rather than flightlines had to be accounted for in the model) and so manipulation of data and certain precautionary assumptions were required to ensure that the 2017-19 data were compatible for the CRM. This may have led to overestimations of collision rates.

9.173 One difference between survey recording methodologies was that in 2017-19, the estimated altitude of observed flights was allocated to one of five height bands: 0m-20m, 20m-150m, 150m-200m, 200m-250m and 250+ m; whereas, the 2022-23 data were allocated to one of six: 0m-20m, 20m-40m, 40m-100m, 100m-150m, 150m-200m and 200+ m. Of particular relevance is the large 20m-150m height band used in 2017-19, which meant that any flight that took place between 20m-45m would be considered potentially 'at-risk' (candidate turbine used for assessment has a lower turbine rotor tip height of 45m above ground), even though in practice, birds would have been flying below turbine rotors. For the 2022-23 data, only those flights recorded in height bands 40m-100m and above would be considered as being at-risk, thereby omitting flights observed at 20m-40m above ground. This results in a relatively large proportion of golden eagle flight duration from 2017-19 being included in the CRM, as shown in charts 1 and 2 below (red bars indicating height bands overlapping with actual rotor heights). In 2017-19, 83% of observed flight duration was within at-risk height bands, whereas this was only 71% in 2022-23, with 17% of flight duration occurring at 20m-40m.

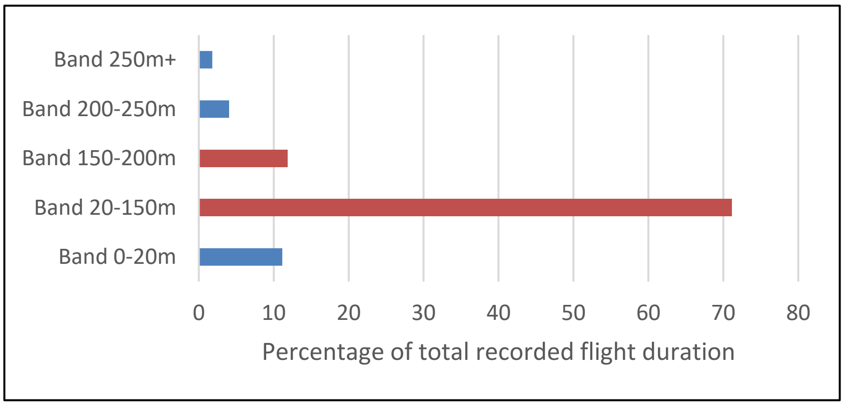

Chart 1: Proportion of recorded golden eagle fight duration per survey height band used in 2017-19.

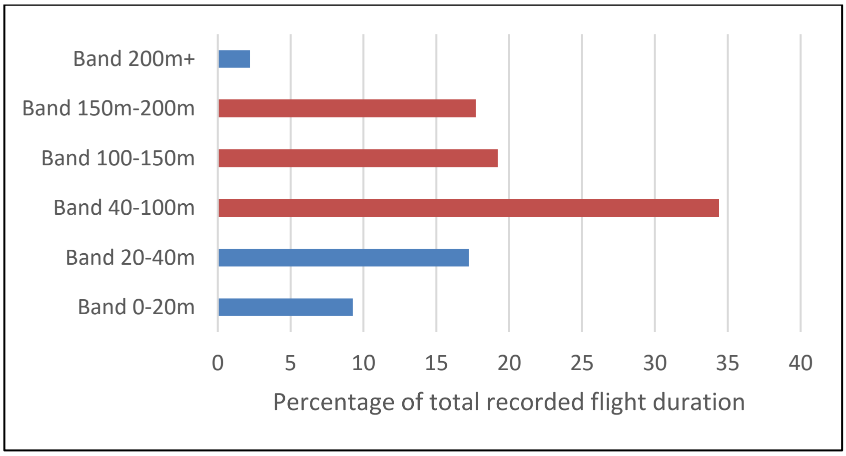

Chart 2: Proportion of recorded golden eagle fight duration per survey height band used in 2022-23.

9.174 It was however the case that the total number of flights recorded per season in 2017-19 was greater than in 2022-23, despite relatively similar survey effort, and so there may be some actual differences in behaviour between years.

9.175 It is possible that the increase in white-tailed eagle presence in the local area in recent years may be affecting golden eagle behaviour due to competition for resources. Evans *et al.* (2010) noted that overlap between the species in Scotland is greatest in the Hebrides, but with both species increasing in population size, at current densities, neither food supply nor availability of nest-sites were considered to be limiting factors for either species, and so competition was not considered to be an important factor. The study did however only consider territory occupancy and not productivity impacts or behaviour changes. Whitfield *et al.* (2012) also concluded that there is no indication that white-tailed eagles are having an adverse effect on golden eagles in western Scotland. However, with nest sites relatively close by, high breeding density, and a potential overlap of diet, it is possible, at least at a Site level, that golden eagle behaviour and distribution may now be affected by higher white-tailed eagle presence.

9.176 As it is unclear whether 2017-2019 or 2022-23 data are more reflective of the current/future reasonable worst-case situation for golden eagles, it is considered appropriate to take a mean value for annual collision rate using all the data. This assumes that of the three local pairs, in any year, one would fledge successfully, the other fail, and the other not attempt to breed (as per 2018 and 2022). Based on this assumption, the mean breeding season collision rate would be 0.489, and the mean non-breeding season collision rate would be 0.506, giving an overall annual mean collision rate of 0.995, or one collision per year.

9.177 Although much activity within the Site is likely to be associated with the adults of at least two breeding pairs, regular immature/subadult flights were recorded, and satellite tag data of non-breeding golden eagles within the Site (**Figure 9.8**) show not all of the predicted collision rate is likely to be attributable to breeding birds, and therefore would not directly affect the NHZ 3/ Outer Hebrides breeding population. Thus assuming all collision mortality is concentrated on breeding adults introduces precaution to the assessment.

9.178 Additionally, recently published studies of satellite-tagged golden eagle behaviour in relation to operational wind turbines in Scotland (Fielding et al. 2021; 2022) have shown that, contrary to evidence in other countries, golden eagles are almost wholly displaced within and immediately around an operational wind farm, with no clear evidence of habituation occurring over time. Whilst the two impacts are not mutually exclusive, it is considered that displacement is the primary risk to golden eagles, rather than collisions. Indeed, Fielding et al. (2021) conclude that their results suggest that "*collision risk is not a substantive factor in young Scottish golden eagles, and so anticipating population impacts of wind farms should be based on habitat loss and not additional mortality"*. In this case, the Displacement section above concludes that although the presence of operational turbines may affect at least two golden eagle territories, with the potential loss of one pair, the effects would not be significant at a NHZ 3 population level.

9.179 Fielding et al. (2022) state that despite a potentially high exposure to collision risk, collisions are rare and in over 20 years only three golden eagle collision fatalities in Scotland are known to the authors (NatureScot now know of at least five collisions, **Table 9-1**). They do however state that due to the genetic distinctiveness and minimal persecution in recent history, the Outer Hebrides population may be less wary of wind turbines, and avoidance behaviour may be relatively weaker than the Scottish mainland population (as witnessed by one of the three known collisions occurring with a turbine in the Outer Hebrides).

9.180 Nevertheless, the results of these studies indicate that collision rates for the proposed development may well overestimate the actual risk, since the species' 99% avoidance rate, as recommended by NatureScot (SNH, 2018d) for use in the Band model, was primarily based on evidence taken from wind farms in the USA (Whitfield, 2009), where Fielding et al. (2022) note that studies have found, or presumed, that golden eagles are relatively susceptible to collisions.

9.181 Therefore, although it is acknowledged that there may remain a collision risk around outermost turbines in particular, with strong displacement being the more likely outcome, the predicted mean annual collision rate of one bird per year to the NHZ 3 breeding population may be an overestimation for various reasons.

9.182 To investigate the population-level impacts of this worst-case additional mortality, a population model was created (details are presented in **Technical Appendix 9.4**) which is based on the Golden Eagle Population Model (GEPM) developed by Whitfield *et al.* (2004) and used by Whitfield *et al.* (2008) in their golden eagle conservation framework report. Input data on territory numbers, occupancy and productivity were obtained from Scottish Raptor Monitoring Scheme annual reports from 2003 to 2020, with survival rates being those previously used by Whitfield *et al.* (2008).

9.183 The findings from this modelling can be summarised as follows:

- Based on the criteria of territory occupancy rate, productivity and population trend used by Whitfield *et al.* (2008) in their Golden Eagle Conservation Framework report, the Outer Hebrides (NHZ 3) golden eagle population is currently in favourable conservation status;
- under an unimpacted (baseline) scenario, based on recent trends the current NHZ 3 golden eagle population (95 pairs) will continue to expand until the NHZ's carrying capacity of an estimated 101 pairs is reached within a model prediction of three years;
- with additional mortality due to predicted collisions at the proposed development (up to 0.995 per year), it would take a single additional year (four in total) for the population to reach carrying capacity; and

- with continued growth predicted over the long-term, despite additional mortality associated with collisions due to the proposed development, it is predicted that favourable conservation status would be maintained.

9.184 Despite a delay in reaching carrying capacity, favourable conservation status would still be maintained, and therefore the additional mortality increase on the Outer Hebrides (NHZ 3) population is predicted to be a low, long-term magnitude of change.

9.185 **Significance of Effect:** The unmitigated effect on the NHZ 3 golden eagle population from additional mortality due to collisions is classified as **minor adverse** and is therefore **not significant** in the context of the EIA Regulations.

White-tailed Eagle

9.186 **Impact:** birds flying within the Site may be subject to a collision risk with turbines, thereby increasing the annual mortality rate of the population above background levels.

9.187 **Sensitivity:** medium.

9.188 **Magnitude of Change:** Evidence suggests that white-tailed eagles are relatively vulnerable to collisions compared to other species, with incidents of collisions occurring at Smøla Wind Farm in Norway (e.g., Bevanger et al. 2008), and in Scotland, including Burnfoot Hill Wind Farm in Clackmannanshire in 2014[8], Stronelairg in Highlands in 2019[9], and probably with a turbine at Pentland Road Wind Farm[10] on Lewis in 2020.

9.189 The mean annual collision rate from 2022-23, predicted using the standard input parameters for white-tailed eagle in the Band *et al.* (2007) collision model ('the Band model') was predicted to be 2.5 birds per year, split roughly evenly between breeding and non-breeding seasons (**Table 9-6**). This estimate was slightly higher than the predicted mean annual collision rate from 2017-19 (approximately 2.2 collisions per year, **Table 9-8**), but with an increase in activity in recent years it is considered appropriate to use the 2022-23 results as a reasonable worst-case.

9.190 One of the most influential, but most difficult to accurately estimate parameters of the Band model is the avoidance rate, which is a species-specific correction factor, mainly to account for the likelihood of birds avoiding a wind farm, either by being displaced from the area, avoiding turbines or taking other evasive action to prevent a collision. Even seemingly small differences in avoidance rates can lead to large differences in predicted collision rates – for example a change from 98% to 99% avoidance rate would halve the predicted collision rate. When the Band model first emerged, empirical evidence of collision rates at operational wind farms was lacking, and so a default 95% avoidance rate was used for most species (SNH, 2010). Over time, the results of various studies have been used to determine more accurate avoidance rates for particular species, and changes have generally been upwards, e.g., 99% for golden eagle and 99.5% for red-throated diver, and 98% is generally seen as the 'default' rate for most species without sufficient empirical evidence (SNH, 2018d).

[8] https://www.scottishraptorstudygroup.org/uncategorised/white-tailed-eagle-killed-at-scottish-wind-farm/
[9] https://community.rspb.org.uk/ourwork/b/scotland/posts/raptors-and-wind-farm-collisions
[10] https://www.rspb.org.uk/about-the-rspb/about-us/media-centre/press-releases/stornoway-windfarm/

9.191 For white-tailed eagle, NatureScot currently advises that a 95% avoidance rate should still be used (SNH, 2018d), and this is based on "*Sufficient evidence from flight behaviour and collision monitoring studies in Norway for vulnerability to collisions; see May et al. (2011)*". It is not entirely clear how the 95% avoidance rate was obtained from the May *et al.* (2011) study, which modelled collision risk for white-tailed eagles at Smøla Wind Farm using satellite telemetry data. The authors stated that the original NatureScot guidance (SNH, 2010) gave the reason for the 95% avoidance rate as being "*because there is sufficient evidence for their vulnerability to collisions: white-tailed eagle (evidence of a disproportionate number of collisions at Smøla, than might be expected)*", referring to older studies at the Smøla Wind Farm (Bevanger et al. 2008). It may be the case that the SNH (2010) guidance was more accurately reflecting the previous May *et al.* (2010) study, which modelled collision risk for white-tailed eagles at Smøla using vantage point observations. There, avoidance rates of 96.4% and 97.1% were estimated at fixed rotor speeds, and an avoidance rate of 95.8% was estimated using variable rotor speeds, based on windspeed distribution on site. The authors also derived uncertainty levels in the modelling, which resulted in a mean avoidance rate of 92.5% ± 9.7 SD, with a median of 95.4%. The subsequent May *et al.* (2011) study however derived a higher year-round estimate of avoidance rate, based on the satellite telemetry data, of 97.5%.

9.192 It should also be noted that the wind turbines at the Smøla Wind Farm are relatively smaller with faster rotating blades than those associated with current available turbines, which may contribute to a higher recorded collision rate, and higher probability of collision should a bird pass through the rotor swept area.

9.193 This suggests that there is some uncertainty in what avoidance rate for white-tailed eagles is most appropriate to use in the Band model, and therefore collision rates for the proposed development have been provided in **Table 9-10** based on a range of avoidance rates, from 95% to 97.5%, from evidence presented above.

Table 9-10: Estimated white-tailed eagle collision rates based on a range of avoidance rates.

Avoidance Rate	Annual Collision Rate
95 %	2.530
96 %	2.024
97 %	1.518
97.5 %	1.265

9.194 This means that the predicted mean annual collision rate may range from approximately 1.3 to 2.5 collisions per year.

9.195 In order to ascertain whether this level of additional mortality would result in a significant effect on the Outer Hebrides (NHZ 3) population (assumed to be 50 pairs), a population model was developed, which is presented in **Technical Appendix 9.3**. Values for population size and productivity were derived from data provided by Robin Reid, RSPB and the Scottish Raptor Monitoring scheme, with adult and subadult survival rates taken from previous modelling of white-tailed eagle in Scotland for NatureScot (Sansom *et al.* 2016).

9.196 The model was run for the baseline situation (i.e., without additional collision mortality associated with the proposed development), and for a range of additional annual mortality (1-5 birds). Comparison of the outputs from the baseline and impact runs provides the relative change in population growth rate and population size to be expected over a 25 year timeframe (referred to as counterfactuals) when additional losses occur, for the regional (Outer Hebrides) and national (Scottish) populations.

9.197 Under the baseline situation, the model predicts a relatively large average annual growth rate of 1.087 (8.7%) for the Outer Hebrides and national populations, which is consistent with the Sansom *et al.* (2016) model, where an annual growth rate of 8.6% was predicted for a 10 year period from 2014 (an annual growth rate of 9.7% was predicted by Sansom *et al.* (2016) using the observed growth rate over the *previous* ten years up to 2014).

9.198 Based on this trend in the model, after 25 years the number of pairs within the Outer Hebrides would be predicted to increase from 50 to 400 (assuming no cap on number of territories/nest sites), with a total of 1,500 individuals (up from an initial 188 individuals).

9.199 Considering a range of additional mortality from around 1 to 2.5 birds per year due to collisions, the model predicted that this would result in a 12-29% smaller Outer Hebrides population over the long-term (25 years), compared with the unimpacted (baseline) population. The annual growth rate of the Outer Hebrides population would be reduced by 0.5% to 1.4% compared to the unimpacted population but would remain strongly positive at 7.3% to 8.2%. The long-term effect of these lower growth rates after 25 years would result in 284-350 pairs (1,064-1,313 individuals). Note that these predictions assume growth remains unlimited by resources which means that the difference between the impacted and unimpacted populations would continue to occur over the model's 25-year period, in contrast to a scenario where growth was constrained at some point (e.g. by food, nest sites, etc.). In the case of growth becoming constrained by competition for resources then the difference between the baseline and impacts projections would be in terms of how soon the population limit was attained.

9.200 Overall, therefore, the Outer Hebrides population would still continue to grow, but after 25 years the population would be between 12% and 29% smaller than without the proposed development, depending on annual collision rate. With this level of impact, it is considered that favourable conservation status can still be attained/maintained over the operational period of the proposed development, despite possible other impacts such as avian influenza (it is predicted that the population would theoretically rise from 50 to at least approximately 284 pairs after 25 years), but as a worst-case, a medium magnitude of change on the Outer Hebrides population is predicted.

9.201 The model was also run to evaluate impacts on the current national population (assumed to be 150 pairs). Under the unimpacted (baseline) scenario, by year 25 (approximately 2048), the number of pairs is predicted to increase from 150 to 1,200, with a total of 4,550 individuals (up from an initial 564 individuals). This is consistent with the predictions in the Sansom *et al.* (2016) model which predicted 889 pairs by 2040 using the predicted growth rate from 2014 onwards, and 1,005 pairs by 2040, using the observed trend for the ten years leading up to 2014.

9.202 The collision rate of 1 to 2.5 birds per year would result in the national population being 4.1% to 6.4% smaller after 25 years than it would be in the absence of the estimated additional mortality. The annual growth rate of the national population would be reduced by 0.17% to 0.26% compared to the unimpacted population but would remain strongly positive at between 8.4% and 8.5%. After 25 years, the population would be predicted to reach 1,073 to 1,150 pairs despite the additional mortality, which would mean that favourable conservation status can be attained/maintained (based on the BoCC classification of white-tailed eagle as being Amber listed due to being a 'breeding rarity', i.e., if the UK breeding population is <300 pairs). The magnitude of change to the national population is therefore considered to be low.

9.203 **Significance of Effect:** The unmitigated effect on the Outer Hebrides white-tailed eagle population from additional mortality due to collisions is classified as **moderate adverse** and is therefore **significant** in the context of the EIA Regulations. The effect on the national population is considered to be **minor adverse** and **not significant.**

All other IOFs

9.204 **Impact:** Results of the CRM are presented in **Tables 9-7**. Black-throated diver and dunlin are not included in this table because no flight activity was recorded during flight activity surveys that was 'at-risk' – i.e., within 500m of a turbine and at rotor height. Black-throated diver was however recorded in 2017-19, but a low collision rate (one every 142 years) was predicted (**Table 9-8**). Dunlin was recorded on one occasion during 2017-19 flight activity surveys, and whilst it cannot be concluded for certain that collision rate for these two species would be zero, it is likely that the risks are very low and so a negligible, long-term magnitude of change is predicted.

9.205 For merlin, greenshank and golden plover, although collision rates were predicted in 2022-23 and/or 2017-19, in each case, these were very low (i.e., fewer than one bird during the likely operational period of the proposed development). Although, as noted in Baseline Conditions: Flight Activity Surveys section, a small number of wader flights were excluded from the CRM due to a lack of required information, a negligible, long-term magnitude of change is predicted.

9.206 **Significance of Effect:** The unmitigated effect on the NHZ 3 black-throated diver, merlin, greenshank, golden plover and dunlin populations from additional mortality due to collisions is classified as **negligible** and is therefore **not significant** in the context of the EIA Regulations.

Lighting

9.207 As the turbines would be in excess of 150m to blade tip, they are required to be lit pursuant to Article 222 of the UK Air Navigation Order (ANO) 2016. The exact turbine lighting specifications would be confirmed prior to construction – information pertaining to turbine lighting is presented in **Chapter 15: Aviation**.

9.208 As advised by NatureScot (2020b), there are however general potential lighting impacts on birds which require consideration within an EIA.

All IOFs

9.209 **Impact:** impacts on IOFs might arise as a consequence of deployment of obstruction lighting on turbines over 150m to blade tip. In addition to lighting on the turbines themselves, any permanent lighting of the substation may also affect birds utilising the area around the substation for breeding or foraging.

9.210 Lighting could have various effects on birds: they may be attracted to lights and thereby placed at higher risk of collisions, have migration patterns disrupted, show avoidance of lights with a consequent displacement impact, or be subject to increased predation threat. NatureScot (2020b) has identified attraction (phototaxis) as posing the principal threat to birds, in relation to wind turbines.

9.211 **Sensitivity:** medium or medium-high, depending on IOF.

9.212 **Impact:** in NatureScot's (2020a) advice on the scope of assessment for turbine lighting, it is identified that an assessment of the possible impacts of lighting on birds may be required in the following three situations, where risk is greater:

- turbines on or adjacent to a seabird colony that hosts burrow nesting species;
- turbines that are on or adjacent to protected areas that host large concentrations of wintering waterbirds, where such sites are located within open country away from other sources of artificial light; and
- where wind farms are located on migratory corridors or bottlenecks for nocturnally migrating passerines.

9.213 It is clear that the proposed development does not fit the first two situations. In the case of migrating species, there is no evidence to suggest that the Site is of any importance as a migration route, with relatively few wildfowl flights recorded for example.

9.214 As such, based on the guidance provided by NatureScot (2020a, 2020b), it is considered that there is little evidence to indicate that any species would be significantly impacted either negatively or positively by turbine lighting requirements.

9.215 The substation would be situated in the north of the Site, adjacent to the existing estate road (see e.g. **Figure 9.2**). As permanent lighting is required, this could potentially affect a small number of breeding greenshank and golden plover, based on recorded distribution in 2022 (**Figure 9.10** and Confidential **Figure 9.7**). Impacts are however unlikely to add to the magnitude of change predicted for either species in the Operational Displacement section and are likely to be negligible at a population level.

9.216 The 2018 and 2022 black-throated diver breeding loch would be within 500m of the substation (Confidential **Figures C9.5** and **C9.8**). Although it is unlikely that at the distance involved, lighting would directly affect the nest site, it is possible that a perception of increased human or predator presence could affect nest site selection and breeding success.

9.217 Overall, the changes to all IOFs from lighting are considered to be of long-term, negligible magnitude, with the exception of black-throated diver, which is considered to be a low magnitude of change at a NHZ 3 level.

9.218 **Significance of Effect:** the level of significance of lighting on IOFs is predicted to be **negligible** and **not significant**, with the exception of black-throated diver, which is predicted to be **minor-moderate adverse**, and **significant** in the context of the EIA Regulations.

Potential Decommissioning Effects

9.219 Decommissioning impacts for the proposed development are difficult to predict with any confidence because of the long timeframe until their occurrence. Decommissioning impacts are considered for the purpose of this Chapter to be similar in nature to those of construction impacts but are likely to be of shorter duration. The significance of effects predicted in the Potential Construction Effects section are therefore considered appropriately precautionary for assessing decommissioning effects on IOFs.

MITIGATION AND RESIDUAL EFFECTS

Construction

9.220 When taking into account the embedded mitigation for the construction period – enforcement of a BDMP with ECoW presence and pre-construction surveys/ongoing monitoring – all construction effects were considered to be no more than minor adverse for all IOFs. No additional mitigation is therefore required, although the BDMP would be treated as a live document, and should any unforeseen potential impacts be identified, the document would be updated to ensure legal compliance and that no undue disturbance to breeding birds would occur.

9.221 The predicted residual levels of significance of construction effects on all IOFs are therefore unchanged.

Operation

9.222 The assessment of potential impacts during operation identified the following unmitigated significant effects:

- minor-moderate adverse effects on breeding black-throated diver due to displacement around turbines and substation lighting; and
- a moderate adverse effect on white-tailed eagle due to collision mortality.

9.223 To address these effects and reduce the residual effects to a non-significant level, additional mitigation and enhancement is proposed in the following sections.

Black-throated Diver: Artificial Rafts and Lighting Restrictions

9.224 It is possible that the presence of the proposed development may reduce or restrict the availability of suitable nest sites on lochs within the Site. In order to address this, it is proposed that a minimum of two artificial diver rafts are installed on suitable lochs within or adjacent to the Site (most likely those where black-throated divers have previously nested, or regularly used), and monitored and maintained throughout the operational period.

9.225 In Scotland, some regions such as Kintyre have low black-throated diver occupancy rates and low breeding success, and this has been attributed at least in part, due to a lack of suitable nest conditions on lochs (Dewar & Lawrence *in press*). In Argyll, water level fluctuations were also identified as a key impact on breeding divers (ap Rheinallt et al. 2007). Artificial rafts therefore offer a tried and tested way of providing more suitable and stable nest site conditions for breeding black-throated divers. Hancock (2000) found that productivity of black-throated divers was initially doubled on sites in Scotland where they were provided with nesting rafts. Merrie (1978) found that artificial rafts installed in south Argyll on waterbodies where previous breeding attempts had been noted were mostly rapidly accepted, usually within the first season, for black-throated and red-throated divers. This was consistent the later findings by Broad (2018) for black-throated divers across Argyll, and with results from a study of raft introduction in Finland (Nummi et al. 2013) where a red-throated diver population increased steadily compared to a control area, and the breeding success was relatively high. This management intervention, subject to careful placement, offers a good opportunity to sustain the local black-throated and red-throated diver breeding populations over the long-term.

9.226 For the substation (see **Chapter 3: Description of Development** for information), it is also proposed that lighting is minimised and only used when required during the months of April and July (restrictions would be maintained until no active nest is confirmed). The lighting would be directed away from the loch used by black-throated divers to reduce the likelihood of birds being impacted.

9.227 As a result of implementation of the above mitigation, it is predicted that a **minor adverse** and **not significant** effect would occur on the black-throated diver NHZ 3 population.

Waders: Habitat Enhancement

9.228 Although the extent of displacement of breeding waders is likely to be limited in extent to a relatively small area around turbines, due to the numbers likely present within the Site, habitat enhancement is considered to be worthwhile.

9.229 As part of the Habitat Management Plan (HMP) for the proposed development, peatland restoration within the Site is planned (see Outline HMP, **Technical Appendix 8.6**). This would increase wetness and improve the quality of bog habitats that are preferred by greenshank, golden plover and dunlin. Additionally, planned restrictions in grazing on steep ground would improve habitat quality.

9.230 It is likely that the HMP would provide benefit for not just waders, but also for breeding merlin, and indirectly for golden eagle and white-tailed eagle due to an increase in prey resource. As such, it is considered that the residual effects of operational displacement remain **not significant**.

Merlin: Habitat Enhancement

9.231 In addition to the habitat enhancement outlined above, a series of wooden posts 1-2m high would be placed in suitable merlin habitat within the Site (away from wind turbines), with the aim of them to be used by birds as a perch/ plucking post, thereby improving foraging opportunities for the species.

White-tailed eagle and golden eagle: Eagle Conservation Programme

9.232 An Eagle Conservation Programme will be set up prior to commencement of construction and will run throughout the construction and operational periods of the proposed development. The scope will be determined in consultation with relevant conservation organisations and eagle experts, and would be designed to identify the best options for ongoing conservation of golden eagles and white-tailed eagles in the Outer Hebrides, by identifying any threats, constraints to growth, and opportunities for research and management.

White-tailed eagle and golden eagle: Low Intervention Areas

9.233 As part of the HMP, areas within 1km of active white-tailed eagle and golden eagle nest sites would be subject to restrictions on management such as muirburn, stalking activities, peatland restoration and other forms of potentially disturbing estate work during the eagle breeding season (February to August) to minimise the risk of disturbance to breeding attempts, as well as disturbance to eagle prey species and associated habitats.

White-tailed eagle and golden eagle: Collision Risk Reduction

9.234 Two mitigation measures are proposed which would aim to reduce the risk of white-tailed eagle collision and also likely golden eagle collisions:

- removal of gralloch and carcasses from the vicinity of operational turbines; and
- painting of single blades of selected turbines black in order to increase visibility to birds in flight, and a monitoring programme to determine effectiveness.

Carcass Removal

9.235 Regular checks within 200m all turbines would be made throughout the year during the operational period, to locate the presence of any deer or livestock carcasses and gralloch, which may be treated as carrion by eagles. Any carcasses uncovered would be removed from Site, buried in situ, or relocated 200m away from turbines.

9.236 The removal of carrion from within the wind farm would therefore reduce the likelihood of eagles attempting to fly close to rotating turbine blades to reach potential food resources.

Painting Rotor Blades

9.237 The most practical and effective form of reducing collision risk for white-tailed eagles (and other species) has been identified as painting a turbine blade a contrasting colour, which helps to reduce motion smear effects, and therefore increases the likelihood of avoidance. Evidence from a study at Smøla wind farm, Norway (May et al. 2020) and a scientific review (Martin, 2022 and a subsequent journal article by Martin & Banks, 2023) suggests this is likely to be particularly effective for large raptor species such as white-tailed eagle, due to their higher visual acuity.

9.238 The May et al. (2020) study of painted blades at Smøla showed that over the three-year study period the mitigation of blade painting appeared 100% effective in avoiding white-tailed eagle collisions. In relation to the Band CRM model, this suggests that the avoidance rate of individuals around painted turbines may be much higher than the 95% rate advised by NatureScot (SNH 2018), and potentially, higher than the May *et al.* (2011) study at Smøla, conducted prior to blade painting, which derived year-round estimate of avoidance rate of 97.5%.

9.239 The painting of blades was also seen to be effective for other species at Smøla, as the overall annual fatality rate for all species combined was significantly reduced at the turbines with a painted blade by over 70%.

9.240 This Smøla study is considered to be relevant to the proposed development for the following reasons:

- with white-tailed eagle being the key species of concern at Smøla, the mitigation was designed primarily to address impacts on this species;
- there are long-term data on turbine fatalities before treatment (7.5 years) and after treatment (3.5 years);
- smøla is an archipelago located off the coast of central Norway and the habitats are characterized by open terrain consisting of heath and marsh vegetation, and rocky outcrops interspersed with minor bogs and lakes. This landscape is considered to be relatively similar to that within the Site, and much of Lewis in general; and
- white-tailed eagles re-introduced into Scotland in three phases (1975 to 1985, 1993 to 1998, and 2007 to 2012) were from donor stock in Norway, suggesting that Scottish birds will have similar genetic makeup, and may therefore have similar behavioural responses as those individuals at Smøla to anthropogenic features such wind turbines.

9.241 It is likely that not all turbines are of equal risk to white-tailed eagles when they are present in an area. A study of white-tailed eagles in northeast Germany (Heuck et al. 2019) for instance looked at records of collision victims and found that more were found in areas of high habitat suitability, and to some extent, nearer nest sites. During the design process, work was therefore undertaken to identify which turbines would be most risky to white-tailed eagles based on known nest site locations, satellite tag and survey flight distribution, habitat preferences and species' behaviour.

9.242 **Figure 9.9** presents a kernel density model produced from satellite tag records of four non-territorial white-tailed eagles tagged as nestlings over a two-year period from 2020. It shows highest concentrations of eagle activity around Loch Sealg south of the Site, where much foraging activity is likely to take place. This was largely consistent with the flight activity survey results which also showed highest concentrations of activity in the south of the Site, likely from breeding and non-breeding individuals. This distribution is consistent with studies of observed white-tailed eagle habitat preferences from a literature review (see e.g., Evans *et al.* 2010; Heuck et al. 2019), which showed a preference for nesting and foraging near coastal areas (see Confidential **Figure C9.4** for nest site locations).

9.243 It was therefore considered that turbines nearest to a coastline, and nearer to recorded nest sites are likely to be the most sensitive.

9.244 The output from the GET model was also taken into account, with white-tailed eagle being a large raptor, similar to golden eagle, that requires particular topographical conditions such as ridges to allow soaring flight. Based on this, Confidential **Figure C9.3** shows that although much of the Site may be of lower suitability for eagles, there are concentrations of more preferred topographical conditions in the south of the Site.

9.245 It is therefore proposed that the seven southernmost turbines (T19 to T25 – see location on **Figure 9.9**) would be subject to blade painting to reduce collision risks, as it is likely that they would contribute a disproportionate risk of collisions within the wind farm, for the following reasons:

- the turbines are closest to the nearest recorded nest sites to the Site;
- they are located closest to the Loch Sealg coast, which based on known species preferences, is likely to be well used for foraging;

- concentrations of flight activity were recorded in that area, from both the satellite tag data and flight activity surveys; and
- topographical conditions are likely to be preferred for soaring eagles compared to much of the turbine area.

9.246 The choice of these turbines is supported by the CRM. When running the CRM for north (18 turbine) and south (seven turbine) array separately, it was found that these south seven turbines selected for painting accounted for 68% of the overall predicted annual collision rate.

9.247 Martin & Banks (2023) argue that for marine birds the internal visual contrast of wind turbines should be increased using achromatic patterns applied to all turbine blades and their pylons, to allow birds with different flight speeds and visual acuities to detect turbines sufficiently early to allow alteration of flight direction and avoid collision. Whilst this is likely to be the best approach to deal with a range of marine species, the original single blade approach used by May et al. (2020), and currently trialled by RWE at a site in the Netherlands[11] is considered sufficient and appropriate for eagle species due to their high visual acuity. As Martin & Banks (2023) noted, marine birds have significantly lower visual spatial resolution than eagles. Additionally, white-tailed eagles are long-lived and typically establish small home ranges that are typically occupied throughout the year. They are thus able to build knowledge of turbine distributions within relatively local areas. Furthermore, they are diurnally active and rarely fly under poor visibility conditions. This suggests that a similar method to that deployed at Smøla would be sufficient, although it is proposed that instead of the bottom 2/3^{rds} of a blade being painted (as was the case at Smøla, because operatives could not reach the top 1/3rd of the blade on already operational turbines), the whole of one blade would be painted, which would further increase visibility to eagles. Further detail on blade painting is presented in **Chapter 7 Landscape & Visual Amenity**.

9.248 It is acknowledged that there is uncertainty as to whether this form of mitigation would reduce collision rates at these turbines to zero (i.e., effectively a 100% avoidance rate) as suggested by the Smøla study, and so CRM results have been generated separately for the north 18-turbine array (unpainted blades) and the south 7-turbine array (painted blades) at a range of avoidance rates (**Table 9-11**).

Table 9-11: Total estimated mean annual white-tailed eagle collision rates for north (unpainted) and south (painted) turbine arrays, based on a range of avoidance rates.

		North (unpainted) 18-turbine array					
		95 %	**96 %**	**97 %**	**97.5 %**	**98 %**	**99 %**
South (painted) 7-turbine array	**95 %**	2.530	2.370	2.210	2.130	2.050	1.890
	96 %	2.184	2.024	1.864	1.784	1.704	1.544
	97 %	1.838	1.678	1.518	1.438	1.358	1.198
	97.5 %	1.665	1.505	1.345	1.265	1.185	1.025
	98 %	1.492	1.332	1.172	1.092	1.012	0.852
	99 %	1.147	0.986	0.826	0.746	0.666	0.506

[11] https://www.rwe.com/en/press/rwe-renewables/2022-09-29-research-black-rotor-blades-for-bird-protection/

9.249 The avoidance rate range has been based on the previously quoted avoidance rates calculated from studies at Smøla prior to addition of painted blade mitigation (May et al. 2010 and 2011) which ranged from 95.4% to around 97.5%. Beyond this avoidance rate, rates up to 99% have been used, based on those quantified avoidance rates recommended by NatureScot (SNH, 2018) for other raptor species (golden eagle, red kite and hen harrier). Although in some cases avoidance rates have been determined to be higher than 99% (divers, skuas and geese being 99.5% or above), and there is now evidence to suggest that 99% may be an underestimate for golden eagles in Scotland (Fielding *et al.* 2021; 2022) it is considered that here, due to uncertainty, 99% is a suitably precautionary value to assume for white-tailed eagle avoidance rate around painted blade turbines.

9.250 This means that the predicted total mean annual collision rate, combining the north (unmitigated) and south (mitigated) arrays would be reduced from 2.530 collisions, to between 0.746 and 1.147 collisions, depending on whether the unmitigated avoidance rate is considered to be 97.5% or 95% respectively (with the mitigated avoidance rate assumed to be 99%). It should be noted that this does not include a further potential reduction in collision rate due to the other form of mitigation: removal of carcasses from around all turbines to reduce activity rates near rotating blades.

9.251 This revised rate of annual mortality can be investigated using the white-tailed eagle population model provided in **Technical Appendix 9.3**.

9.252 Based on a range of additional mortality from 0.746 to 1.147 birds per year, the loss of around 1 to 1.5 birds per year to the Outer Hebrides population would result in a reduced growth rate in the population and hence a population after 25 years that would be approximately 12% to 18% smaller than in the absence of additional mortality. However, the population would still grow strongly, with a prediction that the current 50 pairs would increase to between 327 and 350 pairs instead of 400 pairs under the unimpacted (baseline scenario). The annual growth rate of the Outer Hebrides population would be reduced by 0.55% to 0.83%, but when compared to the baseline population growth rate of 8.7% this would still result in positive growth rates of 7.9% to 8.2%.

9.253 The two mitigation measures (carcass removal and painting blades) are also likely to reduce the risk of collisions for golden eagle as the avoidance rate for golden eagles around the seven painted blade turbines is likely to be above the 99% currently used for the species, which is likely to be an underestimate.

9.254 An important part of the mitigation would be monitoring of its effectiveness, and so a robust monitoring programme would be agreed with consultees prior to operation. This would likely take the form of year-round carcass searches covering both painted blade and non-painted blade turbines. The results of the monitoring would offer the opportunity for future revisions to the mitigation plan, for example, extending painting of blades to other sensitive turbines. The monitoring also offers the opportunity to determine if alternative mitigation measures may need to be investigated (potentially in conjunction with the Eagle Conservation Programme), as well as adding to the knowledge base as to the efficacy of painting blades to reduce collision risks associated with onshore wind farms.

9.255 Based on this reduction in predicted collision rate due to the mitigation measures (carcass removal, painted blades, monitoring, Eagle Conservation Programme) acting in combination, it is considered that the residual effect of additional mortality due to collisions on the Outer Hebrides white-tailed eagle population can be reduced to **minor adverse** and **not significant**, with a reduction in annual growth rate estimated to be less than 1%.

9.256 The mitigation will also increase the likelihood of a **minor adverse** and **not significant** effect on golden eagle.

9.257 A comparison of predicted collision impacts on eagles due to the proposed development and consented scheme is presented in the **Project Comparison Report**. This shows that unmitigated collision risks are lower for white-tailed eagle and golden eagle for the proposed development, and this difference is increased because of the planned mitigation (which is not part of the consented scheme).

CUMULATIVE EFFECTS

9.258 This section presents information about the potential cumulative effects of the proposed development combined with other operational, consented or proposed projects that are located within the appropriate spatial context on the basis of the species considered.

Methods

9.259 NatureScot (SNH 2018b) has provided guidance on assessing the cumulative effects on birds. This assessment follows the principles set out in that guidance.

9.260 Cumulative effects may arise when there are effects from two or more developments, including cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects. Effects can be additive, antagonistic (i.e., the cumulative impact is less than the sum of the multiple individual effects) or synergistic (i.e., the cumulative impact is greater than the sum of the multiple individual effects).

9.261 The main projects likely to cause similar effects to those associated with the proposed development are other operational wind farm developments, or those under construction, consented, or in the planning process within NHZ 3 or appropriate geographical reference area (**Table 9-7**).

9.262 Wind farm projects at scoping stage have been scoped out of the cumulative assessment because either they do not have sufficient information on potential effects to be included; because the baseline survey period is ongoing; or because results have not been published. Projects that have been refused (and no longer capable of appeal) or withdrawn have also been scoped out of the cumulative assessment.

9.263 Small wind farm projects with one or two turbines have also been scoped out from the cumulative assessment as often these projects are not subject to the same level of detail of ornithological assessment, and so there are no directly comparable data. Because of the small scale of such projects, effects are likely to be negligible on the IOFs assessed here.

Scope of Cumulative Assessment

9.264 Based on the conclusions of the assessment of construction and operational effects presented above, and the committed mitigation outlined in Mitigation and Residual Effects, the following IOFs and impacts have been scoped out of the cumulative assessment due to a lack of likely significant effects and no/ negligible contribution to a cumulative effect:

- cumulative construction effects for all IOFs when embedded mitigation measures are implemented (no reduction in numbers of breeding attempts or survival rates);
- cumulative collision effects for all IOFs, except golden eagle and white-tailed eagle, due to low or no predicted collision risk;
- cumulative operational displacement effects for black-throated diver, white-tailed eagle, merlin or dunlin due to no or negligible long-term impacts (e.g., productivity or survival rates) predicted on the NHZ 3 populations due to the proposed development alone; and
- cumulative operational lighting effects for all IOFs when additional mitigation measures are implemented (no reduction in numbers of breeding attempts or survival rates).

9.265 The remaining cumulative effects are therefore considered below:

- cumulative operational displacement effects for golden eagle, greenshank and golden plover; and
- cumulative collision risks for golden eagle and white-tailed eagle.

Golden Eagle

Operational Displacement

9.266 There are two larger wind farms on Lewis that have been consented – the 35 turbine Stornoway Wind Farm to the west of Stornoway, and the 14 turbine Druim Leathann Wind Farm, in the north of Lewis. The Stornoway Wind Farm will be located directly to the south of the six-turbine Pentland Road Wind Farm, operational since 2013. It is also near the three turbine Arnish Moor and Beinn Ghrideag Wind Farms.

9.267 Predicted operational displacement effects on golden eagle due to these, and all other wind farm projects within NHZ 3 / Outer Hebrides are presented in **Table 9-12**. This shows that the only other project which is likely to result in the loss of a golden eagle territory is Druim Leathann, although there is some uncertainty in this conclusion. All other smaller projects of three turbines are unlikely to affect the viability of a territory, even when clustered around the Stornoway Wind Farm.

9.268 In a worst-case scenario, the loss of two territories, when considering the proposed development, would equate to around 2% of the Outer Hebrides population (95 pairs). With apparently high territory occupancy rates in the Western Isles (>80%), it is considered that the loss of two territories would not affect the favourable conservation status of the Outer Hebrides population. As such, a long-term, low cumulative magnitude of change is predicted.

9.269 The cumulative displacement effect on golden eagle is therefore considered to be **minor adverse** and therefore **not significant**.

Table 9-12: Other NHZ 3 wind farm projects: golden eagle

Project	Status	Displacement	Collision Risk
Stornoway Wind Farm	Consented	Up to three breeding pairs are likely to overlap with the survey area. No known nest sites are within 1km of the development. Predicting *Aquila* Territories (PAT) modelling predicted sufficiently low overlap of	Mean collision rate of 0.308 birds per year.

Project	Status	Displacement	Collision Risk
		foraging habitat with the development for it to be concluded that there would be no detectable effect on the NHZ 3 breeding population.	
Druim Leathann Wind Farm	Consented	PAT modelling undertaken to assess the impact of displacement on golden eagle territory overlapping with wind farm. The loss of foraging habitat due to displacement (up to 5.2%) was not expected to result in reduced breeding success or subsequent range abandonment by the pair. However, a combination of displacement and potential disturbance may diminish the suitability of the breeding crag leading effectively to range abandonment.	Predicted loss of approximately 0.51 golden eagles during the life of the project [equivalent of 0.020 per year]
Pentland Road Wind Farm	Operational	The Stornoway Wind Farm S36 Additional Information stated that from surveys there is some evidence that the presence of the Pentland Road wind farm has had an influence on the spatial distribution of golden eagle flight activity.	No CRM undertaken. One collision recorded in 2018 (operational since 2013)
Beinn Greidaig Wind Farm	Operational	No information available	0
Monan Wind Farm	Operational	No information available	1.1 during life of project [equivalent of 0.044 per year]
Arnish Wind Farm	Operational	No information available	No CRM undertaken.
Loch Carnan Wind Farm	Operational	No information available	1.5 during life of project [equivalent of 0.060 per year]
Baile an Truseil Wind Farm	Operational	No information available	0
Loch Sminig Wind Farm	Operational	No information available	No information available

Collision Risk

9.270 When combining the estimated collision rates from other projects where CRM was undertaken, an annual collision rate of 0.432 birds is predicted (**Table 9-12**). One collision has been recorded at Pentland Road, which has been operational for ten years. This would equate to a minimum collision rate of 0.1 birds per year, acknowledging it is possible that other collisions may have gone undetected. It is also possible that collision may have occurred at other small three-turbine wind farms, but this is considered less likely.

9.271 When adding the cumulative total from other projects (0.532) to the mean annual collision rate of 0.995 associated with the proposed development, a minimum collision rate of 1.527 birds per year is predicted.

9.272 The predicted cumulative collision mortality has also been applied to the golden eagle population model (**Technical Appendix 9.4**). The model predicted that with additional collision mortality from the proposed development and all other wind farm projects within NHZ 3 (1.527 per year), annual population growth would be similar to that for the proposed development alone, with just a short delay in the time taken for the NHZ 3 population to reach its estimated carrying capacity (5 years instead of 4 years, and instead of 3 years under the unimpacted scenario).

9.273 With continued growth predicted over the long-term, despite additional mortality associated with collisions due to the proposed development and other projects, it is predicted that favourable conservation status would be maintained, and a **minor adverse** and therefore **not significant** effect in the context of the EIA Regulations is concluded.

White-tailed Eagle

Collision Risk

9.274 A predicted white-tailed eagle collision rate was only available for the Stornoway Wind Farm, with the risk associated with Druim Leathann considered to be negligible due to very low site presence (**Table 9-13**). One probable collision has been recorded at Pentland Road, which has been operational for ten years. This would equate to a minimum collision rate of 0.1 birds per year, acknowledging it is possible that other collisions may have gone undetected. It is also possible that a collision may have occurred at other small three-turbine wind farms, but this is considered less likely. This gives a predicted cumulative collision rate at other projects of 0.734 per year.

Table 9-13: Other NHZ wind farm projects: white-tailed eagle

Project	Status	Collision Risk
Stornoway Wind Farm	Consented	Mean rate of 0.634 collisions per year.
Druim Leathann Wind Farm	Consented	Only two “at risk” flights for a total duration of 31 seconds during surveys. No CRM undertaken.
Pentland Road Wind Farm	Operational	No CRM undertaken. One probable collision recorded in 2020 (operational since 2013)

9.275 When considering the predicted collision rate range for the proposed development (taking into account painted blade mitigation but not reductions in collision risk due to gralloch/carcass removal) of 0.746 to 1.147 birds per year, this would result in a minimum mean cumulative collision rate of 1.48 to 1.88 birds per year.

9.276 Based on the outputs of the white-tailed eagle population model (**Technical Appendix 9.3**), an additional mortality of 1.5 to 2 birds per year would result in a slightly lower population growth rate and consequently a slightly smaller population after 25 years than would be predicted in the absence of additional mortality. Thus, while the baseline Outer Hebrides population prediction was for the initial 50 pairs to increase to 400 after 25 years, with the additional mortality the population would reach 304 to 327 pairs (i.e. approximately 18% to 24% smaller than might otherwise be achieved). The annual growth rate of the Outer Hebrides population would remain positive at 7.6% to 7.9% (i.e. reductions of 0.8% to 1.1% compared to the unimpacted population growth rate). This level of impact is considered unlikely to affect the ability of the population to attain/maintain favourable conservation status.

9.277 When considering the mitigation planned for the proposed development in addition to painted blades (gralloch/carcass removal, Eagle Conservation Programme) and for Stornoway Wind Farm (peatland restoration), the reduction in annual growth rate on the Outer Hebrides white-tailed eagle population due to cumulative collision mortality is predicted to be 1% or lower, and therefore the effect is classified as **minor adverse** and is therefore **not significant** in the context of the EIA Regulations.

Greenshank

Operational Displacement

9.278 Information on greenshank was available from Stornoway and Druim Leathann wind farms, where combined a total of seven pairs may be displaced (**Table 9-14**). When considering the possible unmitigated loss of up to of 7-13 pairs due to the proposed development, the cumulative loss would be 14-20 pairs. With an NHZ 3 population estimated to be 256 pairs, this would represent 5.4% to 7.8% of the breeding population. Although it is possible that a small number of territories may have been affected by the operational three-turbine wind farms, this is considered to be a reasonably precautionary worst-case value.

9.279 As described in the assessment for the proposed development alone, the actual losses are likely to be at the lower end of the range because some territories may be feeding rather than nesting ones, and there is evidence to suggest that greenshanks are not overly sensitive to turbines. With the planned habitat management of peatland and wet heath on Site, this is likely to aid greenshank, and so a cumulative displacement impact of long-term, low magnitude of change is predicted on the NHZ 3 population.

9.280 The effect on the NHZ 3 greenshank population from cumulative displacement is therefore classified as **minor adverse** and is therefore **not significant** in the context of the EIA Regulations

Table 9-14: Other NHZ wind farm projects: greenshank

Project	Status	Displacement
Stornoway Wind Farm	Consented	Up to six territories within 500m of the development.
Druim Leathann Wind Farm	Consented	Possible permanent displacement of up to one breeding pair during operation.

Golden Plover

Operational Displacement

9.281 Information on golden plover was available from Stornoway and Druim Leathann Wind Farms, where combined a total of 14 pairs may be displaced (**Table 9-15**). When considering the possible unmitigated loss of up to of 12-27 pairs due to the proposed development, the cumulative loss would be 26-41 pairs. With an NHZ 3 population estimated to be 4,194 pairs, this would represent 0.6% to 1.0% of the breeding population. Although it is possible that a small number of territories may have been affected by the operational three-turbine wind farms, this is considered to be a reasonably precautionary worst-case value.

9.282 As described in the assessment for the proposed development alone, the actual losses are likely to be at the lower end of the range because golden plovers are likely to be able to move to habitat away from turbines. With the planned habitat management of peatland and wet heath on Site, this is likely to aid golden plover, and so a cumulative displacement impact of long-term, low magnitude of change is predicted on the NHZ 3 population.

9.283 The effect on the NHZ 3 golden plover population from cumulative displacement is therefore classified as **minor adverse** and is therefore **not significant** in the context of the EIA Regulations

Table 9-15: Other NHZ wind farm projects: golden plover

Project	Status	Displacement
Stornoway Wind Farm	Consented	Up to ten territories, mainly at the edge of the development boundary.
Druim Leathann Wind Farm	Consented	Possible permanent displacement of up to four breeding pairs during operation.

STATEMENT OF SIGNIFANCE

9.284 For all IOFs, the predicted residual levels of significance of effects during the construction, operational and decommissioning stages of the proposed development are considered to be no more than of **minor adverse** and therefore **not significant**, when taking into consideration any required mitigation measures (**Table 9-16**). Non-significant cumulative effects were also predicted for all IOFs, when taking into consideration mitigation for the proposed development.

Table 9-16: Significance of effects on Important Ornithological Features

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
Black-throated diver	Direct habitat loss and construction disturbance	Minor	None required above embedded mitigation (BDMP, ECoW, monitoring)	Minor
Golden eagle		Minor		Minor
White-tailed eagle		Minor		Minor
Merlin		Minor		Minor
Greenshank		Minor		Minor
Golden plover		Minor		Minor
Dunlin		Minor		Minor
Operational Phase				
Black-throated diver	Displacement	**Minor-moderate**	Artificial rafts	Minor
	Collision risk	Negligible	None required	Negligible
	Lighting	**Minor-moderate**	Substation lighting minimisation	Minor
Golden eagle	Displacement	Minor	None required [Eagle Conservation Programme, Low intervention areas]	Minor
	Collision risk	Minor		Minor
	Lighting	Negligible		Negligible
White-tailed eagle	Displacement	Negligible	None required [low intervention areas]	Negligible
	Collision risk	**Moderate**	Carcass removal Painted turbine blades Eagle Conservation Programme	Minor
	Lighting	Negligible	None required	Negligible
Merlin	Displacement	Negligible	[Habitat management]	Negligible
	Collision risk	Negligible	None required	Negligible
	Lighting	Negligible	None required	Negligible

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Greenshank	Displacement	Minor	[Habitat management]	Minor
	Collision risk	Negligible	None required	Negligible
	Lighting	Negligible	None required	Negligible
Golden plover	Displacement	Minor	[Habitat management]	Minor
	Collision risk	Negligible	None required	Negligible
	Lighting	Negligible	None required	Negligible
Dunlin	Displacement	Negligible	[Habitat management]	Negligible
	Collision risk	Negligible	None required	Negligible
	Lighting	Negligible	None required	Negligible
Decommissioning Phase				
As per construction effects				

FURTHER SURVEY REQUIREMENTS AND MONITROING

9.285 Monitoring to ensure legal compliance with the Wildlife & Countryside Act would take place pre- and during construction, to safeguard the nests of breeding birds, and avoidance disturbance to breeding species on Schedule 1 of the Act.

9.286 In order to determine whether the additional mitigation measures for the operational period are appropriate and sufficient, the following monitoring would be undertaken, with a schedule to be agreed prior to construction:

- black-throated diver: monitoring of lochs within 1km of Site to determine breeding attempts. Monitoring of artificial rafts to determine occupancy and whether maintenance or relocation is required.
- golden eagle: monitoring of three territories that may overlap with Site for occupancy. Programme of year-round carcass searches at painted and non-painted turbines to determine whether this form of mitigation is appropriate and sufficient.
- white-tailed eagle: monitoring of territories within 1km of Site. Programme of year-round carcass searches at painted and non-painted turbines to determine whether this form of mitigation is appropriate and sufficient.
- greenshank, golden plover, dunlin and merlin: monitoring of any habitat management areas to determine usage by these wader species.

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HYDROLOGY, HYDROGEOLOGY AND GEOLOGY 10

CONTENTS

INTRODUCTION

10.1 This Chapter assesses the impacts of the proposed development on geology (including peat and soils), hydrology and hydrogeology (forming the water environment). It includes assessment of superficial and bedrock geology, surface water including streams, rivers and lochs, and groundwater within the 1km of the Site.

10.2 The assessment of impacts has been made on the basis of the proposed turbine and infrastructure layout as fully described in **Chapter 3: Description of Development.**

10.3 The Chapter details the assessment undertaken to determine the potential effects of construction, operation and decommissioning of the proposed development on the current baseline geology and the water environment. It outlines the embedded good practice methods which have been incorporated into the design and would be used during construction, operation and decommissioning of the proposed development to prevent or reduce identified effects and risks.

10.4 Further mitigation methods to address any potential effects are proposed, where appropriate, and residual effects are assessed.

10.5 This Chapter presents summary information from the following Technical Appendices (TA):

- **Technical Appendix 10.1: Peat Landslide Hazard and Risk Assessment (PLHRA)**;
- **Technical Appendix 10.2: Peat Management Plan (PMP)**;
- **Technical Appendix 10.3**: **Borrow Pit Appraisal (BPA)**;
- **Technical Appendix 10.4**: **Schedule of Watercourse Crossings**;
- **Technical Appendix 10.5**: **Private Water Supply Risk Assessment (PWSRA)**;
- **Technical Appendix 10.6**: **Groundwater Dependent Terrestrial Ecosystems (GWDTEs) Assessment**; and
- **Technical Appendix 10.7: Consultation**.

10.6 This Chapter is supported by **Figures 10.1** to **10.8** (referenced within the text where relevant).

10.7 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**.

10.8 The assessment uses information and findings presented in **Chapter 8: Ecology** to inform the assessment of potential effects on possible areas of GWDTEs.

SCOPE AND CONSULTATION

10.9 The scope of the assessment has been determined through a combination of professional judgement, reference to relevant guidance documents and consultation with stakeholders. The assessment has also been cognisant of the previous assessments completed at Site in relation to the consented Muaitheabhal Wind Farm (ECU ref. EC00005222), including the eastern (ECU ref. EC00005223) and southern extensions (ECU ref. EC00002096).

Consultation and Scoping Responses

10.10 Consultation for the proposed development was undertaken with statutory and non-statutory bodies, as set out in **Chapter 6: Scoping and Consultation**.

10.11 The outcome of the relevant consultation with regards to the water environment and geology (including peat) is summarised in **Table 10-1**.

Table 10-1: Summary of Key Issues

Consultee	Summary of Response	Where Addressed in Chapter
Scottish Water Email Dated 26 July 2022 Scoping Response	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.
Scottish Environment Protection Agency (SEPA) Email dated 16 August 2022 Scoping Response	A Peat Management Plan is required as part of the application. The EIA report should also consider peatland quality. Areas of pristine or near natural peat forming habitat should be avoided through layout design. Provided watercourse crossings are designed as oversized bottomless arched culverts or traditional style bridges and other infrastructure is located well away from watercourses, we do not foresee from current information a need for detailed information on flood risk or watercourse crossings. The only exception to this would be if a crossing of the Abhainn Cheothadail is proposed. If that is the case then information should be submitted at the application stage of the proposed design of the crossing (which should be a traditional style bridge) to demonstrate that it is built to pass the 1 in 200 year flood event plus climate change without constriction. Infrastructure (except watercourse crossings and tracks leading up to them) should be at least 50 m from the top of the banks of watercourses, including smaller scale watercourses. We can confirm that as long as infrastructure is located out with the 50 m buffer to watercourses	See **Technical Appendix 10.2: PMP**. See **Technical Appendix 10.4: Schedule of Watercourse Crossings**. See Baseline Conditions and Embedded Measures

Consultee	Summary of Response	Where Addressed in Chapter
	(including small scale watercourses) then we do not require detailed drainage design information at the application stage. This issue will be directly controlled by SEPA via regulation.	Sections of this Chapter.
	Should borrow pits be required on site, they should be located in an area demonstrating the least environmental impact.	See Baseline Conditions and Embedded Measures Sections of this Chapter. See **Technical Appendix 10.3: Borrow Pit Appraisal**.
Comhairle Nan Eilean Siar (CnES) Letter dated 26 August 2022 Scoping Response	A Phase 2 peat survey is likely to be required to ensure infrastructure is sited to avoid deep peat and generally minimize disturbance to peat.	See **Technical Appendix 10.1: PLHRA** and **10.2: PMP**.
	Development should avoid adverse effects on the water environment. It is suggested a 50m buffer should be applied to all watercourses. The EIA must identify any public and/or private drinking water supplies near the Site and demonstrate how these will be protected, any potential effects of contamination or pollution minimised and mitigated against. The EIA Report should demonstrate no significant effects both during construction and after completion on the water quality in groundwater, adjacent watercourses or areas downstream; existing groundwater abstractions within 250m; and water quality and natural flow patterns and sediment transport processes in all water bodies.	See Baseline Conditions and Embedded Measures Sections of this Chapter, and **Technical Appendix 10.5: PWSRA**.
	The consultants should be aware of fish farming activities in Loch Shell.	Noted and See **Chapter 8: Ecology.**
	We suggest that the impact assessment includes a GWDTE risk assessment. Buffers of 100m and 250m around areas of GWDTE are proposed by SEPA for excavations up to 1m and greater than 1m respectively.	See **Technical Appendix 10.6: GWDTE Assessment**.
	We recommend that the impact assessment includes a private water supply risk assessment as an appendix which will identify private water supplies or other abstractions within 250m of the turbine locations, or 100m of temporary access tracks, this report must demonstrate how abstractions will be protected in accordance with SEPA guidance (LUPS-GU31).	See **Technical Appendix: 10.5: PWSRA**.

Consultee	Summary of Response	Where Addressed in Chapter
NatureScot Letter dated 12 September 2022 Scoping Response	NatureScot considers that the work proposed in the scoping report is appropriate and fit for purpose.	Noted.
Energy Consents Unit Letter dated 05 October 2022 Scoping Response	A full assessment on the impact on peat should be included in the EIA report. 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 point of infrastructure as proposed by the scheme but also covering the areas of ground which would be subject to micrositing limits. The Scottish Ministers consider that where there is a demonstrable requirement for peat landslide hazard and risk assessment (PLHRA), the assessment should be undertaken as part of the EIA process. This will provide the Scottish Ministers with a clear understanding of whether the risks are acceptable and capable of being controlled by mitigation measures. The Scottish Ministers request that the Company investigate the presence of any private water supplies that may be impacted by the proposed Development. 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 that would be provided.	See **Technical Appendix 10.1: PLHRA** and **10.2: PMP**. See **Technical Appendix 10.1: PLHRA**. See **Technical Appendix 10.5: PWSRA**.
SEPA Emails dated 30 March 2023 and 02 May 2023 Further Consultation (see **Technical Appendix: 10.7**)	In response to further consultation emails dated 13 March 2023 and 12 April 2023 from SLR providing details of the emerging site design, the results and findings of additional site surveys regarding peat depth, location of the potential GWDTE and buffer to watercourses. Feedback and comment provided by SEPA has been incorporated where possible into the design of the proposed development and where this has not been possible details are given in this Chapter along with required mitigation to safeguard carbon rich soils and peat, and the water environment.	See Baseline Conditions and Embedded Measures Sections of this Chapter. See **Technical Appendix 10.7: Consultation**

Effects Assessed in Full

10.12 The following potential impacts have been assessed in full in relation to the proposed development:

- pollution risk, including potential impact on surface water and groundwater quality and public and private water supplies during construction and operation;
- erosion and sedimentation which could give rise to potential impact on surface water and groundwater quality, and private water supplies during construction and operation;
- fluvial flood risk resulting from changes to runoff volumes and rates and modifications to natural and man-made drainage patterns during operation;
- potential impact upon the linkage between groundwater and surface water during construction and operation;
- potential impact on areas of peat during construction and operation;
- potential impact on areas of GWDTE during construction and operation; and
- potential cumulative impact during construction and operation.

Effects Scoped Out

10.13 On the basis of the desk based and survey work undertaken, policy, guidance and standards, the professional judgement of the Environmental Impact Assessment (EIA) team, feedback from consultees and experience from other relevant projects, the following topic areas have been scoped out of the assessment.

- detailed flood risk and drainage impact assessment. Published mapping confirms that most of the Site is not located in an area identified as being at flood risk. A simple screening of potential flooding sources (fluvial, coastal, groundwater, infrastructure etc.) is presented in the EIA Report and measures that would be used to control the rate and quality of runoff will be specified in Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP);
- water quality monitoring: As the assessment is informed by classification data available from SEPA and there are no known sources of potential water pollution, no additional water quality monitoring is considered necessary to complete the assessment. Note water quality monitoring is proposed prior to, during and post construction if the proposed development were to be granted consent. Details of monitoring suites, locations, frequencies and reporting would be specified in the CEMP;
- potential effects on geology: With the exception of peat, there are no protected geological features within the application boundary. Furthermore, the nature of the activities during construction, operation and decommissioning of the proposed development would not alter regional superficial or solid geology. Potential effects on peat and carbon rich soils are not scoped out of the assessment and are considered in full; and
- potential significant decommissioning effects would be no greater than potential construction effects. Decommissioning the wind farm and its associated infrastructure would be subject to a decommissioning plan which would include the same safeguards as those

identified during the construction stage of the project. Potential decommissioning effects are therefore scoped out of this assessment.

APPROACH AND METHODS

10.14 The following section discusses the approach and methods taken to determine the potential impacts of the proposed development.

Study Area

10.15 The study area includes all the proposed Site infrastructure located within the Site. In addition, details of local water use and quality within a buffer of 1km from the application boundary has been considered. Beyond this any effect is considered to be so diminished as to be undetectable and therefore not significant.

10.16 The study area for potential cumulative effects uses the catchments within the study area, with a maximum distance of 5km from the nearest proposed turbine.

Information and Data Sources

Webservices and Desk Study

10.17 An initial desk study has been undertaken to determine and confirm the baseline characteristics by reviewing available information on geology, hydrology and hydrogeology. The following sources of information have been consulted in order to characterise baseline conditions:

- previous assessments and planning applications at the Site;
- British Geological Survey (BGS) Onshore Geoindex (available online at **http://mapapps2.bgs.ac.uk/geoindex/home.html**);
- BGS Hydrogeological Maps of Scotland 1:100,000 scale (available online at **https://www.bgs.ac.uk/datasets/hydrogeological-maps-of-scotland/**);
- UK Centre for Ecology and Hydrology, FEH Handbook (available online at **https://fehweb.ceh.ac.uk/**)
- James Hutton Institute Soil Mapping (available online at **https://www.hutton.ac.uk/learning/natural-resource-datasets/soilshutton/soils-maps-scotland**)
- NatureScot Site Link (available online at **https://sitelink.nature.scot/home**)
- SEPA flood maps (available online at https://map.sepa.org.uk/floodmaps and **http://map.sepa.org.uk/reservoirsfloodmap/Map.htm**);
- SEPA environmental data (available online at **https://www.sepa.org.uk/environment/environmental-data/**);

- Data requests with SEPA regarding details of registered/licensed abstractions and discharges (December 2022); and
- Data requests with CnES regarding details of historic flooding records and private water abstractions (September 2022).

Field Surveys

10.18 The project hydrologists, hydrogeologists, geologists, and ecologists have worked closely on this assessment to ensure that appropriate information is gathered to allow a comprehensive impact assessment to be completed.

10.19 Detailed Site visits and walkover surveys have been undertaken by the authors of this assessment on the following dates:

- August 2022 to conduct initial peat and soil depth probing exercise;
- November 2022 to conduct additional peat and soil depth probing exercise, assess borrow pit locations, complete a watercourse crossing survey and a private water supply survey; and
- January 2023 to conduct additional peat and soil depth probing exercise and complete topographic survey to inform watercourse crossing of the Abhainn Cheothadail.

10.20 The field work has been undertaken in order to:

- verify the information collected during the desk and baseline study, and that reported in previous assessments completed at Site;
- allow appreciation of the site, determine gradients, assess access routes, ground conditions, etc., and to assess the relative location of all the components of the proposed development;
- assess peat extent and depth, peat slide landslide risk and Site geomorphology;
- undertake a visual assessment of the main surface waters and identify and verify the location of private water supplies;
- identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- assess areas of potential GWDTE; and
- visit and prepare a schedule of potential watercourse crossings.

10.21 The desk study and field surveys have also been used to identify potential development constraints and have been used as part of the iterative design process.

10.22 The data obtained as part of the desk study and collected as part of the field work has been processed and interpreted to complete the impact assessment and recommend mitigation measures where appropriate.

Assessment Methods

10.23 The significance of potential effects of the proposed development has been assessed by considering two factors: the sensitivity of the receiving environment and the potential magnitude of change, should that effect occur.

10.24 The assessment methodology has also been informed by experience of carrying out such assessments for a range of wind farm and other developments, knowledge of the geology and water environment characteristics in Scotland and cognisance of good practice.

10.25 This approach provides a mechanism for identifying the areas where mitigation measures are required and for identifying mitigation measures appropriate to the significance of potential effects presented by the proposed development.

10.26 Criteria for determining the significance of effect are provided in **Table 10-2**, **Table 10-3** and **Table 10-4**.

Sensitivity of Receptor

10.27 The sensitivity of the receiving environment (i.e. the baseline quality of the receiving environment) is defined as its ability to absorb an effect without a detectable change and can be considered through a combination of professional judgement and a set of pre-defined criteria as set out in **Table 10-2**. Receptors in the receiving environment only need to meet one of the defined criteria to be categorised at the associated level of sensitivity.

Table 10-2: Criteria for Assessing Sensitivity of Receptor

Sensitivity	Definition
High	- Class 1 or 2 priority peatland, carbon-rich and peaty soils cover >20% of the development area; - soils or geology form regionally important economic mineral deposits; - SEPA Water Framework Directive Water Body Classification: High-Good or is close to the boundary of a classification Moderate to Good or Good to High; - receptor is of high ecological importance or national or international value (e.g. Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC), habitat for protected species) which may be dependent upon the hydrology of the Site; - receptor is at high risk from flooding above 0.5% Annual Exceedance Probability (AEP) and/or water body acts as an active floodplain or flood defence; - receptor is used for public and/or private water supply (including Drinking Water Protected Areas (DWPA); - groundwater vulnerability is classified as high; and - if a GWDTE is present and identified as being of high sensitivity.
Moderate	- Class 1 or 2 priority peatland, carbon-rich and peaty soils cover <20% of the development area; - soils or geology form locally important economic mineral deposits; - SEPA Water Framework Directive Water Body Classification Moderate or is close to the boundary of a classification Low to Moderate;

	- receptor is at moderate risk from flooding (0.1% AEP to 0.5% AEP) but does not act as an active floodplain or flood defence; and - moderate classification of groundwater aquifer vulnerability.
Low	- Class 3 to 5 peatland; - soil type and geology type and associated land use not sensitive to change; - SEPA Water Framework Directive Water Body Classification Poor or Bad; - receptor is at low risk from flooding (less than 0.1% AEP); and - receptor not used for water supplies (public or private).
Not Sensitive	- receptor would not be affected by the proposed development, e.g. lies within a different and unconnected hydrological/hydrogeological catchments, has no rarity value or would not be impaired by the proposed development.

Magnitude of Impact

10.28 The potential magnitude of an impact would depend upon whether the potential effect would cause a fundamental, material or detectable change. In addition the timing, scale, size and duration of the potential effect resulting from the proposed development are also determining factors. The criteria that have been used to assess the magnitude of impact are defined in **Table 10-3**.

Table 10-3: Criteria for Assessing Magnitude of Impact

Magnitude	Criteria	Definition
Major	Results in loss of attribute	Fundamental (long term or permanent) changes to the baseline geology, hydrology, hydrogeology and geology such as: - permanent degradation and total loss of soils habitat (inc. peat) and geology; - loss of important geological structure/features; - wholesale changes to watercourse channel, route, hydrology or hydrodynamics; - changes to the site resulting in an increase in runoff with flood potential and also significant changes to erosion and sedimentation patterns; - major changes to the water chemistry; and - major changes to groundwater levels, flow regime and risk of groundwater flooding
Medium	Results in impact on integrity of attribute or loss of part of attribute	Material but non-fundamental and short to medium term changes to baseline geology, hydrology, hydrogeology and water quality, such as: - loss of extensive areas of soils and peat habitat, damage to important geological structures/features; - some fundamental changes to watercourses, hydrology or hydrodynamics;

Magnitude	Criteria	Definition
		- changes to site resulting in an increase in runoff within system capacity; - moderate changes to erosion and sedimentation patterns; - moderate changes to the water chemistry of surface runoff and groundwater; and - moderate changes to groundwater levels, flow regime and risk of groundwater flooding.
Low	Results in minor impact on attribute	Detectable but non-material and transitory changes to the baseline geology, hydrology, hydrogeology and water quality, such as: - minor or slight loss of soils and peat or slight damage to geological structures/feature; - minor or slight changes to the watercourse, hydrology or hydrodynamics; - changes to Site resulting in slight increase in runoff well within the drainage system capacity; - minor changes to erosion and sedimentation patterns; - minor changes to the water chemistry of surface runoff and groundwater; and - minor changes to groundwater levels, flow regime and risk of groundwater flooding.
Negligible	Results in an impact on attribute but of insufficient magnitude to affect the use/integrity	No perceptible changes to the baseline geology, hydrology, hydrogeology and water quality such as: - no impact or alteration to existing important soils (inc. peat) geological environs; - no alteration or very minor changes with no impact to watercourses, hydrology, hydrodynamics, erosion and sedimentation patterns; - no pollution or change in water chemistry to either groundwater or surface water; and - no alteration to groundwater recharge or flow mechanisms.

Significance of Effects

10.29 The sensitivity of the receptor together with the magnitude of impact determines the significance of the effect, which can be categorised into a level of significance as identified in **Table 10-4**. This also takes into account good practice measures implemented and embedded as part of the design and construction of the proposed development and use of professional judgement where appropriate. Good practice measures (i.e. embedded mitigation) are discussed later in the Chapter.

10.30 The significance of a potential effect provides a guide to assist in decision making. However, it should not be considered as a substitute for professional judgment and interpretation. In some cases, the potential sensitivity of the receiving environment or the magnitude of potential impact cannot be quantified with certainty and therefore professional judgement remains the most robust method for identifying the predicted significance of a potential effect.

10.31 The characteristics of the impacts are described as: direct/indirect, temporary(reversible) or permanent (irreversible), together with timescales (short, medium and long term).

Table 10-4: Significance of Effect

Magnitude of Impact	Sensitivity of Receptor			
	High	Moderate	Low	Not Sensitive
Major	**Major**	**Major**	**Moderate**	Negligible
Medium	**Moderate**	**Moderate**	Minor	Negligible
Low	**Moderate**	Minor	Minor	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Cumulative Effects

10.32 The assessment also considers potential cumulative effects associated with other material developments within 5km of the nearest proposed turbine and in the same surface water catchments as the proposed development. A cumulative effect is considered to be the effect on a hydrological, hydrogeological or geological receptor arising from the Site in combination with other developments which are likely to affect soils or geology, surface water and groundwater.

10.33 With reference to **Chapter 5: Environmental Impact Assessment**, there are no other material developments both within 5km of the proposed turbines and within the same surface water catchments as the proposed development. Cumulative effects, are therefore, not considered further in this assessment.

Mitigation

10.34 Any potential effects of the proposed development on geology or the water environment identified by the assessment have been addressed and mitigated by the design and the application of good practice guidance to be implemented as standard during construction and operation to prevent, reduce or offset effects where possible. As such a number of measures would form an integral part of the construction process and these have been taken into account prior to assessing the likely effects of the proposed development (embedded mitigation). Where appropriate, and furthermore tailored mitigation measures have been identified prior to determining the likely significance of residual effects.

10.35 Good practice measures would be applied in relation to pollution risk, sediment management, peat management and management of surface runoff rates and volumes. This would form part of the CEMP to be implemented for the proposed development which would be secured by a planning condition and would be prepared prior to construction commencing. An outline CEMP is provided in **Technical Appendix 3.1**.

10.36 The final CEMP would include details and responsibilities for environmental management onsite for environmental aspects and would outline the necessary surface water management, oil and chemical delivery and storage requirements, waste management, traffic and transport management and would specify monitoring requirements for wastewater, water supply and all appropriate method statements and risk assessments for the construction of the proposed development.

Residual Effects

10.37 A statement of residual effects, following consideration of any further specific mitigation measures where identified, is then given.

Statement of Significance

10.38 The assessment provides a Statement of Significance associated with the proposed development. Effects of major or moderate significance, as outlined in **Table 10-4** are considered to be significant in terms of the EIA Regulations.

Assumptions, Limitations and Confidence

10.39 The assessment uses site investigation, survey data and publicly available data sources, including but not limited to SEPA, NatureScot, Met Office, CnES and commercial data supply companies, as well as additional information supplied from stakeholders during the scoping and consultation stages.

10.40 It is considered that the data and information used to complete this assessment is robust and that there are no significant data gaps or limitations.

BASELINE CONDITIONS

Current Baseline

Site Setting, Climate and Topography

10.41 The Site is located on the south east coast of the Isle of Lewis within the Park (Pairc) peninsula, approximately 20km south west of Stornoway and approximately 17.9km north east of Tarbert. The proposed access route is expected to be from the A859, travelling south east along the public road towards Eishken lodge.

10.42 Ground elevations generally range from approximately 10m Above Ordnance Datum (AOD) along the banks of Loch Eisgein and sea loch Loch Shell (also known as Loch Sealg) to 270m AOD near the summit of Beinn Mheadhanach, in the north western extent of the Site. Generally, elevations decrease towards Loch Eisgein within the centre of the Site or southwards towards Loch Shell.

10.43 The standard average annual rainfall (SAAR) for the largest surface water catchment that drains the Site, based on data obtained from the FEH webservice, confirms a high annual rainfall of 2,201 mm per annum for the Abhainn Cheothadail surface water catchment.

10.44 SEPA provided precipitation data for the two nearest rain gauges (Laxdale located at NGR NG 09930 97115 and Creed Bridge located at NB 40189 32522). In 2022 precipitation totals of 2,199mm and 1,605mm were recorded at Laxdale and Creed Bridge respectively, similar to the SAAR data provided by FEH.

10.45 An extract of OS mapping for the Site, which shows its setting, is presented on **Figure 10.1**.

Water Dependent Statutory Designated Sites

10.46 A review of NatureScot SiteLink webpage confirms that there are no statutory designated sites located within the proposed development boundary.

10.47 The Lewis Peatlands Special Protected Area (SPA) and RAMSAR site is located approximately 954m north of the proposed access point off the A859. The SPA and RAMSAR site has been designated for a breeding bird assemblage and several upland habitats including upland bog, depressions on peat substrates and subalpine wet heath. Approximately 1km of the proposed access track is located within the same surface water catchment as the designated site, however, the designated site is located upstream of the proposed access track and therefore not considered further as there is no hydraulic connection between the site and SAC / RAMSAR.

10.48 No other designated sites are noted within 1km of the proposed development.

Soils and Geology

10.49 A detailed review of the soils, superficial and solid geology at the Site is given in **Technical Appendix 10.1: PLHRA** and **Technical Appendix 10.2: PMP**. Summary details are given below.

Soils

10.50 An extract of the National soil map of Scotland (1:250,000 scale) is presented on **Figure 10.2**. The principal soil types underlying the Site are shown as peaty gleys and peaty podzols.

Superficial Deposits (inc. Peat)

10.51 The BGS indicate that generally superficial deposits have not been mapped at the Site, with the exception of a small area of peat and till recorded toward the western and south western extent of the application boundary respectively, as shown on **Figure 10.4**.

10.52 Priority peatland mapping (see **Figure 10.3**) published by Scottish Natural Heritage (now NatureScot) indicates that the majority of the application boundary lies within Class 1 and Class 2 peatland. Class 1 and 2 peatlands are considered nationally important carbon-rich soils, deep peat and priority peatland habitat and are areas considered to be of high conservation value. Small discrete areas of Class 5 peatland are noted within the centre of the Site - these areas are not considered to be peatland habitats, however, the soils remain carbon rich and may contain areas of bare soil and deep peat.

10.53 As part of this assessment a comprehensive peat probing exercise has been completed; the results of which are presented in full in **Technical Appendix 10.1: PLHRA.** Review of the probing investigation confirms:

- the depth of soil / peat was recorded at 18,241 locations;
- approximately 58% of all probes recorded no peat or peaty soils (probe locations with <0.5m depth of peat/soil);
- approximately 10% of peat probes confirmed peat in excess of 1.5m thick;
- the average depth of peat recorded at the proposed turbines and associated hardstanding is 0.5m; and
- where recorded, peat is generally limited to flat expanses that mimic topographic flat lying areas however localised areas of deep peat were also recorded across the Site, defined by lower topographic gradients and undulating bedrock.

10.54 The potential effects on peat are discussed in full in **Technical Appendix 10.1: PLHRA** and **Technical Appendix 10.2: PMP**. As part of the iterative development design, and as discussed with SEPA during this process it is shown that areas of deep peat, and areas that could be prone to peat landslide risk, have been avoided where possible.

Bedrock and Solid Geological Features

10.55 An extract of the regional BGS bedrock geological mapping is presented on **Figure 10.5.**

10.56 The application boundary is shown by BGS mapping to be underlain by units of the Outer Hebrides Thrust Zone Mylonites Complex, comprising of protocataclasite, cataclasite and mylonite. Part of the access track and a small area within the northern extent of the Site, near turbines T5 and T8, is shown to be underlain by the Lewisian Complex (amphibolite and gneiss). Several inferred faults are noted across the Site.

Hydrogeology

Aquifer Characteristics and Groundwater Vulnerability

10.57 Extracts of the BGS groundwater vulnerability and regional hydrogeological mapping (see **Figure 10.6** and **Figure 10.7**) confirm that the superficial deposits, where present, and the bedrock beneath the site are unlikely to contain significant amounts of groundwater. BGS classify the bedrock as a low productivity aquifer, whereby small amounts of groundwater may be present within the near surface weathered zone or secondary fractures.

10.58 A description and hydrogeological classification of the geological units at the Site are presented in **Table 10-5**.

Table 10-5: Hydrogeological Classification of Geological Units

Period	Geological Unit	Hydrogeological Characterisation	Hydrogeological Classification
Pleistocene to Recent	Peat	Where not degraded or eroded, characteristically wet underfoot and dominated by Sphagnum. Typically peat consists of two layers: the upper very thin (up to 30cm) acrotelm layer contains upright stems of Sphagnum mosses and allows relatively free water movement and the lower catotelm layer comprising the thicker bulk of peat where individual plant stems have collapsed. Water movement in the catotelm layer is very slow and normally the water table in a peat never drops below the acrotelm layer	Not a significant aquifer
	Glacial Till	Sand and gravel horizons within this unit are capable of storing groundwater, although their lateral and vertical extent realises a variable and often small groundwater yield. Clay within this unit acts as an aquitard to the more permeable sand and gravel lenses and will hinder/prevent large scale groundwater movement. Regionally, groundwater flow will be limited by the variability of these deposits and consequently any groundwater yields are normally low.	Not a significant aquifer
Proterozoic	Outer Hebrides Thrust Complex and Lewisian Complex	Generally without groundwater except at shallow depths. Hard rocks with limited groundwater in near surface weathered zone and secondary fractures or rare springs.	Fracture Flow Very Low Productivity

10.59 Groundwater vulnerability is divided into five classes (1 to 5) with 1 being vulnerable and 5 being the most vulnerable. Review of **Figure 10.6** shows that the potential groundwater vulnerability in the uppermost aquifer, and with respect to the proposed development, shows that majority of the has been ascribed a vulnerability of Class 5. Slightly lower vulnerabilities (4a and 4b) are noted within the western and south western extent of the Site where superficial deposits are recorded on BGS maps. The high vulnerability is likely to reflect the limited cover of superficial deposits and the potential presence of shallow groundwater in the upper weathered surface of the bedrock.

Groundwater Levels and Quality

10.60 Groundwater recharge at and surrounding the Site is limited by the following factors:

- steeper topographic gradients will result in rainfall forming surface water runoff;
- the peat and glacial till deposits inhibit infiltration owing to their generally low bulk permeability; and
- the underlying bedrock displays a low permeability that inhibits groundwater recharge.

10.61 The high density of surface watercourses and surface water features shown on OS mapping (see **Figure 10.1**) confirms the low permeability of the geology and propensity of rainfall to form surface water runoff.

10.62 SEPA does not maintain groundwater level monitoring locations within the study area.

10.63 All of Scotland's groundwater bodies have been designated as Drinking Water Protected Areas under the Water Environment (Drinking Water Protected Area) (Scotland) Order 2013 and require protection for their current use or future potential as drinking water resources.

10.64 The current status of groundwater bodies in Scotland has been classified by SEPA in accordance with the requirements of the Water Framework Directive (WFD). SEPA have identified that the study area is underlain by the Lewis and Harris groundwater body (SEPA ID: 150695), which was classified in 2020 (the last reporting cycle) with an Overall Status of Good and no pressures are identified.

Groundwater Dependent Terrestrial Ecosystems (GWDTE)

10.65 In accordance with SEPA guidance and their scoping responses an assessment of GWDTE has been undertaken and is presented as **Technical Appendix 10.6: GWDTE Assessment**. A summary of the habitat surveys completed is presented in **Chapter 8: Ecology**, along with a detailed National Vegetation Classification (NVC) habitat plan which has been used to inform the assessment of GWDTE. **Figure 10.8** shows the distribution of potential GWDTE.

10.66 **Technical Appendix 10.6: GWDTE Assessment**, concludes that areas of potential GWDTE are sustained by rainfall and water logging of soils, rather than by groundwater. Buffers to areas of potential GWDTE specified in SEPA guidance therefore do not apply, but safeguards to maintain these habitats, and the sources of water to these habitats will need to be maintained during construction and operation of the proposed development. Examples of appropriate safeguards and techniques are given in **Technical Appendix 10.6: GWDTE Assessment**.

Hydrology

Local Hydrology

10.67 The study area is characterised by a dense network of surface water features including numerous watercourses and lochs.

10.68 The majority of the proposed development is located within the surface water catchment of Loch Shell in particular the Abhainn Cheothadail watercourse sub catchment. The Abhainn Cheothadail flows generally eastwards through the centre of the site before discharging into Loch Shell near Eisgean (Eishken) in the south east. The Abhainn Glenn Airighan Domhnall, another sub catchment of Loch Shell, is located in the south western corner of the study area and flows eastward before also discharging into Loch Shell to the south.

10.69 The north eastern extent of the proposed turbine area is located within the surface water catchment of the Abhainn Ghlas which is part of the larger Seaforth River catchment. The Abhainn Glas flows generally northwards before discharging into the Abhainn Ghleann Quirn. The Seaforth River flows westwards within the centre of the proposed turbine area before discharging into Loch Seaford.

10.70 The central section of the proposed access route also drains to the Loch Seaford whilst the northern extent of the access route is located within the catchment of the Abhainn Mhor, which drains to the Loch Erisort.

Surface Water Quality

10.71 SEPA classifies larger watercourses as part of its responsibility under the WFD. The quality of these watercourses is presented in **Table 10-6**. It is shown that the watercourses and loach have an overall classification of either Good or High.

Table 10-6: Surface Water Quality

Watercourse (SEPA ID)	Overall Status	Overall Ecology	Physio-Chemical Status	Hydromorphology
Abhainn Cheothadail (20761)	High	High	Unavailable	High
Abhainn Gleann Airigh an Domhnall (20762)	Good	Good	Good	Good
Loch Shell (200173)	High	High	N/A	High
Abhainn Ghleann Quirn (20765)	Good	Good	Good	High
Seaforth River (20764)	Good	Good	Good	High
Loch Seaforth (200177)	High	High	N/A	High
Abhainn Mhor (20759)	Good	Good	Good	High

Loch Eirsort (200184)	High	High	High	High

Fisheries

10.72 Fisheries within the area are managed by the Outer Hebrides Fisheries Trust (OHFT) in partnership with the Western Isles District Salmon Fisheries Board (WIDSFB). Fishery interests, including any fish farming activities within Loch Shell to the south, are discussed in more detail and assessed within **Chapter 8: Ecology**.

Watercourse Crossings

10.73 The proposed development has sought to utilise existing tracks and access routes where possible. However, 21 new permanent watercourse crossings, 33 existing crossings on tracks which are scheduled to be upgraded, will be required. This includes a new temporary bridge over the Seaforth River adjacent to the existing crossing (WX11) which would be used to facilitate delivery of the wind farm components, and a new permanent bridge over Abhainn Cheothadail (WX48).

10.74 The locations of the proposed crossings are shown on **Figure 10.1** and schedule of these crossing points, which includes photographs and dimensions of each crossing is shown in **Technical Appendix 10.4: Schedule of Watercourse Crossings**. This Technical Appendix includes an outline bridge design, informed by hydraulic modelling, of the crossing over the Abhainn Cheothadail, as requested by SEPA in their scoping response.

10.75 It is noted that 15 proposed crossings (two new and 13 existing to be upgraded) have not been surveyed at the time of reporting. The catchments to these watercourses will be similar to those that have been surveyed and details of the crossings will be confirmed at the detailed design stage, as part of the final CEMP.

Flood Risk

10.76 SEPA has developed national flood maps that present modelled flood extents for river, coastal, surface water and groundwater flooding. The river, coastal, surface water and groundwater maps were developed using a consistent methodology to produce outputs for the whole of Scotland, supplemented with more detailed, local assessments where available and suitable for use. Flood extents are presented in three likelihoods:

- high likelihood: A flood event is likely to occur in the defined area on average more than once in every ten years (1:10). Or a 10% chance of happening in any one year;
- medium likelihood: A flood event is likely to occur in the defined area on average more than once in every two hundred years (1:200). Or a 0.5% chance of happening in any one year; and
- low likelihood: A flood event is likely to occur in the defined area on average more than once in every thousand years (1:1000). Or a 0.1% chance of happening in any one year.

10.77 The flood risk from each of these potential sources is discussed in **Table 10-7** and where relevant reference is made to the national SEPA flood mapping. Current and future flood maps which account for the potential effects of climate change (to 2080) published by SEPA have been reviewed. Consultation with CnES and SEPA has been conducted and is also used to inform this assessment. **Table 10-7** confirms that local flood extents are limited to watercourse corridors and discrete areas of surface water flooding.

Table 10-7: Flood Risk Evaluation

Potential Source	Potential Risk to the Site	Justification
Coastal Flooding	No	Flooding along sea lochs including Loch Shell and Loch Seaford is shown by SEPA mapping, however, this is limited to the loch banks and does not encroach onto the proposed development now or in future. It is therefore considered that the site is not at risk from coastal flooding.
Fluvial Flooding	Yes (minor)	SEPA mapping confirms floodplain extents are limited, never extending far from the main waterbodies or watercourses. With the exception of the proposed watercourse crossings no development is proposed in the published floodplain, now or in the future. The proposed watercourse crossings are assessed further in **Technical Appendix 10.4: Watercourse Crossing Assessment**.
Surface Water Flooding	Yes (minor)	SEPA have identified several areas of surface water flood risk across in the study area. Flood extents are localised, never forming large, linked areas or flow paths. Therefore, surface water is not considered a development constraint.
Groundwater Flooding	No	Review of the SEPA groundwater flood map confirms that the study area is not at risk from groundwater flooding. This concurs with the desk-based assessment.
Flood Defence Breach (Failure)	No	SEPA has produced reservoir inundation maps for sites currently registered under Reservoirs (S) Act 2011. Review of these maps indicates that there is one breach scenario noted within the study area associated with Loch Eishken (RES/R/1127900). Flooding associated with this event is very localised and downstream of any elements of the proposed development. In addition, the likelihood of a breach scenario occurring is considered to be very low and therefore it is not considered further.
Flooding from Artificial Drainage Systems	No	The proposed development is located within a remote area and no flood defences are recorded with in the study area.

Private Water Supplies and Licenced Abstractions

10.78 Consultation with CnES and SEPA has been undertaken to gather details of private and licenced water abstractions within the study area. SEPA CAR authorisations and licences were obtained from SEPA environmental database. One CAR licence is noted located at Loch Eishken (RES/R/1127900) within the study area. Consultation with SEPA confirms that there are no abstractions within the study area.

10.79 A data request was made to CnES who provided details of private water supply (PWS) sources. In addition, a programme of site investigation has been undertaken to confirm the location of PWS sources. Confirmed PWS locations within the study area are shown on **Figure 10.1**.

10.80 The risk the proposed development poses to PWSs has been considered as part of this assessment and is presented in **Technical Appendix 10.5: PWSRA**. It confirms that one PWS source (PWS01 – Sideabhal) is located downstream of an existing track which will be used to access the proposed wind farm. It is also confirmed that the existing access track passes over the distribution pipework of another source (PWS02 – Kinloch Seaforth).

10.81 **Technical Appendix 10.5: PWSRA** confirms the measures that are required to safeguard these PWS and presents a monitoring schedule which can be used to confirm that the PWSs are not impaired.

Receptor Sensitivity

10.82 **Table 10-8** outlines the receptors identified as part of the baseline study and from the field investigation programme, and their sensitivity based upon the criteria contained in **Table 10-2**. These receptors form the basis of the assessment, and as per the methodology, are used in conjunction with an estimate of the magnitude of an impact to determine the significance of any potential effect.

Table 10-8: Receptor Sensitivity

Receptor	Sensitivity	Reasons for Sensitivity
Water Dependent Designated Sites	Not sensitive	No designated sites within the study area and which are in hydraulic continuity with the site. They are not considered further in this assessment.
Soils and Geology	High	Class 1 and Class 2 peatland and carbon rich soils have been recorded with the site. With the exception of peat the superficial and bedrock geology is not rare, does not form a potential mineral reserve, and is not considered sensitive or further in this assessment
Hydrogeology	High	Groundwater beneath the study area has been classified with Good water quality.
Hydrology	High	Surface water catchments which drain the study area have been classified with Good to High water quality.

Flooding	Moderate	Little flood risk has been identified onsite, but the development has potential to alter surface water flow paths and increase flood risk.
Private Water Supplies	High	2 private water supplies have been confirmed within the study area and which could be at risk from the proposed development.
Licensed Abstractions	Not sensitive	No licensed water abstractions are recorded within the proposed study area and therefore they are not considered further in this assessment.
GWDTE	High	Areas of potential GWDTE have been identified by NVC mapping. It has been shown that the habitats are not sustained by groundwater but by surface water.

Operational Period Baseline Changes Considered (Future Baseline)

10.83 Climate change studies predict a decrease in summer precipitation and an increase in winter precipitation alongside higher average temperatures. This suggests that there may be greater pressures on water supplies and lower water levels in summer months in the future. In addition, summer storms are predicted to be of greater intensity. Peak fluvial flows associated with extreme storm events may also increase in volume and velocity, and sea level rise is anticipated. These potential changes are considered in the assessment of effects.

ASSESSMENT OF EFFECTS

10.84 The assessment of effects is based on the proposed development description outlined in **Chapter 3: Description of Development** and is structured as follows:

- details of embedded mitigations included in the development design;
- construction effects of the proposed development;
- operation effects of the proposed development; and
- decommissioning effects of the proposed development.

10.85 The effects have been identified with reference to relevant guidance, through consultation and project team discussions, through targeted research on hydrological and water quality effects and by considering the information provided by the project engineers on infrastructure and construction methods.

Embedded Measures

Design Iterations

10.86 The proposed development has undergone design iterations and evolution in response to the geological, hydrological and hydrogeological constraints identified as part of the baseline studies and field studies so to avoid and/or minimise likely effects on receptors where possible. This has included areas of deep peat or potential peat instability, watercourse locations, areas of potential flooding, PWS and GWDTE.

10.87 The layout of the access track was designed to minimise the requirement of watercourse crossings.

Peat and Peat Management

10.88 The presence of peat within the Site formed a key consideration in the design of the proposed development. Informed by the extensive programme of peat probing undertaken across the Site, the design has tried to avoid areas of deeper peat (typically greater than 1.5m) and where possible limited development to areas of peat less than 1m or where peat is absent.

10.89 The peat depth probing data has been used to accurately determine the volume of peat which will be disturbed by the proposed development. This data has been used to prepare a site specific PMP (see **Technical Appendix 10.2** (**PMP**)) which details the volume of acrotelmic and catotelmic peat which would be disturbed and how this would be safeguarded and reused on site.

10.90 The final wind farm design reflects feedback and consultation with SEPA during the design of the wind farm and where possible, and subject to technical constraints shows that areas of deep peat have been avoided.

10.91 As shown in **Technical Appendix 10.1 (PLHRA) and Technical Appendix 10.2 (PMP)** measures have been proposed to ensure the stability of peat and carbon rich soils and that peat and soils that would be disturbed by the proposed development can be safeguarded and beneficially re-used on Site. The Policy aims of NPF4, regarding soils and peat, are therefore met; further details are provided below.

Peat Management

10.92 A detailed review of the distribution and depth of peat at the Site is contained in **Technical Appendix 10.2 (PMP)**. As the Site design has largely avoided areas of deep peat and where peat would be encountered by the proposed development it can be readily managed and accommodated within the Site layout without significant environmental impact. No surplus peat would be generated and the volumes of peat generated from the proposed excavations would be used to reinstate track verges, turbine bases, cane hardstandings and restoration of onsite borrow pits.

Peat Landslide Hazard

10.93 A Design and Geotechnical Risk Register would be compiled to include risks relating to peat instability, as this would be beneficial to both the developer and the Contractor in identifying potential risks that may be involved during construction.

10.94 Good construction practice and methodologies to prevent peat instability within areas that contain peat deposits are identified in **Technical Appendix 10.1 (PLHRA)**. These include:

- measures to ensure a well-maintained drainage system, to include the identification and demarcation of zones of sensitive drainage or hydrology in areas of construction;

- minimisation of ‘undercutting’ of peat slopes, but where this is necessary, a more detailed assessment of the area of concern would be required;

- careful micrositing of turbine bases, crane hardstandings and access track alignments to minimise effects on the prevailing surface and sub-surface hydrology;

- raising peat stability awareness for construction staff by incorporating the issue into the site induction (e.g. peat instability indicators and good practice);

- introducing a ‘Peat Hazard Emergency Plan’ to provide instructions for site staff in the event of a peat slide or discovery of peat instability indicators;

- developing methodologies to ensure that degradation and erosion of exposed peat deposits does not occur as the break-up of the peat top mat has significant implications for the morphology, and thus hydrology, of the peat (e.g. minimisation of off-track plant movements within areas of peat);

- developing robust drainage systems that would require minimal maintenance; and

- developing drainage systems that would not create areas of concentrated flow or cause over/under-saturation of peat habitats.

10.95 Notwithstanding any of the above good construction practices and methodologies, detailed design and construction practices would need to consider the particular ground conditions and the specific works at each location throughout the construction period. An experienced and qualified engineering geologist/geotechnical engineer would be appointed as a supervisor, to provide advice during the setting out, micrositing and construction phases of the proposed development.

Buffer to watercourses

10.96 In accordance with wind farm construction best practice guidelines and SEPA consultation advice, a 50m buffer has been applied to watercourses (shown on OS 1:25,000 mapping).

10.97 The majority of the proposed development including all turbines and the majority of tracks and crane pads are located outside of this buffer (see **Figure 10.1)**, with the exceptions:

- a small part of the proposed clearance area, temporary hardstanding and permanent hardstanding at turbines T1, T2, T10 and T24 (where the buffers are approximately 25m, 10m, 29m and 35m respectively).

10.98 As a consequence of the high density of water features, which reflects the impermeable Site geology, it has not been possible to develop the design without encroaching on the 50m buffer at these locations. However, the design has strived to minimise the number of locations where infrastructure does encroach within the buffer. The parts of the crane pad which are permanent and the parts which are temporary (only required during construction of the wind farm) are shown on **Figure 10.1**, and the crane pad areas which are permanent within the buffer has been minimised as much as possible.

10.99 It is recognised, during construction, use and restoration of works within the watercourse buffer there is a need for increased monitoring and management of the works. Specific drainage management plans, methods statements, monitoring, and pollution incident response plans relevant to the works at these locations are required and need to be agreed with statutory consultees, including SEPA.

10.100 Examples of the additional safeguards that would be deployed at these locations and included in the management plans, subject to agreement with consultees, include, but are not limited to the following:

- location specific drainage, pollution prevention and incident response plans;
- increased induction and training for staff highlighting sensitivities;
- a wet weather working protocol and provision to cease works during prolonged rainfall or periods of high runoff (pluvial or fluvial);
- reduction in extent of working area to minimise the potential to disturb ground;
- additional passive water quality control measures, such as temporary water diversion ditches, silt fences and silt traps to control and treat runoff from working areas;
- daily inspection of works and watercourses and full-time supervision of construction, restoration and dismantling works;
- deployment of real-time water quality monitoring telemetry with predetermined water quality trigger levels based on baseline water quality data (e.g. for pH, dissolved oxygen and electrical conductivity); and
- documentation that clearly identifies responsibilities and actions and contact details should a pollution event be recorded.

10.101 The above is considered in the impact assessment that follows.

Groundwater Dependent Habitats

10.102 SEPA's wind farm planning guidance states a NVC survey should be undertaken to identify wetland areas that might be dependent on groundwater. If potential GWDTE are identified within (a) 100m of roads, tracks and trenches, or (b) within 250m of borrow pits and foundations, then it is necessary to assess how the potential GWDTE may be affected by the proposed development.

10.103 It has been shown that areas identified as being potentially highly or moderately groundwater dependent are likely to be sustained by incident rainfall and local surface water runoff rather than by groundwater. Accordingly, the buffers proposed in SEPAs GWDTE guidance need not apply.

10.104 Measures, such as permeable access tracks and regular cross track drains, have been proposed to safeguard existing water flow paths and maintain existing water quality. It is considered therefore that the water dependent habitats identified by the NVC mapping can be sustained. This would be confirmed, in accordance with good practice, by the Ecological Clerk of Works (ECoW) at the time of the construction who would ensure existing surface water flow paths and water flushes are maintained.

Good Practice Measures

10.105 Good practice measures would be applied in relation to pollution risk, and management of surface runoff rates and volumes. This would form part of the final CEMP.

10.106 Key good practice measures are stated below, and the assessment incorporates these measures as part of the proposed development.

Construction Site Licence

10.107 In accordance with Controlled Activity Regulations (CAR) prior to any construction at Site a Construction Site Licence application would be made to SEPA. The Licence, which is regulated by SEPA, is used to ensure that runoff from a construction site does not cause pollution of the water environment. The Construction Site Licence requires the development of a Pollution Prevention Plan, which once agreed with SEPA is adhered to on Site. The principles which would be adopted in the Plan are discussed in the good practice measures below.

General Measures

10.108 As a principle, preventing the release of any pollution/sediment is preferable to dealing with the consequences of any release. There are several general measures which cover all effects assessed within this Chapter, details of which are given below.

10.109 Prior to construction, a site-specific drainage plan would be produced. This would take into account any existing local drainage which may not be mapped and incorporate any site-specific mitigation measures identified during the assessment.

10.110 Measures would be included in the final CEMP for dealing with pollution/sedimentation/flood risk incidents and would be developed prior to construction. This would be adhered to should any incident occur, reducing the effect as far as practicable.

10.111 The final CEMP would contain details on the location of spill kits, would identify ‘hotspots’ where pollution may be more likely to originate from, provide details to site personnel on how to identify the source of any spill and state procedures to be adopted in the case of a spill event. A specialist spill response contractor would be identified to deal with any major environment incidents.

10.112 A wet weather protocol would be developed. This would detail the procedures to be adopted by all staff during periods of heavy rainfall. Tool box talks would be given to engineering/construction/supervising personnel.

10.113 Roles would be assigned to different engineering/construction/supervising personnel and the inspection and maintenance regimes of sediment and runoff control measures would be adopted during these periods. In extreme cases, the above protocol would dictate that work onsite may have to be temporarily suspended until weather/ground conditions allow.

Water Quality Monitoring

10.114 Water quality monitoring during the construction phase would be undertaken for the surface water catchments that drain from the proposed development to ensure that none of the tributaries of the main channels are carrying pollutants or suspended solids. Monitoring would be carried out at a specified frequency (depending upon the construction phase) on these catchments.

10.115 The private water supply risk assessment (**Technical Appendix 10.5: PWSRA**) also identifies locations that should be included in a site-specific monitoring plan.

10.116 Monitoring would continue throughout the construction phase and immediately post construction. Monitoring would be used to allow a rapid response to any pollution incident as well as assess the efficacy of good practice or remedial measures. Monitoring frequency would increase during the construction phase if remedial measures to improve water quality were implemented. Detailed water quality monitoring plans would be developed during detailed design. CnES, SEPA, Marine Scotland, OHFT and WIDSFB would be consulted on the plans and would be contained within the final CEMP.

10.117 The performance of the good practice measures would be kept under constant review by the water monitoring schedule, based on a comparison of data taken during construction with a baseline data set, sampled prior to the construction period.

Pollution Risk

10.118 Good practice measures in relation to pollution prevention would include the following:

- refuelling would take place at least 50m from watercourses and where possible it would not occur when there is risk that oil from a spill could directly enter the water environment;
- foul water generated onsite would be managed in accordance with best practice and be drained to a sealed tank and routinely removed from site;
- drip trays would be placed under vehicles which could potentially leak fuel/oils when parked;
- areas would be designated for washout of vehicles which are a minimum distance of 50m from a watercourse;
- washout water would also be stored in the washout area before being treated and disposed of;
- if any water is contaminated with silt or chemicals, run-off would not enter a watercourse directly or indirectly without treatment;
- water would be prevented as far as possible, from entering excavations;
- procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the CAR to minimise the potential for accidental spillage; and

- a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the effect as far as practicable. This would be included in the final CEMP.

Erosion and Sedimentation

10.119 Good practice measures for the management of erosion and sedimentation would include the following:

- all stockpiled materials would be located out with a 50m buffer from watercourses, including on up gradient sides of tracks and battered to limit instability and erosion;
- stockpiled material would either be seeded or appropriately covered, minimising the area of exposed bare ground;
- monitoring of stockpiles/excavation areas during rainfall events;
- water would be prevented as far as possible, from entering excavations through the use of appropriate cut-off drainage;
- where this is not possible, water that enters excavations would pass through a number of settlement lagoons and silt/sediment traps to remove silt prior to discharge into the surrounding drainage system. Detailed assessment of ground conditions would be required to identify locations where settlement lagoons would be feasible;
- clean and dirty water onsite would be separated, and dirty water would be filtered before entering the stream network;
- if the material is stockpiled on a slope, silt fences would be located at the toe of the slope to reduce sediment transport;
- the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum and appropriate drainage would be in place to prevent surface water entering deep excavations;
- a design of drainage systems and associated measures to minimise sedimentation into natural watercourses would be developed – this may include silt traps, check dams and/or diffuse drainage;
- silt/sediment traps, single size aggregate, geotextiles or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and
- construction personnel and the Principal Contractor would carry out regular visual inspections of watercourses to check for suspended solids.

Fluvial Flood Risk

10.120 Sustainable Drainage Systems (SuDS) shall be incorporated as part of the proposed development. SuDS techniques aim to mimic pre-development runoff conditions and balance or throttle flows to the rate of runoff that might have been experienced at the Site prior to development. Good practice in relation to the management of surface water runoff rates and volumes and potential for localised fluvial flood risk would include the following:

- drainage systems would be designed to ensure that any sediment, pollutants or foreign materials which may cause blockages are removed before water is discharged into a watercourse;
- onsite drainage would be subject to routine checks to ensure that there is no build-up of sediment or foreign materials which may reduce the efficiency of the original drainage design causing localised flooding;
- appropriate drainage would attenuate runoff rates and reduce runoff volumes to ensure minimal effect upon flood risk;
- where necessary, check dams would be used within cable trenches in order to prevent trenches developing into preferential flow pathways and trenches shall be backfilled with retained excavated material; and
- as per good practice for pollution and sediment management, prior to construction, section specific drainage plans would be developed and construction personnel made familiar with the implementation of these.

10.121 Further information on ground conditions and drainage designs would be provided in the final CEMP.

Water Abstractions

10.122 Any water abstraction would only be made with authorisation from SEPA and in accordance with the CAR. Should a suitable source not be identified, a water bowser would be used. Good practice that would be followed in addition to the CAR Licence regulations includes:

- water use would be planned so as to minimise abstraction volumes;
- water would be re-used where possible; and
- abstraction volumes would be recorded.

Watercourse Crossings

10.123 21 new permanent watercourse crossings and 33 existing crossings on tracks which are scheduled to be upgraded are required for the proposed development, as detailed within **Appendix 10.4: Schedule of Watercourse Crossings**.

10.124 The crossings would be designed to pass the 200-yr flood event plus an allowance for predicted climate change effects and would be agreed upon by SEPA and CnES as part of the final CEMP.

Potential Construction Effects

Peat and Soils

10.125 It has been shown (see **Technical Appendix 10.1 (PLHRA)**, **Technical Appendix 10.2 (PMP)** and Embedded Mitigation Section) that the disturbance of peat and soils as a result of the construction of the proposed development can be minimised and the peat deposits safeguarded.

10.126 Peat is a high sensitivity receptor. With the identified safeguards and proposed good practice methods, the potential impact on deposits of carbon rich soil and peat is assessed as negligible and thus the significance of effect is **negligible** and therefore **not significant**. No additional mitigation, over and above the proposed site supervision, is required.

Pollution Risk

10.127 During the construction phase, there is the potential for a pollution event to affect surface waterbodies impacting on their quality. This would have a negative impact on the receptor, potentially resulting in degradation of the water quality which would impact on any aquatic life and private and public water supplies abstracting from the watercourses.

10.128 Pollution may occur from excavated and stockpiled materials during Site preparation and excavation of borrow pits. Contamination of runoff from machinery, leakage and spills of chemicals from vehicle use and the construction of hardstanding also have the potential to affect surface water and groundwater bodies. Potential pollutants include sediment, oil, fuels and cement.

10.129 The risk of a pollution incident occurring would be managed using industry standard good practice measures. Many of these practices are concerned with undertaking construction activities away from watercourses, sensitive peat and vegetation habitats and identifying safe areas for stockpiling or storage of potential pollutants that could otherwise lead to the pollution.

10.130 The magnitude of a pollution event on peat, surface water dependent habitat, groundwater and surface water receptors is considered negligible following adherence to good practice measures. The potential impact of a negligible magnitude of effects on watercourses of High sensitivity would be **negligible** and therefore **not significant**. No further mitigation measures are required.

Erosion and Sedimentation

10.131 Site traffic during the construction phase has the potential to cause erosion and increase sedimentation loading during earthworks, and due to increased areas of hardstanding and such features as stockpiles, tracks and excavations etc., which could be washed by rainfall or inappropriate site practices into surface water features. The has the potential to reduce surface water quality, increase turbidity levels, reduce light and oxygen levels and affect ecology including fish populations.

10.132 Excavation of borrow pits, construction of hardstanding, diversion of drainage channels and the construction of water crossings associated with the proposed development are the key sources of erosion and sediment generation. Adherence to good practice measures would ensure that any material generated is not transported into nearby watercourses, to groundwater, or onto areas of peat.

10.133 Location specific good practice measures will form part of the final CEMP and would be used to minimise the potential for erosion and sedimentation.

10.134 After consideration of good practice measures, the magnitude of impact associated with erosion and sedimentation is assessed as negligible. Peat, surface water dependent habitat, groundwater and surface water are considered high sensitivity receptors. The level of effect is therefore assessed as **negligible** and **not significant** and no further mitigation measures are required.

Fluvial Flood Risk

10.135 Construction of hardstanding including the substation compound, construction compound and turbine bases would create impermeable surface areas which could increase runoff rates and volumes.

10.136 Adherence with good practice measures including appropriate drainage design and compliance with the final CEMP would limit potential impacts to being local and short duration and so of negligible magnitude.

10.137 It is proposed that any rainwater and limited groundwater ingress which collects in the turbine excavations during construction would be stored and attenuated prior to controlled discharge to ground or surface water network adjacent to the excavation.

10.138 Attenuation of runoff generated within the proposed turbine excavations would allow settlement of suspended solids within the runoff prior to discharge in accordance with 'Site control' component of the SuDS 'management train'.

10.139 The potential level of effect on flood risk, which is considered to have a moderate sensitivity, is therefore assessed as being **negligible** and **not significant**. No further mitigation is therefore required.

10.140 The magnitude of the increase in impermeable area is not sufficient to have a measurable effect on groundwater levels, as the extent of the impermeable area is insignificant compared to the extent of the underlying geology and groundwater.

Infrastructure and Man-made Drainage

10.141 Excavations associated with construction works (e.g. cut tracks, turbine bases foundations, cable trenches, borrow pits etc.) can result in local lowering of the water table. This is an important consideration in areas of peat deposits, where the water table is characteristically near the ground surface.

10.142 Dewatering associated with construction of turbine foundations is temporary and would not be required post construction. Cable laying, without appropriate mitigation measures, can also lower high groundwater levels and provide a preferential drainage route for groundwater movement that can lead to local and permanent drying of soils, superficial deposits and/or water supplies.

10.143 The design of the proposed development has avoided areas of high ecological or habitat interest, including GWDTE, wherever possible. Furthermore, the superficial and bedrock deposits have little groundwater and therefore limited or little dewatering is likely to be required. There remains potential however, for local dewatering of soils near cable trenches, turbine bases and borrow pits, without incorporation of mitigation measures.

10.144 Location specific good practice measures will form part of the final CEMP and would be used to minimise the potential for drainage and dewatering effects.

10.145 The sensitivity of the receptor (groundwater and habitat that may be dependent on groundwater) has been assessed as being High. Without mitigation the magnitude of impact is assessed as negligible and therefore the potential significance of effect of changing groundwater levels and flow due to dewatering is assessed as **negligible** and therefore **not significant**, and requires no further mitigation.

Proposed Mitigation

10.146 As there are no predicated significant effects under the terms of the EIA Regulations, other than the good practice measures that the developer would implement as standard (and as described above), no specific mitigation during construction is required.

Residual Effects

10.147 No significant residual effects on soils and peat, geology, surface water or groundwater receptors are predicted during the construction period of the proposed development.

Potential Operational Effects

10.148 During the operational phase of the proposed development, it is anticipated that routine maintenance of infrastructure would be required. This may include work such as maintaining access roads and drainage and carrying out maintenance of turbines.

10.149 Should any maintenance be required onsite during the operational life of the project which would involve construction activities; mitigation measures would be adhered to along with the measures in the final CEMP to avoid potential effects.

Peat and Soils

10.150 No excavation, movement or storage of peat or soils is anticipated during the operational site life.

10.151 Peat is a high sensitivity receptor. The potential impact on deposits of soil and peat is therefore assessed as **negligible** and therefore **not significant**. No additional mitigation is required.

Pollution Risk

10.152 The possibility of a pollution event occurring during operation is very unlikely. There would be a limited number of vehicles required onsite for routine maintenance and for the operation of the proposed development. Storage of fuels/oils onsite would be limited to the hydraulic oil required in turbine gearboxes and this would be bunded (satisfying storage guidance) to prevent fluid escaping.

10.153 Based upon this, the potential risk associated with frequency, duration and likelihood of a pollution event is low. It is therefore anticipated that the magnitude of a pollution event during the operational phase of the proposed development would be negligible, as no detectable change will likely occur. Therefore, the level effect of a pollution event during the operational phase of the proposed development is predicted to be **negligible** for all receptors and **not significant**. No mitigation is therefore required.

Erosion and Sedimentation

10.154 During the operation of the proposed development, it is not anticipated that there would be any significant excavation or stockpiled material beyond the clearing of SuDS features to maintain their efficiency, reducing the potential for erosion and sedimentation effects.

10.155 Immediately post-construction, newly excavated drains and track dressings may be prone to erosion as any vegetation would not have matured. Appropriate design of the drainage system, incorporating sediment traps, would reduce the potential for the increased delivery of sediment to natural watercourses. Potential effects from sedimentation or erosion during the operational phase are considered to come from linear features on steeper slopes, where velocities in drainage channels are higher. Immediately post-construction, flow attenuation measures would remain and be maintained to slow runoff velocities and prevent erosion until vegetation becomes established.

10.156 The likelihood, magnitude and duration of a potential erosion and sedimentation event occurring within the surface water catchments would be negligible following adherence to good practice measures. Therefore, the potential level of effect on these all receptors is **negligible** and **not significant**. No specific mitigation beyond good practice is therefore required.

10.157 Should any non-routine maintenance be required at the sections of track crossing wet areas (defined visually onsite by a contractor or operational personnel) there would be potential for erosion and sedimentation effects to occur due to the existence of disturbed material. Should this type of activity be required, then the good practice measures as detailed for the construction phase would be required on a case by case basis. Extensive work at water crossings/adjacent to the water environment may require approval from SEPA under the CAR (depending upon the nature of the activity).

Fluvial Flood Risk

10.158 The risk of an effect from fluvial flood risk arises as a result of a potential restriction of flow at the existing watercourse crossings following intense rainfall. In accordance with good practice, routine inspection of the culverts or bridges at the Site would be undertaken, reducing the likelihood of a blockage occurring. In the unlikely event of a blockage any flooding would be localised. The magnitude of impact is assessed as negligible, and thus the level of effect is assessed as **negligible** and therefore **not significant**, and no further mitigation is identified to be required.

Infrastructure and Man-made Drainage

10.159 Operation of the proposed development would require limited activities relative to the construction phase.

10.160 The magnitude of a potential effect on groundwater and sub-surface flows as a result of permanent hardstanding and associated drainage would be negligible on the overall groundwater body due to the dispersed nature of the proposed hardstanding. The level of effect is **negligible** and **not significant**. No further mitigation is required.

Proposed Mitigation

10.161 As there are no predicated significant effects under the terms of the EIA Regulations, other than the good practice measures that the applicant would implement as standard, no specific mitigation during operation is required.

Residual Effects

10.162 No significant residual effects on soils, peat, geology, surface water or groundwater receptors are predicted during the operational period of the proposed development.

STATEMENT OF SIGNIFANCE

10.163 An assessment of the potential effects of the proposed development on soils, geology, hydrology, hydrogeology within a defined study area (comprising land within 1km of the Site boundary) has been undertaken and **no significant impacts** in terms of the EIA Regulations have been identified.

10.164 The assessment has considered the construction and operational phases of the proposed development.

FURTHER SURVEY REQUIREMENTS AND MONITORING

10.165 This Chapter has demonstrated that the proposed development is not likely to have any significant effects on the study area's soils, geology, hydrological or hydrogeological receptors. The lack of significant effects relates primarily to the proposed 'Good Practice Measures' and the iterative design process (**Chapter 2**), which effectively act as 'designed-in' mitigation. No other further surveys or monitoring is considered necessary to complete this assessment.

10.166 It has been recognised in this assessment that a programme of water monitoring would be required prior to any construction activity and during construction of the proposed development. The monitoring programme would be agreed with SEPA, CnES, Marine Scotland, NatureScot, OHFT and WIDSFB and it is expected to include monitoring private water supplies and watercourses identified as potentially at risk without incorporation of best practice construction and mitigation techniques.

10.167 As detailed in **Technical Appendix 10.1: PLHRA**, it is proposed a geotechnical risk register is maintained during the construction and post-construction phase of the proposed development. It is expected that this would be maintained by the developer, and again, secured by an appropriately worded predevelopment condition of consent.

10.168 During and following construction the drainage measures deployed at the Site (temporary and permanent) would be subject to routine inspection by the dedicated Site EcoW and developer as specified in the site-specific CEMP, and which would be secured by an appropriately worded predevelopment condition of consent.

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CONTENTS

INTRODUCTION

11.1 The cultural heritage of an area comprises archaeological sites (including Scheduled Monuments), historic buildings (including Listed Buildings), Inventoried Gardens and Designed Landscapes (GDLs), Inventoried Battlefields and other historic environment features (collectively known as 'heritage assets'). It also includes features or places that have the capacity to provide information about past human activity, or which have cultural significance due to their associations with literary or artistic work, folklore or historic events. The setting of an asset may also contribute to the understanding and appreciation of the asset and its cultural heritage significance.

11.2 This Chapter assesses the potential effects of the construction and operation of the proposed development on heritage assets within the Site and surrounding area. A full description of the proposed development is given in **Chapter 3: Description of Development**. The assessment has included consideration of all known designated and non-designated heritage assets within the Site, all nationally significant heritage assets within 10km of the wind turbines that fall within the Zone of Theoretical Visibility model (ZTV), and further nationally significant heritage assets beyond 10km of the wind turbines identified in consultation with Statutory Consultees or during assessment as having a setting sensitive to change (**Figures 11.1a** to **d** and **11.2a** to **f**).

11.3 For the purposes of this assessment the historic environment and cultural heritage are considered to consist of a variety of heritage assets, including the following types of designated assets:

- World Heritage Sites (WHS);
- Scheduled Monuments (SMs);
- Listed Buildings (LBs);
- Inventoried Battlefields;
- Conservation Areas; and
- Inventoried Gardens and Designed Landscapes (GDLs).

11.4 World Heritage Sites (WHS) are of international importance. Scheduled Monuments (SM) and Category A Listed Buildings (LB) are considered to be of national importance. Conservation Areas may be of national or regional importance depending upon their composition. Category B LB's are considered of regional importance, and Category C LB's are of local importance (NatureScot Handbook, 2019).

11.5 This Chapter is supported by:

- **Technical Appendix 11.1: Site Gazeteer**
- **Technical Appendix 11.2: Fieldwork Report and Settings Assessment**; and
- **Figures 11.1a to d** and **11.2a to f** (referenced within the text where relevant).

11.6 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**.

SCOPE AND CONSULTATION

Consultation and Scoping Responses

11.7 In undertaking the assessment, consideration has been given to the scoping responses and other consultations undertaken as detailed in **Table 11-1**.

Table 11-1: Consultation with Stakeholders

Consultee and Date	Scoping/ Other Consultation	Issue Raised	Response/Action
Historic Environment Scotland (HES) 05 of October 2022	Scoping	Concern was raised over the following assets: - Calanais Complex (**SM90054**) - Sideval, Stone Circle (**SM5351**) HES requested a more detailed Zone of Theoretical Visibility model (ZTV). HES also requested further clarification on the relationship between the consented schemes (Malbeanach Wind Farm, Muaitheabhal East Extension and Muaitheabhal South Extension) and the proposed development (Uisenis Wind Farm). The latter is to replace the former. The following comments were raised in connection with scoping report: - Assessments must be undertaken by appropriately qualified cultural heritage experts. - HES disagreed with a 10km study area and requested a rescope on this matter. - HES stated that as per SPP (2014) policy provides equal	A letter providing a detailed ZTV, with specific monuments annotated, was issued on the 16 of November 2022. The letter contained clarification on the relationship between the proposed development and the previously consented schemes (Malbeanach Wind Farm, Muaitheabhal East Extension and Muaitheabhal South Extension) as well as a response to comments on the scoping report. The response to comments upon the scoping report was as follows: - A 10km a study area will continue to be implemented with additional assets outwith the study area also considered such as Calanais Complex (**SM90054**) was implemented as a compromise. Calanais will be considered where other Scheduled Monuments shall be excluded, as it is considered that the asset's significance is equivalent to that of a World Heritage Site. The Calanais Stones comprise an almost complete Neolithic – Bronze Age stone circle, the core and most complex part of the ritual landscape, with an extensive setting. Therefore, the asset's setting is considered to be atypically sensitive, including to more distant changes to its surrounding landscape. - Detail was given on the wording in HEPS, outlining that while equal

		weight and protection to assets and their settings. - HES requested that the terminology be changed from 'Heritage Significance' to 'Cultural Significance'.	protection is given in policy, setting is a contributor to significance and is not a receptor in and of itself. Effects upon setting shall be discussed in line with the NPF4. - SLR has adopted Cultural Heritage, to replace 'Heritage' as used previously, as terminology going forward, as a way to describe assets that are considered Culturally Significant (HEPS). - As per **Chapter 1**, full detail of qualifications and expertise can be found for the author of this chapter.
Comhairle nan Eilean Siar 26 August, 2022	Scoping Response	Concern was raised over other heritage assets within the landscape of Calanais / Breasclate, including one of the key aspects of the stone's setting – the 'Sleeping Beauty' – located c.4km to the west of the Site, the skyline of which being a significant part of the asset's setting.	The Calanais Stones complex will be considered within the setting assessment with reference to the relevant guidance documents and documentation provided by HES. This will be covered in the Cultural Heritage Chapter of the EIA Report.
The Archaeological Service 05 October 2022	Scoping Response	The Archaeology Service was content with the methodology outlined in the scoping report. However, it recommended that the following points should be included within the EIA for further assessment: Palaeoenvironment - The proposed development is situated in a remote mountainous area of extensive undisturbed peatland. The formation processes of this landscape offer a high potential for palaeoenvironmental data to be recovered. Informed through SI data, peat coring and subsequent analysis of palaeoenvironmental remains should be included in any mitigation strategies.	A recommended programme of archaeological mitigation shall be proposed as part of the final EIA chapter.

Effects Assessed in Full

11.8 The following effects have been considered in full:

- direct effects on all heritage assets within the Site;
- indirect effects on selected designated heritage assets of national importance within a 10km Study Area – assets selected in agreement with HES (**Table 11-1**); and
- indirect effects on selected designated assets of regional importance within a 5km Study Area.

Effects Scoped Out

11.9 The following have been scoped out:

- effects on the setting of heritage assets more than 10km from the proposed development unless identified as being particularly sensitive to change (in which regard the Calanais Stones Scheduled Monument has been identified and scoped in at HES's request); and
- effects on the setting of designated heritage assets within the Study Area that are beyond the ZTV, and so would not be anticipated to be intervisible with the proposed development (and where no 'third points' or potential for non-visual changes have been identified).

APPROACH AND METHODS

Study Areas

11.10 This assessment refers to the following:

- the Site: land within the application boundary of the proposed development; and
- the Study Area: land within 10km of the proposed locations of the wind turbines.

11.11 The 10km Study Area has ensured that the potential for the proposed development to have an adverse indirect effect upon any designated assets of national/regional importance within the vicinity of the Site has been considered. Whilst an extension was requested by HES, it was considered proportionate to proceed with the 10km buffer but identify assets which may be susceptible to indirect effects further than 10km from the proposed turbines, to identify constraints that HES outlined. As a result, specific assets, outwith the study area, have been included for assessment following consultation with HES on 20/09/2022, at which point a refined list of nationally important assets to be included within the assessment was agreed (**Table 11-6**). This was formally outlined in the Energy Consents Unit Scoping Opinion, 05/10/2022, outlying the following assets to be assessed:

- Calanais or Callanish Standing Stones complex (SM90054);
- Sideval, stone circle 400m S of (SM5351); and

- St Columb’s Church, Eilean Chaluim Chille (SM5345).

11.12 Heritage assets and other aspects of the historic environment recorded within the Site, and a surrounding 1km radius have been used to inform a predictive model of the probability for currently unrecorded archaeological remains to survive buried within the Site (i.e., archaeological potential).

Data Sources

11.13 The Site’s baseline conditions have been determined using the following sources:

- Historic Environment Scotland (HES), for information relating to designated heritage assets, including Scheduled Monuments, Listed Buildings and Gardens and Designed Landscapes on the Inventory;
- Western Isles Arcaheology Service on behalf of Comhairle Nan Eilean Siar’s Historic Environment Record (HER), for records of known and potential heritage assets and other historic environment information;
- historic cartographic sources, for information relating to the development of the historic landscape, and for purposes of map regression;
- Historic Landscape Characterisation (HLC) data;
- the National Collection of Aerial Photography, Edinburgh, for vertical and oblique aerial photographs of the Site and its environs;
- geotechnical data, including peat probing and sampling data;
- previous heritage assessments for supplementary historic environment information;
- published and archival sources, for information relating to the history of the Site and its environs, its historic landscape and archaeological context, place names and any other relevant (tangible and intangible) cultural heritage associations; and
- online resources, including Canmore, for additional historic environment information, as required.

Field Survey

11.14 A targeted walkover survey was carried out between 31 October 2022 and the 03 November 2022 (**Technical Appendix 11.2**). The Site was walked to identify any archaeological features and the proposed turbine locations at the time were inspected to confirm the presence or absence of any unknown above-ground archaeological remains. Whilst the proposed turbine locations have since changed, the landscape in which the turbines are now located were also walked during the walkover and no evident archaeological features were noted. Known heritage assets within the Site boundary were also inspected to confirm their presence and location. Ground conditions were predominantly those of upland moorland with significant areas of peat bog. All assets recorded on the HER within the Site were inspected, as listed within **Technical Appendix 11.1: Site Gazetteer**.

Zone of Theoretical Visibility (ZTV) Analysis

11.15 Assessment of visual impact (as far as this is relevant to considering changes to setting and the effect on cultural significance) has been assisted by a ZTV calculation, which is presented in **Figure 11.1**. The ZTV calculation methodology is set out in detail **in Chapter 7: Landscape and Visual Amenity**. In summary, it maps the predicted degree of visibility of the proposed development from all points within a study area around the Site, as would be seen from an observer's eye level, two metres above the ground. The ZTV model presented in **Figure 11.1** is based on the maximum height of the blade tips of the proposed development (200m). The ZTV model has been used to assist in the assessment of potential indirect impacts upon designated assets within the study area; it is understood that visual change does not necessarily concur with setting change which would effect cultural significance. A change to an assets setting would require an alteration which results in a change to the effect of a contributing aspect of the asset's setting, which would have a tangible or intangible relationship with the asset and contribute to how it is understood, appreciated and experienced.

11.16 The ZTV is a 'bare earth' representation of visibility; it is based on landform only and does not take into account the screening or filtering effects of vegetation, buildings or other surface features. In that respect, it provides an overestimate of the actual level of visibility of the proposed development, i.e., a worst-case scenario that may need to be ground-truthed or subject to cartographic/satellite analysis to determine the conditions under which an asset is truly experienced.

11.17 Assets that fall outside the ZTV within the 10km study area have been excluded from any further assessment, with the exception of those assets anticipated to be co-visible with the proposed development, i.e., where both would be visible within the same viewshed from a given location; this is sometimes referred to as a 'third point'. Furthermore, assets that would be intervisible with the Site, but which could be effected by other changes in setting, such as increased noise, would be considered as necessary. As noted above, however, no assets falling outside the ZTV have been identified for consideration under these factors.

Approach to Assessment of Effects

11.18 Effects may be caused by the proposed development where it changes the physical condition of either the asset itself or the setting in which it is experienced and understood.

11.19 In accordance with the EIA Regulations and HEPS (2019), the assessment identifies impacts and effects as either direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

11.20 Direct impacts are those which change the cultural significance of an asset through physical alteration. Direct effects on the cultural significance of an asset (or potential assets) have been assessed in relation to cultural significance and the magnitude of change resulting from the proposed development.

11.21 Indirect impacts are those which effect the cultural heritage significance of an asset by causing change within its setting; it being accepted that change does not necessarily equate to adverse effects.

11.22 Indirect effects on the cultural significance of heritage assets have been identified and assessed with reference to '*Managing Change in the Historic Environment: Setting'* (HES, 2020) and the guidance set out in EIA Handbook produced by NatureScot and HES (2019). Assessment has been carried out in the following stages:

Stage 1: Identifying historical assets sensitive to change

- initial consideration of intervisibility (including third point sensitivity) and other factors (such as changes in noise levels) leading to the identification of potentially effected assets; and
- assessment of the cultural significance of the potentially effected assets;

Stage 2: Define and analyse the setting

- assessment of the contribution of setting to the cultural significance of those assets;

Stage 3: Evaluate the potential impact of the proposed changes

- assessment of the magnitude of change of the proposed development on the contribution of settings to the significance of assets (by causing change within those settings); and
- prediction of the significance of the effect.

Cultural Heritage Significance

11.23 **Table 11-2** provides the criteria against which cultural heritage significance has been assessed. For designated heritage assets, this has taken into account their designation, status and grading. For non-designated heritage assets, this has taken into account their intrinsic, contextual, and associative characteristics as defined in Annex 1 of HES (2019). Assessments/statements of significance recorded within the HER for specific assets were also taken into account as available.

11.24 This table acts as an aid to consistency in the exercise of professional judgement and provides a degree of transparency for others in evaluating the conclusions reached by this assessment. Its application for the purposes of this Chapter has involved the exercise of professional judgment.

Table 11-2: Cultural Heritage Significance

Cultural Heritage Significance	Explanation
Highest	Designated assets of international importance, including: • World Heritage Sites, or assets of equivalent significance.
High	Designated assets of national importance, including: • Scheduled Monuments; • Category A Listed Buildings;

	• Gardens and Designed Landscapes included on the national inventory; and • Designated Battlefields.
Medium	Designated assets of regional importance, including: • Category B Listed Buildings; • Some Conservation Areas; and • Non-designated assets of equivalent significance.
Low	Assets of local importance, including: • Category C Listed Buildings; • Some Conservation Areas; and • Non-designated assets of equivalent significance.
None	Features that do not retain any cultural heritage significance.
Unknown	Assets of indeterminable significance.

Magnitude of Change

11.25 Determining the magnitude of any likely change (direct or indirect) requires consideration of the nature of the activities proposed during the construction and operation of the proposed development.

11.26 The changes could potentially include direct change (e.g., ground disturbance, effects of vibration), and indirect change (e.g., visible change, noise, traffic movements effecting the setting of the asset). Impacts may be beneficial or adverse and may be short term, long term, or permanent. The magnitude of change has been assessed with reference to the criteria set out in **Table 11-3.**

Table 11-3: Magnitude of Change

Magnitude of Change	Explanatory criteria
High Beneficial	The proposed development would considerably enhance the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
Medium Beneficial	The proposed development would enhance to a clearly discernible extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
Low Beneficial	The proposed development would enhance to a minor extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
Very Low Beneficial	The proposed development would enhance to a very minor extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.

Neutral/None	The proposed development would not effect, or would have harmful and enhancing effects of equal magnitude upon, the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
Very Low Adverse	The proposed development would erode to a very minor extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
Low Adverse	The proposed development would erode to a minor extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it
Medium Adverse	The proposed development would erode to a clearly discernible extent the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.
High Adverse	The proposed development would considerably erode the cultural significance of the effected asset, or the ability to understand, appreciate and experience it.

Significance of Impact

11.27 **Table 11-4** provides a matrix that relates the cultural heritage significance of the asset to the magnitude of change on its significance to establish the likely overall level of significance of impact.

Table 11-4: Level of Significance of Impact

Magnitude of Change (Beneficial/Adverse)	Cultural Significance (excluding unknown)				
	Highest	**High**	**Medium**	**Low**	**None**
High	Major	Major	Moderate	Minor	Nil
Medium	Major	Moderate	Minor	Very Minor	Nil
Low	Moderate	Minor	Very Minor	Very Minor	Nil
Very low	Minor	Very Minor	Negligible	Negligible	Nil
None	Nil	Nil	Nil	Nil	Nil

11.28 Effects predicted to be of major or moderate significance in Table **11-4** are considered to be 'significant' in the context of the EIA Regulations, and are shaded in light grey in the table. **Table 11-5** provides a narrative for the terms expressed above. This narrative provides a definition of impact upon cultural heritage assets, to which the result of the magnitude of change upon the cultural heritage significance is quantified.

Table 11-5: Level of Impact Criteria

Level of Impact	Description
Major	Severe harm or enhancement such as total loss of significance or integrity of the setting, or exceptional improvement by the development on the cultural significance of the asset and the ability to understand, appreciate and experience the asset in its setting.
Moderate	Harm or enhancement such as the introduction or removal to the baseline of an element that would effect to a clearly discernible extent the cultural significance of the asset and the ability to understand, appreciate and experience it in its setting.
Minor	To a minor extent, the development would introduce change to the baseline that would harm or enhance the cultural significance of the asset and the ability to understand, appreciate and experience it in its setting.
Very Minor	To a barely discernible extent, the development would introduce change from the baseline that would harm or enhance the cultural significance of the asset and the ability to understand, appreciate and experience it in its setting.
Negligible	Harm or enhancement to the asset's cultural significance and/or the ability to understand, appreciate and experience it would be indiscernible.
None	The development would not effect, or would have harmful and enhancing effects of equal magnitude, on the cultural significance of the effected asset and the ability to understand, appreciate and experience it in its setting.

Cumulative Effects Assessment

11.29 A cumulative assessment is presented in **Section 11.143 – 11.146**. Cumulative effects have been assessed in relation to only those assets that would have the following effects by the proposed development:

- a Moderate or above significance of effect on an asset or group of assets as a result of the proposed development; and
- an effect on the same asset or groups of assets which would be caused by another development or developments.

11.30 The potential effects of other forthcoming wind energy developments (other development was considered but excluded due to scale and proximity) within up to 30km on the effected heritage assets are then considered; this includes wind energy developments that have been consented, those that are subject of a live planning application, and those that are subject to a planning appeal/inquiry. Operational wind farms are considered as part of the baseline assessment. There are no other developments of similar scale in proximity to the proposed development, and therefore only wind energy developments were considered for cumulative effects.

11.31 Cumulative effects would be addressed in two stages:

- assessment of the combined effect of the developments including the proposed development; and

- assessment of the degree to which the proposed development contributes to the combined effects.

Mitigation

11.32 A statement of any embedded mitigation measures proposed to be implemented in response to identified cultural heritage impacts is provided, with the impact predictions taking these into account. The main approach to mitigating both direct and indirect impacts has been through design. Avoidance of direct impacts on heritage assets has been a consideration throughout the design process. Where avoidance is not possible, further mitigation is proposed as a condition to consent.

11.33 In relation to indirect effects, embedded mitigation measures including adjustments to turbine numbers, layout and height, have been considered and incorporated as part of the design process (See **Chapter 2: Site Description and Design Evolution**).

Residual Effects

11.34 A statement of the residual effects of the proposed development has been provided, taking into account any site-specific mitigation measures which could be implemented as a condition to consent.

Statement of the Significance of identified Effects

11.35 This chapter concludes with a 'Statement of the Significance of identified Effects' anticipated to result from the proposed development.

11.36 Effects considered 'significant' in EIA terms are typically those assessed as moderate or major when measured against the matrix presented in **Table 11-4**, in accordance with the suggestion contained in current guidance HES and NatureScot (2018) *'Environmental Impact Assessment Handbook'*, Section C, Page 75. However, professional judgment has also been applied in determining whether such effects are in fact 'significant' for purposes of EIA; this is especially so in relation to 'moderate' effects which for heritage receptors, in particular, require professional consideration beyond strict EIA terminology.

Limitations to the Assessment

11.37 The assessment is based on the sources outlined in Section 11.13 and, therefore, shares the same range of limitations in terms of comprehensiveness and completeness of those sources.

BASELINE CONDITIONS

Introduction

11.38 A full description of the Site and environs is given in **Chapter 2: Site Description and Design Evolution**. All heritage assets within the Site and 1km of this area are shown in **Figure 11.2a – 11.2h**. Designated assets within the Study Area are shown in relation to the ZTV in **Figure 11.1a – 11.1d**.

11.39 All recorded non-designated heritage assets within the Site and 1km of the Site are listed in the gazetteer that is contained within **Technical Appendix 11.1**. Where designated assets are tabulated in this Chapter, they are identified by the index number (i.e., Scheduled Monuments) or reference number (i.e., Listed Buildings) under which they are registered by HES.

Designated Heritage Assets

11.40 There are no designated heritage assets within the Site or within 1km of the Site.

11.41 There are three heritage assets of national importance within the 10km Study Area and one heritage asset of regional importance within 5km of the Site, which was scoped out in agreement through scoping. Not all of these assets have been carried forward for further assessment, with potential effects scoped out in agreement with consultees.

11.42 As per correspondence with HES on 05 October 2022 and CnES on 26 August 2022 (**Table 11-1**), it was agreed through scoping and consultation that four nationally important assets were to be considered, with the inclusion of the Calanais Complex (SM90054) which is situated outside of the 10km study area (**Table 11-6**).

Table 11-6: Designated Heritage Assets to be Assessed

Name	Type	Index Number	Distance to closest Turbine	Within the ZTV
Sideval Stone Circle	Scheduled Monument	SM5351	4km north west of Turbine 3	No
St Columb's Church, Eilean Chaluim Chille	Scheduled Monument	SM5345	8.9km north east of Turbine 2	No
Dun Cromore, Broch	Scheduled Monument	SM1670	9.6km north east of Turbine 7	No
Calanais Complex	Scheduled Monument	SM90054	21km north west of Turbine 3. Mor Mhonadh, Guaineamol and Sidhean an Airgid the 'Sleeping Beauty' mountain range, set c.4.2km to the west of Turbine 12.	Yes

Non-Designated Heritage Assets

11.43 Known non-designated assets are detailed in **Figure 11.2**, including those in the 1km buffer zone surrounding the Site. Thus, the type and density of archaeological remains can be used to inform a predictive model of what further, as yet undefined, buried remains may exist within the Site. Non-designated heritage assets, either recorded on the Comhairle nan Eilean Siar HER or recorded by SLR during baseline survey are prefixed with an SLR reference number (see **Technical Appendix 11.1**).

Prehistoric, Romano-British

11.44 There are no known prehistoric or Romano-British, heritage assets within the Site or 1km of the Site. Within 1km of the access track to the Site there is a cairn which has the potential to be prehistoric in date. Further information can be found in **Technical Appendix 11.1.**

Medieval

11.45 There is a single medieval asset, located 4.3km to the northwest of the wind farm boundary, and located along the proposed access track. The potential medieval clapper bridge (**SLR55**) recorded on the HER has now been overlaid for a more established track and supports for the previous consented Muaitheabhal windfarm access track (**SLR159**). Further information can be found in **Technical Appendix 11.1**.

Post Medieval

11.46 The Site has a well-documented post-medieval history. The Site is part of Eishken Estate, which was once part of the larger park. During the later 18th Century, kelping was a key industry for the townships within the park area. The estate was cleared as part of the Highland Clearances in 1833, with the land-owner developing the estate into a forested sheep farm, displacing many of the families that had once lived and worked the land there. It is thought that over 30 crofting communities were forcibly removed from the larger Park Estate during this period.

11.47 Throughout the 19th Century, the land was developed into a shooting estate and deer forest. In 1886, Eishken Estate was leased by the Platt family, who furthered its reputation as one of the premium sporting estates in Scotland. The Eiskhen and Park Estates were not fully welcomed by the local community, as many of the previous inhabitants of the area desired to return to their former villages.

11.48 In 1887, the Eishken and Park Estates were the subject of the Park Deer Raid, where the former crofters that had occupied the area marched into the estate and camped on the shore of Loch Seaforth, eating the deer as a form of protest. The Royal Scots Guards were quickly deployed, and the raiders dispersed. Six of the leaders of the raid were taken to the High Court in Edinburgh to stand trial. However, all six men were found not guilty. The events at the estate formed part of wider protests throughout Scotland against the changes forced upon crofting communities as part of the highland clearances, which eventually forced changes to the law and the re-establishment of crofters' rights.

11.49 Within the Site, there are seven potential post-medieval heritage assets. These heritage assets comprise nine shielings[1] and a hunting lodge (**SLR27**). The hunting lodge is a substantial building on the Eishken Estate. Built in the late 1800s, it includes an earlier building as part of its northern wing. The lodge was constructed by Mr Joseph Platt, who leased the Eishken Estate at the time, and it is still used as part of the leisure facilities for those visiting the estate. The closest turbine is Turbine 20, which is located 1km to the southwest of the asset.

[1] SLR5, SLR11, SLR18, SLR19, SLR20, SLR22, SLR23, SLR24, SLR25

11.50 The sheilings are spread throughout the Site, their respective distances from the nearest proposed turbine location can be found in **Table 11-7**. Five of these shielings (**SLR11**, **SLR19**, **SLR20**, **SLR23**, **SLR24**) were inspected during the November 2022 Site walkover and all comprised upstanding remains of low to medium preservation.

Table 11-7: Shielings within Site

SLR Number	Nearest Turbine	Distance to closest Turbine	Direction to the nearest turbine
SLR5	T23	500m	North
SLR11	T3	380m	South west
SLR18	T12	400m	South east
SLR19	T12	400m	North
SLR20	T12	630m	North east
SLR22	T8	100m	South east
SLR23	T12	310m	South west
SLR24	T10	150m	North east
SLR25	T11	100m	South east

11.51 There are a further 13 post-medieval heritage assets within 1km of the Site. Of these, 10 are shielings, consistent with the agricultural use of the estate during this period. There are also two small sections of Head Dyke (**SLR26**) along the land separating Loch Sgiobacleit from Loch an Eilein Liatha, approximately 1.2km north of Turbine 1.

11.52 A number of post-medieval to modern assets are also recorded on the HER within or proximate to the access road, which shall be widened within the extent of the access track boundary. There are 53 assets within 100m of the access track boundary. The assets within the boundary of the access track are agricultural and rural in character.

11.53 The region of Seaforth Head, north of the Site and an area which the access track passes though, is historically known as the seat of Clan Mackenzie, who came to Lewis in the early 17th century. A stronghold was established at Loch Seaforth and formed the Seaforth Regiment. The Clan's link to the area is seen in their titles, such as Earls of Seaforth and the Seaforth Highlander Regiment; they were based at Seaforth for eighty years before relocating to Stornoway (Kinloch Historical Society). The archaeological record along this track is typically agricultural in nature, with blackhouses and cultivation features.

11.54 Two agricultural features (**SLR114** and **SLR158**), 16m apart from one another, are located within the access road widening boundary. These assets comprise late post-medieval to modern agricultural features, comprising a field system (**SLR114**) and a field boundary of a wall and dyke (**SLR158**). Given their proximity to the road, it is likely that these assets have been removed for the construction of the road and the drainage ditch that runs along much of the length of the road.

11.55 Another cluster of assets is located proximate to the Clan Mackenzie Monument at Loch Seaforth; this comprises two blackhouses (**SLR136** and **SLR138**) just to the south of the existing track, two field boundaries (**SLR139** and **SLR135**) and an associated well (**SLR137**). This cluster likely formed an agricultural settlement prior to being left to ruin and replaced by later farmsteads. The blackhouses are extant as stone wall foundation remains, and a stone boundary wall is still extant along the south of the current road.

Undated Features or Structures

11.56 There are six recorded undated heritage assets within the Site. A ruined building (**SLR9**) is recorded on the northern shoreline of Loch Shell, below the high tide line. The asset is located c.0.4km south of Turbine 24 and sits shortly outside the Site boundary.

11.57 A township (**SLR21**) is recorded in the general area of the Eishken shooting lodge, approximately 1km northeast of Turbine 25. The township is recorded as comprising one roofed and sixteen unroofed ruined buildings, as well as two enclosures and a head-dyke. The township is unnamed and was likely left as part of the forcible evictions of the Highland Clearances.

11.58 Two corn mills (**SLR29**, **SLR30**) are recorded along the watercourse that connects Loch an Eilean with Loch Eisgein. Within the Historic Environment Record, these are recorded as ruined buildings.

11.59 There are a further six undated heritage assets within 1km of the Site. There are two recorded townships along the southern bank of Loch Shell, with **SLR2** located c.0.8km southwest of Turbine 22 and **SLR7** located c.1.15km south of Turbine 25. As with the township within the Site, these were likely cleared as part of the Highland Clearances.

11.60 An unroofed ruined building (**SLR6**) is recorded on the northern shore of Loch Shell, c.0.5km south of Turbine 25. A farmstead (**SLR12**), comprising two unroofed buildings, two enclosures and a head-dyke, is recorded on the northern shore of Loch Shell at the base of Cnoc na Saighde. The asset is located c.1.4km east of Turbine 25. The location of a mill (**SLR31**) is recorded on the west bank of the watercourse connecting Loch Mòr Stiomrabhaigh and Lodan Stiomrabhaigh.

11.61 A small, ruined structure (**SLR28**) is recorded on a small island named Dun Mhic Phi at the western end of Loch Sealg, approximately 0.8km southwest of Turbine 22. Local tradition states that an outlaw named MacPhail lived on the island inside the building, but there is no written record of this being true.

11.62 Two unrecorded and undated heritage assets were identified during the November 2022 Site walkover. A weir (**SLR101**) was located at the head of Abhainn Cheothaidal, spanning the river as it leaves Loch na Beirighe. The weir is in two sections, with each section being approximately 8m in length and 1m in height. The weir is made out of a wooden base, with a concrete and stone body. The northern most part of the weir is solid, with the southern-most part having two breaks to control the flow of the water. Due to the inclusion of concrete in the weir, it is most likely to be of post-medieval date, possibly having replaced an earlier weir.

11.63 A number of lines of stones (**SLR102, Plate 1, Plate 2**) were identified approximately 70m west of the pre-existing track. These lines of stones were all approximately 1m to 1.5m in length and approximately 1m apart. There are two rows of these stones and there are approximately 10 visible lines of stones. The precise date and function of these stones is unknown, but they may be modern and were used for drainage.

Plate 1: Partial view of SLR102, looking to the east

Plate 2: SLR102, looking to the south east

11.64 There is a number of undated assets situated within 1km of the access track, these can be found in **Technical Appendix 11.1.**

Historic Mapping and Historic Land-Use Assessment

11.65 A review of the Historic Land-Use Assessment data provided by Historic Environment Scotland shows areas of peat cutting in the south of the Site and areas of medieval and post-medieval agriculture and settlement focussed around the Eishken Estate lodge.

11.66 A review of the online historic mapping available from the National Library of Scotland was undertaken. The earliest map where the Site is recognisable is the Western Isles sheet of John Thomson's Atlas of Scotland, published in 1832. There are no additional heritage assets recorded on the map.

11.67 A detailed depiction of the land within the Site is first provided on the 1854 and 1855 Ordnance Survey 1-Inch maps. There are several small, ruined settlements and structures shown on these maps, all of which are recorded within the HER. Several gravel pits are recorded along the track that runs to Eishken Lodge, and they can be seen on satellite photography.

Aerial Photography

11.68 The aerial photography from the National Collection of Aerial Photography (Historic Environment Scotland) was consulted but provided no further information than was already contained within the HER data, identified on historic mapping and revealed during the Site walkover survey.

Discussion of Archaeological Potential

The Site

11.69 There is very low potential for prehistoric, Romano-British, medieval, and early medieval heritage assets within the Site, given that there are no assets dating to these periods recorded within the Site or 1km of the Site.

11.70 There is a moderate potential for heritage assets of a post-medieval date to be present within the Site. There are 21 post-medieval heritage assets within the red line boundary and 1km study area of the Site, with the majority of these assets comprising shielings. The post-medieval history of the estate as agricultural land, sheep grazing land, deer forest, and a shooting estate means that it is most likely that any unknown heritage assets identified within the land are likely to be related to such activities.

11.71 Due to the prevalence of peat within the Site, there is a general moderate potential for any previously unrecorded palaeo-environmental remains within the Site. Due to the anaerobic environment and level of acidity within a peat bog, peat has the potential to preserve archaeological remains that would otherwise have decayed.

The Access Track

11.72 There is very low potential for any prehistoric, Romano-British and early medieval heritage assets within the boundary of the access track, given that there are no assets dating to these periods recorded within the Site.

11.73 Given that the HER records of a potential clapper bridge (**SLR55**) potentially dating to the medieval period, there is an indication of some medieval activity within the region during this period, which is reflected by the medieval dated shielings although this does not indicate the character, extent, locality or if there are actually further remains. There are, however, no indications that there are any medieval remains within the access track boundary.

11.74 There is a moderate potential of post-medieval archaeological remains. Primarily, the majority of these remains would be agricultural in nature and building remains from the black houses. If the access track is widened in the areas of these black houses, they would be directly truncated There is also potential for significant remains in relation to the occupation of the Seaforth Headland by Clan Mackenzie. Although the primary location of the settlement is uncertain, the area is of archaeological interest to identify and characterise the settlement (Kinloch Historical Society; Clan Mackenzie and Seaforth Project).

ASSESSMENT OF EFFECTS

11.75 Impacts have been defined by the lifecycle of the wind farm: Construction and Operation. All stages consider direct and indirect effects upon cultural heritage receptors.

Embedded Measures

11.76 Impacts are considered with due regard to embedded mitigation measures. Mitigation through design has been outlined in **Chapter 2: Site Description and Design Evolution**.

Potential Construction Effects

11.77 Taking account of the embedded design mitigation, the following potential construction effects are predicted.

11.78 With reference to **Figure 11.2**, the proposed development, specifically construction of the access tracks, would have a direct impact on the following assets:

- **SLR179**, unknown potential archaeological remains related to the Mackenzie Clan (within region of NB 28448 16557) ;
- **SLR114**, field system;
- **SLR135**, field system;
- **SLR136**, blackhouse;
- **SLR138**, blackhouse;
- **SLR139**, field boundary;
- **SLR158**, field boundary, wall and dyke;
- **SLR159**, bridge for Muaitheabhal wind farm;

- **SLR55**, road bridge, potentially clapper type;
- **SLR11**, sheilings;
- **SLR102**, linear stones; and
- **SLR22**, potential sheiling.

11.79 **SLR11** is a post medieval sheiling, recorded in the HER and identified during the Site walkover. The sheilings comprise two small buildings on either side of the proposed access track. They are considered to be of low cultural significance, the magnitude of change upon them would be very low adverse, and there would therefore be a **negligible significance of effect**.

11.80 **SLR102** is a group of linear stones running north to south in eight lines approximately 0.5m apart. Their use is undetermined, though they may well be modern and are assumed to be of low cultural significance at most. The magnitude of change upon them would be very low adverse, resulting in a **negligible significance of effect**.

11.81 **SLR22** is a potential sheiling identified on review of the HER data. The sheiling is considered to be of low cultural significance. The magnitude of change upon it would be very low adverse, resulting in a **negligible significance of effect**.

11.82 **SLR114**, **SLR135**, **SLR139** and **SLR158**, **SLR136** and **SLR138** are agricultural features which lie within the boundary of the access track; they are considered to be of low cultural significance. The magnitude of change if the access track were to impact these features would be considered very low adverse, and there would be a **negligible significance of effect**.

11.83 **SLR55**, the potential clapper bridge, recorded on the HER as being medieval, has been previously impacted by the bridge built for access to the Muaitheabhal windfarm (**SLR159**). Any impacts within the area of this recorded asset is **not predicted to cause any further impacts** and therefore **no further effects**.

11.84 **SLR179** represents the area in which there is archaeological interest for potential settlement remains of the Clan Mackenzie Castle or Stronghold. These remains would be of medium cultural significance, contributing to the regional cultural heritage. Any track widening that would partially truncate or remove any such remains would result in a very low adverse magnitude of change, resulting in a **minor significance of effect**.

Proposed Mitigation

11.85 With regard to further mitigation to be implemented as a condition to consent, the undertaking of an archaeological watching brief is to be used to ascertain the absence/presence of unknown assets in the vicinity that may relate to assets described in section 11.77. This includes a watching brief where the access road shall be widened within the region of Seaforth Headland. This area is of archaeological interest for settlement activity related to the Clan Mackenzie during the 17th century, and is of interest to local people and the Kinloch Historical Society.

11.86 The precise scope of the mitigation works would be negotiated with the Western Isles Archaeological Officer and an agreed mitigation program would be documented in an approved Written Scheme of Investigation (WSI) supplanting any previous WSI that has been in place for previous schemes on the Site.

Residual Construction Effects

11.87 The completion of the archaeological mitigation programme outlined above would offset direct adverse impact upon archaeological remains. Any harm caused to buried remains as a result of ground disturbance during construction would be offset to some degree by the benefits provided through the information gained during the archaeological investigation and reporting process. Any significant impacts identified in relation to buried archaeological remains should be considered in this context.

Potential Operational Effects

Sideval, stone circle 400m S of (SM5351)

Description

11.88 The stone circle sits on a low coastal plain to the north of Loch Seaforth, at the southern foot of Sideabhal. Sideval stone circle is comprised of seven stones defining a circular area 16.6m in diameter. The stones range in height between 0.91m and 1.52m. The monument is of Late Neolithic to Early Bronze Age origin. Four of the seven stones have been incorporated into another building, a 19th century blackhouse, later used as a sheepfold which no longer has a roof. Two stones are still standing at 1.3m and 1.67m, and a third is broken.

11.89 These stones have no visibility with the Calanais Complex but may be considered to retain an intangible relationship with the ritual landscape to the north. It is located circa 0.5km from two cairns (Canmore ID: 278109, 335957) to the northeast. The landscape around the stones has a high level of prehistoric activity, with cairns located upon Beinn Lobhair to the east, the saddle between Beinn Lobhair and Sideabhal, and the hills to the south of Loch Seaforth, including Mor-Mhonadh.

Cultural Heritage Significance

11.90 As a scheduled monument, Sideval Stone Circle is considered to be an asset of national importance and therefore, high cultural significance. Professional archaeological examination of the extant stones, as well as any archaeological remains, would have the potential to make a material contribution to our understanding of the asset. This includes the construction, use, and sequence of development of the asset, as well its contribution to the wider Neolithic and Bronze Age landscape, and the relationship between the asset and the surrounding landscape. In addition to archaeological interest, setting also makes a contribution to the asset's cultural significance.

Setting

11.91 The stone circle is located on a level elevated beach on the southern foot of Sideval on the northern coast of Loch Seaforth. This position is one of few between Sideval to the north and the loch to the south. The position provides the monument with wide views to the east, south and west within the valley, across the loch, and towards the surrounding peaks, such as Dun Chonaill, Cadha Cleit, Cul Chreag and Mor Mhonadh. The latter of these, comprises part of the 'Cailleach na Mointeach' or 'Sleeping Beauty' mountain range which forms part of the setting of the Calanais Stones (**SM90054**).

11.92 These peaks tend to be the locations of prehistoric funerary monuments, such as the cairns upon Mon Mhonadh (HER Ref: **MWE145558**) and Beinn Iobhair (HER Ref: **MWE144599**). Prehistoric funerary monuments were often constructed in such prominent locations, providing visual links with one another as well as with natural features such as water courses. These visual relationships are part of the setting of such assets.

11.93 'Cailleach na Mointeach', or the 'Sleeping Beauty', is also part of a much wider prehistoric ritualistic complex associated with Calanais (**SM90054**). Although the Sideval stones have no intervisibility with other stone monuments due to its position along Loch Seaforth, shared views toward this mountain range is shared with other stone circles, theoretically forming a series of viewpoints as an observational system for lunar events (HES, 2018, Nance, D.A., 2021, Higginbottom, G., 2016). This forms an intangible relationship with the Calanais Stones setting known as the Calanais complex.

11.94 The stone circle is situated in a natural semi-circular amphitheatre of higher ground, the rim of which is around 50 – 75m from the circle. The setting of the monument includes third-point views from higher ground looking toward the stone circle, from which to potentially observe lunar and solar movements through or over the stone circle and the landscape as set out by HES on the 05 October 2022.

11.95 The stone circle is now partially built into the blackhouse building, part of a complex of post-medieval agricultural buildings and field systems which utilised the flat, grass covered parcels of land at the foot of Sideval and the coast of the loch, c.400m west and c.350m east, for pasture. Approximately 300m to the east is a modern farmstead proximate to a historical township known as Sithport, and a rural hard-surfaced road coming from the north.

Contribution of Setting to Significance

11.96 Not all aspects of a heritage asset's setting will contribute to its cultural significance. The following aspects of the assets setting contribute to its cultural significance:

- the nearby prehistoric cairns, which contribute to our understanding of prehistoric land-use around the stones and the potential characteristics of the asset as ritualistic and funerary;
- the natural semi-circular 'amphitheatre' of higher ground around the stone circle;
- third point views and points of appreciation of the asset from higher ground, particularly from the 'Sleeping Beauty' comprising Mor-Mhonadh, Guaineamol and Sidhean an Airgid;
- views towards the hilltops to the north and to the south of Loch Seaforth, and their associated cairns;
- views from and towards the asset along Loch Seaforth, which enable an appreciation of why the stones were constructed in this location.

Development Effects

11.97 The proposed development would introduce 25 wind turbines into the landscape, the closest to the Sideval stone circle being Turbine 3 located over 4km to the south east of the asset. Analysis of the ZTV suggests that no turbines would be visible from the asset (**Figure 11.1c**).

11.98 With reference to the section above, the only contributing aspect of setting to the cultural significance of the asset that would be effected by the proposed development would be the visibility of the turbines from the mountain ridge comprising Mor-Mhonadh, Guaineamol and Sidhean an Airgid, located 2.8 - 3.6km to the south of the asset. The views toward the asset from these third points contribute to the asset's significance. From these viewpoints, the asset is visible to the north-north east, whilst the turbines within the windfarm would be visible to the west-south west. Views towards the asset, across Loch Seaforth to the north, are the key views which make a contribution to the significance of the monument, as it provides a third point view to the asset and its relationship with Calanais to the north west; these views contribute to the spatial and visual associations of the asset.

11.99 While the turbines would be visible from this third point view, they would have no effect upon the ability to appreciate those aspects of the asset's setting that contribute to its cultural significance. It would not compromise the overall intelligibility of the asset as its views would remain intact, as would the ability to experience the asset within its setting. No views from non-designated assets would include the proposed turbines. Overall, the turbines would not be considered to detract from these views, and the relationship between the assets would remain intelligible.

11.100 The proposed development would result in a neutral level of impact upon only one of the multiple positively contributing aspects of the asset's setting. This results in no impact upon the significance of the asset. Fundamentally, the relationship between the Sideval stone circle monument, its strategic, spatial and visual associations with the mountain ridges known as 'Sleeping Beauty' and the historic landscape of the Calanais complex would be preserved, as would the ability to understand, appreciate and experience the monument.

11.101 As the asset is a Scheduled Monument and of national importance, this is defined as High Cultural Significance (**Table 11-2**). As set out in paragraphs 11.83, the contributing factors susceptible to change are unlikely to be impacted by the proposed development. It is therefore concluded that the magnitude of change (**Table 11-3**) is neutral upon the contributing factors of significance and therefore, has an overall significance of effect of None (**Table 11-4**). This is not significant in EIA terms.

St Columb's Church, Eilean Chaluim Chille (SM5345)

Description

11.102 The church is a Scheduled Monument, one of a few remains left of a medieval and post-medieval Christian Chapel on the island known as Eilean Chaluim Chille near the mouth of Loch Erisort, 8.9km northeast of Turbine 2. The island is currently uninhabited, and at low tide a causeway connects the island to the mainland. The church is thought to be the site of the first arrival of Christian

Columban monks in the north of the Western Isles, as it is comparable to the one identified on Iona, another significant Christian Chapel with confirmed dating to the medieval period.

11.103 The roofless remains of the church conform to a simple rectangular plan, measuring approximately 11m by 5.7m, orientate east to west, within a disused graveyard. The building has lost its gables but parts of the wall survive to a height of 2.1m, made of rough random coursed rubble with small stone pinnings. The entrance to the south wall and round-headed splayed window was blocked when the church was used as a private burial vault. Internally, three more recent gravestones can be identified standing in the west end of the structure, dating to the 19th century.

11.104 An enclosure surrounding this building also includes a number of grave slabs on its east side, between the east remaining wall and enclosure wall, and may be 'rude' markers. The burial ground is separated from the shore by the enclosure wall, and a well is located against the south wall. On either side of the cemetery are wall footings of old farmsteads and field boundaries, which have subsequently had a pair of small, high walled, rectangular burial enclosures built within them.

Cultural Heritage Significance

11.105 As a scheduled monument, St Columb's Church, is considered to be an asset of national importance and therefore, high cultural heritage significance. This derives primarily from the asset's archaeological, historical and architectural interests; the preservation of the early Christian chapel, considering its age, is notable and can provide insights into the introduction of Christianity, construction and use within the region during the medieval to post-medieval period. Any archaeological remains could contribute further to our understanding of the status and longevity of the church's use, of the activities undertaken within, and the population that frequented the church.

11.106 The monument preserves evidence of ecclesiastical architecture dedicated to St Columba, hinting at an origin of connection with Iona, informing on the spread of the Celtic church throughout the western seaboard of Scotland.

11.107 In addition to archaeological and architectural interest, the setting also makes a contribution to the asset's cultural significance.

Setting

11.108 The church is set within an enclosure wall which encompasses the church and burial grounds with numerous headstones. It is located on the west side of the island, known as the Eilean Chaluim Chille, accessed over a causeway known as Braigh nah-Uidhe. The church is situated on the south shore, providing views to the church from the mainland across an inlet of Loch Erisort to the south and from a causeway which forms at low tide to the east which would have a view across the water to the asset.

11.109 The causeway historically comprised the main approach to the church from the east up until the disuse of the church in the 19th century, as seen on the Ross-Shire Ordnance Survey 1851 map (1st Edition). The causeway has likely been a primary approach to the asset throughout its history for the occupying population of Lewis, being an isolated location, separated from other communities on the mainland. The timing of the tide with the causeway would have created temporary periods of isolation and accessibility. This would have made it a location for planned pilgrimages across the causeway at low tide to visit the asset.

11.110 The church would have been visible from the mainland and the approach to the island along the causeway and from on the water and would have been prominent upon traversing the inlet to the south of Eilean Chaluim Chille by water. This would have both been a way to identify the church during travel and pilgrimages, but also creates a focus upon the church as a feature in the rural landscape.

11.111 The surrounding landscape comprises an uninhabited island, with modern farmland with dispersed homes, farmsteads and infrastructure along the approach to the causeway from the east at Cromore. Views from the church have remained primarily rural in character.

Contribution of Setting to Significance

11.112 The following aspects of the asset's setting contribute to its significance:

- the extant remains of the church which contribute to how the asset is understood, including the internal and external burials;
- the approach to the church across the causeway to Eilean Chaluim Chille, and views of the church from the causeway and mainland to the south and east, which contribute to how the asset is experienced, emphasising the isolation of the church from the mainland and the reasons for its positioning. This contributes to the assets historical significance as it demonstrates its use and meaning to the population at the time of its use;
- the location of the church on the south end on the Eilean Chaluim Chille, where the church would have been the prominant structure on traversing the causeway to the east; and
- the enclosure walls and graveyard associated with the church which still surrounds the remaining structure, contributing to our understanding and experience of the asset, its association with the aforementioned historic individuals buried here, and the ecclesiastical style of Christian chapel which was typical of this period.

Development Effects

11.113 The proposed development would introduce 25 wind turbines located c.8.9km to the southwest of the asset. Analysis of the ZTV found that 8 to 14 of these turbines would be visible (**Figure 11.1b**). These turbines, considering the distance, would have very little effect upon the views toward the Site from the surrounding landscape.

11.114 With reference to the section above, the aspects of the asset's setting that contribute to its significance would not be effected by the proposed development. Views from the asset c.8.9km to the southwest are not considered to contribute anything to the asset's significance, and any changes to the views at this distance would not be considered to effect the ability to understand, appreciate or experience the asset and its setting.

11.115 As the asset is a Scheduled Monument and of national importance, this is defined as High Cultural Significance (**Table 11-2**). As set out in paragraphs 11.98, the contributing factors susceptible to change are unlikely to be impacted by the proposed development. It is therefore concluded that the magnitude of change (Table 11-3) is neutral upon the contributing factors of significance and therefore has an overall significance of effect of None (Table 11-4). This is **not significant** in EIA terms.

Dun Cromore, broch, Loch Cromore (SM1670)

Description

11.116 The asset is a broch, located on the end of a promontory on the west side of Loch Cromore, Lewis. The broch occupies almost the entirety of the promontory. It comprises an oval galleried broch with an interior measuring approximately 4-5m. The interior of the structure contains cells and a gallery, the latter reported to have had a stair within it which led up to a third gallery, passed by a second. It is now filled with topsoil and collapsed building materials which have collapsed inward from the asset's structure above. Some of the rubble has fallen to the northwest of the broch, but where the outer wall can be seen it is well preserved.

11.117 An arced wall forms a courtyard outside to the northwest, approximately 1.37m thick. It joins the broch wall at the west end and runs out to a maximum distance of 8.54m down to the water's edge on the northwest side. The external buildings of the broch date to the medieval period when the local population used the asset as a landscape feature.

11.118 A submerged causeway is included within the scheduled area, connecting to the shore of the loch to the northwest, measuring approximately 40m in length. Its surface currently sits below the water level but the water over the causeway is shallow.

Cultural Heritage Significance

11.119 As a Scheduled Monument, it is considered to be an asset of national importance and therefore, high cultural heritage significance. Its significance derives from its extant remains, its archaeological potential and its setting. The remains of the asset continue to provide the ability the study the asset, and the preservation of building remains and possible other remains remaining under the infilled soil have the potential to provide further information on how the asset was used.

11.120 In addition to archaeological interest, setting also makes a contribution to the asset's cultural significance.

Setting

11.121 Dun Cromore is located on a small island within a narrowing of Loch Cromore (also known as Loch Chromore), which opens to the north and south, connected to the mainland via a causeway measuring c.40m to the west of the island. The hill ridges rise on the north, east and south sides of the loch, whilst the west is relatively low and would have provided an approach to the causeway. The island on which the broch is located is within a narrowing of the loch, which provides views to the surrounding landscape and coastlines of the loch.

11.122 The setting of the broch utilises the natural defence of the water, with the approach to the asset controlled in a bottleneck through the causeway and lower land to the west. The ridges which surround the loch would prevent any approach to the asset without being seen from its location.

Its position and views within its vicinity within Loch Cromore provide the asset with a defensive vantage and the ability to observe its wider surroundings.

11.123 This setting contributes to how the asset is understood and experienced and is considered a part of the asset's significance.

Contribution of Setting to Significance

11.124 The following aspects of the asset's setting are considered to contribute to its significance:

- Loch Cromore in which the asset is located, providing views to the surrounding ridges around the loch, and contributing to the intelligibility of the asset as a defensive settlement;
- the island on which the broch is built within the loch, which provides a visual advantage of the surrounding landscape;
- the causeway which forms the strategic approach to the asset; and
- the surrounding ridges, which form natural defensive boundaries around the loch, except to the west and north as part of the approach to the asset.

Development Effects

11.125 The development is located c.8km to the south west of the asset. Analysis of the ZTV shows there is no potential for the turbines to be visible from the asset (**Figure 11.1b**).

11.126 With reference to the section above, none of the contributing aspects of setting to the cultural significance of the asset would be effected by the proposed development. The intelligibility of the asset's approach from the west, north and along the causeway, and views toward the asset from these approaches would be preserved and would not be altered by the proposed turbines. Views from the asset towards the ridges surrounding the loch, which are considered to contribute to the understanding of the asset as a defensive settlement, would be similarly preserved.

11.127 As such, the proposed development would cause no effects upon the ability to appreciate the aspects of the asset's setting that contribute to its cultural significance; it would not prevent or compromise the overall intelligibility of the asset as a domestic and defensive broch, or the ability to experience the asset within its setting. Therefore, there would be no level of impact upon the asset, resulting in no effects to the assets significance. The Dun Cromore's strategic spatial and visual association with Loch Cromore and the natural topography would be preserved, as would the ability to understand, appreciate and experience the monument.

11.128 As the asset is a Scheduled Monument and of national importance, this is defined as High Cultural Significance (**Table 11-2**). As set out in paragraphs 11.1., the contributing factors susceptible to change are unlikely to be impacted by the proposed development. It is therefore concluded that the magnitude of change (**Table 11-3**) is neutral upon the contributing factors of significance and therefore has an overall significance of effect of None (**Table 11-4**). This is **not significant** in EIA terms.

Calanais, or Callanish, Standing Stones (SM90054)

Description

11.129 The asset is situated on a promontory extending into Lock Roag, beside the township of Calanais on the west side of Lewis, approximately 13 miles west of Stornoway. Cnoc an Tursa is located to the south of Calanais, located within its scheduled boundary, which comprises a rocky outcrop. There is credible archaeological evidence for this rock outcrop to have been a place for ritualistic activities upon and potentially around it. The ground within the vicinity of the monument has a high potential for remains of activity associated with the monument, including quarrying for the erected stones.

11.130 Activity within this region began around 6500 to 3500 BC with woodland clearance, when hunter-gatherers began transitioning into sedentary farmers residing within long-term settlements by c.3500 BC; evidence of tillage and Neolithic pottery has been found within the Calanais scheduled area. At around 3000 BC poorly preserved circular structures were built just to the east of the main circle, with the first standing stone, the central monolith, being erected. This monolith is positioned within the main circle and comprises the largest of the stones.

11.131 The circle, avenue and the rows were erected sometime after 2900 BC; it is not clear whether they were erected in a single phase or multiple phases. These stones form a circle of large, erect stones around the earlier central stone, with short projecting rows of similarly large stones on its south, west and east axes. Two, much longer, rows of large stones form an avenue running toward the north east of the circle.

11.132 Archaeological evidence within and outside the main circle of the stones shows traces of unsubstantial buildings constructed between 2900 – 2400 BC, with the chambered cairn built within the sequences of these buildings as well as stone 30 in the east row, closest to the circle. Whether the other stones within the eastern row were erected before or after this stone is unknown.

11.133 Between 2900 and 2400 BC, further unsubstantial buildings were constructed within and outside the main stone circle, with the chambered cairn and stone 30 within the east row, closest to the circle, being erected around 2500 BC. From 2500 to 1500 BC, further insubstantial buildings or enclosures with human cremations and artefacts were found prior to a cease in use of the site. Peat accumulated over the stones from 1000 BC to 1m above the stones by AD 1500. It was first recorded again by Ian mac Mhurch'c Ailean in 1686 having re-emerged from the peat.

11.134 In summary, the stones now form an overall cross shape, comprising a corridor, stone circle, stone rows on the south, west and east and a central stone feature with four stones and a large central stone, with a total of 49 erect stones, measuring an average of 4m.

11.135 The Calanais Stones, like other standing stone circles within Scotland such as Skennes on Orkney (**SM90285**), are related to funerary related activities and astronomical phenomena. Lunar and solar events related to the stones, including the passing of the moon along skylines, known as the 'lunar standstill', as well as the sun in relation to the central circle during the summer solstice, and a posited alignment with Venus along the east row of the stones during the summer solstice, once every 251 years (Higginbottom, G., et al 2016). The Alcyone (brightest star of the Pleiades) would have possibly been seen aligning with this crossover c.1674 and 1677 BC (Nance, D.A., 2021). The occurrence of these astrological events occurring throughout the Neolithic to Bronze Age may partially explain the continued development of the Calanais stone formations and demonstrates an understanding of astronomical events.

11.136 The lunar standstill involves the moon skimming over the skyline of the hill range comprising Mor-Mhonadh, Guaineamol and Sidhean an Airgid, the silhouette of which is known as the ‘Sleeping Beauty’ or ‘Old Woman of the Moors’. The moon rises from the ‘neck’ of the silhouette, skims the top of the stones in the east row and sets into the nearby horizon of Cnoc an Tursa before reappearing in the circle.

11.137 This stone circle is the largest among other circles, stone alignments standing stones and features which together make up an archaeological landscape. This primary stone circle is known as Calanais 1 when discussed as part of a larger ritualistic landscape. A number of stone monuments within the vicinity of Calanais I include Ceann a’ Gharaidh (Calanais II) (**SM5433**), Cnoc Filibhir Bheag (Calanais III) (**SM5437**) and Airigh nam Bidearan (Calanais V) (**SM6018**). Other stone circles have intangible relationships with the Calanais stones, including Sideval (**SM5351**), located approximately 18km to the south east; both stone circles have views to the ‘Sleeping Beauty’ mountain ridge, and may both function as a reference or to observe the moon throughout the landscape. This creates a large landscape of complex social significance and how the Calanais stones are related to other stone monuments.

Cultural Heritage Significance

11.138 The Calanais Standing Stones is a scheduled monument and is therefore an asset of national importance. In terms of significance, the Calanais Stones hold a particular level of significance by comparison with the other monolithic or stone circles within the Outer Hebrides. The monument comprises a unique, more complex and core part of the Neolithic and Bronze Age ritualistic landscape, which holds a level of significance comparable with that of World Heritage Sites, such as the Stones of Stenness and the Rings of Brodgar which form part of the heart of Orkney WHS. Therefore, the Calanais Stones shall be considered of the highest cultural significance.

11.139 The asset derives significance from its completeness and integrity, archaeological potential, intangible value, evidential and research potential and artistic and architectural value. These are as follows:

Evidential value, research potential and preservation

11.140 The asset still has a high potential to provide further material information in terms of archaeology, but also its continued preservation provides access to physical study and continues to contribute to our understanding and interpretation of the monument within its landscape. Its completeness and lack of later ‘reconstruction’ and change of the assets form provides an accurate baseline against which to continue such research. Excavation of just 4% of the monument provided 3kg of prehistoric pottery and worked stone tools dating from the Neolithic to the Bronze Age.

11.141 Additionally, the continued preservation of the stones and its views to the surrounding natural landscape and tangible and intangible relationship with other stone circles continues to provide a means of in situ research and observation with regards to the stones’ functionality, and astronomical function.

Completeness and integrity

11.142 Considering the monument was constructed approximately 2900 BC and functioned until approximately 1500 BC, the presence of the asset in its current form is a marked level of preservation. Although some stones may have fallen, the asset is unusually well preserved due to its submersion in peat, and subsequent identification and removal from the peat in the 19^{th} century.

Intangible values with the wider landscape and archaeoastronomy

11.143 Calanais is increasingly understood as the central, most complex stone circle among many which form a large archaeological landscape involving the use of the stones in astronomical observation. The preservation of these collective monuments and parts of their observatory function in the landscape, such as the 'Sleeping Beauty' mountain ridge, contributes to our further understanding of how the asset was constructed, its relationship with other stone monuments and the landscape.

Historic value

11.144 The asset contributes to historical values, such as religious beliefs, the prehistoric society and their abilities, but also in relation to famous historical and archaeological figures who have worked on the Site in the 19^{th} and 20^{th} centuries. Particularly, the site is one of the first examples of a heritage asset being taken from public ownership into state care. The asset has approximately 400 years of recorded history.

Artistic and Architectural Value

11.145 The formation and development of the stones at Calanais 1 are unique, with a planned and calculated location along with the other associated standing stones and monoliths. The asset grew over time, from 3000 BC to 2500 BC, showing a possible change in the artistic style and architecture over this period. The features associated with the stones, including the central monolith, cairn and several potential structures within the asset's vicinity, are all also of architectural interest, as part of the complexity of the Calanais 1 standing stones.

11.146 The Calanais Stones also derive their significance from their setting and group value, with relationships to the surrounding landscape and contemporary lithic monuments.

Setting

11.147 The asset is located on a promontory within the west of Lewis, on an outcrop along the eastern coast of East Loch Roag. The asset provides panoramic views to its surroundings, with hilltops and sea inlets. The monument is a sky-line feature, placed on a low ridge visible from every vantage point within the proximate area. Although the sea level would have been different 5,000 years ago, the location of the stones were clearly planned to hold wide views to high ridges and surrounding land formation, but also the sea to the west and the coastal inlets. These aspects of the asset's setting contribute toward how the asset's historical function is understood, particularly with the established relationships of the stones with astronomical events utilising the mountain formations, and the Atlantic coastal trade established by recovered ceramics.

11.148 The Calanais Stones comprise a core part of the prehistoric ritualistic landscape, with a number of stone monoliths and circles associated with a large scale system of astronomical observation located throughout Lewis, including the furthest, Sideval stones (**SM5351**), using the 'Sleeping Beauty' mountain skyline as part of the interactive relationship with the moon, and theoretical patterns with the sun, stars and Venus. The views from Calanais to these associated stone monuments and skylines contribute to the functionality of the asset within the historic, ritualistic landscape.

11.149 The asset utilises the natural landscape, with views to the skyline particularly along the mountain range of Mor-Mhonadh, Guaineamol and Sidhean an Airgid, in relation to the lunar standstill, and visibility with some contemporary stone circles. The ability to understand the stones relationship with astronomical events with the skyline from the stones and with the stones themselves, and the visibility and functionality with other stone circles within the vicinity contributes to the setting and how the asset is understood, experienced and appreciated, which comprises part of the significance of the asset.

11.150 Stone circles or stone monuments that have tangible or intangible associations with the Calanaish stones within the historic ritual landscape are as follows:

- Achmore,stone circle (**SM4355**);
- Druim Dubh,stone circle (**SM5504**);
- Airigh Mhaoldonuich,fallen standing stone (**SM5430**);
- Cul a'Chleit,standing stones,Garynahine (**SM6019**);
- Clach an Tursa, standing stones and enclosure, Lewis (**SM1662**);
- Sideval, stone circle 400m S of (**SM5351**);
- Ceann a'Gharaodh, stone circle and cairn 250m N of (**SM5433**);
- Cnoc Fillibhir Bheag, stone circle and stone settings (**SM5437**);
- Sron a'Chail, stone circle and cairn 450m SSE of Ceann Hulavig (**SM5457**);
- Airidh nam Bidearan,standing stones N of (**SM6018**);
- Bernera Bridge, stone setting,Great Bernera (**SM5548**); and
- Beinn Bheag,standing stone, cairns and shielings 500m SSE of (**SM5499**).

Contribution of Setting to Significance

11.151 The following aspects are considered to contribute to the setting of the asset:

- the position of the asset which allows panoramic views to nearby hilltops, open grasslands, sea inlets and East Loch Roag, and the way the views can be seen or framed while navigating the stones;

- close association of the stones with the sea inlets which contribute to our understanding of the coastal trade which took place around the stones and its contemporary population. It may also have related to tracking the moon in order to predict the tides for seafaring;
- views to the moutain range comprising Mor-Mhonadh, Guaineamol and Sidhean an Airgid, which forms the 'Sleeping Beauty' or 'Old Lady of the Moor', which forms part of the stones interaction with the lunar standstill event;
- the location and plan of the asset which was constructed to have astronomic associations with the natural landscape and skyline; and
- visible or non-visible associations with nearby stone circles or monoliths within the landscape listed in the previous section, which are a contribution to the asset's intelligibility overall as part of a much larger group of heritage assets (HES: Statement of Significance, Calanais Standing Stones).

Development Effects

11.152 The proposed development would introduce 25 wind turbines upon the land to the west of Eishken and land upon and east of Beinn Mheadhanach and Feiriosbahl. The closest turbine would be Turbine 3, located c.21km to the south east of the asset. Analysis of the ZTV and VP16: Calanais Standing Stones indicates that 17 turbines would be visible from within the Scheduled area of the monument (**Figure 11.1d**).

11.153 With reference to the section above, the only one of the contributing aspects of setting to the cultural significance of the asset that would be effected by the proposed development would be views to the east of the 'Sleeping Beauty' mountain range, comprising Mor-Mhonadh, Guaineamol and Sidhean an Airgid, located c.4km to the west of the proposed wind farm. Views toward the 'Sleeping Beauty' mountain ridge contribute to the asset's significance. It is the key views to the mountain range, however, that make the contribution to the significance of the monument, due to the lunar standstill event.

11.154 The turbines would be located c.4km to the east within the backdrop of views toward the 'Sleeping Beauty' mountain range in the foreground. Considering the turbines would have a slight presence on the clearest of days and will not block views or occupy a section of skyline which is part of a contributing aspect of setting, they would comprise a very minor, discernible, part of the view beyond the assets setting. While this may result in a slight erosion of the ability to appreciate those aspects of the asset's setting that contribute to its cultural significance due to the visibility of the turbines, it would not compromise the overall intelligibility of the asset's relationship with the mountain range, including during astronomical events.

11.155 The proposed development would result in a comparatively low level of effect upon only one of multiple positively contributing aspects of the asset's setting, the remainder of which would be preserved. A very low adverse magnitude of effect would be anticipated, resulting in a minor significance of effect, which is considered **not significant** in EIA terms. The operation of the proposed development would not result in such a high level of impact that it would adversely effect the integrity of the asset's setting. Despite the anticipated changes to the backdrop of the views between the asset and the 'Sleeping Beauty' mountain range to the south east, their association would remain intelligible. Fundamentally, the relationship between the Calanais stones and its spatial and visual association with the 'Sleeping Beauty' mountain range would be preserved, as would the ability to understand, appreciate and experience the monument. As the asset is a Scheduled Monument and of national importance, this is defined as High Cultural Significance (**Table 11-2**). As set out in paragraphs 11.136, the contributing factors susceptible to change are unlikely to be impacted by the proposed development. It is therefore concluded that the magnitude of change (**Table 11-3**) is very low adverse upon the contributing factors of significance and therefore has an overall significance of effect of Minor (**Table 11-4**). This is **not significant** in EIA terms.

Cumulative Effects

11.156 Cumulative effects have been considered with regard to any wind farm developments 50m to blade tip or greater that are:

- consented or the subject of valid but currently undetermined planning or s36 application; and
- within 15km of any nationally important assets anticipated to be subject to a Moderate adverse effect (or above) as a result of the proposed development (Uisenis Wind Farm).

11.157 The following proposed/consented wind farms have been considered when identifying cumulative effects:

Table 11.8: Other wind farms involved in the cumulative impacts assessment.

Wind Farm	No. of Turbines	Tip height (m)	Status	Approximate Distance (km)
Stornoway	33	180	Consented	17.0km
Druim Leathann	14	140	Consented	36.7km

11.158 The consented proposals of Muaitheabhal Wind Farm, Muaitheabhal East Extension and Muaitheabhal South Extension have not been considered as part of the cumulative effects as Uisenis Wind Farm is intended to replace these consented schemes.

11.159 As outlined in section 11.29, no assets assessed have met the criteria to be assessed for cumulative effects. The only asset which was concluded to be subject to potential effects was Calanais Stones Scheduled Monument (**SM90054**), with a **minor significance of effect.**

STATEMENT OF SIGNIFANCE OF EFFECT

11.160 This assessment has considered data from a diverse range of sources in order to identify any heritage assets which may be effected by the proposed development. The potential effects upon identified assets, mitigation measures for recording the removal of any known and unknown assets during construction which could be lost, and indirect effects have all been considered. The residual and cumulative effects of the proposed development have been considered in line with the above methodology set out in Sections 11.29 – 11.31 and 11.34.

Construction effects

11.161 Two assets have been identified within the Site which have the potential to be truncated or entirely removed during the construction of access tracks within the Site. These comprise **SLR11**, an undated sheiling, and **SLR102**, undated and unclassified linear stone formations (Sections 11.69 and 11.74).

11.162 There are an additional eight assets that lie within the access track boundary, which have the potential to be truncated or entirely removed during the widening of the access track to the wind farm Site. These comprise **SLR114**, **SLR35**, **SLR139** and **SLR158**, agricultural features, **SLR136**, **SLR138**, comprising black houses, and **SLR55**, a potential clapper bridge.

11.163 These assets are considered to be, or preserved to a level to be higher than, of low cultural significance. The removal of these assets would be considered to be of a very low adverse magnitude of change, resulting in a negligible significance of effect. An archaeological watching brief is to be conducted to ascertain the absence/presence of the assets and any further potential archaeology within their vicinity that may relate. This would offset the negligible significance of harm that the construction is expected to have upon these assets, in the form of preservation by record.

Operational effects

11.164 The assessment included four assets which were scoped in to identify any indirect effects to their significance as a result of change to setting under the proposals. The assets are set out below in **Table 11-9**.

11.165 The assessment identified that the only asset the setting of which would be effected would be the Calanais Complex (**SM90054**). This is due to a very minor intrusion of the proposed turbines which would be present within the distant skyline of the asset's setting to the southeast, to the east of the mountain ridge complex known as the 'Sleeping Beauty' or 'Old Lady of the Moors'. The inclusion of the turbines within the backdrop of the setting would be considered a very minor impact, and would be not significant in EIA terms.

11.166 Overall, the proposed development would be compliant with relevant policy and guidance, including the National Planning Framework 4 (NPF4), Historic Environment Policy for Scotland (HEPS) and the CnES Outer Hebrides Local Development Plan (2018).

Table 11-9: Summary of Statement of Significance

Receptor	Magnitude of Impact	Significance of Impact	Mitigation Proposed	Residual Effect
Construction Phase				
SLR11	Partial/total truncation during construction of trackway.	Negligible significance of effect	Archaeological Watching Brief	None identified. Any significant impacts identified during mitigation works

Receptor	Magnitude of Impact	Significance of Impact	Mitigation Proposed	Residual Effect
SLR102	Partial/total truncation during construction of trackway.	Negligible significance of effect	Archaeological Watching Brief	would be offset to some degree by the benefits provided through information gained during the archaeological watching brief and reporting process.
SLR22	Total removal of the asset during ground removal for borrow pit.	Negligible significance of effect	Archaeological Watching Brief	
SLR179	Partial or total removal of assets during track widening.	Minor significance of effect.	Archaeological watching brief and potential outreach program due to local interest (Kinloch Historical Society)	Potential benefit effects from the outreach program. Any significant impacts identified during mitigation works would be offset by the benefits provided through information gained during archaeological observation. The applicant will consult with the Kinloch Historical Society to agree details with the outreach program and all archaeological works will be in accordance with a WSI agreed with the council.
SLR114	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	None identified.
SLR135	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	
SLR136	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	

Receptor	Magnitude of Impact	Significance of Impact	Mitigation Proposed	Residual Effect
SLR138	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	
SLR139	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	
SLR158	Partial truncation of asset during track widening.	Negligible significance of effect.	No mitigation proposed	
SLR55	Partial truncation of asset during track widening; no asset is considered to remain.	No impacts.	No mitigation proposed	
Operational Phase				
Sideval (**SM5351**)	Neutral	Nil	N/A	N/A
St. Columb's Church (**SM5345**)	Neutral	Nil	N/A	N/A
Dun Cromore (**SM1670**)	Neutral	Nil	N/A	N/A
Calanais Complex (**SM90054**)	Very low adverse impact	Minor adverse significance of effect	N/A	N/A

FURTHER SURVEY REQUIREMENTS AND MONITORING

11.167 Mitigation, as outlined in section 11.85 – 11.86, is to be implemented as a condition to consent. A scheme of mitigation shall be agreed upon with the local planning authority to ascertain the absence/presence of unknown assets that might be effected by the proposed groundworks.

11.168 No other survey requirements and monitoring are required.

FURTHER COMMENTS

11.169 The assessment of effects upon the Calanais Stones (**SM90054**) Scheduled Monument has been undertaken due to the asset being of the highest significance, equivalent to that of a World Heritage Site. The Calanais Stones hold a notably higher level of significance than other comparable stone circles and monuments located within the Outer Hebrides, therefore it was scoped into the Operational Effects assessment on the basis of its atypical sensitivity at the request of HES.

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CONTENTS

INTRODUCTION

12.1 This Chapter examines the transport and access issues associated with the proposed development and considers the likely significant effects on transport and access associated with the construction, operation, and decommissioning phases. The specific objectives of the Chapter are to:

- describe the existing access network and transport 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.

12.2 The assessment has been undertaken by Pell Frischmann Consultants Limited and led by Stephen Cochrane. Stephen is an Associate Director within the Traffic and Transport team and has over 21 years' experience in the traffic and transportation industry and over 16 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).

12.3 This Chapter is supported by the following Figures (EIA Report Volume 3d):

- **Figure 12.1: Study Area**;
- **Figure 12.2: Abnormal Indivisible Load Route Plan**;
- **Figure 12.3: Traffic Count Locations**; and
- **Figure 12.4: Personal Injury Accident Plan**.

and the following Technical Appendix (EIA Report Volume 4b):

- **Technical Appendix 12.1: Transport Assessment**.

12.4 Figures and Technical Appendices are referenced in the text where relevant. This Chapter should be read in conjunction with **Technical Appendix 12.1: Transport Assessment**.

12.5 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance.**

SCOPE AND CONSULTATION

Consultation and Scoping Responses

12.6 This Section summarises the consultation responses undertaken regarding transport and access matters and provides information on where and/or how they have been addressed in this assessment. The following regulatory bodies made comment on transport matters during scoping discussion held in 2022:

- Comhairle nan Eilean Siar (CnES) Transport Department (as local roads agency); and
- Transport Scotland (as trunk roads agency).

12.7 **Table 12-1** below provides a summary of the consultation responses received to date in relation to the proposed development, as detailed within **Chapter 6: Scoping and Consultation**.

Table 12-1: Scoping Key Issues

Consultee	Summary of Key Issues	Where Addressed in Chapter
CnES Scoping Response August 2022	The Environmental Statement should include full details of the transportation route, projected transport movements, details of the potential impact from the transportation and the associated mitigation to be implemented. A Transport Assessment report will also be submitted.	Comment noted, a Transport Assessment is included as **Technical Appendix 12.1**, while the impacts relating to the proposed development are detailed within the Chapter.
Transport Scotland Scoping Response August 2022	The SR states that the turbine components will arrive at the port at Arnish, on Lewis. As there are no trunk roads on the Isle of Lewis, I can confirm that Transport Scotland is satisfied that the construction of the wind farm will have no environmental impact on the trunk road network and no further information is required in this regard.	Comment noted.

Effects Assessed in Full

12.8 The following effects were identified at the scoping stage for consideration in this assessment:

- direct effects during construction on traffic flows in the surrounding study area;
- direct effects upon local road users;
- direct effects on local residents as a result of increased traffic; and
- a cumulative sensitivity review on direct effects during construction on traffic flows in the surrounding study area.

12.9 Where the predicted magnitude of change to baseline conditions of roads within the study area meet the criteria set out in the IEMA guidance, a review of the effects on severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation, and accidents / road safety has been undertaken.

Effects Scoped Out

12.10 On the basis of the desk and field survey work undertaken, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, and feedback received from consultees, the following topic areas have been 'scoped out' of detailed assessment:

- Operational Phase: The traffic effects during the operational phase of the proposed development are likely to be insignificant as expected traffic flows will be less than ten vehicle movements per week, far below the recognised thresholds for triggering a formal transport assessment. 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, 30 years on from the completion of the proposed development. As elements of the proposed development are likely to remain in-situ (such as cable trenches, access tracks, etc), 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 at this point in time and has been scoped out of the assessment.

APPROACH AND METHODS

12.11 This Chapter provides an assessment for the construction activities associated with the proposed development, specifically in relation to providing access to the Site and other traffic and transport matters and presents enough information for consultees and decision makers to comment on and determine the application.

Study Area

12.12 The study area includes local roads that are likely to experience increased traffic flows resulting from the proposed development during the construction phase. The geographic scope was determined through a review of Ordnance Survey (OS) plans and an assessment of the potential origin locations of construction staff and supply locations for construction materials.

12.13 Access to the proposed development will be taken from the unclassified Eishken Road to the southwest of the A859 / B8060 junction. Access opportunities and routing options are limited given the road network available on the island. Access for construction materials would be predominantly from the north and south via the A859. Materials would be sourced where available from suppliers located on the island or alternatively brought from the mainland to Arnish Point Dock (Stornoway Port Authority).

12.14 At the time of writing, the proposed method and route used to transport the Abnormal Indivisible Loads (AIL) to the Site has yet to be confirmed. There are currently two options being considered, namely Arnish Point Dock or the potential to develop a berthing facility at Loch Sealg at the southern edge of the Site (see **Chapter 2: Site Description and Design Evolution** for further detail on the potential berthing facility).

12.15 For the purposes of preparing the Chapter, it has been assumed that Arnish Point Docks would be used to ensure a robust assessment has been undertaken and the full potential impact on the local road network has been considered. The final choice of access route will be agreed prior to works commencing on site and it is proposed that this is secured by planning condition and set out in the Construction Traffic Management Plan (CTMP).

12.16 Based on the above, access for AILs associated with turbine component delivery will be via Arnish Point Access Road, the A858 and Eishken Road. A full description of the AIL from Arnish Point Docks is provided within the 'Assumptions and Limitations' section below and in the 'Distribution of Construction Trips' section of **Technical Appendix 12.1**.

12.17 The study area includes likely areas of material supply, the Site access junction and the construction material and abnormal load delivery routes. It is also of sufficient size to include the main areas of workforce accommodation during the construction period. Additional information on the routing of construction materials within the study area are included in the 'Assumptions and Limitations' section of the chapter.

12.18 The study area for the assessment is therefore as follows and is illustrated in **Figure 12.1**:

- the A859 between Tarbert and Stornoway; and
- the Eishken Road from its junction with the A859 to Eishken Lodge.

12.19 Effects associated with construction traffic generated by the proposed development would be most pronounced in close proximity to the Site access junction 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.

Information and Data Sources

12.20 A desk study has been undertaken to inform the assessment, which included reviews and identification of the following:

- relevant transport planning policy – Government / Council planning website;
- personal injury accident data – crashmap.co.uk[1];
- Traffic data – Department for Transport Road Traffic Statistics and Transport Scotland Traffic Database[2];
- sensitive locations within study area (as defined by IEMA such as settlements, schools etc.) –

[1] Crashmap. Available at: https://www.crashmap.co.uk/.

[2] Department for Transport, traffic count data. Available at:https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints.

googlemaps.co.uk[3];

- any other traffic sensitive receptors in the area (core paths, routes, communities, etc.) – googlemaps.co.uk and relevant agency's website;
- Ordnance Survey (OS) plans;
- potential origin locations of construction staff and supply locations for construction materials to inform extent of local area roads network to be included in the assessment;
- cumulative development information – CnES planning portal[4]; and
- constraints to the movement of AILs through a Route Survey including swept path assessments – OS plans, video footage and Google Streetview.

12.21 Traffic data has been obtained from the Department for Transport (DfT) for the local road network. The data format is Annual Average Daily Traffic (AADT) flows, which allow the traffic flows to be split into Cars/Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs).

Field Surveys

12.22 A site visit was undertaken in relation to the proposed development in May 2023 to confirm the information obtained during the desk study. This included a review of the access route for general construction traffic and AILs, to review potential access constraints and opportunities. During the site visit, photographic and video records were collected and measurements were taken at key points along the access routes.

Assessment Methods

12.23 The Institution of Environmental Management and Assessment (IEMA) 'Guidelines for Environmental Impact Assessment'[5] (2005) notes that the separate 'Guidelines for the Environmental Assessment of Road Traffic'[6] (1993) document should be used to characterise the environmental traffic and transport effects (offsite effects) and the assessment of significance of the effects of major new developments[7]. The guidelines intend to complement professional judgement and the experience of trained assessors.

Criteria for Assessing Sensitivity of Receptors

12.24 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.

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[3] Google Maps. Available at: https://www.google.co.uk/maps.

[4] https://planning.cne-siar.gov.uk/PublicAccess/

[5] The Institution of Environmental Management and Assessment (IEMA) (2005), 'Guidelines for Environmental Impact Assessment'.

[6] Institute of Environmental Assessment (1993), The Guidelines for the Environmental Assessment of Road Traffic.

[7] At the time of writing this Chapter (finished in July 2023), the 1993 guidance was used, however we are aware new guidance was published in July 2023. It is considered unlikely that there would be changes to the conclusions of the assessment if the 2023 guidance was used.

12.25 The IEMA Guidelines includes 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 12-2**.

Table 12-2: 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, 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 Abnormal Loads and new strategic trunk road junctions capable of accommodating Abnormal Loads.
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, few community or public facilities or services.	Where a location includes individual dwellings or scattered settlements with no facilities.

12.26 The classifications are based upon the activities that can be expected in different areas and different types of streetscape. Professional judgement is used to reflect these generalised descriptions to study areas, especially those in remote areas where settlement size, function and facilities are more important than the category descriptors suggest.

12.27 Where a road passes through a location, users are considered subject to the highest level of sensitivity defined by either the road or location characteristics.

Criteria for Assessing Magnitude of Impact

12.28 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 highways links where traffic flows are predicted to increase by more than 30% (or where the number of heavy goods vehicles is predicted to increase by more than 30%); and
- Rule 2 – include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

12.29 Examples of sensitive areas presented in the IEMA Guidelines include hospitals, churches, schools, historical buildings and links with high pedestrian flow.

12.30 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 states that, "severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery." Further, "Changes in traffic of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' [or minor, moderate and major] changes in severance respectively". However, the Guidelines acknowledge that "the measurement and prediction of severance is extremely difficult";

- *Driver delay* – the IEMA Guidelines note that these delays are only likely to be "significant [or major] when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.";

- *Pedestrian delay* – the delay to pedestrians, as with driver delay, is likely only to be major when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. An increase in total traffic of approximately 30% can double the delay experienced by pedestrians attempting to cross the road and would be considered major;

- *Pedestrian amenity* – the IEMA Guidelines suggests that a tentative threshold for judging the significance of changed in pedestrian enmity would be where the traffic flow (or its lorry component) is halved or doubled. Therefore, it is considered that a change in the traffic flow of -50% or +100% would produce a major change in pedestrian amenity;

- *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 major changes respectively; and

- *Accidents and safety* – professional judgement would be used to assess the implication of local circumstances, or factors which may elevate or lessen risks of accidents.

12.31 While not specifically identified, as more vulnerable road users, cyclists are considered in similar terms to pedestrians.

12.32 Table 2.2 of Volume 11, Section 2, Part 5 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 12-3.**

Table 12-3: Magnitude of Effect

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.

Criteria for Assessing Significance of Effects

12.33 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 12-4**.

Table 12-4: Significance of Effects

	Magnitude of Effect			
Receptor Sensitivity	Major	Moderate	Minor	Negligible
High	**major**	**major/moderate**	moderate/minor	minor
Medium	**major/moderate**	**moderate**	minor	minor/negligible
Low	moderate/minor	minor	minor	minor/negligible
Negligible	minor	minor	minor/negligible	negligible

12.34 Significance is categorised as major, moderate, minor or negligible. Effects judged to be of major or moderate significance will be considered to be significant in accordance with the EIA Regulations and require mitigation.

12.35 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.

12.36 The terminology used in the Access, Traffic and Transport Chapter can differ slightly from that used within the other Chapters of the EIA reports and as previously advised has been based on the scale set out within the DMRB. The effects of traffic whether temporary or permanent on any sensitive receptors on the local road network tends to be neutral at best, with most being of an adverse nature ranging from major to slight. As such when undertaking the assessment within this Chapter no reference has been made to 'beneficial' when describing the significance of any impacts relating to the traffic generated by the construction of the proposed development.

Cumulative Effects

12.37 The assessment of cumulative effects has been undertaken in a similar manner to that of the potential effects but takes into consideration other consented developments. Developments currently in the scoping stages of planning or without consent, have not been considered.

Assumptions and Limitations

12.38 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 and 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).

12.39 Key assumptions made to inform the assessment include:

- the assessment is based upon an assumed construction programme for the Proposed Development lasting 36 months. Alterations in this programme, may increase or decrease traffic flows per month, however on the information available at this time, it is considered a robust assessment;
- traffic generation across the construction programme is based on the estimates of construction materials and staff working onsite as set out in **Technical Appendix 12.1**. Whilst this has been estimated as accurately as possible at this stage, any changes to staff numbers or material requirements may increase or decrease traffic flows per month. It is however considered a robust assessment;
- assumptions on the origin points for materials have been made to provide a worst-case assessment scenario. Should these origin points change, the effects on surrounding areas may alter to those presented in the assessment;
- it is assumed that up to 50% of stone aggregate requirements will be imported to Site. In reality, it is likely that the onsite borrow pits will provide most, if not all, of the stone aggregate materials, therefore traffic estimates for aggregate imports are conservative;
- it is assumed that concrete batching will be undertaken onsite, however allowance has been made for construction traffic importing concrete batching materials and fine aggregates to Site;
- the proposed development will be accessed via Eishken Road which will be upgraded as required to accommodate both general construction traffic and AILs;
- the distribution of development traffic on the network will vary depending on the types of loads being transported. The assumptions for the distribution of construction traffic during the peak months are as follows:
- all construction traffic enters the Site via the existing access junction on the A859;
- deliveries associated with the delivery of concrete batching materials and other would be

from the north, from the closest supplier, namely Breedon Marybank Quarry;

- while it is anticipated that onsite borrow pits will meet aggregate requirements, for the purpose of this assessment it is proposed that 50% of track and hardstanding aggregate requirements will be sourced from local quarries, with 50% coming from Breedon Marybank Quarry to the north and 50% from Breedon Ceann an Ora Quarry to the south. The BoP contractor will confirm final quarry and material sourcing with CnES in the final CTMP;

- HGV deliveries associated with the substation installation, cabling and associated materials, etc. will arrive via the A859 to the north likely from Arnish Point Docks;

- staff working at the Site are likely to be based locally (either resident on the island or staying in temporary accommodation). It is assumed that 70% will come from Stornoway and 30% from Tarbert; and

- general Site deliveries will be via the A859 from the north.

12.40 For the purposes of preparing this Chapter, it has been assumed that Arnish Point Docks would be the Port of Entry (POE) and used for discharging all AILs associated with the proposed development. Those AILs arriving at Arnish Point Docks would travel through to the Site as follows:

- AILs would route along Arnish Point Access Road for approximately 3.2km before reaching the priority junction with the A859;

- at the junction, the loads would turn left on to the A859 and travel southbound for approximately 22.2km to its junction with Eishken Road; and

- at the junction, the loads would turn left on to Eishken Road and travel eastbound through to the Site.

12.41 The above AIL route can be seen in **Figure 12.2**.

12.42 The Future Baseline Year being assessed as part of the traffic and transport assessment is 2027, as this is the anticipated first year of construction, should the Proposed Development get planning consent.

12.43 Whilst some information gaps have been identified, 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 access, traffic and transport.

BASELINE CONDITIONS

Current Baseline

Pedestrian and Cyclist Networks

12.44 There are no pedestrian facilities in the immediate vicinity of the proposed development, reflecting the rural nature of the Site.

12.45 Away from the proposed development within the wider study area, including the A859, there are pedestrian facilities within the larger settlements, including Stornoway and Tarbert. These generally include footways either on one side or both sides of the carriageway.

12.46 The level of pedestrian infrastructure is commensurate with the scale of the local settlements and their rural setting.

12.47 A review of the Core Paths Plan on the CnES website[8] indicates that the following Core Paths detailed in **Table 12-5** are located within the vicinity of the proposed development or in close proximity to the road network likely to be used during the construction period. Only those paths with the potential to be impacted by construction vehicles have been included, with those Core Paths sufficiently set back from the road network excluded.

12.48 Please note that the paths identified in **Table 12-5** may differ from those included within **Chapter 14: Socio-Economic, Recreation, Land Use and Tourism** and identified on **Figure 14.2**, due to the differences in Study Areas of the Chapters.

Table 12-5: Core Paths in the vicinity of the proposed development

Path No.	Path Name	Selection Criteria	Surface Type	Length (km)
6	Lewis Castle Grounds Paths	Circular, landscape, cultural, natural	Metalled road, surfaced path, unsurfaced path	23.30
10	Miabhaig - Bhiogiadail Route	Landscape, cultural, natural	Rough track, rough surfaced path, unsurfaced path	16.90
11	Urgha - Maraig PROW	Public Right of Way, landscape, cultural, natural	Rough surfaced track	6.13

12.49 A review of Sustrans' National Cycle Route (NCR) map[9], shows the Hebridean Way is an on-road cycle route that is located within the study area on the A859 and is designated as National Cycle Route (NCR) 780. NCR 780 is approximately 317.4km (197.2 miles) in length and runs from Vatersay and Barra to Lewis. The route involves taking two ferry journeys, which links the islands.

Baseline Road Information and Traffic Data

12.50 Access to the proposed development from the A859 will be taken from the unclassified Eishken Road just to the southwest of the A859/B8060 junction.

12.51 The A859 is the main road which connects Stornoway, in the north-east, to Rodel, in the south. The A859 is a single carriageway which is generally subject to the national speed limit, however, this reduces going through towns and villages and is maintained by the CnES. There are no trunk roads on the islands.

[8] https://www.cne-siar.gov.uk/leisure-sport-and-culture/community-life-and-leisure/countryside-access/core-paths-planning-in-the-hebrides
[9] https://www.sustrans.org.uk/national-cycle-network

12.52 Eishken Road is an unclassified single-track road, running from its junction with the A859 to Eishken Lodge intersecting the Site. The road is approximately 12km in length and has passing places throughout its length. In the vicinity of the junction with the A859, the road is signposted as having an 8-tonne maximum gross weight limit in place for vehicles.

12.53 Arnish Point Access Road (potential to be used for AILs) routes between the Arnish Point Dock, which includes the Arnish Fabrication Facility and the A859. The road is a two-way single track road measuring approximately 3.3m – 3.8m in width, with passing places located along its length.

12.54 In order to assess the impact of construction traffic on the study area, Annual Average Daily Traffic (AADT) flows were obtained from the DfT traffic database[10]. Available 2019 flow information was obtained for all locations, as these flows would be unaffected by Covid-related travel restrictions. The traffic counts sites used were as follows.

12.55 DfT traffic data allow the traffic flows to be split in vehicle classes. The data was summarised into LGVs and HGVs (all goods vehicles >3.5tonnes gross maximum weight).

12.56 The traffic counts sites used were as follows and are illustrated in **Figure 12.3**:

- A859 at Loch Sanndahat (Count Site Reference 91285);
- A859 east of Kinloch (Count Site Reference 80413);
- A859 at Loch Seaforth (Count Site Reference 30948); and
- A859 at Tarbert (Count Site Reference 10948).

12.57 The above counts were all estimated counts, using previous years count information from the DfT database.

12.58 These traffic count sites were identified following a desk study and review of online mapping resources along the access routes to determine the location of sensitive receptors.

12.59 With regards to Eishken Road, as previously discussed, this is a single-track road with passing places, serving a small number of isolated dwellings and providing access to areas used for agricultural purposes and to the Eishken Estate. The road is very lightly trafficked and given that all traffic used in the construction of the proposed development will use it to access the Site, the percentage increase will be significant. As such, rather than use the base flows to determine if an assessment is required, one has been undertaken regardless.

12.60 Effects associated with traffic generated by the proposed development would be most pronounced in close proximity to the Site access junction 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.

[10] Department for Transport, traffic count data. Available at: https://roadtraffic.dft.gov.uk/#6/55.254/-6.053/basemap-regions-countpoints.

12.61 The locations of the traffic count sites used in this assessment as discussed above are illustrated in **Figure 12.3**, while **Table 12-6** summarises the AADT traffic data collected and used in this assessment.

Table 12-6: 24-hour Average Traffic Data (2019)

Receptor	Cars / LGV	HGV	Total	% HGVs
A859 at Loch Sanndahat	3,571	114	3,685	3.09%
A859 east of Kinloch	1,874	267	2,141	12.47%
A859 at Loch Seaforth	798	58	856	6.78%
A859 at Tarbert	1,028	328	1,356	24.19%

Please note that variances may occur due to rounding.

Baseline Road Safety Review

12.62 Personal Injury Accident (PIA) data for the five-year period covering 2017 to 2021 was obtained from the online resource crashmap.co.uk[11] which uses data collected by the police about road traffic crashes occurring on British roads, where someone is injured.

12.63 Transport Assessment Guidance[12] requires an analysis of the PIA on the road network in the vicinity of any development to be undertaken for at least the most recent three-year period, or preferably a five-year period, particularly if the site has been identified as being within a high accident area.

12.64 The statistics are categorised into three categories, namely "Slight", "Serious" and "Fatal" for accidents that result in a death. The locations and severity of the recorded accidents along the A859 within the study area are summarised in **Table 12-7**, (it should be noted that there is only provisional data currently available for the latter part of 2021). The location of the recorded PIA can be seen in **Figure 12.4**.

Table 12-7: Recorded PIAs

Year	Severity		
	Slight	Serious	Fatal
2021	2	1	-
2020	2	1	1
2019	2	3	-
2018	2	1	-
2017	4	-	-
Total	**12**	**6**	**1**

[11] CrashMap accident data. Available at: https://www.crashmap.co.uk/.

[12] 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.

12.65 A summary analysis of the incidents indicates that:

- 19 PIAs were recorded within the study area within the last five-year period;
- of those 11 PIAs, 12 were “Slight” (63%), 6 were “Serious” (32%) and 1 was “Fatal” (5%);
- the single ‘Fatal’ PIA involved an HGV, no other vehicles were involved;
- two PIAs involved a motorbike, one ‘Serious’ and one ‘Slight’;
- one PIA involved a pedestrian and occurred at a junction on the A859 in Stornoway. The PIA was ‘Slight’ and involved a car;
- one PIA involved a pedal cycle and occurred in the vicinity of a junction on the A859. The PIA was ‘Slight’ and involved a car;
- two of the recorded PIAs involved child casualties in the vehicles. Both of these were ‘Slight’ and involved cars;
- young drivers (16-20) were involved in three accidents, one “Slight” and two “Serious”; and
- no accidents were recorded on the A859 in the vicinity of the Site access junction.

12.66 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 the construction of the proposed development. There are no clusters of PIAs at any location on the study network and there is only one recorded accident involving HGV, which was a single vehicle accident.

Future Baseline in the Absence of the Proposed Development

12.67 Construction of the proposed development could commence during 2027 if consent is granted and is anticipated to take up to 36 months depending on weather conditions and ecological considerations.

12.68 To assess the likely effects during the construction, base year traffic flows were determined by applying a National Road Traffic Forecast (NRTF) low growth factor to the surveyed traffic flows. The NRTF low growth factor for 2019 to 2027 is 1.049. This factor has been applied to the survey data to estimate the 2027 Base traffic flows shown in **Table 12-8**.

Table 12-8: 24-hour Average Traffic Data (2027)

Receptor	Cars / LGV	HGV	Total	% HGVs
A859 at Loch Sanndahat	3,746	120	3,866	3.09%
A859 east of Kinloch	1,966	280	2,246	12.47%
A859 at Loch Seaforth	837	61	898	6.78%
A859 at Tarbert	1,078	344	1,422	24.19%

12.69 Note, if the proposed development did not proceed, or proceeded later than currently predicted (i.e. later than 2027), traffic growth will occur and the public roads within the study area will experience increased traffic flows resulting from other development pressures, tourism traffic and population growth. Accordingly, the assessment represents a worst case as the contribution of the proposed development in relative terms would decrease in the future.

Implications of Climate Change

12.70 **Chapter 16: Other Issues** provides details of the climate change projections in the west of Scotland for the 2060s, when the operational period of the proposed development is likely to end. In summary, the projections highlight that in the 2060s, summer and winter temperatures are likely to be greater than the current baseline (greater for summer), with winter rainfall increasing and summer rainfall decreasing.

12.71 It is considered that climate change projections will not have a discernible impact on the baseline conditions for road traffic within the timescales of the proposed development.

12.72 It is assumed that, at regional level, appropriate measures will be put in place to ensure flood risk is managed and does not have long term effects on transport infrastructure.

Sensitive Receptors

12.73 A review of sensitive receptors has been undertaken within the study area based on the review of baseline conditions. **Table 12-9** 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 12-2.**

Table 12-9: Summary of Receptor Sensitivity

Receptor	Rationale	Receptor Sensitivity
A859 Users – between the south of Stornoway and Leurbost	Where the road is a local A or B class road, capable of regular use by HGV traffic.	Medium
A859 Users – between Leurbost and Kintarvie	Where the road is a local A or B class road, capable of regular use by HGV traffic.	Medium
A859 Users – between Kintarvie and Aird Aisaig	Where the road is a local A or B class road, capable of regular use by HGV traffic.	Medium
A859 Users – between Aird Aisaig and Tarbert	Where the road is a local A or B class road, capable of regular use by HGV traffic.	Medium
Eishken Road Users	Where the road is a minor rural road, not constructed to accommodate frequent use by HGVs.	High
Residents along the A859	Where a location includes individual dwellings or scattered settlements with no facilities.	Negligible
Residents of Leurbost (including visitors to Langabhat Medical Practice)	Where a location is a small rural settlement, few community or public facilities or services.	Medium

Receptor	Rationale	Receptor Sensitivity
Residents of Balallan / Kinloch	Where a location is a small rural settlement, few community or public facilities or services	Low
Residents living along Eishken Road	Where a location includes individual dwellings or scattered settlements with no facilities.	Negligible
Residents of Tarbert	Where a location is an intermediate sized rural settlement, containing some community or public facilities and services.	Medium
Core Paths	Minor path used by walkers and cyclists, not constructed to accommodate HGV traffic flows.	High

12.74 Based on the indicators which are stated within the IEMA Guidelines, the following locations are identified as sensitive receptors in this assessment due to the presence of schools, churches or medical practices, as well as paths:

- Stornoway (southern extents of the town);
- A859 at Leurbost;
- Tarbert; and
- Core Path / Public Right of Way Users.

12.75 These locations will be subject to the 'Rule 2' of the IEMA Guidelines which requires a full assessment of effects if the traffic count locations are anticipated to be subject to an increase in 10% of total traffic.

12.76 All other locations within the study area are subject to 'Rule 1' and are assessed if traffic flows (or HGV flows) on highway links are anticipated to increase by more than 30% as a result of the construction of the proposed development.

Design Considerations

12.77 The proposed development allows for the use of onsite borrow pits to provide material for the creation of the access tracks, offsite road improvements, hardstandings and compound bases. The use of onsite borrow pits will allow for a reduction in the potential impacts on the local road network and any sensitive receptors along the access routes.

12.78 It is estimated that the onsite borrow pits can provide sufficient material for the construction of the entire Site; however, to ensure that a robust assessment is undertaken, it has been assumed that the borrow pits will only provide 50% of the required stone volume, with 50% of material arriving on Site from local suppliers. This represents an overestimate, with the expectation that the on-site borrow pits will be more than adequate as a source for material and the assessment is therefore an over-estimate and is considered robust.

12.79 Batching of concrete for use onsite 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.

Assessment of Effects

12.80 The assessment of effects is based on the project description as outlined in **Chapter 3**. Unless otherwise stated, potential effects identified are considered to be negative.

Potential Construction Effects

12.81 The assessment is based upon the construction effects that may occur within the study area. To assess the effects, it is necessary to determine the likely traffic generation associated with the proposed development during the peak delivery month.

12.82 During the 36-month construction period, 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, sand and crushed rock;
- components relating to the substation element and associated infrastructure; and
- abnormal loads consisting of the wind turbine sections and a heavy lift crane.

12.83 Average monthly traffic flow data was used to establish the construction trips associated with the Site. 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.

12.84 A full description of the assumptions used to determine the construction trips and resultant material quantities, is detailed in full within Section 6: 'Trip Generation and Distribution' of **Technical Appendix 12.1.** This includes a full breakdown of the following materials**:**

- construction staff;
- AIL and turbine components;
- general site deliveries;
- material deliveries, including:
- cement materials;
- steel;
- aggregates;
- geotextile

- cable / cable sand etc.; and
- substation components and associated materials.

12.85 Except for the turbine components, most traffic would be normal construction plant and will include grading tractors, excavators, high capacity cranes, forklifts and dumper trucks. Most will arrive at the Site on low loaders. The turbines will be delivered in component sections (up to 15 per turbine see **Technical Appendix 12.1**) for ease of transport and will be assembled at the Site. The nacelle, hub, drive train, blade, tower sections are classified as AIL 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 12.1**.

12.86 In addition to the turbine deliveries, two high capacity erection crane will be needed to offload some components and erect the turbines. The crane is likely to be a mobile crane 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. Confirmation on the proposed type and number of cranes used onsite would be confirmed following selection of the candidate turbine and appointment of both the haulage and crane contractors. Information on this would be provided to CnES as part of the CTMP and secured by planning condition.

12.87 The resulting traffic generation profile and indicative construction programme can be seen on **Table 13** in **Technical Appendix 12.1**. This shows that month 23 is the peak period for construction activities. The activities are anticipated to generate an average of 200 movements per day (100 trips in and 100 trips out), of which 108 two-way trips would be made by light vehicles (Site staff, etc.) and 92 two-way trips made by HGV.

12.88 These figures on average indicate approximately eight additional HGV two-way movements per hour on the network at the peak of construction activities, during a typical 12 hour working day.

12.89 It should also be noted that within the estimated peak month of construction activities, AIL movements are expected to begin. Therefore, within the monthly total of 2,024 HGV movements, 66 of these will represent AIL loads.

12.90 Using the distribution of traffic described in **Technical Appendix 12.1** and within the Assumptions and Limitations section of this chapter, the proposed traffic flows on the study area network at the peak of construction are illustrated in **Table 12-10**.

Table 12-10: Peak Construction Month Daily Traffic Data

Receptor	Cars / LGV	HGV	Total	% HGVs
A859 at Loch Sanndahat	76	58	134	43.28%
A859 east of Kinloch	76	58	134	43.28%
A859 at Loch Seaforth	32	36	68	52.94%
A859 at Tarbert	32	-	32	0.00%

12.91 The peak month traffic data was combined with the future year (2027) traffic data to allow a comparison between the baseline results to be made. The increase in traffic volumes is presented in percentage increases for each class of vehicle and is illustrated in **Table 12-11**. Please note there may be minor rounding errors quoted in the tables.

Table 12-11: 2027 Peak Month Daily Traffic Data

Receptor	Cars / LGV	HGV	Total	Cars & LGV % Increase	HGV % Increase	Total Traffic % Increase
A859 at Loch Sanndahat	3,822	178	4,000	2.03%	48.50%	3.47%
A859 east of Kinloch	2,042	338	2,380	3.87%	20.71%	5.97%
A859 at Loch Seaforth	869	97	966	3.82%	59.17%	7.57%
A859 at Tarbert	1,110	344	1,454	2.97%	0.00%	2.25%

12.92 The total traffic movements are not predicted to increase by more than 10% on all of the study network, with the highest being on the A859 at Loch Seaforth, with an increase of 7.57%. It is however assumed that the total traffic increase on the unclassified Eishken Road which leads through to the Site will be in excess of 10% due to the extremely low level of existing traffic using this road.

12.93 The highest total HGV traffic movements increase will be on the A859 at Loch Seaforth, with an increase of 59.17%. Whilst this increase could be considered high, it is generally caused by the relatively low HGV flows on the A859 at this location. The increase would see an additional 58 HGV journeys per day (29 inbound and 29 outbound). Over the course of a typical 12-hour day on Site, this would equate to approximately five movements per hour, which is not considered significant in operational terms of a road such as the A859.

12.94 With regards to the unclassified Eishken Road which leads through to the Site, all HGV traffic accessing the Site will be required to use this road. This would result in approximately 92 HGV journeys per day (46 inbound and 46 outbound), which would equate to approximately eight movements per hour over the course of a typical 12-hour day on Site.

12.95 It should also be noted the construction phase is transitory in nature and the peak of construction activities is short lived, occurring over a relatively short timeframe when taking account of the whole construction programme.

12.96 A review of existing road capacity has been undertaken using the Design Manual for Roads and Bridges, Volume 15, Part 5 “The NESA Manual”. 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 12-12**.

Table 12-12: 2027 Theoretical Road Capacity Review (12 Hour)

Receptor	2027 Baseline Flow	2027 Base + Development Flows	Theoretical Road Capacity (12-hour)	Spare Road Capacity %
A859 at Loch Sanndahat	3,866	4,000	19,200	82.60%
A859 east of Kinloch	2,246	2,380	19,200	89.19%

Receptor	2027 Baseline Flow	2027 Base + Development Flows	Theoretical Road Capacity (12-hour)	Spare Road Capacity %
A859 at Loch Seaforth	898	966	19,200	95.73%
A859 at Tarbert	1,422	1,454	19,200	93.36%

12.97 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 local road network to accommodate all construction phase traffic.

12.98 In accordance with the IEMA Guidelines Rules 1 and 2 and based on the construction traffic data shown in **Table 12-11**, detailed assessments have been undertaken on the following receptors:

- A859 Users – between Kintarvie and Aird Aisaig, (Medium Sensitivity);
- A859 Users – between Aird Aisaig and Tarbert, (Medium Sensitivity);
- Residents along the A859, (Negligible Sensitivity);
- Residents of Leurbost (including visitors to Langabhat Medical Practice), (Medium Sensitivity);
- Residents of Balallan / Kinloch, (Low Sensitivity); and
- Core Paths / Public Rights of Way, (High Sensitivity).

12.99 As previously advised, a detailed assessment has been undertaken for the unclassified Eishken Road, which leads through to the Site, which will be in excess of 10% due to the extremely low level of existing traffic using this road. As such, the assessment includes the following receptors:

- Eishken Road Users, (High Sensitivity); and
- Residents living along Eishken Road, (Negligible Sensitivity).

12.100 It is acknowledged that there will be other months within the overall construction programme as shown in **Table 13** of **Technical Appendix 12.1**, which will also be above the threshold for undertaking detailed assessment, however the assessment focusses on the peak month only, which is the worst case in terms of potential impacts. Other months will still result in impacts within the study area; however these would be less than the predicted peak month. The significance of the potential effects on the above receptors has been determined using the rules and thresholds previously outlined in the Assessment of Significance section. **Table 12-13** summarises the significance on the receptors for the construction phase prior to mitigation measures being applied.

Table 12-13: Construction Phase Effects Summary

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
A859 Users – between the south of Stornoway and Leurbost	Severance	Minor	Minor (not significant)	The increase in HGV traffic is over 50% at this location, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is less than 5% at this location and will therefore not result in community severance at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is considered to be minor.
	Driver Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 79.17%. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 82.60%. In addition, outwith Stornoway to the north, there are limited pedestrian facilities at this location within the study area. As such there is not expected to be any significant pedestrian activity. The effect is therefore considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is not expected that there will be a high number of pedestrians using the road outwith Stornoway. The majority of HGV traffic will arrive and depart from the quarry at the southern extents of the town where the pedestrian provision stops. With the total traffic increasing less than 5%, the effect is therefore considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 5% at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is considered to be minor.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Accidents & Safety	Minor	Minor (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The accidents and safety effects are considered to be minor.
A859 Users – between Leurbost and Kintarvie	Severance	Minor	Minor (not significant)	The increase in HGV traffic is over 20% at this location, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is less than 6% at this location and will therefore not result in community severance at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is therefore considered to be minor.
	Driver Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 87.60%. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 87.60%. There are limited pedestrian facilities at this location within the study area. As such there is not expected to be any significant pedestrian activity. The effect is therefore considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is not expected that there will be a high number of pedestrians using the road as there are limited facilities.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				With the total traffic increasing less than 6%, the effect is therefore considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 6% at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is considered to be minor.
	Accidents & Safety	Minor	Minor (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The accidents and safety effects are considered to be minor.
A859 Users – between Kintarvie and Aird Aisaig	Severance	Minor	Minor (not significant)	The increase in HGV traffic is over 59% at this location, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is less than 8% at this location and will therefore not result in community severance at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is therefore considered to be minor.
	Driver Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 94.97%. The effect is therefore considered to be minor.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 94.97%. There are limited pedestrian facilities at this location within the study area. As such there is not expected to be any significant pedestrian activity. The effect is therefore considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is not expected that there will be a high number of pedestrians using the road as there are limited facilities. With the total traffic increasing less than 10%, the effect is therefore considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 8% at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is considered to be minor.
	Accidents & Safety	Minor	Minor (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic movements will be included within the proposed mitigation measures. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The accidents and safety effects are considered to be minor.
A859 Users – between Aird Aisaig and Tarbert	Severance	Minor	Minor (not significant)	The increase in total traffic is less than 3% at this location and will therefore not result in community severance at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is therefore considered to be minor.
	Driver Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 92.42%. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 92.42%. In addition, outwith Tarbert to the south, there are limited pedestrian facilities at this location within the study area. As such there is not expected to be any significant pedestrian activity. The effect is therefore considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is not expected that there will be a high number of pedestrians using the road outwith Tarbert. The majority of HGV traffic will arrive and depart from the quarry to the north of Aird Aisaig (outwith this section of the study area). With the total traffic increasing less than 3%, the effect is therefore considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 3% at this location. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The effect is considered to be minor.
	Accidents & Safety	Minor	Minor / Negligible (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. There was however one PIA involving and HGV which resulted in a fatality. This occurred at Aird Aisaig on a bend and no other vehicles were involved. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such,

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				cognisance of HGV traffic will be included within the proposed mitigation measures. The A859 forms part of the Hebridean Way on-road cycle route and as such will likely be subject to increased use by cyclist. Appropriate mitigation should be included within the CTMP to ensure potential impacts to cyclist are appropriately mitigated. The accidents and safety effects are considered to be minor.
Residents along the A859	Severance	Minor	Minor / Negligible (not significant)	The increase in HGV traffic ranges from 22.71% to 59.17% through the full length of the A859, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is between 2.25% and 7.57% and will therefore not result in community severance at this location. The effect is therefore considered to be minor.
	Driver Delay	Minor	Minor / Negligible (not significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the A859 to accommodate construction traffic both in terms of HGVs, cars / LGVs and AILS. This however does not take cognisance of the character of the road (i.e. long winding sections, with limited passing opportunities) and limited alternative route options. As such local residents could become frustrated at potential delays caused by construction vehicles, and as such, cognisance of HGV traffic will be included within the proposed mitigation measures. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor / Negligible (not significant)	With the addition of construction traffic, the spare road capacity on the A859 is above 79% for its whole length. In addition, outwith Stornoway and Tarbert, there are limited pedestrian facilities within the study area. As such there is not expected to be any significant pedestrian activity. The effect is therefore considered to be negligible.
	Pedestrian Amenity	Minor	Minor / Negligible (not significant)	It is not expected that there will be a high number of pedestrians using the road outwith Stornoway and Tarbert. The majority of HGV traffic will arrive and depart from the quarry at

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				the southern extents of Stornoway and to the north of Tarbert where the pedestrian provision stops. With the total traffic increasing less than 10%, the effect is therefore considered to be minor.
	Fear & Intimidation	Minor	Minor / Negligible (not significant)	The increase in total traffic is less than 10% along the A859. Changes in flows less than 30% are considered minor. The effect is therefore considered to be minor.
	Accidents & Safety	Minor	Minor / Negligible (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring along the entire length of the A859 and there does not appear to be any specific accident trends. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The accidents and safety effects are considered to be minor.
Residents of Leurbost (including visitors to Langabhat Medical Practice)	Severance	Minor	Minor (not significant)	The increase in HGV traffic is over 48% at this location, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is less than 5% at this location and will therefore not result in community severance at this location. It should be noted that in addition to the residential properties at this location there is a school and medical practice and as such cognisance of these will be given within the CTMP to ensure that any potential severance to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Driver Delay	Minor	Minor (not significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the A859 to accommodate construction traffic both in terms of HGVs, cars / LGVs and AILS. This however does not take cognisance of the character of the road (i.e. long winding sections, with limited passing opportunities) and limited alternative route options. As such local residents could become frustrated at potential delays caused by construction vehicles, and as such, cognisance of HGV traffic

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				will be included within the proposed mitigation measures. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 79.17%. It is estimated that there will be 134 construction vehicles per day during the peak month. This equates to approximately 11 vehicles per hour over a typical working day. As previously mentioned, there are residential properties, a school and medical practice at this location, and as such cognisance of these will be given within the CTMP to ensure that any potential delay to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is estimated that there will be 134 construction vehicles per day during the peak month. This equates to approximately 11 vehicles per hour over a typical working day. The increase is unlikely to affect pedestrian amenity. As previously mentioned, there are residential properties, a school and medical practice at this location, and as such cognisance of these will be given within the CTMP to ensure that any potential delay to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 5% at this location. Changes in flows less than 30% are considered minor. The effect is therefore considered to be minor.
	Accidents & Safety	Minor	Minor (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The accidents and safety effects are considered to be minor.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
Residents of Balallan / Kinloch	Severance	Minor	Minor (not significant)	The increase in HGV traffic is over 20% at this location, however this is due to the low level of HGV traffic. Furthermore, the A859 is capable of accommodating regular use by HGV traffic. The increase in total traffic is less than 6% at this location and will therefore not result in community severance at this location. It should be noted that in addition to the residential properties at these locations there are churches and other community facilities, and as such cognisance of these will be given within the CTMP to ensure that any potential severance to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Driver Delay	Minor	Minor (not significant)	When considering the effects purely in numerical terms based on the assessment criteria, there is ample spare capacity on the A859 to accommodate construction traffic both in terms of HGVs, cars / LGVs and AILS. This however does not take cognisance of the character of the road (i.e. long winding sections, with limited passing opportunities) and limited alternative route options. As such local residents could become frustrated at potential delays caused by construction vehicles, and as such, cognisance of HGV traffic will be included within the proposed mitigation measures. The effect is therefore considered to be minor.
	Pedestrian Delay	Minor	Minor (not significant)	With the addition of construction traffic, the spare road capacity at this location on the A859 is 87.60%. It is estimated that there will be 134 construction vehicles per day during the peak month. This equates to approximately 11 vehicles per hour over a typical working day. As previously mentioned, there are residential properties churches and other local amenities at these locations, and as such cognisance of these will be given within the CTMP to ensure that any potential delay to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Pedestrian Amenity	Minor	Minor (not significant)	It is estimated that there will be 134 construction vehicles per day during the peak month. This equates to approximately 11

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				vehicles per hour over a typical working day. The increase is unlikely to affect pedestrian amenity. As previously mentioned, there are residential properties, a school and medical practice at this location, and as such cognisance of these will be given within the CTMP to ensure that any potential delay to users is appropriately mitigated. Based on the increase in traffic flows and the effect is considered to be minor.
	Fear & Intimidation	Minor	Minor (not significant)	The increase in total traffic is less than 6% at this location. Changes in flows less than 30% are considered minor. The effect is therefore considered to be minor.
	Accidents & Safety	Minor	Minor (not significant)	Within the accident analysis period, there appears to be a low level of accidents occurring at this location and there does not appear to be any specific accident trends. In addition, there are no accidents involving HGVs. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The accidents and safety effects are considered to be minor.
Core Paths / Public Rights of Way	Severance	Major	Major (Significant)	The presence of construction traffic within the Site where there was previously no traffic could lead to a severance of some of the path network. Whilst there are no Core Paths within the Site itself, recreational walkers could be present on the wider path network. The increase in traffic however is likely to be numerically low and, as such, any severance would be highly localised and short term. The effect is therefore considered to be major.
	Driver Delay	Negligible	Negligible (Not Significant)	Not applicable
	Pedestrian Delay	Moderate	Major / Moderate (Significant)	Pedestrians could experience delays if their movements interact with construction traffic along the wider path networks, which would not be experienced prior to the construction period. The impact is therefore considered moderate.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
	Pedestrian Amenity	Major	Major (Significant)	The presence of traffic flows along a location where there would have been no traffic prior to the construction phase could affect the amenity of the wider path network users. The effect is therefore considered to be major.
	Fear & Intimidation	Major	Major (Significant)	The presence of traffic flows along a location, where there would have been no traffic prior to the construction phase, could cause fear and intimidation on the wider path network for users. The effect is therefore considered to be major.
	Accidents & Safety	Moderate	Major / Moderate (Significant)	There is potential to impact the safety of the wider path network users interacting with construction delivery vehicles. It is anticipated that site specific speed limits will be adhered to within the Site boundary. The impact is therefore considered moderate.
Eishken Road Users	Severance	Major	Major (Significant)	The increase in HGV traffic and total traffic flows is expected to be statistically significant at this location, as all construction traffic will use the road to access the Site. The road is a single track road and not capable of supporting significant traffic volumes, in particular HGV traffic. The effect is therefore considered to be major.
	Driver Delay	Moderate	Major / Moderate (Significant)	The road is a lightly trafficked single track road and unlikely to be subject to any capacity issues at present, due to the limited number of properties or locations it serves. The addition of construction traffic to the road in its current form will undoubtably lead to driver delay for existing users, albeit these will be in small numbers. The effect is therefore considered to be moderate.
	Pedestrian Delay	Major	Major (Significant)	Whilst there are no existing pedestrian facilities. Pedestrians could experience delays if their movements interact with construction traffic along the road which would not be experienced prior to the construction period. The effect is therefore considered major.
	Pedestrian Amenity	Major	Major (Significant)	The presence of traffic flows along a location where there would have been minimal traffic prior to the construction phase could affect the amenity of pedestrians.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				The effect is therefore considered major.
	Fear & Intimidation	Major	Major (Significant)	The increase in total traffic is expected to be high at this location due to the low levels of existing traffic. Furthermore, there will be a significant increase in HGV traffic. The effect is therefore considered to be major.
	Accidents & Safety	Moderate	Major / Moderate (Significant)	Within the accident analysis period, no accidents were recorded at this location. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The accidents and safety effects are considered to be moderate.
Residents living along Eishken Road	Severance	Major	Minor (Not significant)	When considering the effects purely in numerical terms, the increase in total traffic at this location could be considered significant, however this is due to the low level of existing road users at this location. Over the course of a typical work day during the peak of construction activity, there is predicted to be a total of 200 movements per day. This equates to less than 17 movements per hour and will therefore not result in severance at this location. The effect is therefore considered to be minor.
	Driver Delay	Major	Minor (Not significant)	The road is a lightly trafficked single track road and unlikely to be subject to any capacity issues at present, due to the limited number of properties or locations it serves. The addition of construction traffic to the road in its current form will undoubtably lead to driver delay for existing users, albeit these will be in small numbers. Over the course of a typical work day during the peak of construction activity, there is predicted to be a total of 200 movements per day. This equates to less than 17 movements per hour and will therefore not result in significant delays at this location. The effect is therefore considered to be minor.
	Pedestrian Delay	Major	Minor (Not significant)	Whilst there are no existing pedestrian facilities. Pedestrians could experience delays if their movements interact with construction traffic along the road which would not be experienced prior to the construction period.

Receptor	Potential Effect	Magnitude of Effect	Significance of Effect	Comment
				It should however be noted that over the course of a typical work day during the peak of construction activity, there is predicted to be a total of 200 movements per day. This equates to less than 17 movements per hour and will therefore not result in significant pedestrian delay at this location. The effect is therefore considered to be minor.
	Pedestrian Amenity	Major	Minor (Not significant)	It is not expected that there will be a high number of pedestrians using the road, although it is acknowledged that the presence of traffic flows along a location where there would have been limited traffic prior to the construction phase could affect the amenity of people. The effect is therefore considered to be minor.
	Fear & Intimidation	Major	Minor (Not significant)	It is not expected that there will be a high number of pedestrians using the road, although it is acknowledged that the presence of traffic flows along a location where there would have been limited traffic prior to the construction phase could affect the amenity of people. The effect is therefore considered to be minor.
	Accidents & Safety	Moderate	Minor (not significant)	It is not expected that there will be a high number of pedestrians using the road, although it is acknowledged that the presence of traffic flows along a location where there would have been limited traffic prior to the construction phase. Within the accident analysis period, no accidents were recorded at this location. The character of the road could lead to driver frustration however, and as such, cognisance of HGV traffic and AIL movements will be included within the proposed mitigation measures. The accidents and safety effects are considered to be minor.

12.101 The assessment of significance carried out in **Table 12-13** indicates that traffic flows interacting with Eishken Road could give rise to significant adverse effects, prior to the application of mitigation measures.

12.102 The assessment of effects also indicates that traffic flows interacting with the Core Path / Public Rights of Way could also result in significant adverse effects, prior to the application of mitigation measures.

12.103 It is also worth considering that the effects detailed relate solely to the peak of construction activities (month 23), and that the construction period is short lived and the effects transitory in nature.

12.104 It is however acknowledged that the thresholds for assessment may be exceeded in other months during the construction programme, however as the assessment has been undertaken on the estimated peak month of construction activity in terms of construction vehicle generation, it is therefore considered to be a worst case assessment. Furthermore, those mitigation measures proposed to address any significant adverse effects identified above would also be relevant to any other months impacted by construction traffic.

STANDARD MITIGATION

Construction Phase Mitigation

Construction Traffic Management Plan (CTMP)

12.105 The following measures will be implemented during the construction phase through the CTMP, secured via a planning condition:

- agree AIL route modifications and improvements with CnES and other relevant stakeholders. Works which will be required to facilitate turbine deliveries are outlined in the respective delivery route option RSR, which is presented in **Technical Appendix 12.1**;
- where possible, the detailed design process would minimise the volume of material to be imported to Site to help reduce HGV numbers;
- a Site worker transport and travel arrangement 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 CnES;
- normal Site working hours would be limited to between 0700 and 1900 (Monday to Friday and 0700 and 1600 (Saturday), though component delivery and turbine erection may take place outside these hours;
- appropriate traffic management measures would be put in place on the A859 and Eishken Road to avoid conflict with general traffic, subject to the agreement of CnES. Typical measures would include HGV turning and crossing signs and / or banksmen at the Site access and warning signs;

- provide construction updates on the project website and or a newsletter to be distributed to residents within an agreed distance of the Site;
- adoption of a voluntary reduced speed limits at locations to be agreed with CnES;
- all drivers would 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.

Road Maintenance

12.106 CnES within their scoping response have highlighted the requirement that an agreement to cover the cost of abnormal wear on its network is made. This will be covered by a planning condition.

12.107 Video footage of the pre-construction phase condition of the abnormal loads access route and the construction vehicles route would be recorded to provide a baseline of the condition of the road prior to any construction work commencing. This baseline would provide evidence of any change in the road condition during the construction phase. Any necessary repairs would be coordinated with CnES's roads team. Any damage caused by traffic associated with the proposed development during the construction period, that would be hazardous to public traffic, would be repaired immediately.

12.108 Damage to road infrastructure caused directly by construction traffic would be remediated, and street furniture that is removed on a temporary basis would be fully reinstated.

12.109 There would be a regular road review, and any debris and mud would be removed from the carriageway using an onsite road sweeper to ensure road safety for all road users.

12.110 Before the AILs traverse the route, the following tasks would be undertaken to ensure load and road user safety:

- ensure any vegetation which may foul the loads is trimmed back to allow passage;
- confirm there are no roadworks or closures that could affect the passage of the loads;
- check no new or diverted underground services on the proposed route are at risk from the abnormal loads; and
- confirm the police are satisfied with the proposed movement strategy.

Offsite Mitigation / Improvement Works

12.111 With regards to offsite mitigation works to accommodate both general construction vehicles and AILs, a scheme of improvements are proposed at the junction between the A859 and Eishken Road and on Eishken Road.

12.112 The improvement works at the junction will include widening to allow AILs to negotiate the junction in a safe and efficient manner.

12.113 On Eishken Road, widening works are proposed, to bring the existing carriageway up to a minimum of 4.5m on straight sections, with improved or new passing places provided. In addition, there may be requirements for carriageway regrading and creation of over-run areas for AILs, together with the provision of a new bridge at Seaforth Head. Confirmation on the type of structure (temporary or permanent) will be confirmed following additional onsite investigations.

12.114 All of the above works would be undertaken in full consultation with CnES and designed in accordance with the appropriate technical standard.

Abnormal Load Transport Management Plan

12.115 An Abnormal Load Transport Management Plan will be prepared and will likely be subject to a planning condition, to cater for all movements to and from the proposed development. This will include for example:

- 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 popular local events etc.;
- 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 committee 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 will form a means of communicating and updating on forthcoming activities and dealing with any potential issues arising.

12.116 In addition, there are a number of traffic management measures (temporary mitigation measures) that will help reduce the effect of abnormal load convoys. All abnormal load deliveries will be undertaken at appropriate times (to be discussed and agreed with the local authority and police) with the aim to minimise the effect on the local road network. It is likely that the abnormal load convoys will travel in the early morning periods before peak times while general construction traffic will generally avoid the morning and evening peak periods.

12.117 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.

12.118 Potential conflicts between the abnormal loads and other road users can occur at a variety of locations and circumstances. The main potential conflicts are likely to occur:

- on Fabrication Yard Road, the A859 and Eishken Road, where the loads may straddle the centre line, where fast moving oncoming traffic may be encountered, etc.;
- 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.

12.119 Advance warning signs would be installed on the approaches to the affected road network. Information signage could be installed to help assist drivers. The location and numbers of signs would be agreed post consent and would form part of the wider Traffic Management Proposal for the project.

12.120 The Abnormal Load Transport Management Plan would also 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 committee 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.

Onsite Measures delivered using an Onsite Path Management Plan (OPMP)

12.121 Within the Site, consideration has been given to pedestrians and cyclists alike due to potential interactions between construction traffic and users of the paths and public roads. If required, a Path Planning Study will be conducted post consent and will be secured through a planning condition. Findings from the study will be used to formulate a set of measures into a Path Management Plan (PMP).

12.122 Users of paths will be separated from construction traffic through the use of barriers. Crossing points will be provided where required, with path users having right of way. Appropriate Traffic

Signs Manual Chapter 8[13] compliant temporary road signage will be provided to assist at these crossing for the benefit of all users.

12.123 The principal 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 Rights of Way and at crossing points. Advisory speed limit signage will also be installed on approaches to areas where path users may interact with construction traffic.

12.124 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.

12.125 With regards to the possible interaction with horses on and in the vicinity of the proposed development, no response has been received from The British Horse Society, however measures implemented on similar schemes will be given consideration 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.

12.126 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.

12.127 The British Horse Society has previously 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;

[13] Department for Transport/Highways Agency, Department for Regional Development (Northern Ireland), Transport Scotland & Welsh Assembly Government (2009): Traffic Signs Manual, Chapter 8 – Traffic Safety Measures and Signs for Road Works and Temporary Situations

- 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.

Staff Travel Plan

12.128 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; and
- car parking management.

Operational Phase Mitigation

12.129 The Site entrance will be well maintained and monitored during the operational life of the proposed development. Regular maintenance will be undertaken to keep the Site access track drainage systems fully operational and the road surface in good condition and to ensure there are no adverse issues affecting the public road network.

CUMULATIVE SITUATION DURING CONSTRUCTION

12.130 Transport Assessment Guidance[14] 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 not yet determined should not be included in cumulative assessments as they have yet to be determined.

12.131 A review of surrounding planning applications has been undertaken and a number of consented schemes (i.e., developments with planning permission) were noted. A summary of these is provided in **Table 12-14**.

[14] 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.

Table 12-14: Committed Development Schemes

Development	
Balallan – Stornoway 132kV Overhead Line Replacement	No – no traffic information details in the public planning record, traffic accounted for in the use of Low NRTF growth factors.
Stornoway Deep Water Port Development	No – minor traffic generating development, traffic accounted for in the use of Low NRTF growth factors.
Ardvourlie Mountain Bike Trails, Scaladale, Isle of Harris	No – no traffic information details in the public planning record.
Marybank Quarry Extension	No – no traffic information details in the public planning record. The proposals are for an extension to the existing quarry (i.e., to allow it to remain operational) and as such, traffic generated by the development will already be accounted for on the local road network.

12.132 Beinn Thulabaigh wind farm was consented for one turbine with a tip height of up to 150m. A review of the online planning application documents note that a total of 106 deliveries are expected, of which 100 deliveries are associated with concrete deliveries. The nearest concrete plant to the Beinn Thulabaigh wind farm Site is Breedon Marybank Quarry, which is located to the southwest of Stornoway. It is therefore considered that delivery vehicles will not significantly impact on the study area to the south of Breedon Marybank Quarry, as such Beinn Thulabaigh wind farm is not included as committed development in the study area.

12.133 Stornoway wind farm is to comprise 33 wind turbines with a maximum tip height of 180m. A review of the planning application documents indicates that the concrete will be likely be delivered from Breedon Marybank Quarry and stone will be delivered from existing quarries on Lewis. From a review of local quarries in the area, Breedon Marybank is the nearest quarry to provide aggregate material. As such, it is not expected that the construction traffic vehicles will impact on the proposed development's study area to the south of Breedon Marybank Quarry, and as such Stornoway wind farm is not included as committed development within the study area.

12.134 Druim Leathann wind farm is to comprise 14 wind turbines with a maximum tip height of 140m. A review of the planning application documents indicates that materials are expected to be sourced from the Stornoway area, with stone delivered existing quarries on Lewis, however it is expected that onsite borrow pits will provide the majority of aggregate materials. From a review of local quarries in the area, Breedon Marybank is the nearest quarry to provide aggregate material. As such, it is not expected that the construction traffic vehicles will impact on the proposed development's study area to the south of Breedon Marybank Quarry, and as such Druim Leathann wind farm is not included as committed development within the study area.

12.135 It should be noted that it is unlikely that peak periods of the consented developments described above will coincide with peak periods of the proposed development due to demand on construction materials and supplies. Furthermore, should any crossover of traffic with the proposed development flows occur, these would be addressed via the CTMP, secured by planning condition on the proposed development consent.

12.136 In addition, the Applicant would welcome the opportunity to engage with other developers in consultation with CnES to ensure appropriate traffic management measures would be implemented to minimise any potential cumulative impacts.

12.137 Based on the above, it is considered that there are no consented developments within the vicinity of the proposed development which will generate significant traffic and should be considered as part of any cumulative assessment.

ASSESSMENT OF RESIDUAL EFFECTS

Residual Construction Effects

12.138 The identification of residual construction effects considers the assessment of traffic effects following the incorporation of the identified mitigation measures above. An evaluation of the potential effects of the temporary increase in traffic on the study area roads used for the construction traffic has been undertaken. To avoid repetition, the summary of this assessment of residual effects is presented in **Table 12-15** below.

12.139 The assessment confirms the effects will be minor in nature and they would be **not significant**, following the implementation of a comprehensive CTMP, together with onsite route signage and an access management plan, which would incorporate any required re-routing of Public Rights of Way or temporary barriers to protect users from construction activities. 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.

Residual Cumulative Effects

Residual Cumulative Construction Effects

12.140 No residual cumulative effects are predicted as part of the proposed development.

Residual Cumulative Operational Effects

12.141 No residual cumulative operational effects are predicted as part of the proposed development.

INTERRELATIONSHIP BETWEEN EFFECTS

12.142 The IEMA guidelines also refer to visual effects, noise and hazardous loads. Visual effects and noise are addressed in **Chapter 7: Landscape and Visual Amenity** and **Chapter 13: Noise**.

FURTHER SURVEY REQUIREMENTS AND MONITORING

12.143 Site entrance roads will be well maintained and monitored during both 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 junction 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, that will likely be required by CnES.

12.144 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.

STATEMENT OF SIGNIFICANCE

12.145 This Chapter considers the potential effects of the proposed development on Site Access, Traffic and Transport during the construction phase.

12.146 The proposed development will lead to a temporary increase in traffic volumes on the study area during the construction phase. Traffic volumes will fall considerably outside the peak period of construction.

12.147 The maximum traffic impact associated with construction is predicted to occur in Month 23 of the programme. During this month, an average of 92 HGV movements is predicted per day and it is estimated that there will be a further 108 car and light van movements per day to transport construction workers to and from the Site. The greatest magnitude of effect will occur on the unclassified Eishken Road which leads through to the Site, as this will be used by all construction vehicles to access the Site. Furthermore, this road is subject to extremely low level of existing traffic.

12.148 No capacity issues are expected on any of the roads within the study area due to the additional construction traffic movements associated with the proposed development, as background traffic movements are low, the links are of a reasonably good standard and appropriate mitigation is proposed. The effects of construction traffic are temporary in nature and are transitory.

12.149 A review of the road network has been undertaken to assess the feasibility of transporting turbines to the Site and no significant issues have been noted.

12.150 Traffic levels during the operational phase of the Proposed Development will be one or 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 may be left in situ and others broken up onsite.

12.151 **Table 12-15** below summarises the potential effects of the proposed development on Site Access, Traffic and Transport prior to mitigation, proposed mitigation measures and the significance of residual effects.

Table 12-15: Summary of Significant Effects

Predicted Significant Effect	Significance of Effect (without mitigation)	Mitigation Proposed	Means of Implementation	Residual Effect
Construction Phase				
Eishken Road Users and Core Paths / Public Rights of Way				
Severance	Major	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.	Via a planning condition	Minor (Not Significant)
Driver Delay	Major / Moderate	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.	Via a planning condition	Minor (Not Significant)
Pedestrian Delay	Major	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.	Via a planning condition	Minor (Not Significant)
Pedestrian Amenity	Major	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.	Via a planning condition	Minor (Not Significant)
Fear & Intimidation	Major	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and	Via a planning condition	Minor (Not Significant)

Predicted Significant Effect	Significance of Effect (without mitigation)	Mitigation Proposed	Means of Implementation	Residual Effect
		provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.		
Accidents & Safety	Major / Moderate	Implementation of CTMP, provision of construction traffic road signage, convoy escorts for AIL movements, AIL traffic management plan and provision of localised road improvement works. All works undertaken in agreement with CnES prior to construction activities commencing.	Via a planning condition	Minor (Not Significant)
Operational Phase				
None	None	None	None	None
Decommissioning Phase (if required)				
None	None	None	None	None

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CONTENTS

INTRODUCTION

13.1 This Chapter presents the noise assessment for the proposed development.

13.2 Wind turbines may emit two types of noise when operating. Firstly, aerodynamic noise produced as the blades pass through the air. Secondly, mechanical noise from components within the nacelle of a wind turbine. Aerodynamic noise can be characterised as a more natural '*swish*' sound, whereas mechanical noise is generally characterised by its tonal content. Over the years mechanical noise has been engineered to much lower levels owing to its reduced acceptability when compared with aerodynamic noise. At very low wind speeds the turbine blades do not rotate or rotate very slowly and so negligible aerodynamic noise is generated. In higher winds, background noise, such as wind disturbed vegetation, will increase, along with aerodynamic noise from the turbine blades. The subjective audibility of the wind farm will be determined by the relative difference between background noise and wind turbine aerodynamic noise. This difference, as experienced at nearby dwellings, forms the basis of the noise assessment.

13.3 Whilst reasonable effort has been made to ensure that this chapter is easy to understand, it is technical in nature; to assist the reader, a glossary of terminology is included in **Technical Appendix 13.1 Glossary of Terms** in Volume 4 of the EIA Report.

13.4 This Chapter is accompanied by the following Technical Appendices (TA):

- **Technical Appendix 13.1: Glossary of Terms**;
- **Technical Appendix 13.2: Amplitude Modulation, Low Frequency Noise and Tonal Noise**;
- **Technical Appendix 13.3: ETSU-R-97 Assessment Graphs**; and
- **Technical Appendix 13.4: Wind Turbine Data**.

13.5 This Chapter is supported by **Figure 13.1: Noise Sensitive Receptor Locations.**

13.6 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance.**

Scope and Consultation

13.7 During the initial stages of the noise assessment, the Environmental Health Officer (EHO) at Comhairle Nan Eilean Siar (CnES) was consulted to discuss the approach to the assessment. Consultation took place via email on 19 December 2022 based on an initial layout where the proposed approach was detailed.

Consultation and Scoping Responses

13.8 In the Scoping Response dated 26 August 2022 CnES agreed with the proposed approach to the noise and vibration assessment and to the items scoped in and out of the EIA.

13.9 The Scoping Opinion dated 5 October 2022 contained a section on noise that set out the Scottish Government Energy Consents Unit's (ECU) requirements for this assessment on behalf of Scottish Ministers. This document recommends that the final list of noise sensitive receptors (NSRs) within the noise assessment should be agreed with CnES and that the noise assessment report should be formatted as per Table 6.1 of the IOA 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (IOA GPG). The Scoping Opinion also contained the consultation Scoping Response from the CnES, dated 26 August 2022.

13.10 In addition to the above, consultation was carried out with Environmental Services of CnES on 19 December 2022, which continued throughout January, February and March 2023. The general approach to the noise assessment, NSRs to be assessed and confidential details of the financial involvement of NSRs was discussed and agreed.

13.11 **Table 13-1** summarises the points raised and where they have been addressed within this Chapter.

Table 13-1: Scoping Key Issues

Category	Summary of Key Issues	Where addressed in the Chapter
Operational noise and vibration	The Scoping Report has Turbine 13 as the nearest to the properties but based on the data on page 15, it's Turbine 15.	There was an inconsistency in the turbine numbering which has been corrected in the assessment.
	CnES are satisfied with the items being scoped in and out of the EIA. The items relevant to operational noise and vibration raised in the Scoping Report: Scoped out: • Additional baseline noise surveys; • Infrasound and low-frequency noise; • Amplitude Modulation assessment; • Operational vibration assessment. Scoped in: • Wind farms within 10km that are predicted to be with 10dB of the proposed development; • NSRs within 5km with a predicted cumulative wind turbine noise level of greater than 35dB L_{A90}; • Overall approach to follow ETSU-R-97, the IOA GPG and the Outer Hebrides LDP Supplementary Guidance for Wind Energy Development, 2021 (SGfWED).	**Paragraphs 13.12** and **13.13** and **Technical Appendix 13.2**
	The Scoping Opinion requests that the final list of NSRs should be agreed in consultation with CnES. This was raised in consultation and a table of NSR locations was proposed.	**Paragraph 13.21**
	The noise assessment report should be formatted as per table 6.1 of the IOA GPG.	Where relevant, all key points listed in Table 1 under 6.1 of the IOA GPG have been included in this EIAR chapter.
Construction noise and vibration	CnES are satisfied with the items being scoped in and out of the EIA. The items relevant to construction noise and vibration raised in the Scoping Report:	**Paragraph 13.12** and **13.65** **Paragraph 13.12** **Paragraph 13.34** **Paragraph 13.37** **Paragraph 13.36**

	Scoped out: • Decommissioning noise; • Construction vibration. Scoped in: • Construction noise assessment in accordance with BS 5228-1; • Impact of construction traffic noise; • Noise from blasting operations will be assessed using PAN50, BS 5228 and BS 6472.	

Effects Scoped Out

13.12 The assessment follows current best practice which scopes out the following, as agreed at scoping:

- additional baseline noise surveys;
- assessment of amplitude modulation;
- operational vibration from the wind turbines;
- infrasound and low frequency noise;
- cumulative wind turbines more than 10km from the proposed development or those predicted to generate a level of noise at least 10dB less than the proposed development;
- operational noise at NSRs located at distances greater than 5km from the proposed development, or where cumulative wind turbine noise is less than 35dB L_{A90};
- noise and vibration from the decommissioning phase;
- vibration from the operation of the proposed development; and
- construction vibration.

13.13 Further information regarding the effects of amplitude modulation, infrasound, low frequency noise and tonal noise are discussed in **Technical Appendix 13.2** and the reasons for scoping them out.

APPROACH AND METHODS

13.14 Details of the legislation, planning policy and guidance documentation relevant to this assessment is set out in **Technical Appendix 4.1**.

13.15 The noise assessment has undertaken the following:

- consultation with the EHO at CnES to discuss and agree the approach to the assessment;
- determination of site-specific noise limits, suitable for inclusion in noise related planning conditions, should permission be supported;
- calculation of the operational wind turbine noise from the proposed development and assessment against the site-specific noise limits in accordance with ETSU-R-97 and IOA GPG; and

- calculated and assessed construction noise at receiver locations closest to the work being carried out, based on the potential construction programme and standard wind farm construction activities.

Study Area

13.16 The study area considers wind farms within an approximate radius of 10km and NSRs within a radius of approximately 5km from the proposed development. NSRs have been included in the study area where the wind turbine noise from the proposed development is predicted to be within 10dB of other relevant wind energy developments, and the predicted cumulative wind farm noise level is greater than 35dB $L_{A90,\ 10min}$.

Noise Sensitive Receptors (NSRs)

13.17 NSRs are properties which are potentially sensitive to noise and, as such, may require protection from nearby noise sources.

13.18 All the NSRs identified within this assessment are residential properties. Wind turbine noise immission levels are predicted to a location representative of each outdoor amenity area rather the façade of the property. This is in line with the IOA GPG which states (at paragraph 4.3.8) that, "*calculations should be made at points representative of the relevant outdoor amenity area (as defined in ETSU-R-97) at locations nearest to the proposed wind farm development*".

13.19 Note that in the above, and subsequently in this assessment, the term '*noise emission*' relates to the sound power level of a wind turbine, whereas the term '*noise immission*' relates to the sound pressure level experienced at a receptor location.

13.20 It is not always appropriate to assess impacts at all nearby NSRs, and as a worst-case can be presented with a selection of NSRs. Where multiple NSRs are in the same general direction from the proposed development, it may be appropriate to present results for just one of these which represents the worst-case for all, which is the case for this assessment.

13.21 **Table 13-2** details the identified NSRs for the assessment of operational noise and **Figure 13.1** (Volume 3 of the EIA Report) shows the location of each NSR in relation to the proposed development. These NSRs correspond to those listed in the consultation letter issued to CnES dated 19 December 2022. It should be noted that the location of the NSR may differ slightly to other chapters within the EIA Report as noise impacts have been considered within the amenity space of the dwelling, whilst other disciplines consider the dwelling itself.

Table 13-2: Noise Sensitive Receptors

NSR ID	Name	Coordinates		Nearest Turbine	
		Easting	Northing	Distance (m)	ID
NSR01	Loch Shell House	132642	912107	870	T16
NSR02	The Cottage	132627	912035	940	T16
NSR03	Burnside Cottage	132617	911967	1000	T16
NSR04	Eishken Lodge	132600	911861	950	T25
NSR05	Glenburn Cottage	132666	911865	1010	T25
NSR06	Keepers Cottage	129403	916420	2730	T3

Information and Data Sources

13.22 The exact model of turbine to be used at the Site will be the result of a future tendering process and therefore an indicative candidate turbine model has been assumed for this noise assessment. This approach is recognised in the IOA GPG as most developments at the planning stage do not have a preferred turbine. This operational noise assessment is based upon the noise specification of the Siemens Gamesa 155 6.6MW wind turbine. If planning permission is granted, further data would be obtained from the supplier for the final choice of wind turbine model to demonstrate compliance with the operational noise limits derived in this assessment.

13.23 The candidate turbine is a variable speed, pitch regulated machine with a rotor diameter of 155m and a hub height of 122.5m, or 102.5m for turbines T1, T12 and T19 only. Due to its variable speed operation the sound power output of the turbine varies with wind speed, being quieter at the lower wind speeds when the blades are rotating more slowly.

13.24 Siemens Gamesa have supplied noise emission data for the 155m rotor turbine, a further correction factor of +2 dB has been added to account for uncertainty. The sound power data has been supplied directly for hub height wind speeds of 3.0m/s to 12m/s. In addition, octave band data for the turbine has been provided for a wind speed corresponding to the loudest condition. **Table 13-3** and **Table 13-4** present these data and includes the additional uncertainty correction. Further information about the turbines is provided in **Technical Appendix 13.4**.

Table 13-3: Wind Turbine Sound Power Levels

Hub Height Wind Speed, m/s	Sound Power Level, dB L_{WA}
3	94.0
4	94.0
5	96.8
6	100.8
7	104.1
8 up to cut-out	107.0
Source:	D23598000/004. Dated 29 July 2021

Table 13-4: Wind Turbine Octave Band Sound Power Spectrum at max SWL

Octave Band Centre Frequency, Hz	Sound Power Level, dB(A)
63	86.6
125	94.0
250	98.6
500	100.9
1000	100.7
2000	101.0
4000	94.4
8000	79.4
Source:	D23598000/004. Dated 29 July 2021

Field Surveys

13.25 No baseline field surveys were required to be carried out to inform this assessment, as discussed below in Paragraph 13.26 to Paragraph 13.29. This approach was agreed with CnES during the consultation.

Assessment Methods

Operational Noise Impacts

13.26 It is set out in ETSU-R-97, and subsequently the IOA GPG, that noise limits for wind turbines should be set relative to existing background noise levels at the nearest properties and that these limits should reflect the variation in both turbine source noise and background noise with wind speed. The ETSU-R-97 noise limit is set to the greater of either: a level 5 dB(A) above the typical background noise level or a fixed level of between 35 dB L_{A90} and 40 dB L_{A90} during the daytime and 43 dB L_{A90} during the night-time.

13.27 ETSU-R-97 offers an alternative simplified assessment methodology for wind farms with very large separation distances between the turbines and the nearest NSRs. A fixed noise limit of 35 dB L_{A90} is applied for all wind speeds up to 10 m/s at NSRs, rather than setting a limit relative to the measured background noise level. This value equates to the minimum fixed level, and therefore noise limit, that applies within ETSU-R-97. It should be noted that within this assessment, unless specified otherwise, all references to wind speeds are to a standardised 10m height, derived in accordance with Section 2.6 of the IOA GPG.

13.28 When setting noise limits at NSRs where the property occupier has financial involvement in the proposed wind farm, ETSU-R-97 advises that the fixed portion of a noise limit increases to 45 dB L_{A90} during both the daytime and night-time. Therefore, if background noise surveys were carried out, the noise limit at any financially involved NSR would be the greater of 45 dB L_{A90}, or 5 dB(A) above the typical background noise level.

13.29 In the case of the proposed development, NSR06 is the nearest receptor which does not have financial involvement. There are large separation distances between the turbines and this receptor, as given in **Table 13-2**, such that the noise levels will fulfil the simplified criterion at this and more distant locations. The dwellings situated within the Eishken Estate Lodge Exclusion Zone, represented by NSR01 to NSR05, are financially involved with the proposed development and therefore have a minimum noise limit of 45 dB L_{A90}. Therefore, fixed noise limits have been applied at NSR06 of 35 dB L_{A90}, in accordance with the ETSU-R-97 simplified methodology; and at NSR01 to NSR05 of 45 dB L_{A90}, as the minimum limit applicable to financially involved properties. This approach was raised in the consultation letter to CnES dated 19 December 2022 and subsequently agreed after the provision of further information regarding the financial status of the dwellings within Eishken.

Noise Model

13.30 A noise model of the proposed development was created using proprietary software iNoise Pro, which is specifically designed for the calculation of noise propagation from wind turbines using the ISO 9613-2 method. The model has been used to calculate the noise immission levels at the NSRs as advised in the IOA GPG. The model accounts for the attenuation due to geometric spreading, atmospheric absorption, and barrier and ground effects. All attenuation calculations have been made on an octave band basis and therefore account for the sound frequency characteristics of the turbines.

13.31 All noise level predictions have been undertaken using a receiver height of four metres above local ground level, mixed ground (G=0.5) and an air absorption based on a temperature of 10°C and 70% relative humidity. A receiver height of four metres will be typical of first floor windows and result in slightly higher predicted noise levels than if a 1.2 to 1.5 metre receiver height were chosen in the ISO 9613 algorithm. The attenuation due to terrain screening accounted for in the calculations has been limited to a maximum of 2 dB(A). In situations of propagation above concave ground, a correction of +3dB was added.

13.32 This method is consistent with the IOA GPG which provides recommendations on the appropriate approach when predicting wind turbine noise levels. The IOA GPG also allows for directional effects to be taken into account within the noise modelling: under upwind propagation conditions between a given receiver and the wind farm the noise immission level at that receiver can be as much as 10 dB(A) to 15 dB(A) lower than the level predicted using the ISO 9613-2 model. However, predictions have been made assuming downwind propagation from every turbine to every receptor at the same time as a worst case.

Construction Noise Impacts

13.33 Any development of this nature has the potential to generate noise during the construction phase, should appropriate mitigation not be employed. However, disruption due to construction noise is a localised phenomenon, and is both temporary and intermittent in nature.

13.34 BS 5228-1 has been used as the appropriate reference for the calculation of construction noise impacts. At this stage of a project, it is not feasible to accurately specify exact construction techniques or locations where construction activity is likely to take place. Due regard has been given to the Outline Construction Environmental Management Plan (CEMP) set out in **Technical Appendix 3.1** of this EIA Report which sets out the principles and procedures for environmental management during construction of the wind farm. In addition and where necessary, various assumptions have been made based on best practice and typical wind farm construction projects. **Table 13-5** details the overall sound power level assumed for all plant that would be operational during the corresponding construction activity. The calculation follows Annex F of BS 5228-1 and assumes the following:

- plant is operational for between 75% and 100% of the working day;
- there would be no screening effects;
- propagation over mixed ground (50% hard 50% soft); and
- construction activity assumed to occur at a single point from receiver.

Table 13-5: Construction Activity Sound Power Levels

Construction Activity	Plant Details	Sound Power Level $L_{WA,T}$ dB
Upgrade access track	2 x 67kW hydraulic breaker, 2 x 17t excavators, 2 x 11t bulldozers, 2 x 4t vibratory rollers and 2 x 60kg vibratory compactor	121

Construction Activity	Plant Details	Sound Power Level $L_{WA,T}$ dB
Construct temporary site compound	8t backhoe loader, 40t articulated dump truck, concrete mixer truck	118
Build new access tracks	2 x 40t excavators, 2 x 25t articulated dump truck, 2 x articulated dump truck, 35t bulldozer & 4t vibratory roller	118
Construct substation	25t excavator, concrete mixer truck, 4-axle lorry	112
Crane hardstandings	2 x 32t excavators, 4 x 23t articulated dump truck and concrete mixer truck	116
Turbine foundations	CFA piling, 2 x 32t excavator, 4 x 40t dump truck, 4 x concrete mixer trucks, 100t mobile crane, 2 x 100kg diesel water pumps, 2 x pneumatic road breakers + compressors and 4 vibratory pokers	121
Constructing turbines	1200t crane, 400t crane, delivery vehicles, 10 x articulated lorries, diesel generator and hand tools	117
Borrow pit quarrying	37t hydraulic excavator, 19t hydraulic excavator, 2 x semi-mobile crushers, 17t screen, hopper feed and field conveyors with drive units	127
Bridge realignment	40t delivery lorry, 2 x 32t excavator, 2 x 40t dump truck, 2 x concrete mixer trucks, 100t mobile crane, 2 x 100kg diesel water pumps, 2 x pneumatic road breakers + compressors and 2 vibratory pokers	121

13.35 The calculated construction noise levels are compared with absolute noise limits for temporary construction activities which are commonly regarded as providing an acceptable level of protection from the short-term noise levels associated with construction activities.

13.36 Some rock extraction from borrow pits by means of blasting operations may be required in some instances. Blasting operations can generate airborne pressure waves or "air overpressure" which contains both audible (approximately 20Hz to 20kHz) and infrasonic pressure waves (<20Hz), which, although outside the range of human hearing, can sometimes be felt. The relevant guidance documents advise controlling air overpressure with good practices during the setting and detonation of charges as opposed to absolute limits on the levels produced; therefore, no absolute limits for air overpressure or noise from blasting can be presented in the assessment. Other site activity associated with blasting, such as stone crushing and screening and the operation of plant including excavators, breakers and conveyors will be included in noise assessment as the final activity listed in **Table 13-5**.

13.37 Separate consideration is also given to the possible noise impacts of construction related traffic passing to and from the Site along local surrounding roads. The most sensitive receiver locations in respect of vehicle movements are properties such as NSR06 Keepers Cottage which lie relatively close to the midsection of the road used to access the Site and the Eishken Estate. The existing flow of traffic on this road is unlikely to be above the low-flow threshold in the Calculation of Road Traffic Noise, 1988, and as such noise impacts from vehicles using it cannot be reliably calculated this way. Therefore, noise from passing construction vehicles has been calculated using the Haul Route method described in BS 5228-1.

13.38 Section F.2.5 of BS 5228-1 describes the Haul Route method to calculate noise from mobile plant using a regular well-defined route. A sound power level of 108 dB L_{WA} has been used for large vehicles travelling at an assumed speed of 15 mph and the traffic assessment set out in **Chapter 12:**

Site Access, Traffic and Transport confirms a maximum of 92 heavy vehicles in any one day during the construction.

Significance of Effects

13.39 The significance of effect that a noise impact has upon a receptor has been determined through a standard method of assessment based on professional judgement of the Competent Expert, considering the sensitivity of the NSR and the magnitude of noise impact.

13.40 The only relevant NSRs within the assessment area are dwellings, which are of high sensitivity. Operational noise impacts have been determined following ETSU-R-97 and the IOA GPG, which if they do not exceed noise limits derived following the same guidance, are considered to be not significant in EIA terms.

13.41 The calculated construction noise levels have been compared against absolute noise limits for temporary construction activities which are commonly regarded as providing an acceptable level of protection from the short-term noise levels associated with construction activities. BS 5228-1 Annex E provides example criteria of absolute noise limits for construction activities and has been used to determine the significance of any construction noise impacts within this assessment. The criteria do not represent mandatory limits but rather a set of example approaches intended to reflect the type of methods commonly applied to construction noise. In broad terms, the example criteria are based on a set of fixed limit values which, if exceeded, may result in a significant effect unless ambient noise levels are sufficiently high to provide a degree of masking of construction noise.

Cumulative Effects

13.42 The noise limits defined in ETSU-R-97 relate to the total noise occurring at a dwelling due to the combined noise of all operational wind turbines. The assessment will therefore need to consider the combined operational noise of the Development with other wind farms in the area to be satisfied that the combined cumulative noise levels are within the relevant ETSU-R-97 criteria.

13.43 The IOA GPG quantifies when a cumulative impact assessment is necessary. If the total wind turbine noise immission level exceeds 35 dB L_{A90} and the proposed wind farm produces noise levels within 10 dB(A) of any existing wind farm/s at the same NSR, then a cumulative noise impact assessment is necessary. Equally, in such cases where noise from the proposed wind farm is predicted to be 10 dB greater than that from the existing wind farm (but compliant with ETSU-R-97 in its own right), then a cumulative noise impact assessment would not be necessary.

13.44 In the case of the proposed development, there are no NSRs where the total wind turbine noise immission level is predicted to exceed 35 dB L_{A90} and the noise from the proposed development would be within 10 dB(A) of any other wind farm or turbine. Therefore a cumulative assessment is not necessary.

Mitigation

13.45 In terms of operational turbine noise, impacts have been considered throughout the design process in the form of changes to the proposed location of the turbines and/or the candidate turbine model.

13.46 To manage the effect of construction noise impacts good practice measures will be recommended for incorporation within the CEMP. Such measures would include consideration of working hours, locations where activity takes place, type and maintenance of plant and any specific measures relevant to blasting operations.

13.47 The transmission and magnitude of ground vibrations associated with blasting operations at borrow pits are subject to many complex influences including charge type and position, and importantly, the precise nature of the ground conditions (material composition, compaction, discontinuities) at the source, receiver, and at every point along all potential ground transmission paths. Clearly any estimation of such conditions is subject to considerable uncertainty, thus limiting the utility of predictive exercises. Mitigation of potential effects of these activities is best achieved through on site testing processes carried out in consultation with the Local Authorities.

Residual Effects

13.48 The residual effects of operational noise will be undertaken in accordance with relevant good practice, policy and guidance.

Statement of Significance

13.49 The range of guidance values detailed in BS 5228-1 Annex E and other reference criteria such as PAN50 have been used to numerically define the threshold of significance for construction noise, including construction traffic. As construction noise will always be an introduction of a noise source which would otherwise not be there, where impacts are identified to occur, they will always be adverse:

- where construction noise levels at receptors are below the adopted daytime noise limit of 70 dB L_{Aeq}, this is determined to be 'not significant'; and
- where construction noise levels at receptors are above the adopted daytime noise limit of 70 dB L_{Aeq}, this is determined to be 'significant'.

13.50 In accordance with the guidance in BS 6472-2: 2008 and PAN50 Annex D, ground vibration caused by blasting operations will be considered acceptable if peak particle velocity (PPV) levels, at the nearest sensitive locations, do not exceed 6 mm/s for 95% of all blasts measured over any 6 month period, and no individual blast exceeds a PPV of 12 mm/s.

13.51 These adverse effects, while important at a local scale, are temporary and would only occur during the anticipated construction period.

13.52 The assessment of the significance of effects from operational wind turbine noise is made as follows, with reference to ETSU-R-97 and the IOA GPG:

- where operational and cumulative noise levels at receptors are below the relevant ETSU-R-97 noise limits, this is determined to be 'not significant'; and
- where operational and cumulative noise levels at receptors are above the relevant ETSU-R-97 noise limits, this is determined to be 'significant'.

Assumptions, Limitations and Confidence

13.53 No significant information gaps were identified, and the assessment was undertaken in line with relevant standards, policy and guidance documents and current best practice.

13.54 The road traffic noise model used in this assessment is dependent upon the predicted future traffic data, which will have inherent uncertainties associated with them, details of which are set out in **Chapter 12**.

13.55 Details of specific construction activity, plant used or likely programme are not available at this stage of the proposed development. The construction noise assessment assumes typical activity for the type and scale of the proposed development and that all plant and equipment used are operated continuously throughout the 10-hour working day and are located at the same distance from the noise sensitive receptor. This is unlikely to occur in practice and therefore represents a likely worst-case scenario.

BASELINE CONDITIONS

Current Baseline

13.56 The proposed development is located on the Eisgein (Eishken) Estate in an area of remote moorland on the Isle of Lewis – the land is currently utilised recreationally for hunting, fishing and deer stalking.

13.57 A baseline noise survey was carried out as part of the 2004 EIA undertaken for Muaitheabhal Wind Farm Main Consent (33 turbines) (ECU Reference: EC00005222). Chapter 10 of the 2004 Environmental Statement describes the existing baseline across the study area for the original main wind farm, which includes the area Eisgein (Eishken) and was informed by a baseline noise survey. Despite this baseline noise survey taking place 18 years ago, it is considered unlikely that it has altered during this time. This assessment, however, follows the ETSU-R-97 simplified method of a fixed noise limit, as discussed in paragraphs 13.26 to 13.29, and is therefore not reliant on baseline data.

13.58 The noise climate is described to be controlled by natural sources such as that produced by the wind blowing through vegetation, where present, and around the buildings themselves, plus the sound produced by the nearby loch water in some instances. There were some residual contributions noted from traffic on local roads.

ASSESSMENT OF EFFECTS

Potential Construction Effects

13.59 **Table 13-6** details the predicted worst-case construction noise levels for each of the key activities identified in **Table 13-5**. It must be emphasised that these predictions only relate the noise level occurring during the time when the activity is closest to the referenced property. In many cases such as access track construction and turbine erection, the separating distances will be considerably greater for the majority of the construction period and the predictions are therefore the worst-case periods of the construction phase.

Table 13-6: Construction Activity Sound Power Levels

Construction Activity	Worst-Case Receptor	Noise Level $L_{Aeq,T}$ dB
Upgrade access track	NSR01 Loch Shell House	50
Temporary site compound	NSR01 Loch Shell House	44
Build new access tracks	NSR01 Loch Shell House	48
Construct substation	NSR01 Loch Shell House	34
Crane hardstandings	NSR01 Loch Shell House	46
Turbine foundations	NSR01 Loch Shell House	51
Constructing turbines	NSR01 Loch Shell House	47
Borrow pit quarrying	NSR01 Loch Shell House	56
Bridge realignment	NSR06 Keepers Cottage	57

13.60 All predicted worst-case construction noise levels are below the threshold of significance set out in paragraph 13.49 and would therefore be **not significant.**

13.61 Owing to the difficulties in predicting noise and air overpressure from blasting operations, these activities are best controlled following the use of good practice during the setting and detonation of charges, as set out earlier in this report. Given the separation distances between the location of borrow pits and the NSRs ranging from 1km to 5km, it is very unlikely that these activities would cause unacceptable residual adverse effects. Notwithstanding this, monitoring of air overpressure can be carried out, which is discussed further in Paragraph 13.68.

13.62 Based on the information set out in Paragraph 13.38, noise from heavy construction vehicles at NSR06 is calculated to be at a greatest 58 dB $L_{Aeq,\ T}$. This noise level is below the threshold of significance set out in paragraph 13.49 and would therefore be **not significant**.

Potential Operational Effects

13.63 The predicted operational noise immission levels of the proposed development, noise limit and margin, at each the identified receptors are presented numerically in **Table 13-7**. A positive value indicates the turbine immission exceeds the limit and a negative value shows it is below the limit. **Technical Appendix 13.3** contains this information graphically. The noise levels shown in these tables are predicted for a standardised 10m height wind speed range of 3 – 10m/s, impacts at greater wind speeds remain the same as those presented for 6m/s and higher.

Table 13-7: Daytime Noise Assessment of the Proposed Development

NSR	Detail	Standardised 10m Height Wind speed, m/s							
		3	4	5	6	7	8	9	10
NSR01	Immission	29	34	39	41	41	41	41	41
	Limit	45	45	45	45	45	45	45	45
	Margin	**-16**	**-11**	**-6**	**-4**	**-4**	**-4**	**-4**	**-4**
NSR02	Immission	29	34	39	40	40	40	40	40
	Limit	45	45	45	45	45	45	45	45
	Margin	**-16**	**-11**	**-6**	**-5**	**-5**	**-5**	**-5**	**-5**
NSR03	Immission	28	33	38	40	40	40	40	40
	Limit	45	45	45	45	45	45	45	45
	Margin	**-17**	**-12**	**-7**	**-5**	**-5**	**-5**	**-5**	**-5**
NSR04	Immission	27	32	37	39	39	39	39	39
	Limit	45	45	45	45	45	45	45	45
	Margin	**-18**	**-13**	**-8**	**-6**	**-6**	**-6**	**-6**	**-6**
NSR05	Immission	27	32	37	39	39	39	39	39
	Limit	45	45	45	45	45	45	45	45
	Margin	**-18**	**-13**	**-8**	**-6**	**-6**	**-6**	**-6**	**-6**
NSR06	Immission	15	20	25	27	27	27	27	27
	Limit	35	35	35	35	35	35	35	35
	Margin	**-20**	**-15**	**-10**	**-8**	**-8**	**-8**	**-8**	**-8**

13.64 It can be seen in **Table 13-7** that the wind turbine noise immission level from the proposed development does not exceed the ETSU-R-97 noise limit at any receptor for any given wind speed and would therefore be **not significant**.

Potential Decommissioning Effects

13.65 As set out in the Scoping Report, decommissioning is likely to result in less noise than during construction of the proposed development. Therefore, as a worst case, noise impacts associated with the decommissioning will be considered to be the same as those during the construction phase.

STATEMENT OF SIGNIFANCE

13.66 The effect of construction and decommissioning noise, including construction traffic, is predicted to be **not significant** and no specific mitigation measures are considered necessary.

13.67 The effect of operational noise is also predicted to be **not significant** and no specific mitigation measures are considered necessary.

Table 13-8: Summary of Significance

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
All receptors	Construction noise	Not significant	n/a	Not significant
Operational Phase				
All receptors	Operational noise	Not significant	n/a	Not significant

FURTHER SURVEY REQUIREMENTS AND MONITORING

13.68 No further noise surveys are necessary to inform this assessment. It has been identified in Paragraph 13.61 that air overpressure as a result of blasting can be carried out if required.

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SOCIO-ECONOMICS, TOURISM, RECREATION AND LAND USE 14

CONTENTS

INTRODUCTION

14.1 This Chapter assesses the potential impacts that the proposed Uisenis Wind Farm (the proposed development) may have on the socio-economics, tourism, recreation and land use of the area/region it would be located (the Site), including the effects on recreation and tourism. Effects are also considered within the rest of Scotland and the UK, where relevant.

14.2 The impacts on socio-economics may come as a result of direct or indirect interaction between the proposed development and the socio-economics, tourism, recreation and land use of the area/region, where the interactions could be positive or negative.

14.3 Socio-economic impacts during the construction phase of the proposed development include the temporary creation of employment opportunities, and potential adverse effects on recreational and tourism receptors.

14.4 Once operational, impacts on the local labour market arising from operation and maintenance jobs would be more limited. However, there is potential for further long-term socio-economic benefits to the community, which could result from any potential community benefit fund payments. There is also the potential for adverse effects during the operational phase on tourism and recreation assets.

14.5 This Chapter is accompanied by **Technical Appendix 14.1: Accommodation Assets**. This Chapter is supported by **Figures 14.1, 14.2 and 14.3**.

14.6 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**.

SCOPE AND CONSULTATION

14.7 Consultation with stakeholders has principally been conducted by way of the request for a Scoping Opinion, as described in **Chapter 6: Scoping and Consultation**. This, together with additional communication on access issues, is summarised in **Table 14-1.**

Table 14-1: Scoping Key Issues

Consultee	Summary of Key Issues	Addressed in Chapter
Energy Consents Unit, Scoping Opinion, 05 October 2022	*"Should consent be granted for the application, Comhairle nan Eilean Siar require an assessment to be provided of the number of people likely to work on the construction of the windfarm at peak construction and details be provided on where and how they are likely to be housed."*	Number of expected construction workers and subsequent assessment, as well as mitigation

		related to housing, provided from Paragraph 14.112.
Comhairle nan Eilean Siar, Scoping Opinion, 05 October 2022	*"As the proposal includes the provision of a network of new access tracks for construction and maintenance of the proposed development which will open-up this remote part of Lewis, the EIA should consider opportunities for recreational access throughout the development area to contribute to improvements to, and expansion of the existing path network. Policy EI 7: Countryside and Coastal Access states that proposals for improvements to the existing path network that facilitate greater access and enjoyment of key natural and built heritage resources (e.g.….coastline, mountains, moorland and lochs, archaeological and historic sites) are encouraged and will be required to accord with the Outer Hebrides Outdoor Access Strategy and the Scottish Outdoor Access Code; and demonstrate appropriate consideration has been given to the need for associated way marking, information boards, car parking and other facilities. Maintaining access for walkers during construction phase should also be addressed in the EIA Report."*	Recreational baseline detailed in Paragraph 14.70. Assessment and mitigations related to this are detailed from Paragraph 14.129.
	"Consideration should be given to acknowledging specific tourism sectors, likely to be impacted e.g, bird-watching."	Bird watching referenced in baseline from Paragraph 14.72 and assessed from Paragraph 14.138.
	"Potential Sources of Impact should include reference to parties who come via RSPB or independently to observe Golden and white tailed eagle activity."	Bird watching referenced in baseline from Paragraph 14.72 and assessed from Paragraph 14.138.
Scotways, Scoping Opinion, 05 October 2022	*"The National Catalogue of Rights of Way (CROW) does not record any rights of way that cross or are close to the application site as shown on Figure 1.1 Site Location.* *The enclosed map shows the Heritage Paths project promotes Paths to Stiomrabhaigh, for its historic interest. This old route is not directly affected by but is close to the application site as shown on Figure 1.1 Site Location."*	Heritage Paths mentioned in baseline from Paragraph 14.83 and assessed from Paragraph 14.140.

14.8 Two public exhibitions were held in person in November 2022 and in March 2023, coupled with further consultation with community councils, local groups and councillors and other opportunities for community engagement. The public exhibitions provided the public with opportunity to learn about the proposed development through detailed information boards and visualisations. The attendees were encouraged to take part in the discourse, highlighting any perceived benefits or issues with the proposed development.

14.9 Kinloch, North Lochs, North Harris and Pairc Community Councils were invited to these public exhibitions, along with all households within an approximate 20km radius of the Site. Amongst presenting updates of the design of the Site, community orientated socio-economic issues were also discussed, including the consideration of improved community benefits from those of the consented Muaitheabhal Wind Farm scheme(s) on Site, as detailed in **Chapter 2: Site Description and Design Evolution**.

APPROACH AND METHODS

14.10 This Chapter takes an appropriate and topic-specific approach to the assessment of the proposed development. It provides a worst-case or conservative assessment for socio-economic effects and presents enough information for consultees and the decision makers to comment on and determine the application within the parameters of the proposed development.

14.11 It considers the effect of the proposed development on the economic resource, including employment, within the local, regional and national context, as well as more local effects such as the potential change in land use within the boundaries of the proposed development and potential impacts on tourist attractions and recreation facilities within and in the vicinity of the proposed development.

14.12 The key impacts for the assessment of potential effects relating to the proposed development are short-term beneficial direct and indirect employment and economic effects and potential adverse on tourism and recreation assets, as well as direct changes to the land use arising from the construction phase.

14.13 During the operational phase, it is expected that many of these impacts would have already been mitigated, however, there may continue to be some beneficial longer-term direct and indirect effects on employment and the economy, as well as potentially beneficial and/or negative impacts on tourism and recreation associated with any increase in access tracks or losses of amenity.

14.14 Effects during decommissioning have been scoped out of the assessment due to them being broadly the same, albeit lesser, as the effects during the construction phase. As well as being unable to account for changes in policy, legislation and technologies. Further details on the scope of assessment can be found in the Effects Scoped Out section of the chapter.

14.15 Where appropriate conclusions from **Chapter 7: Landscape and Visual Amenity** have been utilised to inform the assessments within this chapter. In those instances, cross references have been provided.

Study Area

14.16 A two-tiered study area has been used for the assessment (see **Figure 14.1**), which has been defined as the following:

Wider Study Area (WSA)

14.17 The WSA encompasses the area within which the significant effects on employment and the local economy, including the tourism economy, could occur. The WSA is required for certain receptor groups because the majority of the business and labour market effects that could occur would be experienced by population and business centres located across a wider area than that of the Site boundaries and local area. The WSA area will primarily be set at the level of the Comhairle nan Eilean Siar (CnES) administrative area which, when accounting for the relative size and low population, is considered to be the 'local' level, but effects are also considered within the rest of the Highlands and Islands (regional), and Scotland and the UK (national) where relevant.

Local Area of Influence (LAI)

14.18 The LAI forms the focus for the assessment of, both, the direct and indirect effects on those receptors that are likely to experience effects at a more local level, particularly recreational and tourism assets. The LAI for such projects is generally defined by the Site boundary, together with an area extending to 5km. However, due to the remoteness of the Site, a 5km boundary would not be an accurate reflection of the baseline, therefore, a 15km boundary is proposed. A 15km LAI would encompass a number of settlements along the A859, taking account of the potential disruption to routes and venues used by tourists.

14.19 The LAI would also need to include accommodation businesses in Stornoway, approximately 20km north east of the Site; the inclusion of Stornoway within the assessment will give a better representation of where the construction workers would likely be accommodated during the construction period, however, would not include recreational or tourist receptors, as these would not be impacted at this distance from the proposed development.

Cumulative Effects

14.20 The study area where cumulative effects would be considered are, broadly, in keeping with the WSA and LAI study areas, whereby economic and employment impacts would be considered at the level of the CnES administrative area, whilst impacts on tourism and recreational assets would be considered at a scale of a 15km radius of the Site boundary.

14.21 It is noted that when considering potential cumulative sites at the WSA scale, to have a significant impact on employment and/or the economy, then the development would have to have an overlapping construction period and of a comparable, or larger, scale with the proposed development.

Effects Scoped Out

14.22 As the construction phase of the proposed development would be relatively short term (approximately 36 months) it is not expected that construction workers from outside the WSA would have a significant effect on the demand for health or educational services. Effects on demand for such community services are therefore scoped out.

14.23 Recreational activities beyond the boundaries of the Site are scoped out unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.

14.24 Land use effects during the operational phase are scoped out. The operation of the proposed development would have minimal effect on agriculture as the current grazing activities occurring on the proposed Site would be able to continue. It is noted that in **Technical Appendix 8.6: Outline Habitat Management Plan**, a reduction in grazing intensity is recommended. Although this is a slight change, it is considered to be a necessity for the land use to remain, the high-intensity grazing on the Site has resulted in the erosion of the wet heath whilst a reduction in grazing would slow or negate the pace of erosion.

Information and Data Sources

14.25 The assessment uses desk-based information sources to assess the likely effects, supplemented by consultation with relevant stakeholders where necessary, and professional judgement based on previous experience. Sources have been identified in citations throughout, and a complete schedule of data sources referred to in undertaking this assessment is contained in a reference list at the end of the Chapter.

Field Surveys

14.26 No specific field survey has been undertaken with regard to socio-economic, tourism, recreation and land use effects, although information has been gathered where relevant from surveys undertaken in respect of other disciplines, notably **Chapter 7: Landscape and Visual Amenity**.

Assessment Methods

14.27 **Chapter 5: Environmental Impact Assessment** provides an overview of the approach to assessment and explains the parameters being assessed in the EIA. **Chapter 5** also sets out the information on cumulative sites, and the approach to assessing cumulative effects.

14.28 There are no published standards or technical guidelines that set out a preferred methodology for assessing the likely socio-economic effects of an onshore wind farm proposal, although, NatureScot's 'Environmental Impact Assessment Handbook' (2018) makes reference to the potential effects of a development on outdoor recreation and opportunities for mitigation. However, there is a series of commonly used methodologies for such an assessment, including recognised approaches to quantifying economic effects both during the construction of a development and following its completion, that have been widely used in other major projects. These have been adopted here and are described below.

14.29 The approach to the socio-economic assessment is presented in two parts, addressing both the construction phase aspects of the proposed development and the longer-term economic effects once the proposed development is built and operational.

Sensitivity of Receptor

14.30 There are no published standards that define receptor sensitivity in relation to a socio-economic assessment. As a general rule, the sensitivity of each receptor or receptor group is based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects. For example, a receptor (such as a public footpath or an accommodation business) is considered less sensitive if there are alternatives with capacity within the study area. In assigning receptor sensitivity, consideration has been given to the following:

- the importance of the receptor e.g. local, regional, national, international;
- the availability of comparable alternatives;
- the ease at which the resource could be replaced;
- the capacity of the resource to accommodate the identified impacts over a period of time; and
- the level of usage and nature of users (e.g. sensitive groups such as people with disabilities).

14.31 Based upon professional judgement and experience on other large-scale projects, four levels of sensitivity have been used: high; medium; low; and negligible. These are defined in **Table 14-2**.

Table 14-2: Receptor Sensitivity

Sensitivity	Description
High	The receptor: • has little or no capacity to absorb change without fundamentally altering its present character; or • is of high socio-economic, recreational, or tourism value[1]; or • is of national or international importance; or • is accorded priority in national policy; or • has no alternatives with available capacity within its catchment area; or • is a destination in its own right (as regards tourism and visitor attractions).
Medium	The receptor:

[1] Which may include being of high value to a user group of high sensitivity (e.g. mobility impaired users)

	• has moderate capacity to absorb change without fundamentally altering its present character; or • has a moderate socio-economic, recreational or tourism value; or • is of regional importance; or • is accorded priority in local policy; or • has some alternatives with available capacity within its catchment area; or • is a destination for people already visiting the area (as regards tourism and visitor attractions); or • forms a cluster of low sensitivity receptors.
Low	The receptor: • is tolerant of change without detriment to its character; or • is of low socio-economic, recreational or tourism value; or • is of local importance; or • is accorded low priority in policy; or • has a choice of alternatives with available capacity within its catchment area; or • is an incidental destination for people already visiting the area (as regards tourism and visitor attractions).
Negligible	The receptor is resistant to change and is of low socio-economic, recreational or tourism value or there is a wide choice of alternatives with available capacity within its catchment area.

14.32 In considering the sensitivity of a receptor it is important to remember that, in the case of socio-economic assessment, the sensitivity is often subjective and different receptors will have differing sensitivities depending on matters such as the economic profile of the local area, perception of the type of development and attitude to the potential benefits of a development. This assessment is based on the assumption of a worst-case which assumes that there is a negative perception of the proposed development, although this may not be the case for all receptors.

Magnitude of Change

14.33 There are no published standards that define the thresholds of the magnitude of change for socio-economic, tourism or recreation impacts. In order to aid clear and robust identification of significant effects, specific and targeted criteria for defining the magnitude of change have been developed for this assessment based on experience on other similar projects. The following four levels of magnitude have been adopted using professional judgement: high; medium; low and negligible.

These impacts can be beneficial, adverse or neutral. Criteria for each of these levels of magnitude for each receptor group are set out in **Table 14-3**.

Table 14-3: Magnitude Criteria

Receptor Group	High	Medium	Low	Negligible
WSA economy	A change that would dominate over baseline economic conditions by >10%.	A change that would be expected to result in a moderate change to baseline economic conditions by >5%.	A change that would be expected to result in a perceptible difference from baseline economic conditions by >0.5%.	A change that would not be expected to result in a measurable variation from baseline economic conditions.
WSA labour market	A change that would dominate over baseline labour market conditions and/or would affect a large proportion (>10%) of the existing resident workforce.	A change that would be expected to result in a moderate change to baseline labour market conditions and/or would affect a moderate proportion (>5%) of the existing resident workforce.	A change that would be expected to result in a perceptible difference from baseline labour market conditions and/or would affect a small proportion (>0.5%) of the existing resident workforce.	A change that would not be expected to result in a measurable variation from baseline labour market conditions.
WSA tourism and visitor economy	A change that would dominate over baseline tourism and visitor economy conditions.	A change that would be expected to result in a moderate change to baseline tourism and visitor economy conditions.	A change that would be expected to result in a perceptible difference to baseline tourism and visitor economy conditions	A change that would not be expected to result in a measurable variation from baseline tourism and visitor economy conditions
Tourism and recreation assets	A change that would be expected to cause a major restriction of access to or availability of tourism and visitor assets in the LAI or would result in a major change to existing patterns of use.	A change that would be expected to have a moderate restriction of access to or availability of tourism and visitor assets in the LAI or would result in a moderate change to existing patterns of use.	A change that would be expected to have a small restriction of access to or availability of tourism and visitor assets in the LAI or would result in a small change to existing patterns of use.	A change that would be unlikely to result in a noticeable difference to tourism and visitor assets in the LAI.

Land use	A change that would lead to a major restriction on the operation of a receptor, e.g. forestry business, or complete closure of receptor.	A change that would lead to a moderate to major restriction on the operation of the receptor.	A change that would lead to a minor restriction on the operation of the receptor.	A change that would lead to a negligible restriction on the use of the receptor.

Significance of Effects

14.34 The level of effect of an impact on socio-economic, tourism, recreation and land use receptors is initially assessed by combining the magnitude of the change and the sensitivity of the receptor. The level of effects presented in **Table 14-4** provides a guide to the decision-making process.

Table 14-4: Significance Matrix

Sensitivity or Value of Resource or Receptor	Magnitude of Change			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

14.35 Effects may be positive (beneficial), negative (adverse) or neutral. Where an effect is classified as major, this is considered to represent a 'significant effect' in terms of the EIA Regulations. Where an effect is classified as moderate, this may be considered to represent a 'significant effect' but should always be subject to professional judgement and interpretation, particularly where the sensitivity or change magnitude levels are not clear or are borderline between categories or the change is intermittent.

14.36 The level of effects matrix shown in **Table 14-4** therefore provides a guide to decision making but is not a substitute for professional judgement. Impacts and effects can be beneficial, neutral or adverse and these would be specified where applicable. It should be noted that significant effects need not be unacceptable or irreversible.

Cumulative Effects

14.37 In relation to economic effects, cumulative effects depend on the extent to which the supply chain and labour market within the WSA have the capacity to meet demand for construction services from a number of similar projects. An assessment has been made as to whether it is considered likely that the cumulative effect indicates a loss of benefit as a result of cumulative projects, or an enhancement of opportunity which would help to develop expertise and capacity in the market. The cumulative effects assessment is able to make a quantitative judgement on potential loss of benefit due to cumulative projects. Enhancement of opportunity is identified only in qualitative terms.

14.38 Other cumulative effects may arise if the construction and/or operation of a number of wind farms were to affect receptors in the LAI.

Mitigation

14.39 The assessment takes account of any environmental principles that are incorporated into the design of the proposed development. These include good practice measures with regard to traffic management, control of noise and dust, signage and provisions for maintaining access for walkers, details of which are set out in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP)**. Any additional mitigation measures that would reduce the level of any significant effects are set out and considered prior to assessing residual effects.

Residual Effects

14.40 A statement of residual effects, following consideration of any specific mitigation measures, is provided.

Statement of Significance

14.41 The assessment approach is to describe the baseline conditions, to identify likely effects from construction and operation of the proposed development, consider the sensitivity of receptors, and then to assess the likely significance of any effects. Any adverse effects considered to be 'significant' are further considered with regard to bespoke mitigation measures and residual effects following mitigation are then identified.

14.42 Any significant effects that would be direct, indirect, secondary, cumulative, short, medium and long term, permanent or temporary are examined and their significance assessed. These effects are identified as being positive or negative.

Assumptions, Limitations and Confidence

14.43 Assumptions used in the assessment are stated where relevant and are set out in such a way as to be as transparent, evidence-based and as accurate as possible. No particular limitations were noted with regard to the assessment of socio-economic, tourism, recreation and land use effects beyond the availability of more recent datasets regarding tourism in the local area.

BASELINE CONDITIONS

14.44 This section comprises the existing conditions of the Site of the proposed development, accounting for each aspect of the assessment; land use, socio-economics, recreation and tourism assets.

14.45 The baseline conditions are split into the relative study area, with the WSA (as described in Paragraph 14.17) including:

- population;
- labour market and supply chain; and
- tourism economy.

14.46 This is followed by the baseline conditions of the LAI (as described in Paragraph 14.18), whilst noting that the land use conditions, and therefore the land use assessment, is considered to be a localised effect with the spatial area of potential effect being restricted to the Site boundaries. The LAI baseline comprises:

- land use;
- recreation; and
- tourism.

14.47 The characterisation of the baseline is then followed by the Cumulative Situation, where the potential constructed, consented and proposed projects which could potentially interact with the socio-economic, tourism, recreation and land use receptors of the proposed development are described.

Current Baseline

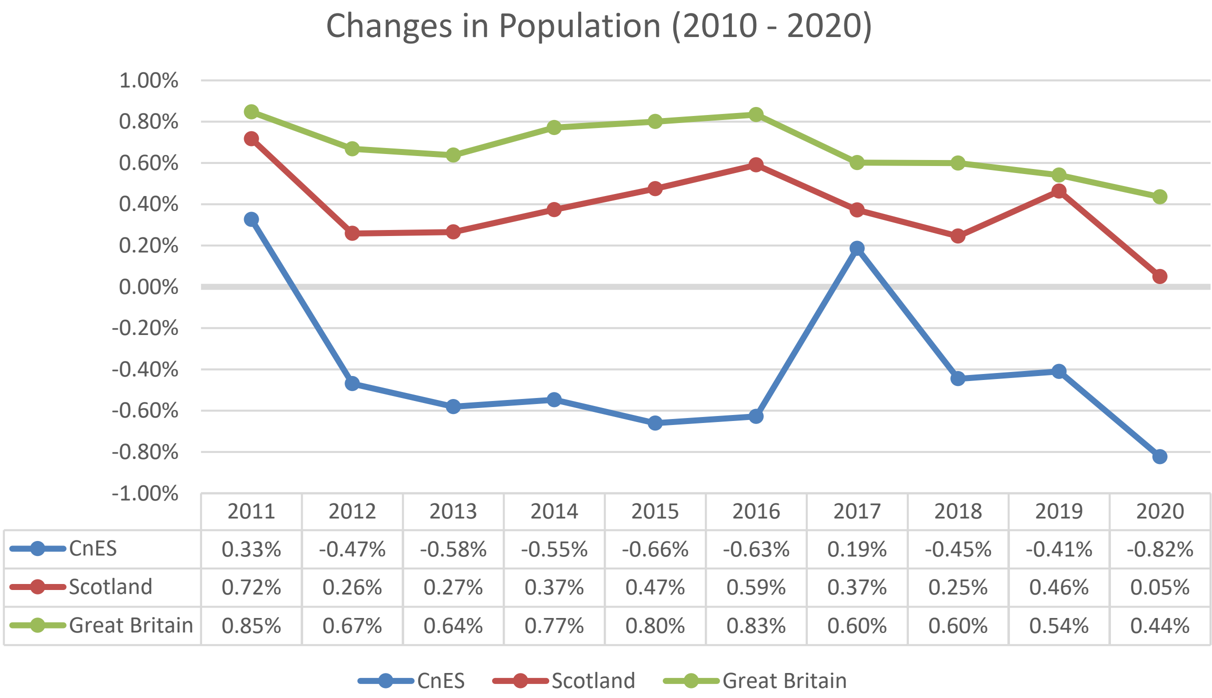
Wider Study Area

14.48 A baseline review of population and employment has been undertaken which focuses on the WSA (the CnES administrative area), although data for Scotland and the UK/Great Britain are provided for comparison as appropriate.

Population

14.49 In 2020 (ONS, 2021a), the population of CnES was 26,500, which represented 0.58% of Scotland's total population, making it one of the smallest local authorities in Scotland, typical of the island authorities. **Chart 14-1** details the changes in population over a 10-year period to 2020, showing that despite consistent growth in Scotland and Great Britain (GB), the population of CnES has steadily decreased, other than in 2011 and 2017.

Chart 14-1: Changes in Population (2010 - 2020)

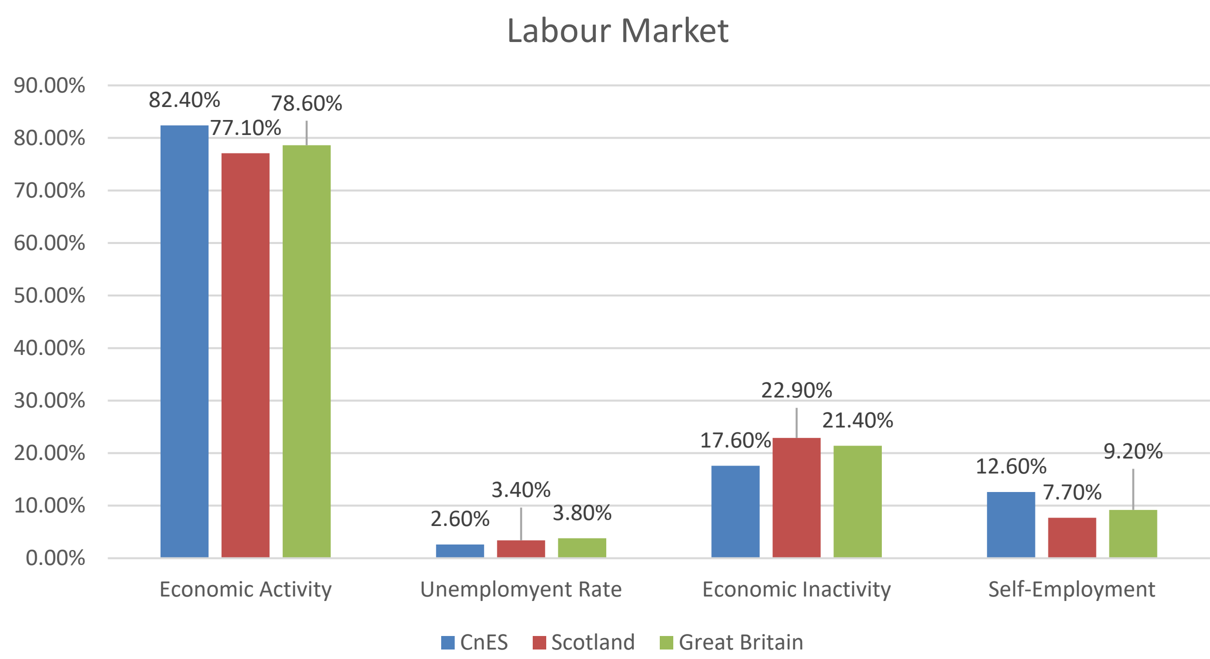


14.50 CnES has an older population than average, with 58.1% considered to be of 'working age' (16 – 64) (ONS, 2021), compared to 63.9% in Scotland and 62.4% in GB. This is reflected in the number of 65+ residents, 26.3% of CnES, compared to 19.3% in Scotland and 18.7% in GB.

Labour Market and Supply Chain

14.51 There are 13,300 economically active residents is CnES (ONS, 2022a), which, proportionately, is a higher rate of activity of than Scotland or GB, as shown on **Chart 14-2.** This infers that despite having a proportionately lower working age population, those living in CnES have a greater rate of employment and economic activity.

Chart 14-2: Labour Market



14.52 The higher rate of economic activity is also reflected in a lower rate of unemployment and economic inactivity (those of working age who are not employed nor seeking work; students, sick, retired, for example) in CnES when compared to the rest of Scotland and GB, whilst CnES also has a higher rate of self-employment.

14.53 Useful insights into the dynamics of the labour market are often revealed by consideration of the occupational structure of those in employment as shown in **Table 14-5** (ONS, 2022a).

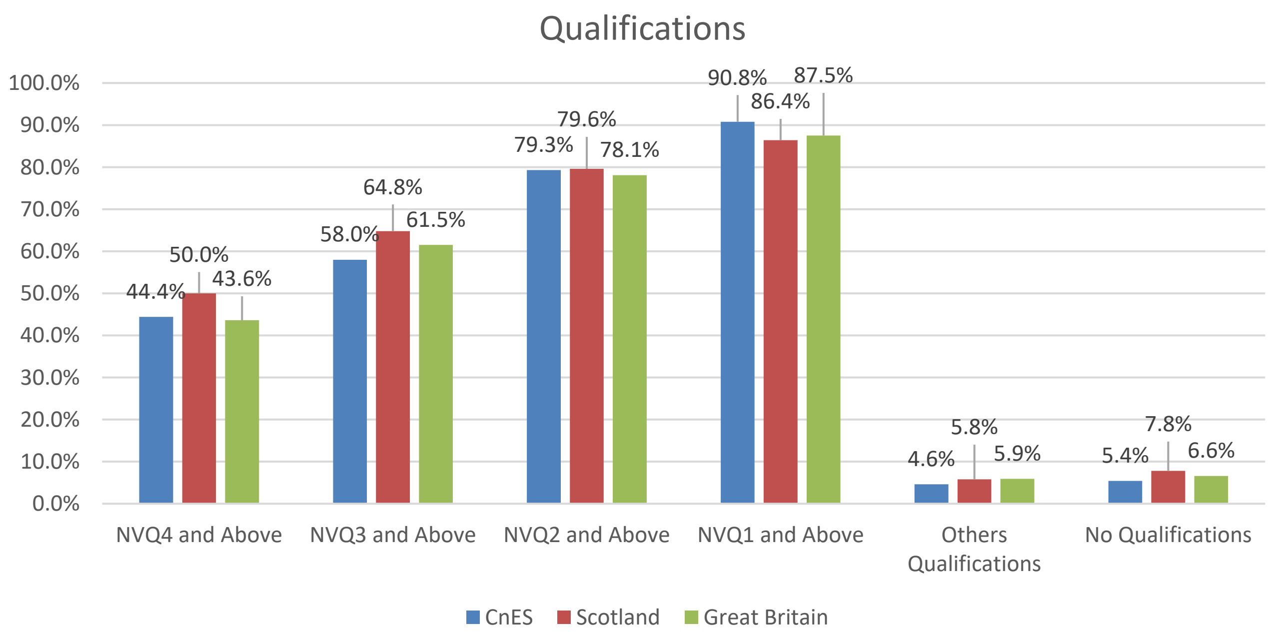
Table 14-5: Employment by Occupation Type

Sector	CnES	CnES (%)	Scotland (%)	GB (%)
1 Managers, Directors and Senior Officials	700	5.4	8.2	10.3
2 Professional	3,200	24.0	25.3	25.8
3 Associate Professional & Technical	1,300	9.9	14.8	15.0
4 Administrative & Secretarial	1,200	9.3	9.8	10.1
5 Skilled Trades	2,500	18.5	8.7	8.6
6 Caring, Leisure and Other Service	1,300	9.4	8.4	7.9
7 Sales and Customer Service	900	6.7	8.6	6.6
8 Process Plant & Machine Operatives	900	6.9	6.0	5.7
9 Elementary	1,000	7.5	10.0	9.6

14.54 Of note in **Table 14-5** is the significantly higher proportion of Skilled Trades workers, over double that of Scotland and GB, skilled trades occupations are likely to include skills and services that would be required for wind farm construction and operation. Conversely, there is a lower proportion of Associate Professional & Technical workers in CnES than in its comparatives.

14.55 Regarding the qualifications attained by the population, degree-qualified (or equivalent) residents of working age account for 44.4% of the CnES population, which is higher than GB but lower than the Scottish average, as shown in **Chart 14-3** (ONS, 2022a).

Chart 14-1: Qualifications



14.56 Regarding qualifications of NVQ1 and above, there was a slightly higher attainment in CnES than in Scotland or GB, which was reflected in the proportion of those who have attained 'Other Qualifications, and No Qualifications.

14.57 According to the ONS Annual Survey of Hours and Earnings (ASHE) (ONS, 2022b), the average weekly gross earnings for residents of CnES were £562.60, £77.90 lower than the Scottish average of £640.50, and £79.40 lower than the average for Great Britain of £642.00.

14.58 Data on an area's business population can be obtained from the ONS UK Business Counts data series (which is sourced from the Interdepartmental Business Register) (ONS, 2021b). This data source can be used to identify the structure of the local business base by sector: this is potentially useful in assessing the capacity of the local area to host supply chain activity for infrastructure and other large-scale construction projects such as the proposed development. **Table 14-6** provides data on the structure of the local business base, both in absolute and relative terms.

Table 14-6: Employment by Industry

Industry	No. of Persons	CnES (%)	Scotland (%)	Great Britain (%)
B: Mining and quarrying	15	0.1	1.0	0.1
C: Manufacturing	800	7.3	7.1	7.6
D: Electricity, gas, steam and air conditioning supply	75	0.7	0.7	0.4
E: Water supply; sewerage, waste management and remediation activities	50	0.5	0.8	0.7
F: Construction	900	8.2	6.1	4.9
G: Wholesale and retail trade; repair of motor vehicles and motorcycles	1,500	13.6	14.4	14.4
H: Transportation and storage	600	5.5	4.2	5.1
I: Accommodation and food service activities	800	7.3	7.6	7.5
J: Information and communication	150	1.4	3.1	4.5
K: Financial and insurance activities	50	0.5	3.1	3.6
L: Real estate activities	200	1.8	1.5	1.8
M: Professional, scientific and technical activities	400	3.6	6.5	8.9
N: Administrative and support service activities	350	3.2	8.0	8.9
O: Public administration and defence; compulsory social security	1,750	15.9	6.6	4.6
P: Education	1,000	9.1	8.7	8.8
Q: Human health and social work activities	2,250	20.5	15.9	13.7
R: Arts, entertainment and recreation	200	1.8	2.5	2.3
S: Other service activities	150	1.4	1.8	1.9

14.59 The data in **Table 14-6** show that the 'Public administration and defence; compulsory social security' has a higher than average proportion of employees. The construction sector is also above the national average, indicating potential capacity and skills in the WSA for construction services.

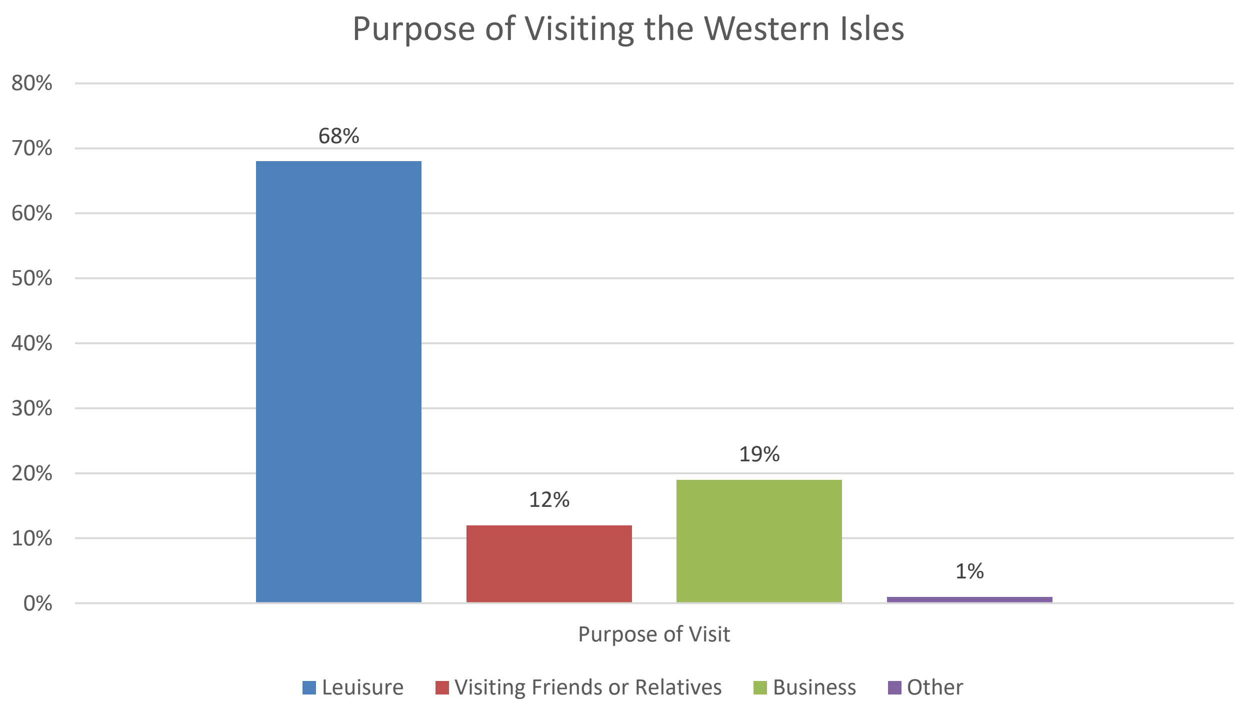
14.60 Note, persons in agriculture and the self-employed are not included in the NOMIS data set out in **Table 14-6**.

Tourism Economy

14.61 The VisitScotland Insight Department's 'Outer Hebrides Visitor Survey' (2018) shows that the total value for visitor spend in 2017, the latest year of the survey, in CnES was £65 million, which represented a 20% (£11.5m) increase from the previous Survey in 2013, and supported approximately 1,200 FTE jobs in the sector, with the pre-pandemic levels of tourism revenue expected to exceed £74 million by 2020 (Comhairle nan Eilean Siar, 2021).

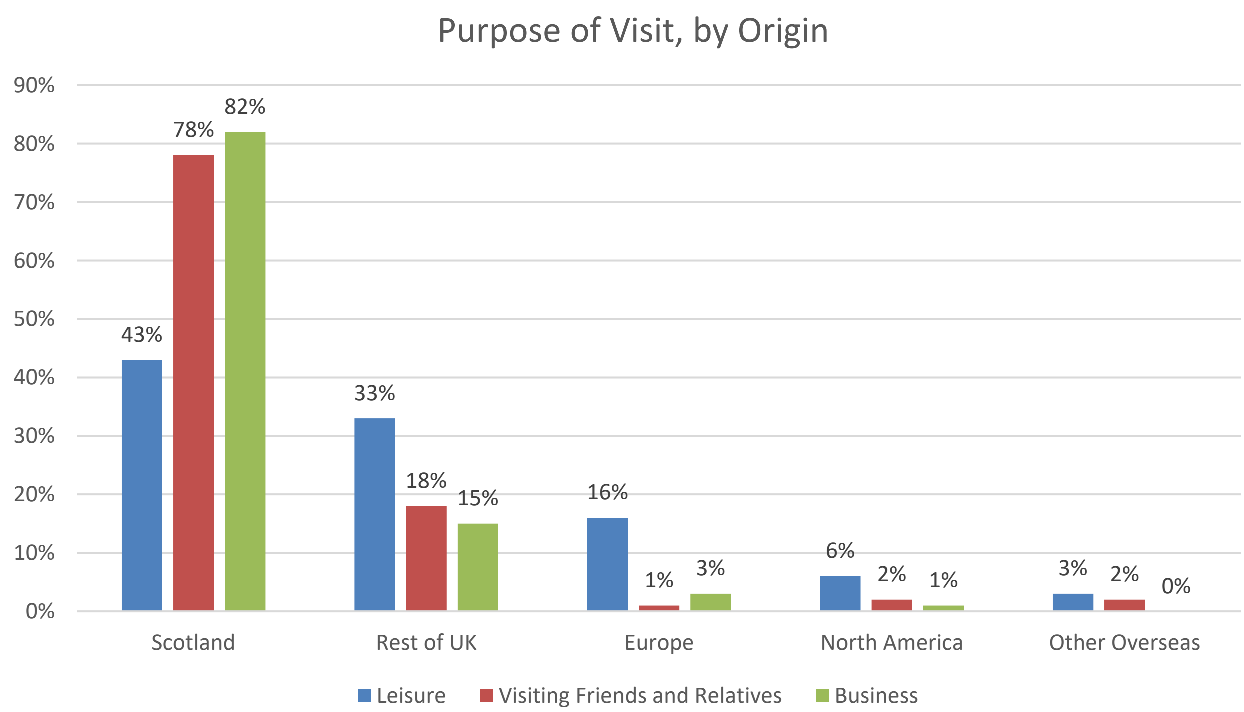
14.62 The total number of tourists visiting the Outer Hebrides in 2017 was 218,965 (Comhairle nan Eilean Siar, 2018), which comprised a majority of visitors travelling for leisure purposes, with the total data for visitor purposes given in **Chart 14-4**. It is noted that although these figures are the most recent in publicly available data for tourism in the Outer Hebrides, the COVID-19 pandemic may have lowered the volume of tourists, however, this is expected to lessen and return to previous levels throughout the project's development.

Chart 14-4: Purpose of Visiting the Western Isles



14.63 The majority of visitors were travelling from other areas of Scotland (55%), with over a quarter coming from the rest of the UK (28%). 11% of the visitors surveys were from Europe, 4% were from North America and 2% were from other overseas origins, the purposes of the visits, by origin, are tabulated in **Chart 14-5**.

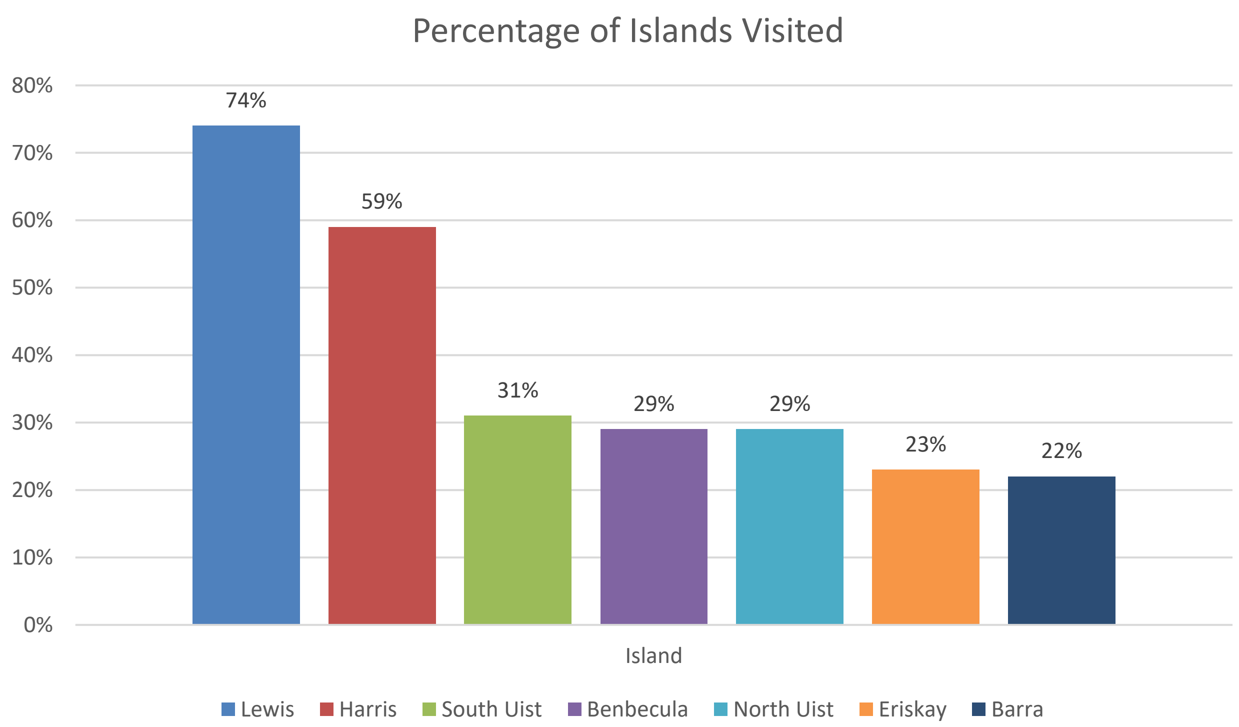
Chart 14-2: Purpose of Visit, by Origin



14.64 The data shows that, proportionately, there are less visitors coming from Scotland for leisure than elsewhere, although, there a, proportionately, more visitors coming from Scotland for visiting family and friends and business. Of relevance to the proposed development is that, of all business visitors, the highest proportion from a particular sector was engineering, which accounted for 13% of the total.

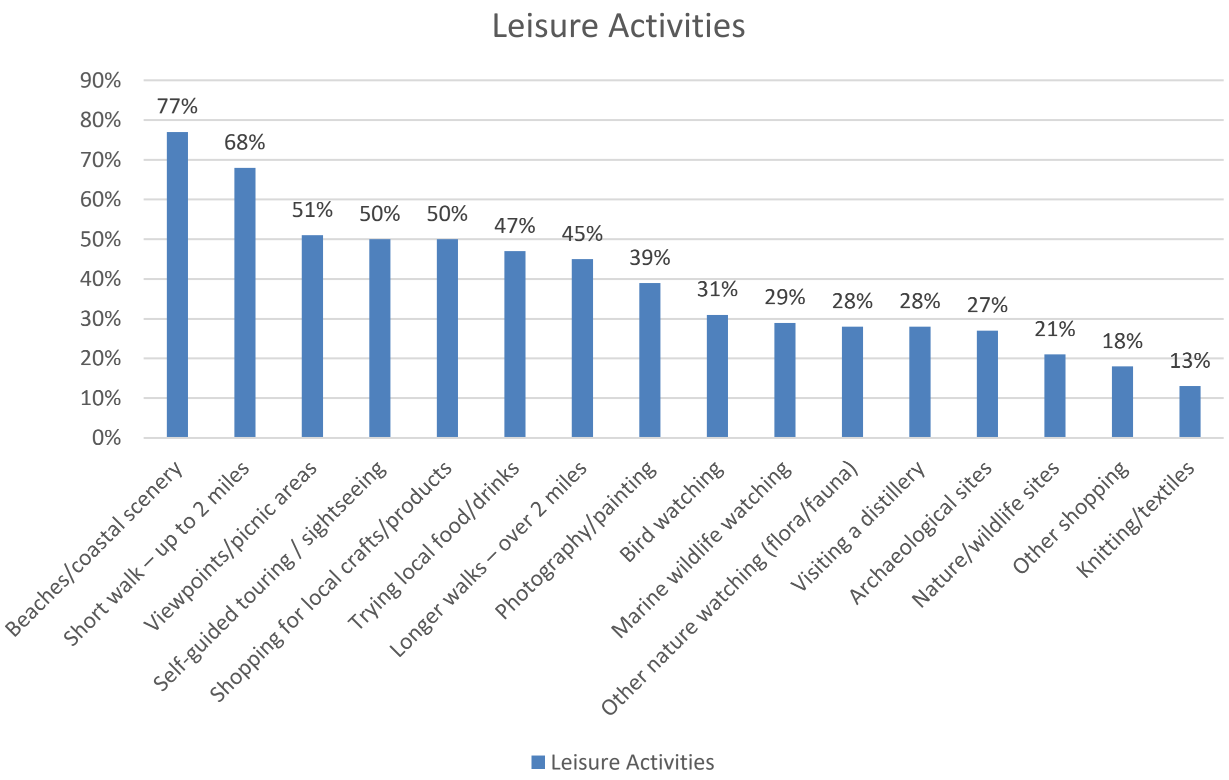
14.65 **Chart 14-6** shows that almost three quarters of the visitors stated they had visited Lewis, the island of the Proposed Development, as well as detailing the percentage of the total visitors who visited each of the islands.

Chart 14-3: Percentage of Islands Visited



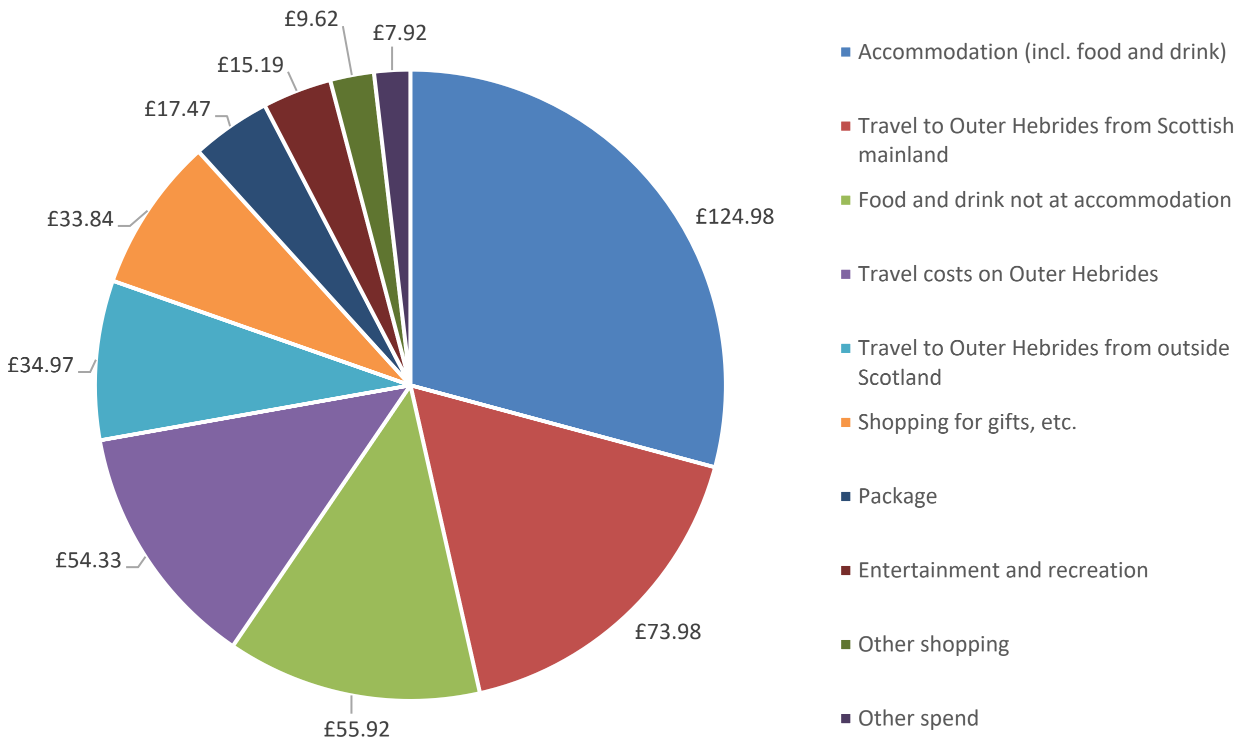
14.66 The Outer Hebrides Visitor Survey (VisitScotland, 2018) also surveyed the most popular leisure attractions for tourists in the Western Isles region (i.e. the WSA), where the beaches/coastal scenery was the most popular. The full data is presented on **Chart 14-7**.

Chart 14-7: Leisure Activities



14.67 The average spend per visitor, per trip in the Outer Hebrides was £428.23 in total, with accommodation (including food and drink) accounting for the highest proportion of this (£124.98). The total breakdown of average visitor spend is shown on **Chart 14-8**.

Chart 14-8: Average Visitor Spend



Local Area of Influence

Land Use

14.68 The land use within the area of the Site is primarily characterised by heather grassland interspersed with freshwater lochans and a network of tributaries and encompasses a number of small lochs with a number of rivers and streams crossing the Site feeding into the lochs. The area within the Site is currently utilised recreationally for hunting, fishing and deer stalking for residents and visitors of the Eishken Estate Lodge, with the LAI falling within the wider Eishken Estate area.

14.69 The Land Reform (Scotland) Act 2003 conferred general access rights over much of rural Scotland. The lack of formally designated paths does not necessarily preclude the right of the public to use it for recreational purposes including for walking, cycling and horse riding.

Recreation

14.70 This section splits recreation in to two forms, ‘formal’ recreation facilities are considered to be those with paid or controlled entry, such as a museum, whilst ‘informal’ recreation facilities are utilised freely without payment, such as walking routes.

14.71 It is noted that only recreational assets that are promoted nationally or regionally and therefore likely to draw in visitors from outside the area located outside of the Site are scoped in to the assessment, although tourist visitors to the area may be expected to make use of some of the local recreational attractions.

Formal Recreation Facilities

14.72 Bird watching is a highly popular draw for tourists to visit the Outer Hebrides, with formal tours offered throughout the island which attract visitors, however, these would be considered within a local context due to the wide availability and informal nature of bird watching in the isles. Within the Site and its immediate surroundings, there is no indication of bird watching tour groups utilising the area following a desk-based review of available resources.

14.73 Eishken Lodge is located within the boundaries of the Site, as it is owned by the Site's landowner. The Lodge offers luxury accommodation as well as various formal recreational activities including stalking and shooting, hiking, fishing and water sports. This is considered to be of local importance and low sensitivity due to a restricted level of visitors capable of attending, restrictive accommodation pricing and location beyond major tourist routes in the Outer Hebrides.

14.74 The Scaladale Centre is located in the west of the LAI, in Aird a' Mhulaidh, and is a hostel which offers several paid activities including skating, abseiling, archery, tours and water sports. This is considered to be of local importance and low sensitivity when considered within the wider context of the Outer Hebrides and is unlikely to be a major factor in tourists visiting Lewis from other areas of Scotland.

Informal Recreation Facilities

14.75 Bird watching is a highly popular activity in the Outer Hebrides and is considered a major drive for tourists to visit the island. It can be done informally and without payment throughout the islands. The Site and wider LAI is home to the recovering white-tailed eagle population as well as several birds of prey species during passage and winter when large numbers of wildfowl and waders congregate, amongst many other native and migrating species.

14.76 There is a number of designated paths. The following sections describe the various types of paths and trails within the LAI.

Long-Distance Routes

14.77 The Hebridean Way, a 252km long-distance trail, passes through the west of the LAI and across the north as it follows the A859. As this is a regional – nationally promoted route, it is considered to be of high sensitivity.

14.78 The Birds of Prey Trail is a self-guided 241km long-distance route which, similarly to the Hebridean Way, enters the west and north of the LAI as it follows the A859. As this is a regional – nationally promoted route, it is considered to be of high sensitivity.

Core Paths

14.79 There are footpaths associated with the Wider Path Network within the south of the Site, from Eishken Lodge running west along the shores of Loch Sealg. Within the LAI, there are Core Paths associated with the A859 and a large cluster of footpaths in the north of the LAI, around Stornoway, shown on **Figure 14.2**.

14.80 The Core Path routes are considered to be of local to medium importance and of low to medium sensitivity depending on the level of access provided to the wider path network. None of those considered in the LAI are connected to a wider path network, so all are considered to be of local importance and Low sensitivity.

Public Rights of Way

14.81 For many years, the Outer Hebrides had an unwritten presumption of open access, whereby establishing a network of paths would have been considered unnecessary (Comhairle nan Eilean Siar, 2010). Paths were often constructed due to purpose and gradually became upgraded into the islands' roads network, the limited fencing throughout the islands meant that there was already free access to the countryside. Consultation from Scotways on 05 October 2022, as part of the Scoping Opinion (see **Table 14-1**), identified that the National Catalogue of Rights of Way (CROW) has no record of any rights of way that are within, or in the vicinity of, the Site boundary.

14.82 Paths were put forward as draft Core Paths, the Core Paths Plan states that Public Rights of Way (PRoW) were used to select Core Paths from the wider path network, all 17 were selected (Comhairle nan Eilean Siar, 2010). Through the combination of desk-based research, GIS mapping, consultation, the remote nature of the Site, low availability of reliable data and lack of identified paths within the Plan, no further PRoWs have been identified within the LAI.

Heritage Paths

14.83 There is one route within the vicinity of the Site promoted by the Heritage Paths Project (Scotways, 2023) for its historic interest, the Paths to Stiomrabhaigh, a 2km rural path, shown on **Figure 14.2**, located approximately 1km to the east. There are a further two paths within the furthest extents of the LAI, all located to the south west of the Site:

- Old Road to Tarbert; and
- Rhenigidale Post Road.

14.84 These are considered to be of regional importance and medium sensitivity.

Access Land

14.85 The lack of any designated or recorded paths in parts of the LAI does not preclude the public from using other land within the LAI for recreational purposes in accordance with the Land Reform (Scotland) Act 2003, including for walking, cycling and horse riding. From Strava heatmap data

(Strava, 2023)[2], it is evident that land to the east of the Site boundary is used lightly for recreational purposes, mainly for cycling. The Site itself is not used for recreational purposes, according to Strava.

Cycling

14.86 Sustrans (2022) have mapped an on-road route, the Hebridean Way, a 317.15km on-road route which is part of the National Cycle Network (NCN) following and runs to the west of the Site, entering the western and northern edges of the LAI. This cycle route is part of the existing road network; therefore, it is believed to be of regional importance and medium – high sensitivity, due to it being the only NCN route in the Hebrides.

Horse Riding

14.87 There are no public facilities for horse riding with the LAI.

Beaches

14.88 There are no beaches within the LAI.

Tourism

Tourism Attractions

14.89 Certain recreational activities are of sufficient prominence to draw visitors to the area and are therefore considered to be tourist attractions. The LAI covers a large area which is considered to be part of the 'iconic' landscape features that attracts visitors to the Outer Hebrides with the Eishken Wild Land Area located to the south west of the Site. However, it does not feature any nationally important tourism 'destinations' that draw tourists to the Hebrides.

14.90 There are several locally important tourist assets located within the LAI, including Stiomrabhaigh, Bonnie Prince Charlie Monument, Clan Mackenzie Monument, Ravenspoint Visitors Centre and Ardvourlie Woodland. The assets are considered to be of local importance and low sensitivity.

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[2] It is noted that Strava would not count those who do not have the app, have their location switched on and / or do not have an accurate signal. However, it can be useful in providing a contextual impression of the usages of some recreational routes comparatively with others, as well as aid in identifying further informal recreational routes. Routes identified were then compared with relevant maps and plans to verify the accuracy of the data.

Accommodation

14.91 According to an online review of Airbnb, Google and other accommodation websites, for local accommodation businesses, close to the LAI, there are 73 accommodation businesses located in the outlined accommodation area on **Figure 14.3**. These include:

- eight bed and breakfasts;
- seven hotels; and
- 58 self-catering.

14.92 Of the individual accommodation businesses identified, each are considered to be of local value and low sensitivity; however, collectively, they comprise a concentration of tourism-related businesses can be of regional importance and medium sensitivity.

14.93 Informal accommodation is also popular amongst tourists throughout the Outer Hebrides, these include ad hoc stopovers for campervans and wild camping that are not easily identified using the above methods as they are, by nature, not related to formal businesses. These sites are therefore not assessed separately from the broader context of the LAI.

Cumulative Situation

14.94 The cumulative impacts from other neighbouring wind farms would differ at the construction and operational phases for socio-economics.

14.95 There is potential for cumulative effects to arise leading to competition for materials, workers, accommodation and further supply chain products in relation to the construction of other prospective or consented projects, including the Stornoway Wind Farm, Lewis Wind Farm, Druim Leathann and SHE-T 1.8, as described in **Chapter 3: Description of Development,** which are likely to have overlapping construction phases with the proposed development due to timings with their respective grid connections.

14.96 The nature of the remoteness of the Outer Hebrides aggravates the potential issues related to the cumulative construction of several projects of a similar scale to proposed development. The scarcity of materials and the related supply chain products is something that could already prove to be difficult for a single development, however, with the added competition of several other developments of a similar scale, this could prove to be entirely more difficult. The low population of the Outer Hebrides would mean that it is reasonable to assume that the readily available workforce who can construct these developments would also be low, which would lead to a construction workforce being supplied externally from the mainland. This workforce would need a ready supply of accommodation venues for the duration of their work, something which is also in low supply, particularly during the peak summer seasons, in the Outer Hebrides, and would result in further competition between the cumulative developments and with tourists, impacting the valuable tourism economy.

14.97 Effects could also be experienced on local roads used by tourists if construction traffic were to use the routes proposed for the cumulative developments. The impacts on roads are assessed further in **Chapter 12: Site Access, Traffic and Transport**.

14.98 During the operational phase, there is potential for cumulative visual effects to arise with regard to prospective or consented projects as described in **Chapter 3: Description of Development**, which could result in a reduction of amenity in the nearby recreational and tourism assets.

14.99 The cumulative developments within the LAI are considered to be:

- the operational Lemreway wind turbine;
- the operational North Harris wind turbines; and
- the Harris – Stornoway 132kV Overhead Line replacement.

14.100 Whilst beyond the boundaries of the LAI, the following projects are considered to be potentially of a scale where cumulative effects could occur within the WSA:

- Stornoway Wind Farm;
- Druim Leathann Wind Farm; and
- Lewis Wind Farm.

ASSESSMENT OF EFFECTS

14.101 This section is concerned with the assessment of effects for both construction and operational activities within the relevant study areas.

Embedded Measures

14.102 The proposed development, as described in **Chapter 3: Description of Development**, incorporates good practice measures for limiting the adverse effects of the construction works. Given the nature of the tourism economy in CnES, the construction of the proposed development is expected to result in competition for accommodation between construction workers and tourist visitors, potentially resulting in some displacement of tourism visitors during peak season unless management measures are put in place. An Accommodation Strategy is proposed to be developed as part of the final CEMP to minimise competition for accommodation. An Outline CEMP is provided in **Technical Appendix 3.1: Outline CEMP.**

14.103 Construction traffic would affect use of the A859 which is also utilised by tourists and local residents alike. Measures are set out in **Chapter 3: Description of Development** and also in **Chapter 12: Site Access, Traffic and Transport** relating to how delivery of goods and services would be managed during construction so as to minimise impacts on sensitive receptors. The proposed management measures would be further developed in the final CEMP that would be adopted prior to construction commencing.

14.104 Further mitigation measures would come in the form of the implementation of the CEMP and Construction Traffic Management Plan (CTMP) to limit the effect of the A859 road users.

14.105 The proposed development would also incorporate measures for enhancing the beneficial effects of construction on the local economy, particularly with regard to adding value to the local supply chain through implementation of a Local Contractor Policy, where additional weight in the tendering process is given to primary contractors that show a clear commitment to increasing local content in their supply chains. Previously, an aim to procure local services was committed to as part of the consented Muaitheabhal Wind Farm Section 75 Agreement which states:

"The Developer (Uisenis Power Limited)… shall aim to procure at least 75% in value of the construction phase of the Development (Muaitheabhal Wind Farm) from the Outer Hebrides on terms and conditions as to price, quality, timing and performance guarantees equivalent to alternative satisfactory suppliers available to the Developer (Uisenis Power Limited)…"

14.106 The applicant will continue to liaise with the local community and local suppliers throughout the full supply-chain as well as key stakeholders. The applicant remains committed to the community benefits proposed as part of the Muaitheabhal Wind Farm consent, as well as exploring options to improve upon these via additional benefits, such as apprenticeship schemes.

Potential Construction Effects

14.107 Construction effects are addressed in turn with regard to the WSA and the LAI.

Wider Study Area - Socio-Economics

14.108 During the construction phase of the proposed development there would be economic effects resulting from expenditure on items such as site preparation, development of access roads, purchase and delivery of materials, plant, equipment, and components, etc. Based on information provided by the applicant, the construction period for the proposed windfarm is expected to occur over a three year duration.

14.109 The applicant has provided technical information relevant to the proposed project that has enabled the production of broad estimates of likely development costs for the scheme. **Table 14-7** provides a breakdown of this predicted expenditure disaggregated by main category of spend.

Table 14-7: Pre-development, Construction, and Installation Cost Estimates

Category of Spend	£ millions
Development and project management costs	6.6
Turbines/plant	120.2
Electricals/grid connection	17.7
Civils/contingency and miscellaneous	20.6
Total	165.0

14.110 Overall expenditure is expected during the pre-development, construction, and installation stages is expected to amount to £165 million.

14.111 Based on previous experience with similar projects, assumptions have been developed regarding the potential broad location of expenditure for each category in the **Table 14-7** for the WSA and Scotland.

Gross Effects During Construction

14.112 Estimates of the expected direct construction phase employment implications of the project have been derived using the information on anticipated project expenditure set out above, as well as assumptions obtained from the following sources:

- employment and Gross Value Added (GVA) multipliers for Scotland, obtained from Input-Output tables for Scotland (1998-2019) published by the Scottish Government;
- employment and GVA multipliers for the UK obtained from Input-Output tables published by the UK Government; and
- ratios of turnover per unit of GVA and GVA per employee have been derived from Scottish and UK Government data.

14.113 Using all of these sources summarised above, **Table 14-8** provides estimates of direct gross employment and GVA effects that would be expected to be delivered by the proposed development – assuming it is approved and delivered as intended – for two spatial areas: the WSA; and Scotland. These estimates are set out for both the proposed development period as a whole and on an average per annum basis. The employment estimates are provided on a workforce job basis.

Table 14-8: Estimates of Gross Development Phase GVA and Employment Effects

Spatial Area	GVA overall £million	GVA p.a. £million	Employment total (workforce jobs)	Employment p.a. (workforce jobs)
WSA	3.19	1.06	49.7	16.6
Scotland (total, including WSA)	19.11	6.37	281.5	93.8

14.114 Assuming the project proceeds as expected, GVA with a gross total of £3.19 million would be expected to be generated by the project in the local WSA economy during the 3-year development, construction, and commissioning phase. This is equivalent to an average of £1.06 million per annum over this period.

14.115 The predicted overall GVA total for Scotland is £19.11 million, averaging £6.37 million per annum.

14.116 In terms of employment, a gross total of 49.7 person-years of gross temporary employment is predicted to be generated in the local WSA economy during the three year construction and installation phase. This amounts to an average of 16.6 workforce jobs per annum during construction and installation.

14.117 The equivalent predicted overall total for Scotland is 281.5 person-years, averaging 93.8 workforce jobs per annum during construction and installation.

Net Effects During Construction

14.118 So far, the focus has been on the gross effects of development and construction. The next step is to consider and quantify the potential for net additional effects by taking account of three additionality concepts:

- **Leakage**: is the proportion of project outcomes that benefit individuals or organisations located beyond the relevant area of impact (e.g., the WSA area). Leakage is generally higher at a local level, although it also varies by the nature of development type;
- **Displacement**: is an estimate of the economic activity hosted by the Site that would be diverted from other businesses in the spatial impact area. This again varies by the nature of development type; and
- **Multipliers**: is an estimate of the further economic activity associated with additional income and/or project procurement activity stimulated by project activity within the spatial impact areas under consideration.

14.119 The specific values assumed for multipliers for Scotland are sourced from input-output tables published by the Scottish Government. These values vary by project expenditure category. Assumptions about leakage are based on local labour market indicators and experience of other windfarm projects located in Scotland.

14.120 **Table 14-9** shows the estimates of net additional development phase effects – both overall and on a per annum basis – during the anticipated 3-year construction period.

Table 14-9: Estimates of Net Additional Development Phase Effects

Spatial Area	GVA overall £million	GVA p.a. £million	Employment total (workforce jobs)	Employment p.a. (workforce jobs)
WSA	2.54	0.85	39.6	13.2
Scotland (total, including WSA)	24.57	8.19	361.9	120.6

14.121 With respect to employment, a total of 39.6 person-years of net additional temporary employment is predicted to be generated in the WSA economy during the construction and installation phase of the proposed project.

14.122 The predicted duration of the construction phase is three years. Therefore, the additional boost to net WSA employment is expected to average 13.2 workforce jobs annually if the project is permitted and delivered as intended by the developer.

14.123 The equivalent total for Scotland is 361.9 overall workforce jobs, averaging 120.6 jobs per annum over the construction and installation period.

14.124 In 2021, there were an estimated 14,000 workforce jobs located within the WSA area (ONS, 2021c). The temporary addition of around 13 net jobs per annum to this total would increase the number of jobs by around 0.10%. The magnitude of effect on the local employment base is considered to be **Minor** (and beneficial) and **Not Significant**.

14.125 In terms of output, a net additional total of £2.54 million of GVA is predicted to be generated by the project in the local WSA economy during the development, construction, and commissioning phase. The average annual net increment is expected to amount to £0.85 million for the WSA economy. The equivalent annual total for Scotland is expected to amount to £8.19 million.

14.126 As of 2020, the estimated annual value of output generated within the WSA was approximately £580 million. (ONS, 2020) The temporary augmentation of the local economy by around £0.85 million p.a. would increase the size of the local economy by around 0.15%. The effect on the value of the local economy is therefore considered to be **Minor** (and beneficial) and **Not Significant**.

Proposed Mitigation and Enhancement

14.127 Allowing for the implementation of embedded mitigation, no significant effects have been identified in respect of socio-economic receptors arising from construction of the proposed development and therefore no mitigation measures are required to reduce or remedy any adverse effect.

Residual Construction Effects

14.128 No residual adverse construction effects are expected on the WSA.

Local Area of Influence – Tourism, Recreation and Land Use

14.129 The principal potential impact on receptors beyond the boundaries of the Site is expected to be caused by delivery vehicles on local roads. The proposed route to the Site (described in **Chapter 12: Site Access, Traffic and Transport**) passes through the north west of the LAI on the A859, a route which is also utilised by tourists.

14.130 Land uses within the Site would be affected throughout the construction period by construction activities. Whilst some parts of the Site may not be directly affected for lengthy periods, it is expected public access would be controlled as part of the Site health and safety plan. Data obtained from Strava heatmaps[2] shows part of the access route along Eishken Lodge is used lightly for recreation, whilst the Site itself has little to no usage in this regard.

14.131 Informal routes utilising the network of forest tracks would be temporarily diverted where construction activities or felling is taking place. Waymarked trails, such as Core Paths, would be either actively managed or temporarily diverted to ensure continuity of the route. Notices will be placed in prominent locations around the Site with details of any areas with restricted access. Such measures would be agreed in advance, through consultation with CnES's Access Officer, the applicant and recreational groups, in the form of an Access Management Plan.

Tourism Effects During Construction

14.132 An assessment of effects on road users of the A859 and other sensitive receptors has been undertaken in **Chapter 12: Site Access, Traffic and Transport**. The assessment takes account of embedded measures to minimise impacts of construction traffic on other highway users, including tourism users of the highway and nearby properties. An outline CTMP has been prepared to outline the mitigation measures recommended during the construction stage; this is provided in **Technical Appendix 12.1**. The CTMP offers several points of mitigation to reduce the impact on highway users, including the A859, including a full condition survey; regular monitoring; remedial works as necessary; and breakdown procedure.

14.133 The experience of visitors using the A859 as a tourism route may be adversely affected during the construction period despite the implementation of the proposed traffic management measures, although the adverse experience for individual travellers is only likely to be experienced for a short period of time when abnormal loads are being delivered to the Site and will be limited to the proposed construction hours of working which exclude periods such as evenings and Sundays.

14.134 The NCN and the long-distance routes Hebridean Way and Birds of Prey Trail would experience similar impacts due to following the A859 within the LAI; however, as this is a two track road it is considered that cyclists and walkers would be more able to traverse any obstructions, with any obstructions likely to be very temporary in nature reducing the magnitude of effect solely for the NCN Route.

14.135 Taking account of the above, the magnitude of change is considered to be negligible. As the sensitivity of the receptor is high / medium, the level of effect would be minor in a worst-case scenario, with the temporary and intermittent nature of the impact considered to result in a level of effect that is **Not Significant**.

14.136 Local businesses, including accommodation and food and drink businesses, may experience beneficial impacts during construction due to use by construction workers. The level of effect may be high for individual businesses, and as the sensitivity of these receptors is low the effect would be **Moderate** which may be **Significant** (beneficial).

14.137 Adverse effects related to competition for accommodation may occur as a result of the need for temporary housing for construction workers. Housing availability during the peak tourist season of the summer months is scarce in Lewis, with the largest concentration of housing being in Stornoway, shown on **Figure 14.3**. This is considered to be a potentially moderate magnitude adverse impact, due to the low volume of accommodation sites located in Stornoway. As accommodation is considered to be of medium sensitivity this results in a **Moderate** level of effect that is **Significant**. As mitigation, the applicant has considered the implementation of an Accommodation Strategy (which could include the delivery of temporary homes for the construction workers for the proposed development, as well as those of potentially overlapping developments referenced in Cumulative Effects assessment). With this mitigation included, the magnitude of effect would be lowered to Minor – Negligible, resulting in a worst-case scenario, **Minor** and **Not Significant** residual effect.

14.138 Bird watching was highlighted through the consultation feedback as being a major draw for tourism visitors to the islands, which can come in the form of paid, guided tours or informally by self-exploring the islands. No bird watching activity pertaining to the Site itself was found from desk based research and the islands themselves have ample alternative facilities and sites for bird-watching which are already popular with tourists, resulting in a minor impact on this medium sensitivity activity, which would be a **Minor** and **Not Significant** level of effect.

Recreational Effects During Construction

14.139 For recreational activities, assets be included in the assessment are the Stiomrabhaigh Heritage Path (as others are considered to be of a distance and direction that would render them unimpacted by the proposed development) and the footpath associated with the Wider Path Network in the south of the Site.

14.140 The Heritage Path is considered to be of Medium sensitivity whilst the footpath is considered to be of local importance and low sensitivity, with neither indicating that they have high usage. The Heritage Path may be impacted by the visual aspect of the construction in a western direction; however, views would be unaffected in all other directions, whilst the southern footpath would likely remain unimpacted, neither path is connected to other path or road networks, therefore the magnitude of the change is considered to be minor, resulting in a **Minor and Not Significant** level of effect for both paths.

14.141 The impact of the proposed development on Eishken Lodge would be major, due to the area it utilises recreationally for the guests and the access leading to the Lodge being heavily restricted during the construction. However, as the landowner is directly involved with the proposed development, benefiting from its construction, coupled with the construction being a temporary impact, reducing the magnitude of change to Moderate which, on a low sensitivity receptor, would result in **Minor** and **Not Significant** level of effect.

Potential Operational Effects

Wider Study Area – Socio-Economics

Employment Effects During Operation

14.142 Once operational, a permanent workforce would be required to operate and maintain the proposed windfarm. Based on experience of proposed and completed onshore windfarm projects of a similar size and in similar locations elsewhere in Scotland, it is estimated that there is likely to be between five and nine permanent direct jobs are likely to be created by the project during its operational phase in the WSA. A mid-point estimate of seven direct operational jobs is used in the assessment of significance.

14.143 As well as the direct impacts on employment during the construction phase there would also be indirect effects generated throughout the operational phase. Indirect effects arise from the placing of contracts with other businesses – both in the WSA and elsewhere in Scotland – supplying services and materials to the proposed project during its operational phase.

14.144 Examples of such supply chain activity would include the procurement of:

- site maintenance;
- waste management and recycling;
- on-site land management;
- vegetation management along access roads and tracks;
- maintenance and repair for access roads, ditches, road furniture and gate repair, etc.;
- maintenance of fencing;
- plant and equipment hire;
- supply of consumable items (e.g., fuels, lubricants and oils, spare parts, office supplies, etc.);
- statutory turbine inspections; and
- catering for meetings and visits.

14.145 In addition to the list above, local shops, cafes, accommodation providers and hotels often experience an increase in business during the operational phase from visitors to the Site (e.g., as a result of extra technicians being needed onsite during windfarm maintenance and servicing).

14.146 Overall, based on experience with similar projects elsewhere across Scotland, it is expected that there is likely to be between 20 and 25 overall indirect jobs created by operational and maintenance supply chain effects associated with the proposed project within the WSA. A mid-point estimate of 23 indirect operational jobs is used in the assessment of significance.

14.147 The overall number of direct and indirect jobs is therefore estimated to amount to 30 permanent jobs in the WSA.

14.148 Given that there are estimated to be 14,000 jobs located in the WSA area (as of 2021), the expected increment to the local employment base that would result if the project proceeded as intended amounts to around 0.21%. This magnitude of effect on local job creation is judged to be beneficial but **Minor** and **Not Significant**.

14.149 Although the number of workers needed for the operation and maintenance of the proposed development is thought to be low. Although an acceptable agreement being made regarding the housing of the construction and the operational phase workers could be beneficial, it is considered to be a **Minor** beneficial, **Not Significant** impact.

Local Area of Influence – Tourism and Recreation

Assumptions of the Operational Phase LAI Assessment

14.150 During the operational phase there are expected to be both adverse effects due to visual impacts on tourism receptors, detailed in **Chapter 7: Landscape and Visual Amenity**, and beneficial effects arising from the legacy of the enhanced routes within the Site. In addition, the applicant is committed to working with the community through the potential of shared ownership of the proposed development, which could allow financial capital to be directly invested into improving the local area, possibly through community enhancements or improving skills and training, which could have a lasting benefit beyond the lifespan of the proposed development. Further to this, the applicant is considering a wide array of community benefits, including the following:

- contribution Agreement of 1% revenue to Uisenis Wind Farm Trust, contribution agreement of 0.5% to Western Isles Development Trust, or an option for shared community ownership;
- community fund at the prevailing Scottish Government rate, currently £5,000 per MW annually over the lifetime of the proposed development (165MW (in the region of) x 5,000 = £825,000 per year, or £24,750,000 over the 30 years, as with the proposed development);
- footpath improvement fund of £750k;
- paid apprenticeship schemes during construction; and

- Eagle Conservation Programme contribution of approximately £150k per annum over the lifetime of the proposed development.

14.151 Although the community benefits would be considered as a benefit of the wider project, it is noted that they would not be considered mitigation and have not been factored in to the assessment.

14.152 No significant effects are expected due to maintenance vehicles using the access road and Site as this would be on an occasional basis.

Tourism Effects During Operation

14.153 Visual effects on recreational receptors are assessed in **Chapter 7: Landscape and Visual Amenity**, and the findings have been considered in the assessment below, although it is important to note that a significant landscape and visual effect does not necessarily result in a significant socio-economic effect.

14.154 The landscape and visual assessment found that the residual impact on the A859, Hebridean Way, NCN Route and Birds of Prey Trail (all of which follow the same road) would be considered a moderate (adverse) effect when considering the localised viewpoints where the turbines would be visible from, however, when considering the route as a whole, the Chapter concluded that it would be a minor (adverse) not significant effect. When assessing the recreational and touristic values of such long routes they are taken within the context of their entirety, as users would unlikely be deterred from small intermittent, brief, negative viewpoints on such long distances. As such, the Socio-Economic, Tourism, Recreation and Land Use assessment would concur that the operational effects on the recreational assets would be **Minor (adverse)** and **Not Significant**.

Recreational Effects During Operation

14.155 Regarding the Heritage Path, due to the close proximity, smaller route and evident viewpoints, **Chapter 7: Landscape and Visual Amenity** found the impacts to be major (adverse) and significant, however, as noted above this does not necessarily mean it would result in a major socio-economic impact. Studies undertaken in respect of other wind farm projects, where users have been asked if the presence of turbines would discourage them from using a route, have found that the majority would not be deterred (BiGGAR Economics, 2021). For example, an independent survey of tourists and day-trippers in the area around the proposed Clashindarroch Wind Farm in Aberdeenshire (Gilmorton Rural Development, 2009) found that 84% of respondents did not feel that the proposed wind farm would have an impact on their willingness to revisit the area. The survey also found that there was no difference in the attitude of walkers to other visitors in relation to their willingness to revisit.

14.156 The reduced usage of the Site due to the presence of the turbines is considered to have a minor impact on the Eishken Lodge, however, with the mitigation outlined in the construction phase assessment. This results in a **Minor** and **Not Significant** level of effect.

Cumulative Effects

14.157 It is considered that Lemreway and North Harris operational turbines would not be of a scale to produce significant impacts on tourism, recreation or land use, nor would they have economic impacts due to already being constructed.

14.158 For the other projects within the LAI Cumulative Study Area during construction, **Chapter 12: Site Access, Traffic and Transport** has assessed the potential for cumulative effects on the proposed routes for construction traffic accessing these cumulative projects and concluded that there are no consented developments within the vicinity of the proposed development which will generate significant traffic and should be considered as part of the respective cumulative assessment.

14.159 In terms of economic effects in the cumulative WSA of CnES, it is expected that the cumulative effects on employment would be significant due to the remote location of the proposed development on the Outer Hebrides, the low volume of readily available construction workforce and the volume of readily available accommodation.

14.160 The construction workforce will be brought in externally from the mainland for the proposed development and, likely, for the cumulative developments, however, the overlapping timescales of construction would result in constraints related to the housing of the workforce. The applicant's aim of locally procuring 75% of the value of the proposed development's construction phase could further exacerbate issues of competition between developments.

14.161 The cumulative effects resulting from accommodation demands could be managed by means of a proposed Accommodation Strategy, as part of the CEMP, that would take account of any potential overlap of construction period, particularly within the peak tourist season. An Outline CEMP is provided in **Technical Appendix 3.1: Outline CEMP.** No other construction cumulative effects are expected. To mitigate the expected issues, the Accommodation Strategy would look to consider:

- outline of the timeline of construction;
- available local accommodation;
- expected number of workers;
- expected number of cumulative workers;
- times of peak numbers of construction workforce;
- outline of plans for the potential construction of housing for workers;
- progress of discussions with cumulative developers; and
- outline of plans for 'sharing' of workforce with cumulative developers.

14.162 The applicant is currently considering the prospect of constructing housing for the construction workforce, which could then be used as local housing or alternative uses for the island. Discussions with cumulative developers are also ongoing, there is potential for a 'sharing' of construction workforce and aligning the peak construction schedules to the benefit of all projects. Further to this, it is expected that the cumulative projects would also be preparing similar Accommodation Strategies.

14.163 Should the above aspects be taken into consideration, the cumulative effects of the proposed development on the local employment and economy of the WSA would be adequately mitigated to significantly reduce the residual cumulative impact to **Minor (adverse)** and **Not Significant**.

14.164 There would be additional beneficial impacts during construction on the local supply chain due to the patronage of local accommodation, food venues and further locals businesses which can assist with any stage of the construction etc., which would see a considerable increase in business during the construction phase of the proposed development.

14.165 During operation, the turbines within the LAI would not present further impacts. The Harris – Stornoway overhead line could present a reduction of visual amenity from certain receptors within the immediate vicinity of the turbine, namely the Wider Path Network to the south of the Site, the Heritage Path to the east and the Eishken Lodge to the south. However, the Landscape and Visual assessment notes that the Harris – Stornoway line is not visible from these routes. Regarding the long-distance routes, similarly to the operational phase assessment, the cumulative visual impact is considered to be minor (adverse) and not significant when taken within the context of the entire route.

14.166 In terms of cumulative operational effects on employment are not expected due to the low numbers of operational staff involved and further materials related to the direct and in-direct supply chains also being low, therefore no other operational cumulative effects are expected.

14.167 There is also the potential to see beneficial effects during the operational phase as a result of the cumulative developments. The increased volume of consented and constructed developments in CnES could increase the likelihood of beneficial supply chain opportunities. Additionally, it is possible that the combined maintenance operations of the proposed development and other nearby wind farm developments would be such that full time employment and materials could be sourced locally.

STATEMENT OF SIGNIFICANCE

14.168 This assessment has considered data from a diverse range of sources to determine the likely effects of the proposed development on the local economy, together with local effects on tourism and recreation assets. The potential effects on the economy and identified assets take account of good practice measures to be adopted.

14.169 The assessment concludes that no necessary specific mitigation has been identified regarding the economic assessment to be required and therefore residual effects of the proposed development are effectively the same as the predicted effects. Predicted adverse effects have been assessed as not significant; predicted beneficial effects have been assessed as negligible with regard to effects on the local tourism economy during the construction phase.

14.170 With regard to local land use, recreational and tourism assets, no significant adverse effects have been identified.

14.171 Potential significant effects were identified regarding the competition for accommodation between construction workers and tourists, however, with the addition of mitigation in the form of an Accommodation Strategy and/or further consideration of new housing for workers, this impact is lowered to a non-significant effect.

14.172 The effects associated with the proposed development during construction are summarised in **Table 14-10**.

Table 14-10: Summary of Predicted Construction Effects

Receptor	Potential Effect	Significance of Effect	Mitigation Proposed	Residual Effect
Construction Phase				
WSA	Local Economy	Minor (beneficial)	None proposed	Minor (beneficial)
	Labour Market	Minor (beneficial)	None proposed	Minor (beneficial)
	Tourist Economy	Minor (beneficial)	None proposed	Minor (beneficial)
Land Use	Land Use	Minor (adverse)	None proposed	Minor (adverse)
Recreation	Loss of Amenity to Formal Recreational Assets	Moderate (adverse)	Consultation with Landowner	Minor (adverse)
	Footpaths	Minor (adverse)	None proposed	Minor (adverse)
	Long Distance Routes	Negligible	None proposed	Negligible
	NCN	Negligible	None proposed	Negligible
Tourism	Accommodation	Moderate (adverse)	Access Management Plan / Accommodation Strategy	Minor (adverse)
	Bird Watching	Minor (adverse)	None proposed	Minor (adverse)
Operational Phase				
WSA	Labour Market	Minor (beneficial)	None proposed	Minor (beneficial)
Recreation	Footpaths	Minor (adverse)	None proposed	Minor (adverse)
Tourism	Accommodation	Minor (adverse)	None proposed	Minor (adverse)
	Loss of Amenity to Formal Recreational Assets	Minor (adverse)	None proposed	Minor (adverse)

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CONTENTS

INTRODUCTION

15.1 This chapter considers the potential operational effects of the proposed development on existing and planned military and civil aviation activities, including those resulting from impacts to radar. Other potential effects result from the physical presence of the turbines as obstacles, and effects on navigational aids ('Navaids') and radio communication stations.

15.2 The assessment of potential effects on aviation and radar considers the potential for technical impacts and the operational acceptability of any such impacts. Rather than following an EIA process of assessing the significance of effects, the primary consideration is the actual or likely position of the specific aviation stakeholders. The assessment of effects on these receptors is therefore one of technical analysis and consultation and seeks to identify if any identified effects are likely to be 'acceptable' or 'not acceptable' to the asset owner, and if not acceptable establish any potential technical mitigation solutions.

15.3 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**.

SCOPE OF ASSESSMENT

15.4 Radio waves are used in a variety of Navaids, radio communication systems and radar; any large structure has the potential to interfere with their propagation and reception. Radars are designed to detect movement; hence a turbine's rotating blades can be interpreted as aircraft, with the potential to then affect air traffic management.

15.5 Wind turbines can also have an impact on flying simply due to their physical presence. In this respect they are no different to any other tall obstacles such as pylons or television masts, with recognised criteria for safeguarding the airspace around airfields. Away from airfields, such obstacles are a normal part of the aviation scenery and measures are in place to enable aircraft to safely navigate around them.

15.6 The potential effects are highly dependent on the location of the wind farm and on the positions of the individual turbines. In some cases, there are no significant consequences, and no mitigation is required, whilst in other cases the turbine specification or layout must be designed to accommodate local infrastructure. Mitigation is often available and appropriate to manage impacts.

Effects Scoped Out

15.7 Interference with surveillance systems and radar can occur when wind turbine blades are moving, but not when they are static. Therefore, only potential effects during operation are assessed in this Chapter and not during construction or decommissioning.

BASELINE

15.8 The Site lies under an area of uncontrolled airspace, approximately 20km south west of Stornoway Airport; to the nearest runway threshold. It is remote from all lower airspace airways and within a low priority military low flying zone.

15.9 The site is beyond the limits of the obstacle limitation surfaces associated with the nearest airport at Stornoway, but it is within the safeguarding zone for Stornoway Airport instrument flight procedures.

Study Area

15.10 The consultation process has considered all military and civil aerodromes in the wider area out to circa 60km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.

SIGNIFICANCE CRITERIA

15.11 As previously discussed, significance is essentially established by the relevant aviation stakeholders in terms of any impacts being deemed either acceptable or unacceptable.

CONSULTATION

15.12 Consultation was undertaken with the following aviation stakeholders, within the scoping and EIA process:

- Defence Infrastructure Organisation (DIO), part of the Ministry of Defence (MOD);
- Edinburgh Airport;
- Glasgow Airport;
- Glasgow Prestwick Airport;
- Highlands and Islands Airports Limited (HIAL);
- Met Office; and
- NATS Safeguarding.

Consultation and Scoping Responses

15.13 Aberdeen Airport, Edinburgh Airport, Glasgow Airport, Glasgow Prestwick Airport and the Met Office Stated that the proposal is located outwith their consultation zones. As such they had no objection or comment to make.

15.14 NATS stated, in their Scoping Response, that they had no objection to the proposed development.

HIAL

15.15 HIAL responded by email to the ECU on 29 July 2022. The key points are replicated below.

"Highlands and Islands Limited (HIAL) request that an Aviation Impact Feasibility Study (AIFS), of the proposed Wind Farm, is undertaken to understand any impact on the infrastructure and operation of Stornoway Airport. The following are required to be assessed by the applicant:

- *Instrument Flight Procedures (IFPs) (see CAP785) requirement. (As the Wind Fam's location is beneath airspace coincident with Stornoway Airport's IFPs)*

- *Aviation Lighting Requirements (see Article 222 of the ANO, CAP168 & CAP764) requirements.*

It should be noted that Inverness Airport are in the process of developing new airspace and instrument flight procedures; this work is relatively mature and should be included in the AIFS."

15.16 HIAL raised two issues to be addressed, aviation lighting and potential impacts to Instrument Flight Procedures for Stornoway Airport. In response to the above, the applicant commissioned an IFP assessment through HIAL. This report was in 20 Dec 2022, report reference IDL-020-1-RPT-035 IFP Safeguarding Report Uisenis Wind Farm 2 V1.0. The IFP safeguarding assessment found that the proposed wind farm would have no impact on Stornoway Airport's IFPs.

15.17 The aviation lighting will meet the requirements set out in the HIAL response. More details on the lighting are set out under 'Aviation Obstruction Lighting' section below.

MOD/ DIO

15.18 MOD / DIO responded by email to the ECU on 05 August 2022. The key points are replicated below.

"In this case the development falls within Low Flying Area 14 (LFA 14), an area within which fixed wing aircraft may operate as low as 250 feet or 76.2 metres above ground level to conduct low level flight training. The addition of turbines in this location has the potential to introduce a physical obstruction to low flying aircraft operating in the area.

To address the impact up on low flying given the location and scale of the development, the MOD would require that conditions are added to any consent issued requiring that the development is fitted with aviation safety lighting and that sufficient data is submitted to ensure that structures can be accurately charted to allow deconfliction.

As a minimum the MOD would require that the development be fitted with MOD accredited aviation safety lighting in accordance with the Air Navigation Order 2016."

15.19 The aviation lighting will meet the requirements set out in the MOD / DIO response. More details on the lighting are set out in the 'Aviation Obstruction Lighting' section below.

Aviation Lighting

15.20 Subsequent to receiving all Scoping Responses and arriving at a final design, an aviation lighting design and consultation exercise was conducted (see **Technical Appendix 15.1: Aviation Lighting Study**).

15.21 The aviation lighting consultees are HIAL, the MOD / DIO, Police Scotland, HM Coastguard, the Scottish Air Ambulance Service and finally the UK CAA.

15.22 Responses have been received from HIAL, the MOD / DIO, Police Scotland and the Scottish Air Ambulance Service. All responses approved the reduced lighting scheme without amendment, as detailed in the following section. A study report was submitted to the UK CAA on 01 June 2023, for their consideration and approval. The response was outstanding at the time of submission. It will be forwarded on once received. Experience in the generation and submission of such studies to the CAA, is that the proposed lighting scheme is approved without amendment if supported by consultation responses from all the key stakeholders, such as is the case here.

ASSESSMENT OF EFFECTS

Radar and Aviation

15.23 Consultation with stakeholders has shown that there are no impacts on military or aviation radar interests, or to the IFPs for Stornoway Airport.

Aviation Obstruction Lighting

15.24 The MOD / DIO has requested that MOD accredited aviation lighting be installed on the wind turbines in accordance with the Air Navigation Order 2016.

15.25 Similarly, in their scoping response, HIAL highlighted *"Aviation Lighting Requirements (see Article 222 of the ANO, CAP168 & CAP764) requirements."*.

15.26 There is a statutory requirement to light the wind farm because the turbines are over 150m tall. However, because of the nature of the area, light pollution from aviation obstacle lighting is of concern. In balancing these two requirements it is considered appropriate to use a reduced lighting scheme, with not all turbines being lit. This can be acceptable where the night time use of the airspace is only very rarely low flying Visual Flight Rules (VFR) traffic with no Night Vision Goggles (NVGs).

15.27 In consideration of the combination of the legislation and the local design considerations, it is proposed to use a cardinal lighting scheme. This requires visible spectrum obstacle lights on the turbines that define the geographical footprint of the wind farm.

15.28 In this case, the proposal is for seven turbines to have nacelle mounted, medium intensity, visible spectrum, steady red obstacle lights, specifically turbines T1, T3, T7, T12, T18, T22 and T25. The lights would operate from dusk until dawn.

LIGHTING SPECIFICATION

15.29 Visible spectrum obstacle lighting must consist of one medium intensity (2000 candela) steady red light, mounted on the top of the nacelle, and a second alternative 2000 candela red light provided in case of failure of the operating light. No intermediate level lights to be fitted on the turbine towers.

15.30 Visible lights can be dimmed to 10% of peak intensity when the visibility as measured at the wind farm exceeds 5km in all directions.

15.31 As described in the Consultation section above, key aviation stakeholders have approved the proposed lighting scheme (see **Technical Appendix 15.1: Aviation Lighting Study**).

15.32 Aviation Lighting is also discussed further in **Chapter 7: Landscape and Visual Amenity** of the EIA Report.

MITIGATION

15.33 The marking of all obstacles of height 150m or more, including turbines, is a standard form of mitigation against collision risk for low flying aircraft. Such a lighting scheme, described in detail above, has been designed and approved by local aviation stakeholders. A Lighting Design and Consultation Study Report has been submitted to the UK CAA for their consideration and approval. A response was outstanding at the time of submission.

SUMMARY

15.34 The proposed development will not impact any military radar facilities, or impact on the infrastructure and operation of Stornoway Airport. No mitigation is required for these elements.

15.35 A visible spectrum aviation lighting scheme has been designed to comply with statutory requirements under The ANO (2016) to assist with air safety.

REFERENCES

Civil Aviation Authority (Feb 2016), 'CAP 764: CAA Policy and Guidelines on Wind Turbines'.

Civil Aviation Authority (Jun 2017), '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'.

Civil Aviation Authority (Feb 2021), 'CAP 393: The Air Navigation Order 2016 (ANO) and Regulations'.

Scottish Government (Dec 2022), 'Onshore wind: policy statement'.

CONTENTS

OTHER ISSUES 16

INTRODUCTION

16.1 This Chapter considers any remaining environmental topics that are within the scope of the Environmental Impact Assessment (EIA), but do not warrant full assessment and are therefore not considered elsewhere in the EIA Report. These topics include:

- Shadow flicker;
- Climate and carbon balance;
- Risk of accidents and other disasters;
- Population and human health;
- Air quality;
- Telecommunications and other infrastructure;
- Television reception; and
- Waste and environmental management.

16.2 This Chapter is accompanied by **Technical Appendix 16.1: Carbon Calculator**. This Chapter is also supported by **Figure 16.1: Shadow Flicker Study Area**, and **Figure 16.2: Shadow Flicker Results**.

16.3 Planning policies of relevance to this assessment are provided in **Technical Appendix 4.1: Legislation, Planning Policy and Guidance**.

SHADOW FLICKER

Introduction

16.4 This section considers the potential impact on receptors from shadow flicker generated by the proposed Uisenis Wind Farm (the 'proposed development'), during the operational phase of the project. The proposed development is located on land (the Site) within the Eisgein (Eishken) Estate on the Isle of Lewis.

16.5 Shadow flicker may occur under certain combinations of geographical position and time of day, when the sun passes behind the rotors of a wind turbine and casts a shadow over neighbouring properties. As the blades rotate, the shadow flicks on and off, an effect known as shadow flicker. The effect can only occur inside buildings, where the flicker appears through a window opening.

16.6 The likelihood and duration of the effect depends upon:

- The direction and aspect of the property relative to the turbine(s): in the UK, only properties within 130 degrees either side of north, relative to the turbines, can be affected, as turbines do not cast long shadows on their southern side;

- distance from turbine(s): the further the building is from the turbine, the less pronounced the effect would be, given the shadow fades with distance. Flicker effects are known to be strongest and most likely to have the potential to cause significant effects within ten rotor diameters of a turbine location;
- turbine height and rotor diameter;
- time of year and day; and
- weather conditions (i.e. cloudy days reduce the likelihood of effects occurring).

16.7 If shadow flicker cannot be avoided through layout changes, then technical mitigation solutions are available, such as shutting down the turbines which cause the effect when certain conditions prevail.

16.8 Shadow flicker effects are only considered during the operational phase of a wind farm development. Effects during construction and decommissioning are not considered in this assessment.

Scope of Assessment

16.9 Comhairle nan Eiliean Siar's Supplementary Guidance for Wind Energy Development states that:

"Planning applications for wind farms must be accompanied by evidence that the proposals have been assessed and found to have no unacceptable significant adverse impact on community amenity including no unacceptable impact on living conditions in relation to the following:

▪ *shadow flicker and shadow throw; …….*

Developers will be expected to demonstrate that wind farm proposals will have no unacceptable significant adverse impact as a result of shadow flicker and shadow throw. The effects of shadow flicker on properties and shadow throw on public roads, the Hebridean Way and paths identified in the Outer Hebrides Core Paths Plan should be calculated by the developer and may be subject to assessment by the Comhairle.

With regards to shadow flicker as per Scottish Government advice, turbines should be located at least a minimum distance equivalent to 10 times the blade diameter from any regularly occupied buildings not associated with the development and at least a minimum distance equivalent to the height of the turbine to blade tip plus 10% from public roads, or paths identified in the Outer Hebrides Core Paths Plan. Where appropriate, developers will identify properties, public roads and paths that will be affected and provide mitigation measures."

16.10 Wind turbines are to be located a minimum distance of 10 times the rotor diameter of the proposed wind turbines from any regularly occupied buildings not associated with the proposed development. Within a distance less than 10 rotor diameters, a shadow flicker assessment will be required.

16.11 The assessment was therefore carried out based on the 10 rotor diameter distance following the Local Development Plan requirements and the Department of Energy and Climate Change (DECC) guidelines, however in the event of shadow flicker being reported beyond this radius, reports will be investigated and mitigatory measures will be put in place.

Study Area

16.12 In line with the best practice guidance outlined above, a study area based on a distance of 10 rotor diameters from the proposed wind turbines has been employed to determine the zone of potential shadow flicker incidence of a proposed development. The turbines for the proposed wind turbines have a rotor diameter of 155m, which results in a study area of 1,550m from the turbines. In addition to this a further 75m area was added to the 10 rotor diameter distance in order to account for potential micrositing should the proposed development receive consent (total study area = 1,625m).

16.13 The maximum study area for the proposed development was mapped using GIS software. This was then refined to include only the areas within 130 degrees of north of proposed wind turbine locations. Properties within 10 rotor diameters (1,550m) plus 75m for the reasons outlined above (1,625m) and the 130^{o} area were identified from OS AddressBase data. Seven properties were identified within the shadow flicker study area. **Figure 16.1** shows the location of these properties.

Methodology

16.14 The shadow flicker assessment comprises numerical modelling of the proposed turbines and receptors within the defined study area. It is noted that whilst there are a number of computer models available, the DECC study (2011) confirms that there are limited differences between outputs of the various packages. For Shadow Flicker assessments, SLR Consulting use one of the industry standard software packages, ReSoft Wind Farm software (version 5.1.2.1).

16.15 The calculations from this assessment process assume a worst-case scenario based on the sun shining during all daylight hours over the course of a year, no obscuring features (such as trees, hedges, other buildings) being present, the face of the rotor always being aligned towards the dwelling, and that the rotor is always turning (i.e. the wind is always blowing between 4m/s and 25m/s, and no account is taken of shut down periods for maintenance). This methodology yields a theoretical maximum indication of potential shadow flicker incidence, together with the times of day, and dates during the year when potential incidence may occur.

16.16 The levels of shadow flicker at each receptor have been calculated based on a 'greenhouse' modelling approach, where the full length of each façade of a building is modelled as a window (and is therefore sensitive to shadow flicker). Each modelled window is assumed to have a height of 2m. This approach has been taken in order to present a worst case estimate of shadow flicker, in the absence of any detailed window location data. In reality, only the glazed area of each façade would be sensitive to shadow flicker effects, therefore modelling the full façade will result in higher predicted levels than will actually be possible.

16.17 The software performs calculations to determine the position of the sun throughout the year, and thus during what times of day it will theoretically cast a shadow across the windows of nearby houses within 10 rotor diameters (plus 75m micrositing). Data input into the model where shadow flicker assessment is required is as follows:

- The locations of all properties within ten times the rotor diameter (including an allowance of 75m for micrositing) and 130 degrees either side of north of any turbine;
- The dimensions and orientations of windows facing the proposed development;
- The surrounding topography (Ordnance Survey Digital Terrain Model); and
- The locations and dimensions of the turbines.

16.18 The following sources of information outlined in **Table 16-1** were used to inform this assessment.

Table 16-1: Sources of Information

Topic	Source of Information
Residential properties Location in relation to proposed development and identification of windows.	Ordnance Survey (OS) 1:25,000 Mapping Google Earth Street View Bing Maps Birds Eye View
Topography Height data	OS 5m DTM data

16.19 In practice it is likely that shadow flicker effects would occur for considerably less time than the worst-case predictions, for the following reasons:

- in the UK, sunshine typically occurs for approximately 30% of daylight hours. At other times, the wind turbines are unlikely to cast shadows sufficiently pronounced to cause shadow flicker effects to occur; and
- at times when the wind turbine rotor is not oriented directly towards the property, the duration of shadow flicker effects would be reduced due to the elliptical shape of the shadow cast.

16.20 Only those properties within 1,625m of the proposed turbines have been included in the calculations. The model has been run using OS terrain 5 DTM data which is the most accurate digital terrain data available for the Site.

16.21 The assessment has been undertaken assuming a worst-case scenario which does not take into consideration the screening effect of anything located between the wind turbines (e.g., intervening structures or vegetation) and the property and as such the actual effect would likely be even less.

Limitations to the Assessment

16.22 There are several additional factors that can influence the amount of shadow flicker actually experienced and these cannot be readily included in a computer-based assessment.

16.23 Climatic conditions dictate that the sun is not always shining. The closest Met Office location is Stornoway, located approximately 23km from the proposed development.

16.24 Historic Met Office data (over the period 1991–2020) gives actual sunshine hours for the Stornoway Met Station to be on average 28.7% of total daylight hours[1]. Cloud cover during other times may obscure the sun and prevent shadow flicker occurrence. While some shadows may be cast under slightly overcast conditions, no shadow at all would be cast when heavy cloud cover prevails.

16.25 During calm periods, or very high winds, the wind turbine blades would not rotate, and shadow flicker would not occur. Turbines would also be periodically shut down for maintenance or repair work.

16.26 Wind turbines automatically orientate themselves to face the prevailing wind direction. This means that the turbine rotors would not always face directly towards the occupied buildings. Under some wind conditions, the proposed turbines would face 'side-on' to properties, and in these conditions only a very small area of blade movement would be visible.

16.27 Any screening provided by vegetation or structures has not been incorporated as the analysis has been run on bare ground terrain data as a worst-case scenario.

Assessment of Significance

16.28 Whilst the time and duration of shadow flicker events can be predicted accurately, the level of the effect is difficult to quantify as this would depend on the location of windows within a property, the use of the rooms affected, the level of shading surrounding the property and how susceptible the receptor is to light flicker.

16.29 As confirmed by the DECC study (2011), there is no standard Scottish or UK guidance relating to a limit for shadow flicker. The only guidance providing additional recommendations is the Northern Irish PPS 18 (2009) guidance which recommends that for properties within 500m of the turbines, shadow flicker should not exceed 30 hours per year or 30 minutes per day.

16.30 The assessment has therefore adopted a criterion of 30 hours of shadow flicker (under the worst case assessment criteria) in one year as a significance threshold. Where less than 30 hours of shadow flicker is predicted to occur in one year at a particular property, this is considered to be a minor effect (not significant), with significance increasing in relation to the number of hours (over 30) of shadow flicker per year, in accordance with best practice guidance.

[1] Average sunshine hours of 1,256 / total number of daylight hours 4,380 = 28.7%. Data from Met Office Climate Averages Site available at: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gf7e0jd30

16.31 Whilst the distance between turbine and property does not affect the calculated shadow flicker exposure times, it does mean that the actual effect (i.e. the total exposure time and flicker intensity combined) of the proposed development would, in reality, be less than that calculated as a worst-case.

16.32 Mitigation is proposed to minimise or remove predicted effects, if levels of shadow flicker are deemed to be unacceptable in practice in line with the Northern Irish PPS 18 (2009) guidance.

Baseline Conditions

16.33 A number of residential properties have been identified which fall within the 1,625m study area. These properties could theoretically be affected by shadow flicker from the proposed development (**Figure 16.1**). Details of these properties are identified in **Table 16-2.** All properties detailed in **Table 16-2** are financially involved with the proposed development.

Table 16-2: Residential Properties within Study Area

Property ID.	Property Name	Use	Grid Reference (E, N)*	Distance from Nearest Proposed Turbine (m)
1	Loch Shell House	Residential	132652, 912108	869 (T16)
2	The Cottage	Residential	132632, 912026	946 (T16)
3	-	Residential	132643, 912027	947 (T16)
4	Burnside Cottage	Residential	132598, 911964	1003 (T16)
5	-	Residential	132633, 911954	1018 (T16)
6	Eishken Lodge	Residential	132623, 911873	979 (T25)
7	Glenburn Cottage	Residential	132670, 911881	1024 (T25)

* Coordinates given are the approximate centre of the property.

Assessment of Effects

16.34 **Figure 16.2** shows the results of the shadow flicker modelling. Based on the predictive modelling technique outlined above, there is predicted to be shadow flicker effects of up to 30.2 hours per year at Loch Shell House (shown in **Table 16-3**) assuming the worst-case scenario. In addition, four other properties could also potentially receive shadow flicker effects but of fewer hours.

16.35 The results shown in **Table 16-3** are based on the 'worst-case scenario', which includes the potential for micrositing leading to turbines being moved 75m closer to these properties.

Table 16-3: Shadow Flicker Assessment Outputs

Property ID.	Property Name	Days per Year Where Shadow Flicker Potentially Experienced	Turbine(s) Causing Effect	Max Minutes per Day Where Shadow Flicker Potentially experienced	Total Hours per Year When Shadow Flicker Potentially Experienced	Likely Hours per Year When Shadow Flicker Potentially Experienced*
1	Loch Shell House	91	14	29.4	33.1	9.5
2	The Cottage	79	14	29.4	33.9	9.7
3	-	81	14	28.8	33.8	9.7
4	Burnside Cottage	111	14, 19	31.2	46.5	13.3
5	-	111	14, 19	30	46.4	13.3
6	Eishken Lodge	81	14, 19	28.2	30.4	8.7
7	Glenburn Cottage	98	14, 19	28.8	39.1	11.2

* based on average sunshine hours being applied to the model.

Analysis of Results

16.36 The results confirm that all the properties assessed could potentially experience over 30 hours of shadow flicker effect per annum. Based on the assessment criteria laid out above the effects on these properties would be significant without mitigation.

16.37 These figures are likely to comprise an over-estimate of actual effects. Given the conservative nature of this assessment as set out in the additional rationale in paragraphs 16.19-27, it is likely in practice actual hours of shadow flicker would be considerably less than this due to the wind not always blowing and the sun not always shining.

16.38 Expected hours of shadow flicker are provided in the final column of **Table 16-3,** adjusted for likely sunshine hours, and under this assumption the annual hours of shadow flicker anticipated at all properties is significantly under 30 hours. Details of when shadow flicker could be experienced at properties are provided below.

House 1 - Loch Shell House

16.39 Shadow flicker at this property could be experienced for up to 33.1 hours per year (9.5 under the average sunshine hours adjustment). Shadow flicker effects would originate from turbine 14, and would be likely to occur between the hours of 19:34 and 20:14 from early-May to early August.

House 2 – The Cottage

16.40 Shadow flicker at this property could be experienced for up to 33.9 hours per year (9.7 under the average sunshine hours adjustment). Shadow flicker effects would originate from turbine 14, and would be likely to occur between the hours of 19:46 and 20:24 from mid-May to late July.

House 3

16.41 Shadow flicker at this property could be experienced for up to 33.8 hours per year (9.7 under the average sunshine hours adjustment). Shadow flicker effects would originate from turbine 14, and would be likely to occur between the hours of 19:46 and 20:23 from mid-May to late July.

House 4 – Burnside Cottage

16.42 Shadow flicker at this property could be experienced for up to 46.5 hours per year (13.3 hours per year under the average sunshine hours adjustment), from turbines 14 and 19. Shadow flicker effects originating from turbine 14 would be likely to occur between the hours of 19:57 and 20:33 from mid-May through to late July, whilst shadow flicker effects originating from turbine 19 would be likely to occur between the hours of 17:46 and 18:20 from late March through to mid-April, and in mid-August to early September.

House 5

16.43 Shadow flicker at this property could be experienced for up to 46.4 hours per year (13.3 hours per year under the average sunshine hours adjustment) from turbines 14 and 19. Shadow flicker effects from turbine 14 would be likely to occur between the hours of 19:56 and 20:32 from mid-May to late July, whilst shadow flicker effects originating from turbine 19 would be likely to occur between the hours of 17:48 and 18:21 from late March through to mid-April, and in late-August to mid-September.

House 6 – Eishken Lodge

16.44 Shadow flicker at this property could be experienced for up to 30.4 hours per year (8.7 hours per year under the average sunshine hours adjustment) from turbines 14 and 19. Shadow flicker effects from turbine 14 would be likely to occur between the hours of 20:07 and 20:41 from late-May to late July, whilst shadow flicker effects originating from turbine 19 would be likely to occur between the hours of 18:04 and 18:32 in mid to late April, and in mid to late-August.

House 7 – Glenburn Cottage

16.45 Shadow flicker at this property could be experienced for up to 39.1 hours per year (11.2 hours per year under the average sunshine hours adjustment) from turbines 14 and 19. Shadow flicker effects from turbine 14 would be likely to occur between the hours of 20:02 and 20:36 from late-May to late July, whilst shadow flicker effects would originate from turbine 19, and would be likely to occur between the hours of 18:00 and 18:30 in mid to late March, and from late-August through to early September.

Mitigation

16.46 Based on the significance thresholds outlined in Paragraphs 16.28 – 16.32, significant shadow flicker effects are predicted to occur as a result of the proposed development, based on a worst-case scenario. Although shadow flicker levels are likely to fall to below the 30-hour per annum significance threshold based on the average sunshine hours expected at the Site, the applicant is committed to installing shadow flicker control modules on the turbines with the potential to cause shadow flicker on nearby receptors.

16.47 Shadow flicker control modules, consisting of light sensors and specialised software, will be installed on the turbines that can prevent operation during periods when shadow flicker can be experienced at nearby properties. The installation of a programmable shadow flicker module will allow the control of turbines in order to eliminate shadow flicker. The correct operation of the installed shadow flicker control measures will ensure that there will be no impact from shadow flicker. The operation and performance of the shadow flicker control measures will be monitored on an ongoing basis.

16.48 The shadow flicker control module consists of bespoke software, a clock, a timer, a switch, a wind direction sensor and a light sensor. The module can control a specific turbine (or turbines) which would be programmed to shut down on specific dates at specific times when the sun is bright enough, there is sufficient wind to rotate the blades and the wind direction is such that nuisance shadow flicker could occur. There is no specific UK guidance regarding what level of light is sufficient to cause a shadow flicker event. However, the actual light level that would trigger a turbine shut down can be manually configured onsite, following installation, to reflect local conditions.

16.49 A planning condition would provide an appropriate form of mitigation to ensure that any complaints would be investigated within a reasonable timescale and that the rectification of any substantiated shadow flicker issue would be implemented promptly and effectively. As noted in the DECC guidance (2011) states that *“Mitigation measures which have been employed to operational wind farms such as turbine shut down strategies, have proved very successful, to the extent that shadow flicker cannot be considered to be a major issue in the UK”.*

Residual Effects

16.50 Following implementation of mitigation following a complaint, it is considered that there will be **no significant effects** in relation to shadow flicker as a result of the proposed development.

CLIMATE AND CARBON BALANCE

16.51 This section of the chapter details the calculations to work out CO_2 emissions from the proposed development. In addition to generating electricity, the Scottish Government sees wind farms as an important mechanism for reducing the UK’s carbon dioxide (CO_2) emissions. This section estimates the CO_2 emissions associated with the manufacture and construction of the proposed development as well as estimating the contribution the proposed development would make to reducing CO_2 emissions, to give an estimate of the whole life carbon balance of the proposed development. The assessment is based on a detailed baseline description of the proposed development and its location. All calculations are based on Site specific data, where available. Where Site specific data is not available approved national/regional information has been used.

16.52 An assessment on the vulnerability of the proposed development to climate change has not been included, as it is considered that none of the identified climate change trends would affect the proposed development, with the exception of increased windstorms. Mitigation with regards to extreme weather events, including windstorms, is detailed in paragraphs 16.101 - 16.104. The effects of climate change on environmental receptors has been considered in each of the relevant environmental topic chapters of this EIA Report (**Chapters 7 to 15**).

16.53 Each unit of wind generated electricity would displace a unit of conventionally generated electricity, therefore, saving power station emissions. **Table 16-5** provides a breakdown of the estimated emissions displaced per annum and over the assumed lifespan of 30 years for the proposed development.

Carbon and Peatland

16.54 Wind farms in upland areas tend to be sited on peatlands which hold stocks of carbon and so have the potential to release carbon into the atmosphere in the form of CO_2 if disturbed. The proposed development is located predominantly in an area of Class 1 and Class 2 Priority Peatland Habitat (SNH, 2016).

16.55 In order to minimise the requirement for the extraction of peat, the Site design process (described in **Chapter 2: Site Description and Design Evolution**) has avoided areas of deeper peat. Peat probing was carried out onsite and peat depth mapped, as shown in **Figure 10.1.6a-k** and **Figure 10.1.6a-k** of **Technical Appendix 10.1: Peat Landslide and Hazard Risk Assessment**. This enabled wind turbines and associated infrastructure to be located in areas of shallower peat where possible. Where it has not been possible to avoid deeper areas of peat, floated track (2.2km) has been proposed as part of the Site layout.

16.56 Paragraphs 16.57 to 16.66 detail how the whole life carbon balance assessment for wind farms on peatlands is calculated. Including the input of emissions due to liberation of CO_2 from carbon stored in peat as a result of construction.

Effects of Carbon Emissions from Construction

16.57 Emissions arising from the fabrication of the turbines and the associated components are based on a full life analysis of a typical turbine and include CO_2 emissions resulting from transportation, erection, operation, dismantling and removal of turbines and foundations and transmission grid connection equipment from the existing electricity grid system.

16.58 With respect to turbines, emissions from material production are the dominant source of CO_2. Emissions arising from construction (including transportation of components, quarrying, building foundations, access tracks and hard standings) and commissioning are also included in the calculations. The assessment has used Nayak et al (2008) default values for 'turbine life' emissions, calculated with respect to installed capacity.

16.59 A number of technical papers (detailed in Nayak et al, 2008) have reported a wide range of emissions values from wind farms, these being between 6 and 34 tonnes CO2 GWh^{-1}. From this, a calculation of additional CO_2 payback time due to production, transportation, erection and operation of the proposed development that this represents can be compared. The additional CO_2 payback time for the best case scenario of 6t CO_2 GWh^{-1} would be approximately 4.8 months (0.4 years) assuming replacement of coal fired power generation and approximately 22.8 months (1.9 years) assuming a replacement of grid mix (the combination of electricity suppliers, including coal, gas and oil generation, used for grid balancing and the type of power generation most likely to be replaced by wind generated power). For the worst-case scenario (34t CO_2 GWh^{-1}), this would increase to approximately 13.2 months (1.1 years) and 69.6 months (5.8 years) additional CO_2 payback respectively.

16.60 These increases are considerable and so it is essential that they are taken into account for the calculation of CO_2 payback time for a proposed development. However, it should be noted that this may still compare very favourably with the life cycle analysis of other means of non-fossil fuel-based power generation, such as nuclear, particularly when the full energy costs of construction, operation, maintenance and decommissioning, uranium mining and transportation and long term waste management are taken into account.

Characteristics of Peatland

16.61 The loss of carbon from the carbon fixing potential from plants and vegetation on peat land is small, but is calculated for the area from which peat is removed and the area affected by drainage. The carbon stored in the peat itself represents a much larger potential source of carbon loss.

16.62 When flooded, peat soils emit less carbon dioxide but more methane than when they are drained. In flooded soils, carbon emissions are usually exceeded by plant fixation, so the net exchange of carbon with the atmosphere is negative and soil stocks increase. When soils are aerated, carbon emissions usually exceed plant fixation, so the net exchange of carbon with the atmosphere is positive.

16.63 To calculate the carbon emissions attributable to the removal or drainage of the peat, emissions occurring if the soil had remained in situ and undrained are subtracted from the emissions occurring after removal or drainage.

16.64 The indirect loss of CO_2 uptake (fixation) by plants originally on the surface of the Site, but eliminated by construction activity including the destruction of active bog plants on wet sites and felling, is calculated on Site specific data collected as part of the EIA process and based on blanket bog.

16.65 Emissions due to the indirect, long term liberation of CO_2 from carbon stored in peat due to drying and oxidation processes caused by construction of the Site, can also be calculated from Site specific data for the proposed development. This figure is a worst-case scenario, as the peat would be reused onsite to minimise carbon losses.

16.66 Data from turbine manufacturers and the construction related activity is included as part of the assessment to address payback periods, however the two previous sources (from peat and the losses from loss of plant uptake) are a much more significant contributor to CO_2 emissions and the overall CO_2 debt where peat is disturbed onsite

Methodology

16.67 In Scotland, applications submitted under Section 36 of the Electricity Act 1989 are required to undertake the carbon balance assessment using the Scottish Government's carbon calculator tool. This has been completed for the proposed development using the latest version of the calculator (C-CalcWebV1.7.0). The methodology to calculate carbon emissions generated in the construction, operation and decommissioning of a wind farm is based on 'Calculating carbon savings from windfarms on Scottish peat lands - A New Approach' (Nayak et al, 2008), prepared for the Scottish Government Science, Policy and Co-ordination Division. This was superseded in 2011 by the document 'Calculating Carbon Savings from Wind Farms on Scottish Peatlands - A New Approach', (Nayak et al, 2008 and 2010) and (Smith et al, 2011). In terms of carbon footprint, the aforementioned 'carbon calculator' is the Scottish Government's tool provided to support the process of determining the carbon impact of wind farm developments in Scotland.

16.68 To undertake this assessment the following parameters were considered, which encompass a full life cycle analysis of the proposed development. These parameters include:

- emissions arising from the fabrication of the turbines and all the associated components;
- emissions arising from construction, (including transportation of components; quarrying; building foundations, access tracks and hard standings; and commissioning);
- the indirect loss of CO_2 uptake (fixation) by plants originally on surface of the Site but eliminated by construction activity (including the destruction of active bog plants on wet sites) and felling;
- emissions due to the indirect, long term liberation of CO_2 from carbon stored in peat due to drying and oxidation processes caused by construction; and
- loss of carbon due to drainage and from forestry clearance.

16.69 As part of their methodology, Nayak et al have provided a spreadsheet 'Scottish Government Windfarm Carbon Assessment Tool' to calculate whole life carbon balance assessments for windfarms on peat lands. The calculation spreadsheet (Version 1.7.0 and online version 4OVO-24G1-R94Z_v4) allows a range of data to be input in order to address expected, minimum and maximum values. However, if several parameters are varied together, this can have the effect of 'cancelling out' a single parameter change. For this reason, the approach for this assessment has been to include 'maximum values' as those values which would result in the longest (maximum) payback period; and 'minimum values' as those values which would result in the shortest (minimum) payback period.

16.70 This spreadsheet provides generic values for CO_2 emissions associated with some components (such as turbine manufacture) and requires Site specific information for other components (such as habitat type, extent of peat disturbance and ground water levels). The calculation evaluates the balance of total carbon savings and carbon losses over the life of the proposed development. The potential carbon savings and carbon costs associated with wind farms are as follows:

- Carbon emission savings due to generation (based on displacing emissions from different power sources);
- Lifetime costs associated with manufacture of turbines and construction;
- Loss of carbon from backup power generation;
- Loss of carbon-fixing potential of peatland;
- Loss and/or saving of carbon stored in peatland (by peat removal or changes in drainage);
- Loss and/or saving of carbon-fixing potential as a result of forestry clearance; and
- Carbon gains due to proposed habitat improvements such as bog restoration.

16.71 This assessment draws on information detailed in the EIA Report, **Chapter 8: Ecology** and **Chapter 10: Hydrology, Hydrogeology and Geology**. For the purpose of this assessment, it is assumed that all the embedded good practice measures outlined in **Chapter 8: Ecology**, and **Chapter 10: Hydrology, Hydrogeology and Geology**, would be employed.

16.72 The final wind turbine choice is not yet known, but would likely be at minimum a 6.6MW machine, and the proposed development would consist of 25 turbines. The greenhouse gas savings and carbon payback are based on these input parameters. Figures are based on currently available turbines and assume a consistent supplier for all turbine locations (i.e. turbine types are chosen by manufacturer). Note that, within the calculation spreadsheet, the expected, maximum and minimum values have been adjusted to suit the input parameter.

16.73 The recommended capacity factor within the calculation spreadsheet is 40% . This is based on the collection of onsite wind data.

Assessment of Significance

16.74 All emissions contribute to climate change. To determine whether effects are significant under the EIA Regulations, it is appropriate to consider the sensitivity (value and resilience) of the receptor and the magnitude of the impact, taking into account uncertainty. This is based on the professional judgement of the assessor and uses the matrix set out in **Table 16-4**.

Table 16-4: Significance Evaluation Matrix

		Magnitude of Change			
		Very High	**High**	**Medium**	**Low**
Sensitivity/Importance/Value	**Very High**	Major (**Significant**)	Major (**Significant**)	Moderate (Probably Significant)	Minor (Not Significant)
	High	Major (**Significant**)	Major (**Significant**)	Moderate (Probably Significant)	Minor (Not Significant)
	Medium	Major (**Significant**)	Major (**Significant**)	Moderate (Probably Significant)	Minor (Not Significant)
	Low	Moderate (Probably Significant)	Moderate (Probably Significant)	Minor (Not Significant)	Minor (Not Significant)

16.75 Climate and the atmosphere is considered to have Very High sensitivity to changes in green house gas emissions.

16.76 Effects assessed can be both beneficial (positive) and adverse (negative). Sensitivity of climate change receptors is inherently linked to the magnitude of the impact. Whilst receptors may be considered *"high-value"*, a non-material magnitude of the impact would result in any effect being considered not significant (IEMA, 2020).

16.77 Effects assessed can be both beneficial (positive) and adverse (negative) as a result of the proposed development. Sensitivity of climate change receptors is inherently linked to the magnitude of change. Whilst receptors may be considered *''Very-high''* or *"high"* value, a medium magnitude of change for a low sensitivity receptor and a low magnitude of change for all classifications of receptor would result in any effects being considered not significant.

Existing Conditions

16.78 As the Site is currently largely undeveloped, baseline carbon emissions to the atmosphere are considered to be minimal. However, it is widely acknowledged that peatlands sequester, and store carbon and the amount sequestered by peat bog varies depending on its condition.

16.79 The current baseline is that of the current climate. Between the years of 1991 and 2020 at the Stornoway Airport climate station[2], the average maximum summer temperature was 16.35^{0}C and the average minimum summer temperature was 9.05^{0}C. For the same location and over the same time period, the average maximum winter temperature was 7.48^{0}C and the average minimum

[2] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gf7e0jd30

winter temperature was 2.73^{0}C. The average annual rainfall between 1991 and 2020, at the same location noted above, was 1,235.52mm. A mean annual wind speed of 11.90 knots was recorded at this climate station between 1991 and 2020. **Technical Appendix 16.1** provides further baseline information on climate targets.

Results

16.80 This section presents a summary of the carbon assessment which has been undertaken in respect of the proposed development. The purpose of the 'carbon calculator' is to assess, in a comprehensive and consistent way, the carbon impact of wind farm developments. This is undertaken by comparing the carbon costs of wind farm developments with the carbon savings attributable to the wind farm. An assessment has been undertaken to calculate the carbon emissions which would be generated in the construction, operation and decommissioning of the proposed development.

16.81 The carbon calculations spreadsheet and further detail on the carbon pay-back period for the proposed development is provided in **Technical Appendix 16.1: Carbon Calculator**. A summary of the anticipated carbon emissions and carbon payback of the proposed development are provided in **Table 16-5.**

Table 16-5: Anticipated Carbon Emissions and Pay-back Time

Results	Exp.	Min.	Max.
Net emissions of carbon dioxide (t CO2 eq.)	367,651	215,668	635,462
Carbon Payback Time			
Coal-fired electricity generation (years)	0.6	0.4	1.1
Grid-mix of electricity generation (years)	3.3	1.9	5.8
Fossil fuel - mix of electricity generation (years)	1.5	0.8	2.6
Ratio of CO2 eq. emissions to power generation (g / kWh) (TARGET ratio by 2030 (electricity generation) < 50g /kWh)	21.2	11.74	38.87

Interpretation of Results

16.82 The calculations of total carbon dioxide emission savings and payback time for the proposed development indicates that the overall payback period will be approximately 1.5 years (approximately 18 months) when compared to the fossil fuel mix of electricity generation. This means that the proposed development is anticipated to take around 1.5 years to repay the carbon exchange to the atmosphere (the CO_2 debt) through construction; the Site would in effect be in a net gain situation following this time period and can then claim to contribute to national emissions reduction objectives thereafter for its remaining operational life.

16.83 The potential savings in CO_2 emissions due to the proposed development replacing other electricity sources over the lifetime of the wind turbines (assumed to be 30 years for the purpose of the carbon calculator) are approximately:

- 579,316tonnes of CO_2 per year over coal-fired electricity (approximately 17.38 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator);
- 111,805 tonnes of CO_2 per year over grid-mix of electricity (approximately 3.35 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator); and
- 249,765tonnes of CO_2 per year over a fossil fuel mix of electricity (7.49 million tonnes assuming a 30 year lifetime for the purposes of the carbon calculator).

16.84 The Scottish Government (2020) Climate Change Plan states that by 2030 Scotland will have a largely decarbonised electricity system with a grid carbon intensity of 50g CO_2/kWh of generation.

16.85 An update to the Climate Change Plan was issued in 2020 through the Securing a Green Recovery on a Path to Net Zero: Climate Change Plan 2018–2032 – Update. The update confirmed that the carbon intensity of electricity generated in Scotland has fallen to less than 50g CO2/kWh in both 2018 and 2019.

16.86 The proposed development is expected to have a carbon intensity (**Table 16-5**) of 21.2g CO2/kWh. This is below the achieved carbon intensity target. Therefore, the proposed development is anticipated to further support Scotland's Climate Change Plan by maintaining and succeeding the target already achieved.

16.87 This is considered a Low magnitude of effect i.e., a slight, detectable, alteration of the baseline condition.

16.88 Climate and the atmosphere is considered to have Very High sensitivity to changes in green house gas emissions. The proposed development is therefore assessed to have Moderate, positive environmental effects, that is significant under the EIA Regulations.

Summary of Significant Effects

16.89 A carbon balance assessment has been undertaken using the Scottish Government Calculator v1.7.0 (reference 4OVO-24G1-R94Z_v4). This found that there is a moderate (positive) influence of the proposed development to Climate Change and national and international targets to combat climate change.

16.90 The influence of the proposed development to Climate Change was therefore **significant (positive)** under the EIA Regulations.

RISK OF ACCIDENTS AND OTHER DISASTERS

16.91 The vulnerability of the proposed development to major accidents and natural disasters, such as flooding, sea level rise, or earthquakes, is considered to be low due to its geographical location and the fact that its purpose is to ameliorate some of these issues.

16.92 In addition, the nature of the proposals and remoteness of the Site means there would be negligible risks on the factors identified by the EIA Regulations. For example:

- population and human health – the Site is remote with low population density and the required safety clearances around turbines has been a key consideration throughout the design process;
- biodiversity – receptors and resources would be unaffected as there would be little risk, following implementation of appropriate mitigation, of polluting substances released or loss of habitat in a turbine failure scenario (highly unlikely);
- land, soil, water, air and climate – there would be little risk, following implementation of appropriate mitigation, of polluting substances released or loss of habitat in a turbine failure scenario (highly unlikely); and
- material assets, cultural heritage and the landscape – there would be no adverse effects on these features in a turbine failure scenario (highly unlikely).

16.93 Despite the risk of major accidents and natural disasters being considered as low, the vegetation and openness of the Site does present a potential, albeit remote, fire risk. **Technical Appendix 3.1: Outline CEMP** contains measures for reducing the risk of fires occurring during the construction of the proposed development and these are considered to be appropriate to the level of potential risk. Follow implementation of these measures contained within the CEMP, the risk of major accidents is concluded to **not result in a significant effect**.

Public Safety and Access

16.94 The Renewable UK Onshore Wind Health and Safety Guidelines (2015) note that wind farm development and operation can give rise to a range of risks to public safety including:

- traffic (especially lorries during construction, and abnormal loads for the transport of wind turbine components; including beyond the Site boundary);
- construction site hazards (particularly to any people entering the Site without the knowledge or consent of the site management);
- effects of catastrophic wind turbine failures, which may on rare occasions result in blade throw, tower topple or fire; and
- ice throw, if the wind turbine is operated with ice build-up on the blades.

16.95 The RenewableUK guidance (2015) states that *"Developers should ensure that risks to public safety are considered and managed effectively over the project lifecycle, and should be prepared to share their plans for managing these risks with stakeholders and regulators; effective engagement can both build trust, and help to reduce the level of public safety risk by taking account of local knowledge"*.

16.96 Site security and access during the construction period would be governed under Health and Safety at Work Act 1974 and associated legislation. Public access along the Eishken Road would remain in place as far as possible during construction, and would reopen to the public fully once construction of the proposed development is complete. No public access would be permitted along new access tracks to the Site during construction. However, the Land Reform (Scotland) Act 2003 which came into effect in February 2005 establishes statutory rights of responsible access on and over most land. The legislation offers a general framework of responsible conduct for both those exercising rights of access and for landowners. Once the construction period and commissioning of the proposed development is complete, no special restrictions on access are proposed.

16.97 Appropriate warning signs would be installed concerning restricted areas such as the substation compound, switchgear and metering systems. All onsite electrical cables would be buried underground with relevant signage. Follow implementation of the required measures, the risk to public safety is concluded to **not result in a significant effect**.

Traffic

16.98 Accident data for the A859 (local road near to the Site which the majority of construction traffic will be using) has been reviewed and is presented in **Chapter 12: Site Access, Traffic and Transport**. An assessment of the potential effects on road safety has been undertaken. In summary, the proposed development would create an increase to HGV traffic levels within the study area but these levels would remain within the design capacity of the local road network. The accident records for the study area show there were 19 accidents (12 slight, 6 serious and 1 fatal) occurring over the five year study period. The study area does not have a significant safety issue and there were no accidents recorded on the A859 in the vicinity of the Site. Therefore, the level of effect is considered **not significant**, following the implementation of a comprehensive CTMP, together with onsite route signage and an access management plan.

Construction

16.99 With regard to risks and accidents during the construction phase, the construction works for the proposed development would be undertaken in accordance with primary health and safety legislation, including the Health and Safety at Work Act 1974 and the Construction (Design and Management) (CDM) Regulations 2015 which will include a requirement to produce emergency procedures in a Construction Phase (Health & Safety) Plan in accordance with the Regulations.

16.100 Nonetheless, the risk of accidents and other disasters is covered where relevant in individual topic Chapters, for instance, the potential for environmental incidents and accidents such as spillages are considered in **Chapter 8: Ecology**, **Chapter 9: Ornithology** and **Chapter 10: Hydrology,**

Hydrogeology and Geology. Flood risk is also assessed with **Chapter 10**. The level of effect is considered **not significant**, following the implementation of a health and safety requirements.

Extreme Weather

16.101 As far as the risk of turbine failure during high winds is concerned, the turbines would cut-out and automatically stop as a safety precaution in wind speeds over 30m/s.

16.102 Wind turbines can be susceptible to lightning strike due to their height and appropriate measures are taken into account in the design of turbines to conduct lightning strikes down to earth and minimise the risk of damage to turbines. Occasionally however, lightning can strike and damage a wind turbine blade. Modern wind turbine blades are manufactured from a glass-fibre or woodepoxy composite in a mould, such that the reinforcement runs predominantly along the length of the blade. This means that blades will usually stay attached to the turbine if damaged by lightning and in all cases turbines will automatically shut down if damaged by lightning.

16.103 Ice build-up on blade surfaces occurs in cold weather conditions. Wind turbines can continue to operate with a very thin accumulation of snow or ice, but will shut down automatically as soon as there is a sufficient build up to cause aerodynamic or physical imbalance of the rotor assembly. Potential icing conditions affecting turbines can be expected two to seven days per year (light icing) in Scotland (WECO, 1999). The potential for ice throw to occur after start up following a turbine shut down during conditions suitable for ice formation is high. There are monitoring systems and protocols in place to ensure that turbines that have been stationary during icing conditions are restarted in a controlled manner to ensure public safety. The risk to public safety is considered to be very low due to the few likely occurrences of these conditions along with the particular circumstances that can cause ice throw.

16.104 The risk to the environment and the public, from the proposed development, as a result of extreme weather is considered **not significant**.

Seismic Activity

16.105 No fault lines are present on or in the immediate vicinity of the Site, and there are no records of any earthquakes occurring in the vicinity of the Site within the last 48 years (Earthquake Track). Earthquakes in Scotland are typically no greater than 3 on the Richter Scale and, therefore, minor and unlikely to cause significant damage to buildings and infrastructure.

16.106 It is very unlikely that an earthquake would occur in the vicinity of the Site resulting in any damage to the proposed development. Should a wind turbine be damaged, the risk to public safety is considered to be negligible due to the remote location and careful design layout of the infrastructure. Therefore, the risk to the environment and the public, from the proposed development, as a result of seismic activity is considered **not significant.**

POPULATION AND HUMAN HEALTH

16.107 **Chapter 7: Landscape and Visual Amenity**, **Chapter 10: Hydrology, Hydrogeology and Geology**, **Chapter 12: Site Access, Traffic and Transport**, **Chapter 13: Noise** and **Chapter 14: Socio-economics, Tourism, Recreation and Land Use** contain assessments which relate to the health and wellbeing of the local population. These chapters assess the effects of the proposed development, both positive and negative, provide an analysis of the significance of these effects and also put forward measures to mitigate against negative effects on people and their health.

16.108 **Chapter 17: Schedule of Commitments**, provides an overview of the mitigation put forward as part of these assessments in order to reduce any negative effects of the proposed development to an acceptable level.

16.109 Further to the topics covered in **Chapters 7** – **17**, including this chapter, it is not expected that there will be any other effects from the proposed development which would have significant effects on population and human health.

AIR QUALITY

16.110 Construction activities can result in temporary effects from dust if unmanaged. This can result in nuisance effects such as soiling of buildings and, if present over a long period of time, can affect human health. As the nearest property is over 500m away from any substantial construction works, effects associated with dust or vehicle emissions are considered to be unlikely, therefore the effects of dust and vehicle emissions from the construction and operation of the proposed development was scoped out of this assessment.

TELECOMMUNICATIONS AND OTHER INFRASTRUCTURE

16.111 Wind turbines can potentially cause interference to telecommunication links through reflection and shadowing to electro-magnetically propagated signals including terrestrial fixed microwave links managed by telecommunications operators.

16.112 Early constraints mapping (pre-Scoping) identified the presence of one fixed links running north – south through the Site. BT, the link operator, were consulted directly in order to understand any requirement for stand-off distances between the proposed turbines and the fixed link path. The operator advised that the minimum acceptable separation distance from turbine location to link path would be the turbine rotor radius (77.5m), a further 25m clearance and finally the 2nd Fresnel zone clearance (variable). As a result, a 120m buffer was applied around the fixed link during the iterative design process, to ensure that turbines were located an adequate separation distance from the fixed link. The closest proposed turbine to the BT fixed link is T8, at approximately 150m to the east.

16.113 Wind turbines also have the potential to adversely affect analogue television reception through either physical blocking of the transmitted signal or, more commonly, by introducing multi-path interference where some of the signal is reflected through different routes.

16.114 The proposed development is located in an area which is now served by a digital transmitter and, therefore, television reception is unlikely to be affected by the proposed development as digital signals are rarely affected. In the unlikely event that television signals are affected by the proposed development, reasonable mitigation measures would be considered by the applicant.

16.115 Consultation has been undertaken which confirms that no fixed telecommunications links should be affected by the proposed development. Further to this, television signals are unlikely to be affected by wind turbines, and should unexpected adverse effects on television reception arise, technical solutions are available. Therefore, **no significant effects** are predicted on telecommunications and tv reception

WASTE AND ENVIRONMENTAL MANAGEMENT

16.116 **Chapters 7** to **16** put forward suggestions on how to mitigate any negative impacts from the proposed development with regards to waste and environmental management. These are summarised in **Chapter 17: Schedule of Commitments.**

16.117 The outline CEMP (**Technical Appendix 3.1**) provides a general overview on how waste and other environmental issues would be managed during the construction phase. **Technical Appendix 10.2: Peat Management Plan** also details how excavated peat is controlled, stored, re-used and disposed of during the construction phase of the proposed development.

16.118 It is expected that a Site specific waste management plan for the control and disposal of waste generated onsite would be required by condition, should the proposed development receive consent. Therefore, it is not considered necessary for waste to be assessed further within this EIA Report and is scoped out for further assessment.

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CONTENTS

INTRODUCTION

17.1 The Schedule of Commitments identifies the mitigation, compensation and enhancement measures that have been proposed throughout the Environmental Impact Assessment (EIA) Report to prevent, reduce or offset the effects of the proposed development on the environment.

17.2 Mitigation measures have been integral to the design evolution of the proposed development as described in **Chapter 2: Site Description and Design Evolution**. A series of environmental and technical constraint design reviews were undertaken to minimise potential significant environmental impacts prior to finalising the final design of the proposed development. Areas which were examined in depth include landscape and visual constraints, peat, sensitive habitats (including fish), cultural heritage and hydrological constraints.

17.3 The mitigation measures in **Table 17-1** are those which would be applied during the construction, and operation of the proposed development. A number of these measures are embedded mitigation, undertaken through good practice and to adhere to relevant legislation during all stages of the proposed development.

17.4 Embedded design mitigation measures are not included in the table.

Table 17-1: Schedule of Commitments

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
Chapter 3: Description of Development	Pre and during Construction (CEMP)	**Outline Construction and Environment Management Plan (CEMP)** An outline Construction Environmental Management Plan (CEMP) for the proposed development is provided in **Technical Appendix 3.1** which sets out the principles which would be detailed in a detailed CEMP which would be agreed prior to construction commencing. This detailed CEMP would be agreed with the Western Isles Council (CnES) in consultation with relevant statutory consultees. The detailed CEMP would, as a minimum, include key details of: • An updated Schedule of Mitigation (SM); • A Construction Methodology Statement (CMS); • A Site Health and Safety Plan; • A Peat Management Plan (PMP); • A Habitat Management Plan (HMP); • A Pollution Prevention Plan (PPP); • A Site Waste Management Plan (SWMP); • A Water Management Plan (WMP);. • An Access Management Plan; • A Construction Traffic Management Plan (CTMP); and • An Accommodation Strategy From the list above an outline PMP, outline HMP, and outline CTMP (within **Technical Appendix 12.1**) have been prepared. These documents would all be updated into detailed versions, in conjunction with preparation of the detailed CEMP, prior to construction commencing and in agreement with CnES and other relevant stakeholders.
	Construction	**Environmental Clerk of Works (EnvCoW)** The applicant will engage an EnvCoW onsite during the construction phase. The services of other specialist advisors will be retained as appropriate, such as an Archaeological Advisor, to be called on as required to advise on specific environmental issues. The Principal Contractor will ensure construction activities are carried out in

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		accordance with the mitigation measures outlined in this Schedule of Commitments, the EIA Report and any planning conditions, and this will be monitored by the applicant and the EnvCoW.
	Construction (Micrositing)	**Micrositing** It is proposed that a 75m micrositing tolerance of turbines and all other infrastructure would be applied to the proposed development (so long as infrastructure moves no closer to any identified watercourse). Within this distance any changes from the consented locations would be subject to approval of the ECoW as required and in consideration of other known constraints.
	Construction (Access Tracks – Peat)	**Floating Road Construction** It is anticipated that approximately 2.2km of floating tracks will be required where peat has been consistently identified on Site in depths (typically over 1m). Floating road construction is described in the Peat Management Plan (**Technical Appendix 10.2).** The construction comprises the laying of a geosynthetic (geotextile mat or geogrid reinforcement) across soils prior to constructing the road. Where required, risk from run-off would be mitigated by directing drainage to settlement ponds. Erosion processes on the roadside embankments and cuttings would be mitigated by ensuring that gradients are below stability thresholds, which would also enable effective regeneration of vegetation. Sediment traps would also be required in the early years following construction until natural regeneration is established. The tracks would be left in place following construction to provide access for maintenance, repairs, and eventual decommissioning of the proposed development. At the end of the construction period the edges of all new tracks would be restored using materials stripped from excavations.
	Construction	**Watercourse Crossings** 33 existing watercourse crossings on the access track will be upgraded as part of the proposed development, and 21 new watercourse crossing will be constructed, to minimise impacts upon the water environment Details of watercourses crossings are set out within **Technical Appendix 10.4: Schedule of Watercourse Crossings.**
	Construction	**Lighting**

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Artificial lighting may be required during the construction phase to ensure safe working conditions, during periods of limited natural light. Examples include vehicle and plant headlights, construction compound lighting, floodlights and mobile lighting units - to be used around specific construction activities. It is intended that the type of lighting would be non-intrusive (e.g. directed towards work activity and away from the Site boundary), to minimise impact on local properties and any other environmental considerations. Further details on lighting are provided in **Technical Appendix 3.1: Outline Construction Environmental Management Plan.** A detailed CEMP would be agreed with the CnES in consultation with relevant statutory consultees, prior to construction work commencing.
	Construction	**Materials Sourcing and Waste Management** For construction, the proposed development would require a range of materials (e.g. stone for access tracks, the temporary site compound and the substation compounds). Excavated material from the turbine bases and access tracks would be used on Site for restoration/reinstatement. A Site Waste Management Plan would be developed for implementation during construction, as discussed in the **Outline CEMP (Technical Appendix 3.1).** This outlines the materials requirements and waste generation during construction and how the applicant intends to consider the management of these aspects. Concrete would be batched onsite at the construction compound for which water would be required. There may be potential to use water mains on the A836, or alternatively a location for a borehole would be found onsite. Water would also be required for welfare facilities and to dampen track during dry weather, although this would be minimal and an abstraction license is not anticipated to be required.
	Post Construction	**Borrow Pits** Five borrow pit search areas will be utilised. These are detailed within **Technical Appendix 10.3 Borrow Pit Appraisal.**
	Post Construction	**Reinstatement** After construction has been completed, the crane hardstandings will remain in place for future maintenance, and the construction compounds and turbine laydown areas will be restored as close as possible to their original condition. All portacabins, machinery and equipment will be removed from the compounds prior to the proposed development becoming operational.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Site restoration will be programmed, managed and carried out to allow restoration of disturbed areas as early as possible and in a progressive manner. A Decommissioning and Restoration Plan will be agreed with CnES prior to construction.
	Post Construction	**Foundations and Hardstanding** Soils that are excavated during construction (i.e. foundations and hardstanding areas) would be set aside for backfilling the batter areas around the turbine bases and hardstandings and for use of small bankings either side of access tracks. Further details of soil storage are contained within the associated **Technical Appendix 10.2 Peat Management Plan.**
	Post Construction	**Site Restoration – Peat** Soils and peat would be used for reinstatement works associated with access tracks, cable trenches, turbine foundations, crane hardstandings, borrow pits and the temporary construction area. The upper vegetated turfs would be used to dress infrastructure edges and to reinstate the surface of restoration areas. It is anticipated that most of the soil resources within areas directly affected by construction activities would be stored and reinstated as close as possible to where they were excavated in accordance with best practice; so that the Site would be restored with minimal movement of material from its original location. It is not anticipated that any excavated material would leave the Site. **Habitat Management Plan (HMP)** As part of the proposed development, an area of approximately **50ha** would be targeted for blanket bog restoration, and an area of 537ha targeted for wet heath restoration in order to compensate for habitat loss. An Outline HMP is provided in **Technical Appendix 8.5.** A detailed HMP would be agreed with the CnES in consultation with relevant statutory consultees, prior to construction work commencing.
	Decommissioning	**Decommissioning and Restoration Plan** At the end of its operational life, the proposed development would be decommissioned unless an application is submitted and approved to extend the operational period or to repower the Site. The decommissioning period would be expected to take up to one year.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		The ultimate decommissioning protocol would be agreed with CnES and other appropriate regulatory authorities in line with best practice guidance and requirements of the time. This would be done through the preparation and agreement of a Decommissioning and Restoration Plan (DRP). Financial provision for the decommissioning would be provided. It is anticipated that the DRP would be the subject of a planning condition and would reflect the relevant legislation and best practice current at the time of decommissioning and restoration. **Turbines** Turbines would be dismantled and removed from site. Turbine components would be dismantled onsite using standard engineering techniques similar to those used for the original installation. The re-use or recycling of components would be prioritised, this would include exploration of any viable second-hand turbine market. Turbine oils or any other oils would be removed from the Site and disposed of appropriately. **Turbine Foundations** Topsoil material that has revegetated the foundations would be excavated first and temporarily stored for re-use following partial removal of foundations. The top 1m of the turbine foundation would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing concrete from the Site. The excavated foundation would be reprofiled with soil and reseeded. **Crane Hardstandings** Topsoil material that has revegetated the crane hardstandings would be excavated first and temporarily stored for reuse following partial removal of crane hardstandings. The top 1m of the crane hardstandings would be removed and disposed of appropriately. This is considered preferential to removing all infrastructure, due to the potentially lower environmental impacts associated with excavating, processing and removing aggregate from the Site. The excavated hardstandings would be reprofiled with soil and reseeded. Recovered geogrids and geotextiles would be disposed of appropriately. All granular materials would be excavated and removed from the Site, for re-use where practicable. **Access Tracks** Access tracks would be left in-situ, which would reduce potential environmental impacts associated with potential sediment migration into watercourses as a result of removing all tracks.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Watercourse Crossings These would remain in-situ in association with the access tracks after decommissioning. This would reduce decommissioning activities in the vicinity of watercourses and thus potential for contamination as a result of run-off. **Underground Cabling** These are underground and therefore all cables would be made safe and left in-situ. This is considered preferential to extracting cables from the cable trenches due to the potentially greater environmental impacts associated with excavating, processing and removing the cable from the Site. **Substation Compound** All equipment from within the substation compound would be removed from site and either reused, recycled or disposed of appropriately. Oils or lubricants from the compound would be removed and disposed of appropriately. The control building, and related infrastructure, would then be demolished and all materials would be reused, recycled or disposed of appropriately. **Substation Compound Foundation** The top 1m of the compound foundations would be removed and disposed of appropriately. The excavated hardstandings would be reprofiled with soil and reseeded.
Chapter 8: Ecology	Pre-Construction	**Pre-Construction Surveys** Due to the time that will have elapsed since the surveys undertaken for this EIA and the determination of this application and the possibility that activity by protected mammal species could have changed in the intervening period, a pre-construction survey for otter, water vole and pine marten would be undertaken during the last available season prior to construction taking place. This would cover all watercourses and other suitable habitat within 250 m of infrastructure and associated working areas. The results of the pre-construction surveys would inform the need for further mitigation (if required) in respect of working practices or to consult with NatureScot if required.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Protected Mammals If protected mammal presence is recorded close to working areas (e.g. watercourse crossings) during pre-construction surveys, additional mitigation measures would be employed to avoid significant disturbance. These additional measures are considered likely to be required and would likely include displacement/exclusion of protected mammals from working areas. This would be undertaken under appropriate licences and at the recommended time so year (ideally mid-March to mid-April in Scotland (as per Dean, Strachan, Gow, & Andrews, 2016)). **Fish Monitoring** Prior to construction commencing, a fish monitoring plan including surveys pre-construction, during construction and post construction would be agreed with the local fisheries board and NatureScot. This would likely include electro-fishing surveys to establish and monitor fish population sizes and demography. These data would facilitate identification and mitigation of any potential impacts to fish that may occur during the construction period. **Reptiles** Given the low numbers of reptiles likely to be present, the large areas of suitable habitat that would remain unaffected by the works and given also the large spatial scale of the works, fencing and translocation are not considered appropriate. Proposed mitigation, therefore, would involve vegetation management and the identification/removal of potential refugia and hibernacula if present. Where appropriate and safe to do so, potentially suitable habitats for reptiles located within construction working areas would be cut, under the supervision of the Ecological Clerk of Works (ECoW), prior to construction works commencing in that area, in order to encourage reptiles to leave the area. Suitable habitat within working areas would also be searched by the ECoW prior to construction commencing and any potentially suitable refuges would be removed. These works would take place during the active season for reptiles (typically April to October, although this is dependent upon the nature of the weather conditions in any one year).
	Pre and During Construction	**Ecological Clerk of Works (ECoW)** A suitably qualified ECoW would be appointed prior to the commencement of construction to advise on all ecological management. The ECoW would be employed for the duration of the construction and reinstatement

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		periods, to oversee the safeguarding of natural heritage interests. The role of the ECoW would include the following tasks: • giving briefings to relevant staff regarding any ecological sensitivities onsite; • undertake pre-construction surveys (bats, reptiles, otter, water vole, pine marten etc.) and advise on ecological issues where required; • supervision of implementation of the HMP measures which are to be undertaken during the construction phase; and • monitoring compliance during the construction and decommissioning phase of the proposed development phases and reporting any breaches to the Applicant’s Construction Project Management Team. • give toolbox talks to all staff on Site, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the Site and the legal implications of not complying with agreed working practices; • agree and monitor measures designed to minimise damage to retained habitats (and habitats for which restoration is proposed as part of the HMP); • undertake pre-construction surveys and checks and advise on ecological issues where required; and • undertaken pre-construction inspections of areas which require reptile mitigation and carry out an appropriate level of supervision during vegetation clearance. The ECoW would also undertake additional roles such as assisting with water quality monitoring and checking for nesting birds (see **Chapter 9: Ornithology** and **Chapter 10: Hydrology, Hydrogeology and Geology** of the EIA Report). **Hazards to Protected Mammals** All potentially dangerous substances or materials within the temporary construction compound would be carefully stored to prevent them causing any harm to otters or other mammal species which may enter the compound at night. During construction, all excavations greater than 1m depth would either be temporarily covered at night or designed to include a ramp to allow otters and other animals a means of escape should they fall in.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		A speed limit of no greater than 15mph would be implemented on site to reduce the risk of road traffic collisions. **Surface Water and Peat Soils** Good practice measures in relation to pollution risk, sediment management and watercourse crossings to be adopted during the construction and operation phases are set out in **Chapter 10** and **Technical Appendix 3.1: Outline CEMP** (detailed CEMP to be agreed with CnES in consultation with relevant statutory consultees, prior to construction work commencing). These will be implemented during construction, reinstatement and habitat restoration required to fulfil the aims of the HMP. During the construction phase, good practice techniques with respect to peatland environments, as contained within 'Good Practice during Wind Farm Construction' (SNH, 2019), would be implemented. **Retained Habitat and Habitat Reinstatement** Good practice measures to protect retained habitats during the construction phase would be implemented, including the erection of temporary protective fencing demarcating the working footprint, to be overseen and policed by the ECoW. Good practice techniques for vegetation and habitat reinstatement would be adopted and implemented on areas subject to disturbance during construction as soon as is practicable. Primary targets of the outline HMP (A detailed HMP would be agreed with CnES in consultation with relevant statutory consultees, prior to construction work commencing) include the management of Blanket Bog and Wet Heath. This management will comprise: • Reinstatement of blanket bog that is disturbed during construction, ditch and drain blocking, and reduction in grazing pressure; and • Restoration of borrow pits where wet heath is damaged in the creation, reduction in grazing pressure in wet heath areas.

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	Construction (Good Practice Measures)	No significant effects on protected species have been identified as a result of the construction of the proposed development. However, should any evidence be found, a Species Protection Plan will be prepared to ensure that all reasonably practicable measures are taken so that provisions of the relevant wildlife legislation are complied with in relation to all protected species. Both the **Outline Habitat Management Plan (OHMP) Technical Appendix 8.5** and **Outline CEMP Technical Appendix 3.1** detail the standard good practice measures and species-specific mitigation recommended for the construction and operational phases of the proposed development. A detailed CEMP and detailed HMP would be agreed with the CnES in consultation with relevant statutory consultees, prior to construction work commencing. Some of the key recommended mitigation is however highlighted below: **Fish** Construction phase monitoring (including a baseline survey pre-construction) is proposed, to allow any changes due to construction of the proposed development to be monitored and addressed. **Protected Mammals** As targeted within the outline HMP, some disturbance/displacement of otter is possible during wind farm construction in association with installation of watercourse crossing points. Reducing grazing pressures and introducing broadleaf tree planting in riparian habitat will also improve habitat and foraging for otters using the watercourses onsite. Due to the time that will have elapsed since the last surveys and the possibility that otter activity could have changed in the intervening period, and/or pine marten or badger could have colonised the site, a pre-construction survey for otter, badger and pine marten would be undertaken. This would cover all watercourses and other suitable habitat within 250m of wind farm infrastructure (including access tracks). The results of the pre-construction surveys would inform the need for further mitigation within the CEMP in respect of working practices, or consultation with NatureScot, if required. During construction, site speed limits of 15mph would reduce the likelihood of accidental injury/killing or otter by construction traffic.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		All potentially dangerous substance or materials within the temporary construction compound would be carefully stored to prevent then causing any harm to otters which may enter the compound at night. During construction all excavations greater than 1m depth would either be covered at night or designed to include a ramp to allow otter and other animals a means of escape should they fall in. **Ecological Clerk of Works** A suitably qualified ECoW would be employed for the duration of the construction and reinstatement periods, to ensure natural heritage interests are safeguarded, although this may not necessarily be a full-time role throughout. The role of the ECoW would include the following tasks: • to give toolbox talks to all staff onsite, e.g. an ecological induction, so staff are aware of the ecological sensitivities on the site and the legal implications of not complying with agreed working practices; • to undertake pre-construction surveys (otter, badger and pine marten) and advise on ecological issues where required; and • to carry out pre-construction inspections of areas which require reptile mitigation (i.e. supervision during vegetation clearance). The ECoW would also undertake additional roles such as assisting with hydrological measures or checking for nesting birds (see **Chapter 9: Ornithology** and **Chapter 10: Hydrology, Hydrogeology and Geology**). **Reptiles** In order to comply with the Wildlife and Countryside Act 1981 (as amended in Scotland) mitigation would be employed to reduce the chances of inadvertently killing or injuring individual reptiles during construction works. Given the low numbers of reptiles likely to be present, the large areas of suitable habitat that would remain unaffected by the works and given also the large spatial scale of the works, fencing and translocation are not considered appropriate. Proposed mitigation therefore would involve identification/removal of potential refugia and hibernacula if present. The proposed site speed limit of 15mph would also reduce the likelihood of accidental injury/killing of reptiles by construction traffic. Where appropriate and safe to do so, the vegetation of all construction working areas with potentially suitable open habitats for reptiles will initially be cut during the active season for reptiles (April to October). Taking into

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		account ornithological sensitivities, October is likely to be the optimal month for this task. Mitigation works will be carried out to reduce the height of vegetation (e.g. use of a brush cutter or tractor mounted flail) and make it less attractive for reptile habitation. The works will be carried out under the supervision of the EnvCoW / ECoW. Working areas would then be kept unsuitable for reptiles through regular cutting until construction in that location commences. **General** A site speed limit of 15mph will be in place at all times to reduce the risk of collision and protected species mortality associated with construction vehicles. Excavations will be covered at the end of each working day to minimise the risk of faunal species becoming injured or trapped. Alternatively, a wooden plank or similar means of egress will be placed inside to allow a means of escape for animals should they enter the excavation. Any temporarily exposed open pipe system would be capped in such a way as to prevent wildlife gaining access. Works will be conducted during daylight hours where possible, avoiding the sensitive periods of dawn and dusk when wildlife is most active. In the event that a protected species is discovered on site, all work in that area would stop immediately and the EnvCoW / ECoW contacted. Increased buffer areas may be required in these locations. Details of the local police Wildlife Crime Officer, NatureScot Area Officer, and Scottish Society for the Prevention of Cruelty to Animals (SSPCA) relevant Officer would be held in the site emergency procedure documents.
	Operation	**Outline Habitat Management Plan (Outline HMP) Technical Appendix 8.5** (A detailed HMP would be agreed with CnES in consultation with relevant statutory consultees, prior to construction work commencing. First implemented during the construction stage, the HMP would remain in place throughout the operational stage.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Assumes Good Practice Measures are implemented in line with current contents of the Outline HMP and Outline CEMP, and the subsequent detailed versions of these documents. **Deer** The proposed area for peatland restoration would be subject to botanical monitoring, which includes monitoring grazing impacts on vegetation, such that a mechanism would be in place to identify the need for remedial action in the unlikely situation that deer grazing is found to be adversely impacting the establishment of the restored habitats. Only minimal maintenance traffic would be present during the operational phase, which would be subject to the 15mph site speed limit, such that increased traffic collision risk is considered minimal. As no significant effects are predicted upon wild deer or resulting from wild deer during construction or operational phases, it is concluded that a draft Deer Management Statement is not required. **Invasive Species** Rhododendron control will prevent further encroachment into blanket bog and wet heath habitats, and is therefore targeted within the HMP for removal. **Grazing Plan** A grazing plan on site should target both domestic and wild low level domestic grazing by horses or cattle in the spring and summer to encourage dominant Molinia caerulea cover and create a more varied vegetation structure, that benefits a variety of wildlife (including upland waders and raptors). Deer grazing will be reduced either through increased deer management or through the erection of deer fencing. An appropriate method for reducing deer numbers should be agreed the land owners and incorporated into the current estate management. Full proposed habitat restoration and management measures for the proposed development which will remain in place for the lifetime of the scheme are set out within **Technical Appendix 8.5 Outline HMP.** The detailed HMP will be established and will be agreed in full with CnES before construction commences. It aims to improve the quantity and quality of peatland habitats, benefitting site ecology and ornithology, and to monitor the effects of the proposed development.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
	Pre and during Construction (Pollution Prevention)	**Construction and Environment Management Plan (CEMP)** Further details of pollution prevention control measures will be provided in the detailed CEMP. Measures will include: • emergency spill kits will be readily available on site to protect against accidental release, leakage or spillage of potentially contaminative substances and materials; • construction plant to be checked regularly for leakages and will undergo maintenance on a regular basis; • construction traffic to be limited to allocated areas of the proposed development; • concrete and cement mixing and washing areas will be sited at appropriate distances from any surface watercourses to limit potential pollution of the water environment; • site drainage measures, including drainage ditches and silt traps, will be provided to collect and treat increased surface run off; and • assessment of Earthworks Specification, chemical analysis and assessment of imported fill materials.
	Operation (General)	During the operational phase the following mitigation will be in place: • a site speed limit of 15mph will be in place at all times to reduce the risk of faunal collisions with construction vehicles; and • a distance of at least 50m between turbine blade tip and the nearest woodland will be maintained.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
Chapter 9: Ornithology	Pre and during Construction	Wherever possible, vegetation clearance will take place outside the bird breeding season (i.e. September – mid-March). Should this not be possible, then the vegetation to be removed will be searched by a suitably qualified ecologist no more than 24 hours before clearance commences. Nests of non-Schedule 1 or Annex I species present will be marked with a buffer (likely to be 5m, but can be less with ECoW oversight) to prevent damage to the nest. This buffer can only be removed with ECoW approval once the nest is no longer in use. This buffer protection distance does not apply to eagle nest sites, which are managed as part of the OHMP Low intervention area – which requires no disturbing activities within 1km of eagle nesting areas/nests during the sensitive breeding season (February to August). In the 12 months before construction commences, breeding raptor surveys should be undertaken (and should also be carried out during construction if construction falls within a breeding season) with the aim of identifying the presence of any Annex 1 or Schedule 1 species which may be disturbed by the construction work. A tool box talk should also be provided during the induction process, detailing that there may be sensitive species on the proposed development site during the construction period and that case should be taken to avoid disturbing these birds if present and that sightings should be reported to the ECoW for further investigation. These actions should be particularly targeted at golden and white-tailed eagle and red-throated diver.
		Should the nest (or where applicable the roost) of an Annex 1 or Schedule 1 species be present, then disturbance buffers based on Ruddock and Whitfield (2007) should be established around the nest and no construction activity should be allowed within this area. The ECoW should carry out a risk assessment if access roads are within the buffer distance of the nest to establish if they can be used safely.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
	Operation (HMP)	**Habitat Management Plan (HMP) - Ornithology** A detailed Habitat Management Plan (HMP) will be developed, pre construction, using the current proposed outline HMP (**Technical Appendix 8.5**) as a starting point. This detailed HMP will aim to monitor the occurrence of sensitive species on the Site with a view to identifying habitat management measures in support of species present. **Eagles** Golden and white-tailed eagles are protected under the Annex 1 of the Wildlife and Countryside Act and are known to be present on Site. Some disturbance/displacement of eagles is possible during wind farm construction and eagles are also at risk of collision with turbine during wind farm operation. Management comprises reducing grazing pressure, carcass removal and painting turbine blades. Removal of carcasses from inside the turbine area and painting turbine blades will reduce collision risk for eagle species. Improving foraging habitat with reduced grazing to improve habitat quality will increase foraging opportunities for eagles, with the increase in prey species utilising the area. There will be a low intervention area/no disturbing activities within 1km of eagle nesting areas/nests during the sensitive breeding season (February to August). **Raptors** Raptor species protected under the Annex 1 of the Wildlife and Countryside Act are present on Site. Some disturbance/displacement of raptors is possible during wind farm construction and raptors are also at risk of collision with turbines during wind farm operation. Management comprises reducing grazing pressure to improve heath and bog habitat and thereby improving foraging opportunities for upland breeding raptors, with the increase in breeding prey species utilising the area. **Upland Waders** Breeding upland waders protected under the Annex 1 of the Wildlife and Countryside Act and listed as Birds of Conservation Concern (BoCC) are present on Site. Some disturbance/displacement of waders is possible during wind farm construction and waders are at risk of collision with turbines during wind farm operation.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		Management comprises the reinstatement of blanket bog disturbed during construction by ditch drain blocking, and reducing grazing pressure to enhance wet heath and blanket bog habitat, improving breeding conditions for waders. **Divers** Breeding divers protected under the Annex 1 of the Wildlife and Countryside Act and listed as BoCC are present on Site. Some disturbance/displacement of divers is possible during wind farm construction and divers are also at risk of collision with turbines during wind farm operation. Management includes for the provision of nesting rafts on appropriate lochans (preferably outside of the turbine area) to improve breeding conditions for divers.
Chapter 10: Hydrology, Hydrogeology and Geology	Pre and during Construction (CEMP)	**Construction Environment Management Plan (CEMP)** Good practice measures would be applied in relation to pollution risk, sediment management, peat management and management of surface runoff rates and volumes. This would form part of the detailed CEMP (**Technical Appendix 3.1** is the Outline CEMP) to be implemented for the proposed development and would be prepared prior to construction. As the detailed CEMP develops it would include details and responsibilities for environmental management onsite for site environmental aspects. It would outline the necessary measures for surface water management, oil and chemical delivery and storage, waste management, traffic and transport management. It would also specify monitoring requirements for waste water, water supply including an Environmental Incident Response Plan (EIRP) and all appropriate method statements and risk assessments for the construction of the proposed development.
	Pre and during Construction (PLHRA)	**Peat Landslide Hazard** Detailed PLHRA recommendations for site specific infrastructure – including for turbine locations, crane pads, borrow pits, access tracks, cable routes, watercourse crossings, substation and construction compound are therefore provided in **Technical Appendix 10.1 Peat Landslide Hazard Risk Assessment**.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		More detailed ground investigations will be required to facilitate the geotechnical design of the various foundations and access track, particularly the vertical and horizontal alignment and the design of the river/stream crossings. These will be incorporated into the Construction Method Statement which will be submitted to the Planning Authority for approval as part of the condition compliance prior to any site works commencing. Good construction practice and methodologies to prevent peat instability within areas that contain peat deposits are identified in the PLHRA. These include: • measures to ensure a well-maintained drainage system, to include the identification and demarcation of zones of sensitive drainage or hydrology in areas of construction; • minimisation of 'undercutting' of peat slopes, but where this is necessary, a more detailed assessment of the area of concern would be required; • careful micrositing of turbine bases, crane hardstandings and access track alignments to minimise effects on the prevailing surface and sub-surface hydrology; • raising peat stability awareness for construction staff by incorporating the issue into the site induction (e.g. peat instability indicators and good practice); • introducing a 'Peat Hazard Emergency Plan' to provide instructions for site staff in the event of a peat slide or discovery of peat instability indicators; • developing methodologies to ensure that degradation and erosion of exposed peat deposits does not occur as the break-up of the peat top mat has significant implications for the morphology, and thus hydrology, of the peat (e.g. minimisation of off-track plant movements within areas of peat); • developing robust drainage systems that would require minimal maintenance; and • developing drainage systems that would not create areas of concentrated flow or cause over/under-saturation of peat habitats. • An experienced and qualified engineering geologist/geotechnical engineer would be appointed as a supervisor, to provide advice during the setting out, micrositing and construction phases of the proposed development.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
	Pre Construction (Groundwater Dependent Habitats)	Measures have been proposed to safeguard existing water flow paths and maintain existing water quality. It is considered therefore that the water dependent habitats identified by the NVC mapping can be sustained. This would be confirmed, in accordance with good practice, by the Ecological Clerk of Works (ECoW) at the time of the construction of the proposed development.
	Pre and during Construction (CEMP)	**Construction Environment Management Plan (CEMP)** Good practice measures would be applied in relation to pollution risk, sediment management and management of surface runoff rates and volumes. Prior to construction, section specific drainage plans would be produced. These would take into account any existing local drainage which may not be mapped and incorporate any section specific mitigation measures identified during the assessment. Measures would be included in the final detailed CEMP for dealing with pollution/sedimentation/flood risk incidents and would be developed prior to construction. This would be adhered to should any incident occur, reducing the effect as far as practicable. The final detailed CEMP would contain details on the location of spill kits; identify 'hotspots' where pollution may be more likely to originate from; provide details to site personnel on how to identify the source of any spill; and state procedures to be adopted in the case of a spill event. As identified in the outline CEMP, a specialist spill response contractor would be identified to deal with any major environment incidents. A wet weather protocol would be developed. This would detail the procedures to be adopted by all staff during periods of heavy rainfall. Toolbox talks would be given to engineering/construction/supervising personnel. Roles would be assigned to site staff and the inspection and maintenance regimes of sediment and runoff control measures would be adopted during these periods. In extreme cases, this protocol would dictate that work onsite may have to be temporarily suspended until weather/ground conditions allow.
	Pre and during Construction	**Water Quality Monitoring**

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		The majority of the proposed development is located within the surface water catchment of Loch Shell in particular the Abhainn Cheothadail watercourse sub catchment. The north eastern extent of the proposed turbine area is located within the surface water catchment of the Abhainn Ghlas which is part of the larger Seaforth River catchment. Water quality monitoring before and during the construction phase would be undertaken to ensure the proposed development has no significant impacts to water quality and/or water quantity in the main water channels. Monitoring would be carried out at a specified frequency (depending upon the construction phase) in these catchments.). Water quality monitoring during the construction phase would be undertaken for the surface water catchments that drain from the proposed development to ensure that none of the tributaries of the main channels are carrying pollutants or suspended solids. Monitoring would be carried out at a specified frequency (depending upon the construction phase) on these catchments. This would comprise the deployment of real-time water quality monitoring telemetry with predetermined water quality trigger levels based on baseline water quality data (e.g. for pH, dissolved oxygen and electrical conductivity). The private water supply risk assessment (**Technical Appendix 10.5: PWSRA**) also identifies locations that should be included in a site-specific monitoring plan. Monitoring would continue throughout the construction phase and immediately post construction. Monitoring would be used to allow a rapid response to any pollution incident as well as assess the efficacy of good practice or remedial measures. Monitoring frequency would increase during the construction phase if remedial measures to improve water quality were implemented. Detailed water quality monitoring plans would be developed during detailed design. CnES, SEPA, Marine Scotland, Outer Hebrides Fisheries Trust (OHFT) and Western Isles District Salmon Fisheries Board (WIDSFB) would be consulted on the plans which would be set out within the final CEMP.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		The performance of the good practice measures would be kept under constant review by the water monitoring schedule, based on a comparison of data taken during construction with a baseline data set, sampled prior to the construction period. **Good Practice Measures (Pollution)** Good practice measures in relation to pollution prevention would include the following: • refuelling would take place at least 50m from watercourses and where possible it would not occur when there is risk that oil from a spill could directly enter the water environment; • foul water generated onsite would be managed in accordance with best practice and be drained to a sealed tank and routinely removed from site; • drip trays would be placed under vehicles which could potentially leak fuel/oils when parked; • areas would be designated for washout of vehicles which are a minimum distance of 50m from a watercourse; • washout water would also be stored in the washout area before being treated and disposed of; • if any water is contaminated with silt or chemicals, run-off would not enter a watercourse directly or indirectly without treatment; • water would be prevented as far as possible, from entering excavations; • procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the CAR to minimise the potential for accidental spillage; and • a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the effect as far as practicable. This would be included in the final detailed CEMP. **Good Practice Measures (Sedimentation and Erosion)** Good practice measures for the management of erosion and sedimentation would include the following: • all stockpiled materials would be located outwith a 50m buffer from watercourses; • where possible, stockpiled material would either be seeded or appropriately covered; • water would be prevented, as far as possible, from entering excavations such as borrow pits through the use of appropriate cut-off drainage;

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		• where the above is not possible, water that enters a borrow pit would pass through a number of settlement lagoons and silt/sediment traps to remove silt prior to discharge into the surrounding drainage system. Detailed assessment of ground conditions would be required to identify locations where settlement lagoons would be feasible; • clean and dirty water onsite would be separated, and dirty water would be filtered before entering the water environment; • if the material is stockpiled on a slope, silt fences would be located at the toe of the slope to reduce sediment transport; • the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum and appropriate drainage would be in place to prevent surface water entering deep excavations, specifically borrow pit excavations; • a design of drainage systems and associated measures to minimise sedimentation into natural watercourses would be developed – this may include silt traps, check dams and / or diffuse drainage; • silt/sediment traps, single size aggregate, geotextiles or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and • construction personnel and the Principal Contractor would carry out regular visual inspections of watercourses to check for suspended solids in watercourses downstream of work areas. **Good Practice Measures (Fluvial Flood Risk and Watercourse Crossings)** It is proposed to adopt Sustainable Drainage Systems (SuDS) as part of the proposed development. SuDS techniques aim to mimic pre-development runoff conditions and balance or throttle flows to the rate of runoff that might have been experienced at site prior to development. Good practice in relation to the management of surface water runoff rates and volumes and potential for localised fluvial flood risk would include the following: • drainage systems would be designed to ensure that any sediment, pollutants or foreign materials which may cause blockages are removed before water is discharged into a watercourse; • onsite drainage would be subject to routine checks to ensure that there is no build-up of sediment or foreign materials which may reduce the efficiency of the original drainage design causing localised flooding;

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
		• appropriate drainage would attenuate runoff rates and reduce runoff volumes to ensure minimal effect upon flood risk; • where necessary, check dams would be used within cable trenches in order to prevent trenches developing into preferential flow pathways; and • as per good practice for pollution and sediment management, prior to construction, section specific drainage plans would be developed and construction personnel made familiar with the implementation of these. Further information on ground conditions and drainage designs would be provided in the final CEMP. The design of new watercourse crossings would be agreed with SEPA prior to construction as required by CAR. The crossings would be designed to have a water conveyance capacity of at least the 1 in 200-year flood event. The structural integrity of the existing culverts that will be retained to afford site access will be assessed prior to any construction and any maintenance or replacement works recorded. As above, any required works would be undertaken with approval and authorisation from SEPA. **Good Practice Measures (Water Abstractions)** Abstraction of water for construction activities is proposed from a suitable source yet to be identified. An application for a CAR Licence would be made to SEPA and managed through the regulation of the CAR Licence. Should a suitable source not be identified, a water bowser would be used. Good practice that would be followed in addition to the CAR Licence regulations includes: • water use would be planned so as to minimise abstraction volumes; • water would be re-used where possible; and • abstraction volumes would be recorded.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
	Pre and during Construction (Other Monitoring Requirements)	• a Design and Geotechnical Risk Register would be compiled to include risks relating to peat instability, as this would be beneficial to both the developer and the Contractor in identifying potential risks that may be involved during construction. Areas of potential risk would be subject to routine inspection; and • an EcoW would supervise activities on site and monitor the efficacy of the drainage, erosion and pollution control measures and ensure that receptors identified in this assessment, including saturation of soils (inc. peat), ground and surface water quality, are not impaired as a consequence of the proposed development.
Chapter 11: Cultural Heritage and Archaeology	Construction (Watching Brief)	With regard to further mitigation to be implemented as a condition to consent, the undertaking of an archaeological watching brief, specifically relating to the construction of the access tracks, is to be used to ascertain the absence/presence of unknown assets in the vicinity that may relate to assets listed below: • SLR179, unknown potential archaeological remains related to the Mackenzie Clan (within region of NB 28448 16557); • SLR114, field system; • SLR135, field system; • SLR136, blackhouse; • SLR138, blackhouse; • SLR139, field boundary; • SLR158, field boundary, wall and dyke; • SLR159, bridge for Muaitheabhal wind farm; • SLR55, road bridge, potentially clapper type; • SLR11, sheilings (post-medieval); • SLR102, linear stones (undetermined use/period); • SLR22, potential sheiling. The precise scope of the mitigation works would be negotiated with the Western Isles Archaeological Officer and an agreed mitigation program would be documented in an approved Written Scheme of Investigation (WSI) supplanting any previous WSI that has been in place for previous schemes on the Site.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
Chapter 12: Site Access, Traffic and Transport	Construction (CTMP)	**Construction Traffic Management Plan (CTMP)** An Outline CTMP is provided within **Technical Appendix 12.1**. A detailed CTMP would be agreed with CnES, with input from Police Scotland and Transport Scotland, prior to the commencement of development. The detailed CTMP would include a number of measures to reduce the effects of the construction of the proposed development on local receptors and communities, including effects from turbine deliveries (abnormal loads). This would include details of any required temporary widening and other road improvement measures, together with detailed consideration of vehicle swept paths, loadings, structural assessments (where required), temporary street furniture removal details, dust and dirt management, and community engagement. An element of preparation of the detailed CTMP would be a trial run, which would be undertaken through a special licence, with CnES and TS as the Roads Authorities, and Police Scotland in attendance. Information, with regards to abnormal loads, would be provided to local residents and users of amenities to alleviate stress and anxiety.
	Construction (General)	**General** A reputable construction contractor would be procured, with an Environmental Policy and good environmental track record; • All HGVs delivering materials to the site would be roadworthy, adequately maintained and sheeted as required; • Adequate traffic management and banksmen would be deployed for the movement of HGVs and abnormal loads; and • HGV loads would be maximised to ensure that part load deliveries would be minimised. Turbine deliveries would be undertaken in consultation with the relevant roads authorities (CnES and TS) and Police Scotland. Mitigation measures to reduce the potential for dust and dirt to make its way on to the local highway network would be undertaken including the cleaning of vehicle wheels during wet periods and the sheeting of aggregate lorries.

Chapter	Type of Mitigation Compensation or Enhancement	Mitigation, Compensation or Enhancement Measure
Chapter 14: Socio-Economics and Land Use	Construction (Accommodation Strategy)	**Accommodation Strategy** An Accommodation Strategy is proposed to be developed as part of the final detailed CEMP to minimise competition for accommodation.
	Construction (Construction Traffic)	**Construction Traffic** Measures are set out in **Chapter 3: Description of Development** and also in **Chapter 12: Site Access, Traffic and Transport** relating to how delivery of goods and services would be managed during construction so as to minimise impacts on sensitive receptors. The proposed management measures would be further developed in the final detailed CEMP that would be adopted prior to construction commencing. Further mitigation measures would come in the form of the implementation of the detailed CEMP and detailed CTMP to limit the effect of the A859.
	Construction (Local Contractor Policy)	**Local Contractor Policy** The proposed development would also incorporate measures for enhancing the beneficial effects of construction on the local economy, particularly with regard to adding value to the local supply chain through implementation of a Local Contractor Policy, where additional weight in the tendering process is given to primary contractors that show a clear commitment to increasing local content in their supply chains.
Chapter 16: Other Issues	Operation	**Shadow Flicker** Shadow flicker control modules, consisting of light sensors and specialised software, will be installed on the turbines that can prevent operation during periods when shadow flicker can be experienced at nearby properties. The installation of a programmable shadow flicker module will allow the control of turbines in order to eliminate shadow flicker. The operation and performance of the shadow flicker control measures will be monitored on an ongoing basis.