UISENIS WIND FARM

Environmental Impact Assessment Scoping Report
Prepared for: **Uisenis Power Ltd.**

SLR Ref: 405.V64341.00001
Version No: 1
July 2022

BASIS OF REPORT

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1.0 Introduction

1.1 Overview

This Scoping Report is submitted on behalf of Uisenis Power Limited (UPL, the Applicant), a subsidiary of Eurowind Energy A/S, for the Uisenis Wind Farm (the Proposed Development), within the Eisgein (Eishken) Estate on the Isle of Lewis. It is the intention of the Applicant to submit an application for consent under Section 36 of the Electricity Act 1989 (the 1989 Act) and gain direction under section 57 (2) of the Town and Country Planning (Scotland) Act 1997, that planning permission for the development is deemed to be granted.

The Proposed Development is located completely within the administrative boundary of Comhairle nan Eilean Siar (CnES), Western Isles Council, approximately 20km south west of Stornoway, Isle of Lewis (NGR 131500, 913500), as shown on Figure 1.1.

The Proposed Development would consist of up to 26 wind turbines, up to 225m tip height, with associated infrastructure and have a total installed capacity of approximately 189 MW. An indicative scoping layout for the proposed turbines is shown on Figure 1.2 with the proposed access route from the A859 to the Proposed Development shown in Figure 3.1. The Proposed Development represents a re-design of the consented 45 turbines of the Muaitheabhal Wind Farm. Further details of the Proposed Development are provided in Section 3 of this Report with the Planning History of the Site provided in Section 2.3.

This Scoping Report forms Uisenis Power Limited's written request to the ECU, to provide an EIA Scoping Opinion. The report provides a description of the development proposal, the Site and surrounding area, summary of the likely impacts of the Proposed Development, and the methodology for the assessment of those impacts. The Report provides the required information for the Scottish Ministers and key consultees to form a Scoping Opinion on the Proposed Development and the Environmental Impact Assessment (EIA) required to support the application for consent.

1.2 Purpose of the Scoping Report

The Proposed Development will constitute a Schedule 2 development as provided for by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (the EIA Regulations 2017), and requires that the Section 36 application be accompanied by an EIA Report setting out the findings of the EIA.

Undertaking an EIA Scoping Study is good practice[1] and an important step in the EIA process as it allows all parties involved to agree key environmental issues relevant to the Proposed Development and to agree on the methodology used for assessment. The Scoping stage seeks to engage the determining authority and other stakeholders at an early stage in the planning process; and ensures that key opinions, based on local understanding, are identified.

The specific aims of this Scoping Report are to:

- identify the technical subject areas that may be subject to significant environmental effects as a result of the Proposed Development and therefore require further study;
- identify the technical subject areas that are unlikely to be subject to significant environmental effects and can be scoped out from further study;
- provide a basis for a consultation process to agree the scope and content of the EIA with ECU;

[1] SNH (2013) A Handbook on Environmental Impact Assessment 4th Edition

- provide a basis for agreeing methodologies for undertaking required studies with ECU, based upon currently available baseline data, site characteristics and best practice in individual technical disciplines; and
- provide all statutory consultees and stakeholders with an opportunity to comment on the Proposed Development at an early stage.

In making its formal Scoping Opinion, under Regulation 12(4)(a) of the EIA Regulations, the ECU must consult with a number of consultees and incorporate their views within the Scoping Opinion.

Upon receipt of the Scoping Opinion from the ECU, the Applicant will continue the EIA process that will lead to the preparation of an EIA Report, paying due cognisance to the findings and responses received. In the 2017 version of the Environmental Impact Assessment Directive (2014/52/EU), scoping remains voluntary, however, if a Scoping Opinion is requested, there is a requirement to base the EIA on the Scoping Opinion received. The proposed contents of the EIA Report are set out in Section 15.0 Proposed EIA Report Structure.

1.3 Notice of Intention

The Applicant, Uisenis Power Limited (UPL), hereby gives the ECU notice in writing that it intends to make a Section 36 application (as detailed above), and to accompany such an application with an EIA Report.

This notice, made pursuant to Regulation 12 of the EIA Regulations, includes information necessary to identify the location, the nature and purpose of the Proposed Development, and indicates the main environmental consequences to which the prospective applicant proposes to refer to in its EIA.

1.4 The Applicant

Uisenis Power Limited (the Applicant) 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 300 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.

EWE develop, construct, and operate wind, solar photovoltaic and 'Power to X' assets across Europe and in the USA. As of November 2021, EWE owned 758 MW of operational renewable assets and held under asset management a portfolio of 1518 MW. The Company has a growing development pipeline of 19,370 MW which is anticipated to deliver 300 MW per year into ownership and 550 MW 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 2000 operational MW in ownership and 4000 MW in asset management. EWE employs an experienced UK team based in Glasgow that was established in 2021. EWE UK has one constructed, soon to be operational, windfarm at Howpark in The Scottish Borders and has a growing development portfolio of around 500 MW in addition to the Uisenis Wind Farm.

1.5 The Proposed Development

The Uisenis Wind Farm (the Proposed Development) would involve the construction and operation of a wind farm within the Eisgein (Eishken) Estate on the Isle of Lewis located approximately 20km south west of Stornoway (Figure 1.1) within the administrative boundary of Comhairle nan Eilean Siar (CnES), Western Isles Council. The Proposed Development would consist of up to 26 wind turbines, up to 225m tip height, with associated infrastructure including external transformers, crane hardstandings, access tracks, cabling, borrow pits and substation as well as an option for battery storage. It is anticipated that the turbines would have a total installed capacity of approximately 189 MW. An indicative scoping layout for the proposed turbines is shown on Figure 1.2.

The Site has implemented consents for a wind farm development comprising 45 turbines consented via three Section 36 consents (Muaitheabhal Wind Farm and the Eastern and Southern Extensions) granted in 2010, 2011 and 2015, respectively, as shown on Figure 2.1 with further details provided in Section 2.3.

1.6 EIA Project Team

The following section describes the team of technical specialists that will undertake the EIA and contribute to the EIA Report.

1.6.1 SLR Consulting

The overall coordination of the EIA will be undertaken by SLR Consulting, as well as the provision of technical lead for the following topics:

- Onshore ecology;
- Soils, geology, hydrogeology and hydrology;
- Cultural heritage and archaeology; and
- Telecommunications, television reception and shadow flicker

SLR is a Registered Environmental Impact Assessor and Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the EIA Quality Mark (http://www.iema.net/qmark). SLR is also a member of the Association of Geotechnical and Geoenvironmental Specialists, and a Landscape Institute (LI) Registered Practice.

The company has significant experience and expertise in the preparation of planning applications and undertaking EIA for a wide variety of projects. SLR's environmental specialists, have the skills and relevant competency, expertise and qualifications to undertake EIA for the Proposed Development.

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

1.6.2 LUC

LUC (Land Use Consultants Ltd.) are the appointed landscape consultant for the Proposed Development. LUC has supported over 3GW of operational and consented onshore wind energy development in the UK and has provided trusted advice on the design and impact of renewables projects for over 20 years. LUC provided specialist services in relation to EIA co-ordination, layout design, public exhibition materials, and landscape and visual (and cumulative) assessment for the previously consented Muaitheabhal Wind Farms. LUC also led recent feasibility and landscape baseline studies for the proposed redesign of the Site and have a robust understanding of the key characteristics and physical considerations of the Site.

Experienced Landscape Architects and Chartered Members of the Landscape Institute (CMLI) at LUC will lead the landscape and visual impact assessment (LVIA) including a cumulative assessment, an assessment of effects on designated landscapes and areas of wild land, and an assessment of visible aviation lighting (if required).

1.6.3 MacArthur Green

MacArthur Green is undertaking the ornithological aspects of the EIA and has considerable experience of conducting and project managing all ornithological aspects for onshore wind farm developments, including leading on surveys, EIA Report chapters, Habitats Regulations Assessments, scoping reports and technical reports as well as well as being involved with public hearings and providing technical advice.

1.6.4 Pell Frischmann

Pell Frischmann is undertaking the transport and access elements of the EIA. Pell Frischmann's Transport Planning team have been involved on numerous renewable projects across the United Kingdom, Republic of Ireland and northern Europe and have experience of over 500 wind farm projects.

1.6.5 Bow Acoustics

Richard Carter of Bow Acoustics is undertaking the noise and vibration aspects of the EIA. Richard has over 20 years' experience as an Acoustics Engineer, during which time he has specialised in Environmental Acoustics. He is a Chartered Engineer, a member of the Institute of Acoustics, and has a Bachelor of Engineering in Mechanical Engineering and a Post-Graduate Diploma in Acoustics and Noise Control. Richard has undertaken noise assessments for over 50 windfarms across the UK and written and delivered training courses on the subject.

1.6.6 Wind Business Support

Wind Business Support is undertaking the Aviation aspects of the EIA. Ian Fletcher of Wind Business Support, has been working on the impacts of wind turbines on aviation interests since 1998. Ian has established strong links with the MoD, NERL, NATS, the CAA, the ATC community and technology providers. As an independent aviation consultant, Ian has worked on in excess of 800 projects involving around 40 aerodromes and technical sites across the UK.

1.7 Report Structure

Following this introductory section, the remainder of this Scoping Report comprises the following sections:

- Section 2.0: Site and Surroundings
    - describes the location, setting and physical characteristics of the Proposed Development site and describes baseline features in and around the Site;
- Section 3.0: Proposed Development
    - provides an outline of the Proposed Development;
- Section 4.0: Scoping the EIA
    - provides detail on the approach to scoping the EIA, sets out the process of Scoping consultation and describes the specialist studies that will be undertaken to assess the impact of the Proposed Development on the environment, and a reasoning why certain aspects have been scoped out of the EIA;
- Section 5.0: Planning Policy and Guidance
    - identifies the development plan and provides a list of policy and guidance that has been considered in the preparation of this Scoping Report;
- Section 6.0 – 13.0: Specialist environmental studies that are proposed to be undertaken
    - describes the specialist environmental studies that are proposed to be undertaken to assess the potential significant impacts of the Proposed Development on the environment and where relevant notes those aspects to be scoped out of assessment;
- Section 14.0: Other Environmental Issues
    - describes the environmental topics which are considered not likely to experience significant effects and are therefore proposed to be scoped out of the EIA; and
- Section 15.0: Proposed EIA Report Structure

- Sets out the proposed structure of the EIA Report

- Section 15.0: Invitation to Comment
  - provides contact details for responding to or discussing any matters contained within this report in greater detail prior to responding to the scoping exercise.

2.0 Site and Surroundings

2.1 Site Location, Description and Topography

The Site, centred on NGR 131500, 913500, is located in the south east of Lewis approximately 7km east of the A859 spine road which connects the Isle of Harris to the south with Stornoway approximately 20km north of the Site (shown on Figure 1.1). The Site is located in the north of the Park (Pairc) peninsula. The peninsula is defined by two long and narrow sea lochs, Loch Erisort (Eireasort) to the north, and Loch Seaforth (Shiophoirt) to the south, the latter forming part of the boundary between Lewis and Harris. The Site location on the Isle of Lewis is presented on Figure 1.1.

The area within the Site is currently utilised recreationally for hunting, fishing and deer stalking for residents of, and visitors to, the Eishken Estate Lodge within the Site boundary (at this stage the boundary is used for the purpose of EIA Scoping and may be refined within the EIA Report) falling within the wider Eishken Estate area. The Eishken estate access track passes through the Site boundary connecting the A859 with Eishken Lodge and associated buildings located in the south eastern area of the Site boundary (as shown on Figure 2.1). The lodge is available for hire as luxury sporting accommodation. Predominant land cover within the Site Is shown to be heather grassland interspersed with freshwater lochans and a network of tributaries. The Site boundary also encompasses a number of small lochs with a number of rivers and streams crossing the Site feeding into the lochs.

The north west extent of the Site boundary is located near Feiriosbhal (Feirihisval), a hill in the Pairc Peninsula and South Lochs region of Lewis. This west and north extent comprises the most elevated and rugged terrain of the entire Site area (Feiriosbhal 327m Above Ordnance Datum) with steep east and east/north east facing slopes in excess of 30°-40°.

Elevations in the south eastern extent of the Site near Beinn Eisgein (129m Above Ordnance Datum) are typically lower while the predominant central area has the least variation in topography (loch levels typically 30-40m AOD.

Primary watercourses intersecting the wider Site are Abhainn Ghlas, which flows northwards along the extent of Eisgein Road before discharging to Loch Sgiobacleit; Abhainn Sgrihascro, which drains steep outcrops and slopes north west of Loch Eisgein (approximately 1.07km north west of the Lodge); and Allt Loch nan Lub which marks the furthest eastern extent of the wider Site. The Site overlies three nested catchments -to the west Abhainn Cheothadail, to the east Abhainn Mhor and Abhainn Ghleann Quirn (centre, north).

Underlying soils are indicated, via high-level interactive UK Soil Observatory mapping[2], to be peaty gleys in the west, south west and south east; and peaty podzols in the central area occupied by the several freshwater lochs[3]. One large area of peat body near the surface is indicated to the west of the Site boundary (and so outwith the Site area). Land Capability for Agriculture is classified as Grade 6.3–- which is considered to be capable for use as rough grazing only with low quality vegetation. The exact nature of localised soils will be determined through probing exercises undertaken as part of the EIA scope of works.

There are no ecological designations within the Site boundary. The Inner Hebrides and the Minches Special Area of Conservation (SAC) is approximately 6km south east of the Site with the Shiant Islands Site of Special Scientific Interest (SSSI) and Special Protection Area SPA is located approximately 10km south east within the Minch and is designated for its seabird and Atlantic puffin populations. To the north, the North Harris SSSI and Achmore Bog SSSI lie within the Ramsar and Special Protection Area SPA which spans across much of the north east of Lewis, approximately 7km distant.

[2] UK Soil Observatory (UKSO) Map Viewer – Soils of Scotland, 1:250,000
[3] UK Soil Observatory (UKSO) Map Viewer – Land Capability for Agriculture (Scotland) 1:250,000

The closest Wild Land Area (No:31 -Eisgein) is located adjacent to the southern Site boundary, on the southern bank of Loch Sealg (Loch Shell).

2.2 Surrounding Area

The immediate surrounding area is remote, and residential dwellings are restricted to the Lodge and inner estate. Beyond this there are only isolated residential properties, typically isolated crofts, within 2km and located within the adjacent estate to the north and east (Pairc Estate).

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 13km south west of the Site on Harris. Beyond this, there are core paths at Maraig, Harris (14km south west), Rhenigidail (14km south) and west Stornoway (22km north).

A series of disused pits follows the route of Eisgein Road northbound, namely Eisgein Pit (ID:211126); Eisgein Road Pit (ID:211127), Loch a'Ghuithais Pit (ID:211125) and Eisgein Road Gravel Pit (ID:211099).

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)[4].

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.

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 on scree slopes) and also frequency of high magnitude storms and prolonged rainfall characteristic of the Outer Hebrides. This has resulted in the series of rills and gullies evident in the western extent in contrast to the central area where terrain is less variable[5].

2.3 Planning History of the Site

The Site has previously been consented by Scottish Ministers (under Section 36 of the Electricity Act 1989) for the development of Muaitheabhal Wind Farm that was initially consented in 2010 (ECU Reference: EC00005222) and then extended via Muaitheabhal East Extension Wind Farm in 2011 (ECU Reference: EC00005223). In 2015, Muaitheabhal South Extension was also consented (ECU Reference: EC00002096) on land to the south and west of Loch Sealg, also within the Eishken Estate. In total the three Section 36 consents comprise 45 turbines all located within the Site boundary as shown in Figure 2.1 and listed below:

- Muaitheabhal Wind Farm Main Consent (33 turbines up to 145 m to tip consented in January 2010);
- Muaitheabhal East Extension (6 turbines up to 150 m to tip consented in December 2011); and
- Muaitheabhal South Extension (5 turbines up to 150 m to tip and 1 turbine up to 130 m to tip consented in September 2015).

The consents have been implemented through development of a bell mouth junction for the Main Consent and East Extension and via other limited ongoing infrastructure works for the South Extension.

[4] British Geological Survey, GeoIndex Onshore – Bedrock Geology
[5] GeoIndex Onshore – Catchment Morphology and Geological Runoff Potential

3.0 Proposed Development

3.1 Design Development

The proposed Site layout that is presented in Figure 1.2 shows the emerging Site design for the proposed Uisenis Wind Farm. The development of this layout has been informed by previous studies, assessment and consultation undertaken throughout the Site history including information and discussions relating to the previous Section 36 consents. Whilst the layout presented in this scoping report represents the current layout, Uisenis Power Ltd (the Applicant) will continue to review and refine the design whilst scoping is taking place and so, at this stage, the design is indicative. The final design that will be presented in the EIA Report will be informed by ongoing design studies, stakeholder feedback as well as ongoing baseline data collection. The appraisal of likely environmental impacts and the corresponding proposed methodologies in this Scoping Report have taken the indicative nature of the scoping layout into account and, where appropriate, worst-case assumptions on layout have been made. Therefore, it is not expected that refinement of the layout that is presented in this report will alter the scope of or approach to the EIA.

3.2 Proposed Development

It is anticipated that the Proposed Development would consist of up to 26 wind turbines with blade tip heights of up to 225m (see indicative layout on Figure 1.2) with an installed capacity of up to 189 MW. The related infrastructure proposed would likely include the following components:

- External transformer plinths and enclosures (if required to be housed externally) at the base of each turbine;
- Crane hardstandings adjacent to each turbine;
- Upgraded and new Site access tracks, passing places and turning circles;
- Power cables linking the turbines to the proposed substation, laid in trenches underground, including cable markers;
- Permanent and temporary power performance assessment (PPA) anemometry masts;
- A substation compound including a control building, parking, and ancillary grid services equipment;
- A possible battery storage facility;
- An anemometry mast;
- Temporary borrow pits for the extraction of rock; and
- A temporary construction compound.

Figure 1.2 shows the indicative layout of 26 turbines – Table 1 gives the indicative turbine location co-ordinates. This is a preliminary turbine layout for the purposes of scoping, which takes into account the currently known ecological, ornithological, topographical, hydrological, hydrogeological, cultural heritage and landscape constraints at this early stage in the EIA process. This indicative layout will be refined further during the EIA process.

Table 1: Turbine Coordinates

Turbine ID	Easting	Northing
1	131738	914940
2	132520	914818
3	132882	914420
4	131038	914165
5	131882	914071
6	133032	913870
7	132331	913820
8	130532	913620
9	132932	913320
10	131032	913220
11	131981	913170
12	133332	913071
13	130481	913020
14	131456	912942
15	132482	912921
16	130881	912770
17	131332	911920
18	130882	911770
19	130131	911770
20	131532	911470
21	130481	911420
22	129131	911320
23	131082	911320
24	130032	911270
25	128572	911131
26	129582	911120

3.2.1 Wind Turbines

A candidate turbine manufacturer and 'worst case' model will be selected for each technical and environmental discipline for the purposes of the EIA. A competitive procurement process would be undertaken, should consent

be forthcoming and prior to construction, to select the final turbine that would be installed onsite. The final wind turbine selected would have a tip height of up to 225m.

The specification of the wind turbine would be a typical horizontal axis design, comprising of three rotor blades, a hub and a nacelle. The tower would be tubular and tapered in design and finished in a light grey semi-matt colour. The blades will be made from fibre-reinforced epoxy and the tower will be constructed from steel.

An indicative layout of 26 turbines is shown on Figure 1.2. Each wind turbine would be served by its own electrical transformer. This layout has been prepared in response to environmental and technical constraints in addition to feedback associated with the previous consents at the Site.

3.2.2 Substation

The Proposed Development would include a new on-site substation and control building. The substation and control building is anticipated to be a single storey building with a pitched roof and solar panels. The building would also house switchgear, metering, protection, welfare facilities and control equipment.

3.2.3 Electrical Layout

Underground cables will link the transformers to the onsite substation. Detailed construction and trenching specifications will depend on ground conditions at the Site.

3.2.4 Electricity Export

There are two possible scenarios for the export of electricity from the wind farm: a traditional grid connection or a 'Power to X' (hydrogen or equivalent) solution. Both would be subject to separate applications and are outwith the remit of this Scoping Report and the EIA.

For a grid connection, a cabling route (not yet determined) would run from the onsite substation to a connection point, yet to be established. The Council has previously granted consent for an onsite substation; however, this consent has expired. A new planning application, separate from the wind farm application, would be required / submitted when grid proposals are more advanced and the detailed requirements of the SSEN Transmission substation are known.

In the event that grid is not forthcoming, alternative 'Power to X' solutions are currently being investigated for electrolysis and export of hydrogen (or equivalent). The electricity from the wind farm would power the electrolyser to produce green hydrogen (or equivalent) which could be exported or converted (e.g., to ammonia) and exported for use as transportation fuel, in fertilizer manufacturing or in chemical production.

3.2.5 Battery Storage

Energy storage such as batteries is being considered for inclusion as part of the Proposed Development. Battery storage would comprise a number of units with ancillary equipment. The batteries would store excess power generated by the Proposed Development and release the power to the grid when output from the Proposed Development falls.

If proposed, the battery storage facility will be located adjacent to the substation compound. The batteries would be housed in structures very similar to shipping containers. These would be arranged in tandem i.e., two containers on a combined plinth with a shared transformer unit and coolers.A separating wall between the pair of containers is the highest elevated point at approximately 3.8 m.

3.2.6 Anemometry Masts

A permanent anemometry mast will be required to provide key wind climatology statistics including; mean wind speed, wind direction, exceedance values, air density, wind shear and turbulence intensity. These masts typically reflect turbine hub height.

3.2.7 Access/Transportation

The proposed Site access and delivery route for construction traffic is anticipated to be from the A859 as shown in Figure 3.1. This may also be used for the delivery of turbine components; however, consideration is being given to use of a berthing facility as detailed below. A network of new and upgraded tracks for construction and maintenance of the Proposed Development once operational will also be required.

If the berthing facility is not taken forward, the wind turbine components would be delivered to the Site using the existing public road network, delivered from Arnish Point. The approach to the Site for wind turbine components would be taken via the A859 and then the existing Eishken estate access track.

3.2.8 The Berthing Facility

In addition to the consented developments, there is a lapsed consent for a dedicated berthing facility for the direct delivery of wind turbine components on the north shore of Loch Sealg. The berthing facility was subject to a planning application submitted to CnES and Marine Scotland and was consented in 2012. The berthing station was not subject to EIA. Should the berthing facility be necessary to facilitate turbine delivery, this would be subject to a separate application with the berthing facility likely to comprise:

- A slipway ramp and conventional slipway which would enable landing craft and barges to unload (including a crane for lifting the turbines ashore). These could be used also during construction by boats bringing construction workers and some HGV traffic for the Proposed Development and could be retained to service maintenance activities.
- An 'A' frame fender berthing facility against which vessels delivering the turbines would berth.
- A crane hardstanding from where the crane would unload the turbines from the delivery vessels; a heavy storage and blade storage area.
- An access track to the closest part of the Site.

As with the Grid Connection, if the berthing facility is proposed, this would be subject to a separate application that is outwith the scope of the wind farm EIA and is not included in this Scoping Report.

3.2.9 Borrow Pits

Where possible, the stone required for the tracks, turbine bases and hardstandings will be predominantly sourced from onsite borrow pits. This approach will minimise transportation movements of stone to the Site. However, depending on the quality of stone found, it may be necessary to import stone into the Site for use as a capping material for the access tracksand hardstandings. The transport implications of this will be assessed fully in the EIA Report.

The location, design and reinstatement of borrow pits will be considered as part of the design/EIA process. The borrow pits will be reinstated after use, using the excess overburden and excavated material from the track building process where possible.

3.3 Construction Works

The duration of the construction works would be approximately 18-24 months, dependent upon weather conditions.

3.4 Operational Maintenance

Maintenance work will involve visiting the Site regularly to undertake scheduled maintenance and operational checks. Annual servicing will involve the undertaking of non-essential repairs on blades, gearboxes and generators.

3.5 Wind Farm Lifecycle and Decommissioning

It is anticipated that the Proposed Development would have an operational life of up to 40 years.

At the end of the operational life, the Proposed Development would be decommissioned or an application may be submitted to repower the Site. The decommissioning period would take up to a year.

The ultimate decommissioning approach would be agreed with ECU, 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 Decommission and Restoration Plan (DRP). Financial provision for the decommissioning would be provided.

Over the period of operation of the wind farm it is recognised that there are likely to 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. The detailed DRP would reflect the scientific ideas and best practice current at the time of decommissioning and restoration.

With this in mind, an assessment of the decommissioning of the Proposed Development will not be undertaken as part of the 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. Decommissioning is, therefore, scoped out for all environmental topics and is not discussed further.

4.0 Scoping the EIA

4.1 Introduction

The EIA Directive (2014/52/EU) was transposed into the current EIA Regulations on 16th May 2017. The EIA will be undertaken in accordance with the EIA Regulations, Circular 01/2017 (Scottish Government, 2017), the best practice guidelines of the Institute of Environmental Management and Assessment (Guidelines for Environmental Impact Assessment) published in 2004 and the SNH (now NatureScot) handbook on EIA 2013.

The principal purpose of the EIA will be to assess in a systematic manner the potential significant environmental effects of the Proposed Development. Throughout the process of undertaking the EIA, the results obtained will be used in an iterative manner to influence the design of the Proposed Development, in order that any significant, detrimental environmental effects can be designed out (embedded mitigation), minimised or negated completely through the careful design and approach to mitigation.

4.2 Approach to Scoping

This Scoping Study has mainly been based upon a desk-based appraisal consideration of datasets from a variety of sources including Ordnance Survey mapping, Development Plans, information on the Proposed Development supplied by Uisenis Power Ltd and application documents (including environmental assessments) submitted for previous Section 36 consent applications. The desk-based appraisal has been complemented using Geographic Information System (GIS) technology to collate and identify potential environmental receptors and environmental designations that may be affected by the development. The GIS datasets comprise details of ecologically important sites, sites of archaeological and/or cultural heritage importance, landscape designations and other important receptors (residential dwellings, watercourses etc). The potential receptors and designated sites that have been identified are shown on Figure 4.1.

4.3 Potential Environmental Effects

The EIA Regulations (Regulation 4 (2), (3) and (4)) specify that the EIA must:

"(2) identify, describe and assess in an appropriate manner, in light of the circumstances relating to the proposed development, the direct and indirect significant effects of the proposed development (including, where the proposed development will have operational effects, such operational effects) on the factors specified in paragraph (3) and the interaction between those factors.

(3) The factors are —

(a) population and human health;

(b) biodiversity, and in particular species and habitats protected under Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora(a) and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds;

(c) land, soil, water, air and climate; and

(d) material assets, cultural heritage and the landscape.

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

Previous experience of the EIA requirements for other wind farm development sites, alongside review of the EIA requirements for previous consents at the Site, has informed the identification of the following topics for consideration in the EIA. A summary of known baseline conditions of relevance, predicted effects, any outline

mitigation measures that can be recommended at this stage and the proposed scope for the EIA is provided for each of the following topic areas in Sections 6.0 to 14.0:

- Landscape and Visual;
- Onshore Ecology;
- Ornithology;
- Hydrology and Soils;
- Archaeology and Cultural Heritage;
- Noise and Vibration;
- Site Access, Traffic and Transport;
- Socio-economics, Tourism, Recreation and Land Use; and
- Other Environmental Issues.

For each topic that is identified as requiring further study, a detailed technical assessment will be carried out in accordance with the scope and methodology agreed with relevant consultees. Each technical assessment will be carried out by an appropriately qualified consultant to prevailing technical standards and reported in a dedicated EIA Report Chapter.

The technical assessments will provide a detailed assessment of potential impacts, identification of mitigation measures and description of the significance of residual effects (those remaining after the mitigation measures have been implemented). The EIA will identify direct and indirect effects, positive (beneficial) and negative (adverse) effects, and seek to identify, as far as possible, the duration of such effects, whether short term, long term, permanent, temporary, periodic, etc. during the construction and operational phases of the Proposed Development. The results of each technical assessment will be reported in the EIA Report and will be accompanied by technical appendices and illustrative material where reasonable. A Non-Technical Summary will be produced.

4.4 Assessment Scenario

For the purpose of assessment, the EIA will consider a baseline comprising the existing Site without wind turbines and that is predominantly undeveloped. In addition, the EIA Report will also summarise the level of environmental effects predicted within the EIA Reports for the consented scheme (45 turbines consented via the Muaitheabhal Wind Farm Main Consent and southern and eastern extensions), which were previously considered acceptable by the ECU and Scottish Government.

4.5 Consultation

4.5.1 Pre-Scoping Consultation

Uisenis Power Ltd has undertaken initial discussions with the ECU during a meeting on the 24th May 2022. During the meeting the ECU requested confirmation of proposed consultees (provided in Appendix A of this report), including Community Council details (if available). The ECU Requested heights and locations of the proposed Turbines, alongside any details for battery storage (provided in Section 3.0).

In addition to the ECU, the Applicant has undertaken initial discussions with CnES to provide an introduction to the project, to be followed by regular updates on the proposals. The most recent discussions took place on the 7th June and 12th July 2022.

4.5.2 Scoping Consultation

This Scoping Report is issued to the ECU, who will then consult with key consultees and stakeholders before forming their Scoping Opinion. It is anticipated that the agencies and bodies to be consulted will include those listed in Appendix A; this list is not exhaustive and other agencies will be consulted during the EIA as and when required.

The purpose of the consultation is to identify:

- key local issues and concerns;
- issues of environmental importance that may be affected by the Proposed Development and need to be considered in an EIA;
- existing information that will be of assistance in the assessment of the environmental effects; and
- the need for further consultation.

4.5.3 Public Consultation

In line with current Scottish Government Guidance, a public exhibition event is planned for autumn 2022 with a further public exhibition event planned for 2023. The exhibition will be an opportunity for the public to learn about the Proposed Development through information panels and visualisations. Discussion and feedback on the Proposed Development will be encouraged; and where received, will be taken into account in development of the design and EIA. A further exhibition will provide the public with an update on progress and show the nearly finalised wind farm design, an update on the EIA, and further information on community benefits and submission timescales.

Initial informal discussion with the community development trusts in the vicinity of the Proposed Development will be undertaken, prior to any public exhibition event.

5.0 Planning and Energy Policy Context

The Proposed Development will be considered under Section 36 of the Electricity Act 1989. As part of the Section 36 application process, the applicant will request that the Scottish Ministers issue a Direction under s.57(2) of the Town and Country Planning (Scotland) Act 1997 ("the Act") that deemed planning permission be granted for the Proposed Development.

Schedule 9 of the Electricity Act 1989 sets out environmental features which the decision maker must have regard to and identifies that mitigation must be considered. Sub-paragraph 1 is relevant to an applicant if they hold a License at the date the application is submitted. The applicant does not hold such a licence. Sub Paragraph 1 states:

"*In formulating any relevant proposals, a licence holder or a person authorised by exemption to generate, transmit, distribute or supply electricity*

(a) shall have regard to 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; and

(b) shall 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."

Sub-paragraph 2 applies to all applicants and refers to sub paragraph 1. Sub-paragraph 2 states:

"In considering any relevant proposals for which his consent is required under section 36 or 37 of this Act, the Secretary of State shall have regard to —

(a) the desirability of the matters mentioned in paragraph (a) of sub-paragraph (1) above; and

(b) the extent to which the person by whom the proposals were formulated has complied with his duty under paragraph (b) of that sub-paragraph."

The planning input to the EIA Report will focus on the relevant development plan and material considerations. The EIA Report will not assess the Proposed Development against the relevant planning policy. This will be provided in a separate Planning Statement. The Planning Statement will consider the balance of effects of the Proposed Development as set out in the EIA, in the context of the statutory requirements of the 1989 Electricity Act, Development Plan policy, and other material considerations.

5.1 The Development Plan

The application Site is located within the administrative area of Comhairle nan Eilean Siar (Western Isles Council, Outer Hebrides). The Development Plan for the Site therefore comprises the Outer Hebrides Local Development Plan OHLPD (Adopted 2018) and associated Supplementary Guidance.

The Development Plan policies of most relevance are detailed below on a topic basis. A comprehensive assessment against the Development Plan would be provided separately within the Planning Statement as part of the Section 36 Application submission.

5.1.1 Outer Hebrides Local Development Plan (OHLDP)

The Outer Hebrides Local Development Plan (OHLDP) was adopted in November 2018 and supersedes the previous Development Plan covering the Site which was the Proposed Local Development Plan (2017). The LDP outlines through planning policies what is required of new developments in order for them to be considered acceptable and receive approval. The policy considered most relevant to the Proposed Development is EI8 Energy and Heat Resources, as it is directed towards wind farm developments and establishes a set of criteria such

developments need to meet. In addition, the LDP includes a number of other polices relating to environmental and design considerations including:

- DS1: Development Strategy
- PD2: Car Parking and Roads Layout
- PD5: Open Space and Outdoor Sports Facilities
- PD6: Compatibility of Neighbouring Uses
- ED5: Minerals
- EI1: Flooding
- EI2: Water and Waste Water
- EI3: Water Environment
- EI5: Soils
- EI7: Countryside and Coastal Access
- EI8: Energy and Heat Resources
- EI9: Transport Infrastructure
- EI11: Safeguarding
- EI12: Developer Contributions
- NBH1: Landscape
- NBH2: Natural Heritage
- NBH3: Trees and Woodland
- NBH4: Built Heritage
- NBH5: Archaeology
- NBH6: Historic Areas

5.1.2 Supplementary Guidance

Supplementary Guidance forms part of the Local Development Plan. The relevant Supplementary Guidance pertaining to this Proposed Development is the OHLDP – Supplementary Guidance for Wind Energy Development (November 2021). This Supplementary Guidance aims to:

- set out the Comhairle's definition of a 'wind farm';
- provide applicants with a guide to the areas where the principle of onshore 'wind farms' (larger turbine developments) may be acceptable;
- provide applicants with a guide to the areas where the principle of onshore 'wind farms' (larger turbine developments) will not be acceptable;
- set out development policies for the assessment of all scales of wind turbine.

Map 1 of the Comhairle Spatial Strategy for Wind Farms presented in the Supplementary Guidance for Wind Energy Development classifies the Site as an 'Area of Constraint (with potential in some certain circumstances)'.

This will be explored further in the Planning Statement and through the technical and environmental studies and sensitive and iterative design process, demonstrate the capacity for the Site to support a wind farm development.

5.2 National Planning Policy and Guidance

The Scottish Government's current national planning policy is set out in the third National Planning Framework (NPF3) and in Scottish Planning Policy (SPP), both of which were published in 2014 and therefore prior to the declaration of the global climate emergency and adoption of the new net zero targets.

The Scottish Government is currently reviewing NPF3 and SPP. A draft version of NPF4, setting out an overarching spatial strategy for Scotland until the period to 2045, was laid before the Scottish Parliament on the 10 November 2021 and consultation seeking responses on the draft closed on the 31 March 2022. Following the Parliamentary scrutiny process, the responses will be analysed and a final NPF4 produced. The current NPF3 and SPP, both published in 2014, will remain in place until NPF4 is adopted by Scottish Ministers.

National planning policy is supported by Planning Circulars, Planning Advice Notes (PANs) and Specific Advice Sheets. The PANS and Specific Advice Sheets considered relevant to the Proposed Development include:

- PAN 1/2011 Planning and Noise, March 2011;
- PAN 2/2011 Planning and Archaeology, July 2011;
- PAN 3/2010 Community Engagement, August 2010;
- PAN 51 Planning, Environmental Protection and Regulation, October 2006;
- PAN 60 Natural Heritage, January 2000;
- PAN 61 Sustainable Urban Drainage Systems, July 2001;
- PAN 75 Planning for Transport, August 2005;
- PAN 79 Water and Drainage, September 2006;
- Scottish Government's Control of Woodland Removal Policy, February 2019;
- Wind Farm Developments on Peat Land, May 2013;
- Specific Advice Sheet: Guidance on Developments on Peat Land: Peatland Survey, 2017:
- Specific Advice Sheet (updated 28 May 2014): Onshore Wind Turbines; and
- Spatial Planning for Onshore Wind Turbines – Natural Heritage Considerations, June 2015

6.0 Landscape and Visual

The Landscape and Visual Impact Assessment (LVIA) will consider direct and indirect effects on landscape resources, landscape character, designated landscapes and wild land. It will examine the nature and extent of effects on existing views and visual amenity. The effects of the proposed turbines, as well as the ancillary infrastructure (access track, masts, transformers etc.) will be assessed during construction and operation of the Proposed Development. The LVIA will also consider cumulative effects i.e., the incremental effects of the Proposed Development in combination with other wind farm developments.

The LVIA will inform modifications and refinements to the layout design and will be undertaken following the approach set out in *Guidelines for Landscape and Visual Impact Assessment: Third Edition* (Landscape Institute and Institute of Environmental Management and Assessment, 2013). The assessment will also draw upon current good practice guidance issued by NatureScot and the Landscape Institute.

The LVIA will be undertaken by experienced Chartered Landscape Architects (Chartered Members of the Landscape Institute (CMLI)) at LUC.

6.1 Baseline Conditions

6.1.1 Description

Site Description

The Site (shown on Figure 6.1) 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 (326m 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. Landform 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, Loch Sealg to the east and Loch Claigh and Loch Bhrolluim to the south. The Eisgein (Eishken) Estate Lodge exerts an existing influence of development in the south east of the Site, with occasional scattered historic sheilings along loch shores. A track passes through the east of the Site boundary.

Landscape Character

In 2019, NatureScot (formerly SNH) made available online an updated national Landscape Character Assessment for Scotland[6]. The Site is located across three Landscape Character Types (LCTs), as shown on Figure 6.2. The west of the Site is located within the Prominent Hills and Mountains LCT 326. 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.*

[6] NatureScot, (2019, updated 2022). Scottish Landscape Character Types Map and Descriptions. Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

- *Lower slopes of windswept heather moorland.*
- *Uninhabited.'*

The east of the Site is located within the Rocky Moorland – Outer Hebrides LCT 323. 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*
- *Medium scale.*
- *Predominantly uninhabited and sense of remoteness.'*

The area in the south east of the Site boundary surrounding the Eishken Estate Lodge is located within the Dispersed Crofting LCT 319. 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 focussed 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'*

Coastal and Seascape Character

The character of the Hebridean coastline and seascape will also be considered within the Landscape and Visual Impact Assessment (LVIA). The SNH (now NatureScot) report 'An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms'[7] examines seascape character at a national scale, identifying 33 seascape character units. The North East Lewis (Area 12) and The Little Minch (Area 14) seascape character units are located to the east of the Site.

Designated Landscapes

The Site itself is not designated, however the South Lewis, Harris and North Uist National Scenic Area (NSA) is located approximately 2.5km to the south and south west of the Site boundary at its nearest point, as shown on Figure 6.3. Special qualities of the NSA are noted in the citation and for the wider NSA include:

- *"A rich variety of exceptional scenery*
- *A great diversity of seascapes*
- *Intervisibility*
- *The close interplay of the natural world, settlement and culture*
- *The indivisible linkage of landscape and history*

[7] SNH, (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms. Available online: https://www.nature.scot/doc/naturescot-commissioned-report-103-assessment-sensitivity-and-capacity-scottish-seascape-relation

- *The very edge of Europe*
- *The dominance of the weather"*

Special qualities specific to South Lewis and Harris within the NSA include:

- *"The wild, mountainous character*
- *Deep sea lochs that penetrate the hills*
- *The narrow gorge of Glen Bhaltos*
- *The rockscapes of Harris*
- *Extensive machair and dune systems with expansive beaches*
- *The drama of Ceapabhal and Tràigh an Taoibh Thuath*
- *The landmark of Amhuinnsuidhe Castle*
- *The distinct, well-populated island of Sgalpaigh*
- *The enclosed glens of Choisleitir, Shranndabhal and Roghadail"*

There are no other NSAs within a 20km radius of the Site. The Trotternish NSA is located 40km to the south east of the Site and the Wester Ross NSA is located 44km to the south east of the Site.

Wild Land Areas

Wild Land Areas (WLA) are not statutory designations, but NPF3 recognises wild land as a "nationally important asset" (NPF3, p.42), whilst SPP notes that development plans "*should identify and safeguard the character of areas of wild land as identified on the 2014 SNH map of wild land areas"* (SPP, p.47) and lists areas of wild land as Group 2: Areas of Significant Protection (SPP, Table 1, p.39).

There are no WLAs within the Site, however WLA 31: Eisgein directly abuts the south western Site boundary[8], as shown on Figure 6.3. Key attributes and qualities include:

- *"A very remote area with challenging access over a rugged landform, few visitors, and a strong sense of sanctuary and solitude.*
- *A strong influence of the sea across the area, including an indented, rugged coast, long sea lochs and a distant sea backcloth, contributing to perceived naturalness and awe.*
- *A simple and wide expanse of peatland and hills at the broad scale, containing a very rugged landform at the local level, with a strong sense of naturalness."*

Other WLAs within 20km of the Site include WLA 30: Harris – Uig Hills, located approximately 7.6km to the north west of the Site at its nearest point. Key attributes and qualities include:

- *"A rugged west coast with awe-inspiring landform features, that combine with the sea to increase remoteness and the perceived naturalness and extent of the area.*
- *Awe-inspiring, towering, irregular, rocky mountains that adjoin low-lying peatland or the sea, offering panoramic views and possessing a strong sense of naturalness.*
- *Extensive peatland that is simple at a broad scale, but interwoven with a complex pattern of lochs, lochans, pools and bogs at the local level that highlight the rugged nature of the landform and limit access."*

[8] Two turbines of the consented Muaitheabhal South Extension Wind Farm are located within the WLA.

Visual Baseline

Visual receptors to be considered will include:

- local residents, in respect to settlements, scattered communities and individual residential properties (where relevant);
- people travelling on major roads and ferry routes;
- people using promoted walking routes and cycle routes;
- people engaged in water-based activities; and
- people visiting areas of interest such as visitor attractions, scenic viewpoints and hill summits.

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.

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.

The settlement pattern near the Site comprises dispersed villages and individual properties, primarily located along main roads, including the A859, 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 20.5km to the north east of the Site.

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.

6.2 Potential Sources of Impact

6.2.1 Potential Sources of Impact

The assessment of effects will be based on the project description as outlined in Section 3.0. The changes arising from the construction of the Proposed Development will include:

- The introduction of construction activity and vehicular/personnel movements around the Site and on local roads;
- The creation of a temporary borrow pit and extraction of material;
- The disturbance of areas of land and surface vegetation at the locations of the borrow pits and other ancillary elements, turbine bases and along the access track routes;
- Construction of temporary construction compounds, laydown areas and car park;
- The creation of Site access tracks, including passing places, turning heads, junctions and watercourse crossings;
- Construction of the new control building and substation compound;

- Construction of energy storage systems (if included in the Section 36 application);
- Construction of turbine foundations;
- Construction of crane hardstandings adjacent to each turbine;
- Excavation of trenches and laying of underground cables connecting the turbines to the onsite substation;
- The introduction of tall vertical structures (turbines and anemometer masts) and the use of cranes;
- The need for lighting during construction if work extends into hours of darkness; and
- Site restoration (including restoration of disturbed moorland vegetation).

The changes arising from the operation of the Proposed Development will be associated with the presence of the wind turbines, turbine transformers and ancillary infrastructure including access tracks, onsite substation and Site access tracks.

6.3 Consultation

It is proposed that the following stakeholders will be consulted in relation to the approach and scope of the LVIA, including the assessment of effects on designated landscapes, wild land and effects arising from visible aviation lighting:

- The Local Authority (Comhairle nan Eilean Siar (CnES), Western Isles Council); and
- NatureScot.

6.4 Method of Assessment and Reporting

This section sets out the proposed approach to assessing the potential effects of the Proposed Development on landscape and visual amenity during construction and operation of the Proposed Development.

The primary guidance for LVIA is the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3). The assessment will also draw upon good practice guidance issued by NatureScot and the Landscape Institute.

The LVIA will consider direct and indirect effects on landscape resources and landscape character, and the implications for designated landscapes and wild land areas. The assessment will also assess impacts on visual receptors (people), and cumulative effects, i.e., the incremental effects of the Proposed Development in combination with other existing and proposed wind farm developments. It will examine the nature and extent of effects arising from the introduction of the proposed turbines, as well as the ancillary infrastructure (i.e., access tracks, masts, transformers etc.) which will be assessed during both the construction and operational phases of the Proposed Development.

6.4.1 Desk Based Research and Datasets

The following data sources will inform the assessment:

Landscape character, seascape character and landscape/seascape capacity

- SNH, (2019). Scottish Landscape Character Types Maps and Descriptions.
- SNH, (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms.

Designated Areas and Wild Land

- SNH, (2010). National Scenic Areas in Scotland Map – Special Qualities.

- SNH, (2014). Wild Land Areas map and descriptions.

Data Sources

- Ordnance Survey (OS) Maps at 1:50,000 scale and 1:25,000 scale;
- OS Terrain® 5 mid-resolution height data (DTM) (5m grid spacing, 2.5metres RMSE);
- OS 1:25,000 raster data;
- OS 1:50,000 raster data; and
- OS 1:250,000 raster data.

Cumulative Assessment

- Data from other wind farm applications; and
- The Local Authority and the Energy Consents Unit (websites).

6.4.2 Assessment Methodology

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

6.4.3 Study Area

It is proposed that the Study Area for the LVIA will cover a radius of 45km from the outermost turbines of the Proposed Development in all directions, as shown in Figure 6.1, in accordance with current NatureScot guidance in relation to turbines of 150m or taller blade tip height.

6.4.4 Zone of Theoretical Visibility (ZTV)

Zone of Theoretical Visibility (ZTV) plans will be used to identify which landscape and visual receptors within the study area require consideration in the assessment. Landscape and visual receptors which are unlikely to experience any or very limited theoretical visibility of the Proposed Development will be scoped out of the assessment. The following figures are provided to illustrate the theoretical visibility of the Proposed Development scoping layout:

- Figure 6.2: Blade Tip Height ZTV (225m) & Landscape Character Types (LCTs);
- Figure 6.3: Blade Tip Height ZTV (225m), Designated Landscapes & Wild Land;
- Figure 6.4: Blade Tip Height ZTV (225m) & Visual Receptors; and
- Figure 6.5: Hub ZTV Height (148m) & Visual Receptors.

As noted above, a study area of 45km will be used for the assessment of effects on visual amenity in relation to representative viewpoints, although based on current ZTV analysis (see Figure 6.4 and Figure 6.5) this will be reduced to circa 20km radius to assess the visual effects on settlements and transport routes. Again, based on ZTV analysis, it is proposed that the assessment of effects on landscape character will focus on a study area of 15km radius and the assessment of effects on designated landscapes will focus on a study area of 25km radius from the Proposed Development, in order to identify potential significant effects. The assessment of effects on wild land will focus on a study area of 15km radius. The cumulative assessment will focus on wind energy

developments considered to have potential to give rise to significant cumulative effects. This is likely to primarily be those wind farms in the more immediate landscape context within a circa 20km radius.

6.4.5 Key Receptors to consider in assessment

The selection of receptors to include in the assessment is based on the requirement for EIA to consider the likely significant effects. Effects that are not likely to be significant do not require assessment under the EIA Regulations. Based on baseline conditions, it is proposed the following receptors are scoped into the assessment:

- The Prominent Hills and Mountains LCT 326, Rocky Moorland – Outer Hebrides LCT 323 and Dispersed Crofting LCT 319, and other LCTs/seascape character units within a 15km radius of the Site, where there may be potential for significant effects;
- Potential effects on the special qualities of and views from the South Lewis, Harris and North Uist NSA;
- Potential impacts on the wild land qualities of, and views from the WLA 31: Eisgein;
- Transient views experienced by road and ferry users within a 20km radius of the Site;
- Views experienced by hillwalkers/recreational receptors from popular hill summits, ridges and elevated areas within the study area;
- Views experienced from promoted recreational routes, including the Hebridean Way; and
- Views experienced by residential receptors living within a 10km radius, and/or travelling in the nearby locality of the Site.

6.4.6 Assessment of Effects

Landscape Effects

The assessment of landscape effects will take account of the sensitivity of the landscape, acknowledging any value placed on the landscape through formal designation at either a national or local level. Landscape effects will be determined in relation to the magnitude and type of change to the landscape, and in accordance with HwLDP Policy 61 Landscape, with consideration of the landscape characteristics and special qualities identified in the relevant (2019) SNH Landscape Character Type (LCT) descriptions and the SNH (2005) seascape sensitivity and capacity study[9].

Visual Effects

Visual effects are experienced by people (visual receptors) at different locations across the Study Area, including at static locations (for example from settlements or promoted viewpoints) and transitional locations (such as sequential views experienced from routes, including roads, footpaths, cycle routes or ferry routes). Visual receptors are the people who would be affected by changes in views at these places, and they are usually grouped by what they are doing at those locations (for example residents, motorists, recreational users etc.).

GLVIA3 states that the nature of visual receptors, commonly referred to as their sensitivity, should be assessed in terms of the susceptibility of the receptor to change in views/visual amenity and the value attached to particular views. The magnitude of the effect should be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered to inform a judgement regarding the overall significance of effect.

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[9] SNH, (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms. Available online: https://www.nature.scot/doc/naturescot-commissioned-report-103-assessment-sensitivity-and-capacity-scottish-seascape-relation

Visual effects resulting from the Proposed Development will be considered within the context of the existing baseline conditions, including operational and under construction wind farms. The assessment of visual effects arising from the introduction of the Proposed Development will be based on analysis of turbine hub (nacelle) and blade tip height ZTVs, field studies and consideration of changes in views from representative viewpoints.

The assessment of the visual effects of the Proposed Development will be based on analysis of ZTVs, field studies and assessment of representative viewpoints. Figure 6.4 illustrates a turbine blade tip height (225m) ZTV of the proposed turbine layout with proposed assessment viewpoint locations. Figure 6.5 illustrates a turbine hub height (148m)[10] ZTV of the proposed turbine layout with proposed assessment viewpoint locations. Proposed representative viewpoints for the assessment are set out in Table 6-1, selected to provide a representative range of viewing distances and viewing experiences, including views from settlements, points of interest, sequential views from routes and views from protected areas (e.g., designated landscapes and wild land areas). With the exception of Viewpoint 3: B8060 near Habost Church, all viewpoints were used for assessment of the consented Muaitheabhal, Muaitheabhal East Extension and Muaitheabhal South Extension developments.

[10] for the purposes of this Scoping Report, the rotor diameter (154 m / radius of 77 m) and hub height (148 m) are indicative and a candidate turbine manufacturer and 'worst case' model will be selected for each technical and environmental discipline for the purposes of the EIA

Table 6-1: Proposed LVIA Viewpoints

VP	Viewpoint Name	Easting	Northing	Approximate Distance to Nearest Turbine[11]	Reason for Selection
1	Beinn Mhor	125426	909554	3.5km	Represents views experienced by recreational receptors from hill summit on edge of South Lewis, Harris and North Uist NSA and within WLA 31.
2	B8060, east of the Site	137337	913237	4.1km	Represents views experienced by road users from the access road to settlements north of Loch Sealg.
3	B8060 near Tabost (Habost) Church	133143	919531	4.8km	Represents views experienced by road users and residents to the north of the Site.
4	Leumrabhagh	138076	911889	4.9km	Represents views experienced by residential receptors within one of the nearest settlements to the east of the Site.
5	Taobh a' Ghlinne (Glenside)	137780	915754	5.1km	Represents views experienced by residential receptors to the north east of the Site.
6	Uisinis	133706	906757	5.2km	Represents views experienced by recreational receptors from hill summit on edge of South Lewis, Harris and North Uist NSA and within WLA 31.
7	Baile Ailein	128005	920508	6.7km	Represents views experienced by residential receptors, recreational receptors on the Hebridean Way and road users to the north of the Site.
8	A859 near Lacasaigh (Laxay) Cemetery	134228	922079	7.5km	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.
9	Liuthaid	117625	913566	11.2km	Represents views experienced by recreational receptors from the hill summits within the WLA 30.

[11] Approximate distance from the nearest turbine of the proposed development.

VP	Viewpoint Name	Easting	Northing	Approximate Distance to Nearest Turbine[11]	Reason for Selection
10	A859 near Liurbost	135528	927362	12.9km	Represents views experienced by residential receptors, recreational receptors on the Hebridean Way and road users to the north of the Site.
11	An Cliseam	115465	907280	13.7km	Represents views experienced by residential receptors within the South Lewis, Harris and North Uist NSA and WLA 30.
12	Acha Mor (Achamore)	131406	929313	14.4km	Represents views experienced by nearby residential receptors, recreational receptors on the Hebridean Way and road users.
13	Calanais Standing Stones	121323	933031	20.9km	Represents views experienced by visitors to the ancient prehistoric monument (Scheduled Monument[12]) and highly popular tourist destination.
14	Stornoway War Memorial	141701	934360	21.6km	Represents views experienced by visitors to the memorial and similar views experienced from nearby residential properties.
15	An-Cnoc (Knock)	149417	932183	24.2km	Represents views experienced by residential receptors and road users to the south west of the Site.

6.4.7 Assessment of Visible Aviation Lighting

In the interests of aviation safety, structures including wind turbines, of ≥150m require visible medium intensity aviation lighting[13]. Potential visual effects arising from the necessity for this visible lighting (typically consisting of 2000 candela red lights mounted on the wind turbine nacelle and intermediate 32 candela lights mounted on the wind turbine tower) will be a key consideration. Informed by current NatureScot visualisation guidance and scoping advice, the assessment of visual effects, effects on the special qualities of the South Lewis, Harris and North Uist NSA and assessment of effects on the wild land qualities of WLA 31: Eisgein will consider effects arising from visible aviation lighting.

The assessment will be carried out as part of the LVIA and included within the assessment or as a technical appendix to the EIA Report and will be informed by turbine hub height ZTVs as a starting point to illustrate the areas from which turbine hub (nacelle) mounted lighting may be visible. Visibility of turbine lighting from each

[12] Refer to Chapter 11: Archaeology and Cultural Heritage for the approach to the assessment of cultural heritage assets.
[13] Civil Aviation Authority, (2016). CAA Policy and Guidelines on Wind Turbines CAP 764.

LVIA assessment viewpoint will be considered; however, the aviation lighting impact assessment will focus on viewpoints from which significant effects may be anticipated.

Dusk/night-time baseline photography will be captured and photomontage visualisations will be prepared in accordance with emerging NatureScot guidance from up to three assessment viewpoints, informed by the hub height ZTV for the final Proposed Development layout and the final aviation lighting scheme design. At this stage, consideration will be given to the provision of night time visualisations from the following locations, representing views from local communities looking towards the dark night skies of the South Lewis, Harris and North Uist NSA, WLA 30 and WLA 31:

- Viewpoint 2: B8060, east of Site;
- Viewpoint 3: B8060 near Tabost (Habost) Church; and
- Viewpoint 7: Baile Ailein.

The baseline dusk/night-time context and presence of existing artificial lighting at these locations will be described, with the related sensitivity identified and the magnitude of change arising from the proposed aviation lighting assessed. The predicted effects of aviation lighting on the visual amenity at these viewpoints will be drawn on to provide general comment on the likely effects across the wider Study Area.

Visibility of turbine aviation lighting from key viewpoints and sensitive landscape receptors will be considered within the iterative design of the scheme. A site-specific reduced aviation lighting scheme or other alternative mitigation options will be considered prior to the assessment being undertaken, and developed in collaboration with the appointed aviation consultant for prior agreement with the Civil Aviation Authority (CAA).

6.4.8 Residential Visual Amenity

Effects upon residential visual amenity become a matter of public rather than private interest when properties or groups of properties become widely regarded as unattractive places to live. Given the nearest uninvolved[14] residential properties are located c. 3km from the nearest turbine, a Residential Visual Amenity Assessment (RVAA) to accompanying the LVIA, is not deemed to be necessary and has been scoped out.

6.4.9 Visualisations

Wirelines and photomontage visualisations will be used to consider and illustrate changes to views. Visualisations will be prepared in accordance with NatureScot visualisation guidance. Photomontages will involve overlaying computer-generated perspectives of the Proposed Development over the baseline photography of the existing situation to create photo realistic renders, illustrating how the views will change from the introduction of the Proposed Development. Other wind farm developments visible from each of the viewpoints will be shown on the wirelines.

Ancillary elements such as permanent anemometer masts, access tracks and the onsite substation, and any proposal for energy storage systems should these be considered, will be shown in photomontages for viewpoints within 5km when they would be visible. Beyond 5km, it is considered unlikely that these ancillary elements would form more than a minor element of the entire development when compared to the turbines.

As mentioned above, dusk/night-time photomontages will be prepared from a selection of viewpoints to inform the assessment of visual effects of visible aviation lighting. Representative assessment viewpoints will be agreed with NatureScot and the Local Authority.

[14] The Eishken Estate Lodge is located approximately 1.1km to the south of the nearest proposed turbine. However, this property is financially involved in the proposed development.

6.4.10 Field Surveys

Field survey work will be carried out during several visits, and records will be made in the form of field notes and photographs. Field survey work will include visits to the Site, viewpoints, designated landscapes and wild land areas, and extensive travel around the Study Area to consider potential effects on landscape character and on experiences of views seen by people (visual receptors) from designated landscapes, settlements, and key transport and recreational routes.

6.4.11 Mitigation

The primary form of mitigation for landscape and visual effects, including cumulative effects, is through iterative design of the layout of the turbines and associated infrastructure, as seen from key viewpoints. The design of the Proposed Development will aim to achieve a coherent and balanced turbine layout, in line with guidance provided by NatureScot[15]. The EIA Report will present the rationale behind the final design strategy and document the iterative design process in response to the technical and environmental constraints identified through the EIA process. The objective in designing the wind farm will be 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. It is also recognised that the final layout will need to balance a wide range of technical and environmental considerations.

A reduced aviation lighting scheme will be developed in collaboration with the appointed aviation consultant for prior agreement with the Civil Aviation Authority (CAA), with the objective of avoiding or reducing effects arising from the introduction of visible aviation lighting.

6.4.12 Cumulative Assessment

The cumulative landscape and visual assessment (CLVIA) will be carried out in accordance with the principles outlined in GLVIA3 and NatureScot guidance[16].

The LVIA will consider the potential effects of the addition of the Proposed Development to the existing landscape against a baseline that includes existing wind farms and those under construction. The CLVIA will consider the potential additional effects of the Proposed Development, against a baseline that includes wind farms that may or may not be present in the landscape in the future (i.e., including wind farms that are consented but unbuilt, undetermined applications (including those which may have been refused and are currently at appeal stage), and in some instances scoping stage schemes where it is deemed appropriate and sufficient information is available in the public domain. The proposed Harris – Stornoway 132kV OHL transmission reinforcement project will also be considered.

A review of the existing pattern(s) of wind energy development will be undertaken building upon the list of cumulative schemes set out in Table 6-2 below, considering operational, consented, and proposed wind farms which are the subject of a valid application, up to a 60km radius from the turbines of the Proposed Development, in accordance with current NatureScot guidance.

Table 6-2: Other Wind Farm Developments

[15] SNH, (2017). Siting and Designing Wind Farms in the Landscape – Version 3a. Available online: https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a

[16] NatureScot, (2021). Assessing the cumulative landscape and visual impact of onshore wind energy developments. Available online: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments

Wind Farm	No. of Turbines	Tip height (m)	Status	Approximate Distance (km)
Lemreway	1	42	Operational	3.9km
North Harris	3	86	Operational	14.8km
Arnish Moor	3	76	Operational	16.0km
Stornoway	33	180	Consented	17.0km
Creed Business Park	1	61.14	Operational	19.0km
Beinn Ghrideag Community Windfarm	3	125	Operational	19.0km
Pentland Road	6	121.2	Operational	21.3km
Horshader (Cnoc Airigh Mhic Crishnidh)	1	81	Operational	31.5km
Druim Leathann	14	140	Consented	36.7km
Tolsta	1	77	Operational	37.8km
Baile an Truseil	3	81	Operational	38.0km

The CLVIA will focus on those wind energy developments considered to have potential to give rise to significant cumulative effects in conjunction with the Proposed Development. This is likely to primarily be those wind farms located in the more immediate landscape context of the Site, and in this instance, those located within an approximate 20km radius. Turbines of less than 50m to blade tip will not be included in the detailed assessment of cumulative effects.

Consideration will also be given to 'total' cumulative effects (assessment which considers all current and future proposals, including the Proposed Development). Figure 6.6 illustrates the locations of operational, consented, and proposed wind farms (including those at scoping) within 45km.

6.5 Potential Impacts/Matters Scoped Out of Assessment

Based on the baseline conditions recorded, theoretical visibility indicated on the ZTVs (Figures 6.2, 6.3, 6.4 and 6.5) and distance from the Site, it is proposed that the following are scoped out:

- 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; and
- Effects upon residential visual amenity, in the form of a detailed RVAA.

6.6 References and Standard Guidance

- Landscape Institute and the Institute of Environmental Management and Assessment, (2013). Guidelines for Landscape and Visual Impact Assessment. Third Edition. (GLVIA3).

- Comhairle Nan Eilean Siar, (2021). Outer Hebrides Local Development Plan, Supplementary Guidance for Wind Energy Development.
- Comhairle Nan Eilean Siar, (2018). Outer Hebrides Local Development Plan, Adopted Plan.
- Countryside Agency and SNH, (2002). Landscape Character Assessment: Guidance for England and Scotland.
- Countryside Agency and SNH, (2004). Topic Paper 6. Techniques and Criteria for Judging Capacity and Sensitivity.
- Landscape Institute, (2019). Visual Representation of Development Proposals – Technical Guidance Note 06/19.
- Landscape Institute, (2019). Residential Visual Amenity Assessment (RVAA) – Technical Guidance Note 02/19.
- NatureScot, (2021). Assessing the cumulative landscape and visual impact of onshore wind energy developments.
- NatureScot, (2020). Assessing impacts on Wild Land Areas – Technical Guidance.
- NatureScot, (2020). General pre-application and scoping advice for onshore wind farms.
- SNH, (2019). Scottish Landscape Character Types Maps and Descriptions.
- SNH, (2017). Siting and Designing Wind Farms in the Landscape. Version 3a.
- SNH, (2017). Visual Representation of Wind Farms Guidance. Version 2.2.
- SNH, (2015). Spatial Planning for Onshore Wind Farms: Natural Heritage Considerations.
- SNH, (2014). Wild Land Areas map and descriptions.
- SNH, (2010). National Scenic Areas in Scotland Map – Special Qualities.
- SNH, (2005). An assessment of the sensitivity and capacity of the Scottish seascape in relation to windfarms.

6.7 Questions for Consultees

Q6.1: Can consultees confirm that GLVIA3 is an appropriate methodological starting point for the LVIA assessment? Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

Q6.2: Are there other sources of information which should inform the baseline and assessment of potential effects on landscape character and designated landscapes?

Q6.3: Are there any comments on the proposed list of representative assessment viewpoint locations listed in Table 6-1 and shown on Figure 6.4 and Figure 6.5?

Q6.4: Are there any comments on which viewpoints should be used to also represent dusk/night-time views?

Q6.5: Are there any further wind farms, in addition to those shown on Figure 6.6 and include in Table 6-2, to consider as part of the cumulative assessment?

Q6.6: Are there any further landscape or visual receptors to be considered within the assessment (i.e., where it is expected that significant effects may occur)?

Q6.7: Are there any comments on the designated landscapes to be scoped in and scoped out of the assessment?

Q6.8: Are there any comments on the Wild Land Areas scoped in and scoped out of the assessment?

7.0 Onshore Ecology

Wind energy developments can influence ecology both directly through habitat loss and indirectly through disturbance or displacement effects on habitats and species. The Ecology chapter of the EIA Report will identify the baseline (non-avian) ecology of the Proposed Development Site and the surrounding area and will assess the potential effects on ecological features. National and local planning policies, best practice guidance, consultation and any mitigation requirements identified will be taken into account in the ecological impact assessment. Potential impacts on birds are considered separately in Chapter 8: Ornithology.

The ecology assessment will be undertaken by experienced chartered ecologists (members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

7.1 Baseline Conditions

Extensive ecological survey work has been carried out within the Proposed Development Site and associated study areas from 2004-2012, as part of the applications for the consented developments. Field work carried out to inform the 2004, 2011 and 2013 EIA Reports have identified that the Site was formed primarily of wet dwarf shrub heath and blanket bog habitat, with open water in the form of lochs and lochans interspersed throughout. Small pockets of dry dwarf shrub heath and acid grassland communities were also recorded on slopes and in elevated areas within the Site. A desk study has been undertaken for the Site and is provided in Appendix B.

7.1.1 Datasets

This scoping report is based on a review of relevant existing data; notably that provided in the following:

- Land Use Consultants (2004). Muaitheabhal Windfarm: Environmental Statement;
- Land Use Consultants (2006). Muaitheabhal Windfarm: Supplementary Environmental Information;
- Land Use Consultants (2009). Muaitheabhal Windfarm: Supplementary Environmental Information;
- Land Use Consultants (2011). Muaitheabhal Windfarm East Extension Environmental Statement, Supplementary Environmental Information;
- Land Use Consultants (2013). Muaitheabhal Windfarm South Extension: Environmental Statement.

Other online sources were also reviewed as part of the desk study (provided in Appendix B), including:

- Aerial photographs (google earth);
- NatureScot SiteLink website;
- British Geological Survey;
- Ordnance Survey 1st and 2nd Edition Mapping; and
- National Biodiversity Network (NGN) Gateway (for commercially available records).

7.1.2 Key Receptors to consider in assessment

There are no statutory designated sites within 2km of the Site and two statutory designated sites within 10km of the Site, see Table 2 for full details.

Table 2: Statutory Designated Sites

Site Name	Designation	Approximate Distance and Direction from Site	Reasons for Designation
Inner Hebrides and the Minches	Special Area of Conservation (SAC)	6.5km from central point (adjacent to the southern boundary)	Harbour porpoise
Lewis Peatlands	RAMSAR	9.2km	Blanket bog, oligotrophic lochs, dystrophic lochs, lochans and pools, wet heath

Given the nature of the Proposed Development, it is unlikely that works will impact the qualifying features of the statutory designated sites.

7.2 Potential Sources of Impact

7.2.1 Potential Sources of Impact

Construction

During construction of the Proposed Development, in the absence of mitigation, it is anticipated that impacts may arise from:

- Habitat loss or damage (permanent or temporary) due to ground/excavation works (e.g. borrow pits) and construction of access tracks, turbine foundations and other wind farm infrastructure; including, drainage impacts to bog and other water sensitive habitats and impacts of airborne pollution (i.e., dust);
- Severance of habitat connectivity;
- Possible changes to groundwater flows affecting potential groundwater dependent terrestrial ecosystems (GWDTEs), especially where deep excavations are required (e.g. at proposed borrow pit locations);
- Loss of places of shelter for otter and near watercourse crossings;
- Disturbance to, displacement and mortality of protected or notable fauna due to vehicular traffic, operating plant and the presence of construction workers (e.g. disturbance of an otter using a place or rest during construction)); and
- Sedimentation of other pollution of watercourses due to run off from construction activities and vehicular traffic (including indirect impacts to aquatic species).

Operation

During operation of the Proposed Development, in the absence of mitigation it is anticipated that impacts may arise from:

- Disturbance, displacement and mortality of fauna due to vehicular traffic, presence of site operatives and turbine operation (e.g. otter road collision); and

- Environmental incidents and accidents (e.g. spillages) on freshwater habitats, fish and aquatic invertebrates.

7.3 Consultation

Consultation with NatureScot was undertaken regarding scoping out bats from the assessment. A phone call was had with Mark Macdonald on the 12th May 2022 where SLR stated their intention to scope bats out of the assessment for the Uisenis Wind Farm due to limited potential for bats to be using the area. It was agreed that an ad hoc activity survey would be undertaken in the vicinity of Eishken Lodge in order to confirm no activity.

The Outer Hebrides Fisheries Trust (OHFT) has been approached to consult on an acceptable scope for fish surveys at this stage, at the time of writing no response has been received. Further consultation will be undertaken with Marine Science Scotland and NatureScot once consultation has been completed with OHFT.

7.4 Method of Assessment and Reporting

7.4.1 Desk Study

A desk study has been carried out in order to inform this scoping report (Appendix B); a search was carried out for any relevant data collected for other proposed developments in this area.

At the time of writing, the project is awaiting a response from Outer Hebrides Biological Recording (OHBR), any additional information received will be used to inform the assessment.

7.4.2 Baseline Field Surveys

The following field surveys have been commenced and will be completed in Summer 2022:

- UKHab and National Vegetation Classification (NVC) Survey;
    - Protected Mammals Survey: Specific focus on otter; and
    - Bat activity survey- Informal activity survey round Eishken Lodge to inform scoping out of bats;
- Fish Habitat Assessment (depending on the outcome of fisheries consultation the approach to fish/ fish habitat survey and assessment may vary from current plans).

Consideration of whether potentially suitable habitat for other protected species is present and could be affected (e.g. reptiles) will be undertaken in conjunction with the mammal surveys.

Further details regarding each survey are provided in Section 7.4.3 sections below. The results of each survey will be reported in full within baseline survey reports, which will be Technical Appendices to the EIA report.

Approach to Bats

Based on the desk study data (see Appendix B) and given the habitats known to be present onsite, which have very low suitability for roosting or foraging bats, formal bat survey are not considered to be required. Following consultation with NatureScot, it was agreed that an ad-hoc activity survey around the Eishken Lodge would be carried out. If no evidence of bat presence is found, no further bat surveys will be required.

If bats are found to be present during this survey, then bat surveys will be implemented in consultation with NatureScot.

7.4.3 Assessment Methodology

UKHab and NVC Survey

The habitat surveys will take account of the Site footprint plus, where accessible, a 250m buffer of the Site boundary. Historically this level of habitat survey has been undertaken following Phase 1 methodology[17]. Phase 1 survey is now being replaced with a more modern survey method, UKHab[18], which is better for identifying priority habitats. UKHab surveys will be completed to a minimum detail of Level 4.

NVC surveys will be undertaken in conjunction with UKHab surveys and will map in detail potentially important semi-natural vegetation communities onsite to allow identification of potential GWDTE and Annex 1 habitats. Methods will follow NVC users' handbook[19] and will focus on potentially important natural/semi-natural habitats only i.e., excluding improved grassland and any other artificial habitats.

Protected Mammals Survey

The combined protected mammal surveys will be undertaken within the Site footprint and a 100 m buffer (250 m along watercourses to allow for the identification of otter resting sites within disturbance distances of proposed working areas), access permitting. The surveys will look for signs of otter and other protected or notable mammal species and follow standard methodology[20] [21] [22].

The Site is currently assessed to be unlikely to support roosting bats and has low habitat suitability for foraging and commuting bats. As mentioned in Section 1.3, an ad hoc bat activity survey will be carried out within proximity of Eishken Lodge in order inform scoping out of further bat surveys.

Fish Habitat Assessment

A fish habitat assessment will be undertaken in accordance with standard guidelines[23]. Results of the assessment will inform the likelihood of the presence of salmonid, eels, freshwater pearl mussel and other protected/ BAP species and therefore highlight the need for further species specific surveys.

7.4.4 Mitigation

Mitigation, compensation and enhancement measures will be developed as appropriate and details will be provided in the ecology chapter of the EIA Report. The primary form of mitigation will be avoidance by design, e.g. the avoidance where practical of important habitats such as blanket bog located on deep peat. A range of 'standard' good practice measures will be implemented during construction to avoid and reduce potential impacts.

7.4.5 Impact Assessment Reporting

The Ecological Impact Assessment that will be presented in the EIA Report chapter will be based on current Chartered Institute of Ecological and Environmental Management (CIEEM) guidelines[24] which have been endorsed by NatureScot. It will also draw on other, more specific guidance as appropriate. Liaison with other technical specialist (e.g. hydrogeologists with respect to GWDTEs) will be carried out as required.

The impact assessment process will involve the following steps:

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[17] Joint Nature Conservation Committee, 2010. Handbook for Phase 1 habitat survey - a technique for environmental audit: Revised Re-print. JNCC, Peterborough.
[18] https://ecountability.co.uk/ukhabworkinggroup-ukhab/
[19] Rodwell, JS, 2006. National Vegetation Classification: Users' Handbook. JNCC, Peterborough.
[20] Chanin P (2003a) *Ecology of the European Otter*. Conserving Natura 2000 Rivers, Ecology Series No. 10. English Nature, Peterborough.
[21] Chanin P (2003b) *Monitoring the Otter*. Conserving Natura 2000 Rivers Monitoring Series No 10.
English Nature, Peterborough.
[22] Strachan R (2002) Mammal Detective. Whittet Books Ltd. London.
[23] Scottish Fisheries Co-ordination Centre (2007). *Habitat Surveys - Training Course Manual*. SFCC, Faskally.
[24] CIEEM (2019). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*, Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

- Identifying important ecological receptors, i.e., receptors of sufficient value and/ or receptors subject to legal protection, for which detailed assessment is necessary;
- Identifying and characterising impacts on important ecological receptors during the construction and operational phases: in accordance with CIEEM guidelines when describing impacts, reference will be made to the following: (area or number of individuals to be impacted); extent; duration; and reversibility i.e., will the impact be permanent or reversible over a given timescale;
- Assessing the significance of effects by considering unmitigated impacts using appropriate guidance and professional judgement;
- Incorporating measures to avoid and mitigate (reduce) potentially significant effects;
- Assessing the significance of any residual effects after mitigation;
- Identifying appropriate compensation measures to offset significant residual effects (if required);
- Identifying opportunities for biodiversity enhancements; and
- Cumulative impact assessment along with other developments (operational and planned).

7.4.6 Cumulative Assessment

The ecological impact assessment will include cumulative assessment to assess the impact of the Proposed Development along with other developments (operational and planned) in proximity of the Proposed Development.

7.5 Potential Impacts/Matters Scoped Out of Assessment

Based on the information currently available and the project description, a number of matters are proposed to be scoped out of the EIA for this topic. The matters are described below, together with a concise justification for scoping them out:

- The need for water vole, badger, amphibian, pine marten, red squirrel are not considered to be necessary as these species have not been recorded on Lewis.
- The need for formal bat surveys (other than those specified above) are not currently considered to be necessary due to the habitats on the Site being of low value to bats.

7.6 References and Standard Guidance

The ecology assessment will be carried out in accordance with the principles contained within the following guidance documents:

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, Freshwater, Coastal and Marine (V1.1);
- Scottish Executive (2011). Planning Circular 3: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011;
- Scottish Executive Rural Affairs Department (SERAD) (2000). Habitats and Birds Directives, Nature Conservation: Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ("The Habitats and Birds Directives"). Revised Guidance Updating Scottish Office Circular No 6/1995;
- Scottish Government (2001). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements;
- Scottish Government (2010). Management of Carbon-Rich Soils;

- Scottish Government (2016). Draft Peatland and Energy Policy Statement;
- Scottish Government (2017). Draft Climate Change Plan – the draft Third Report on Policies and Proposals 2017 – 2032;
- Scottish Environment Protection Agency (SEPA) (2017a). Guidance Note 4 – Planning guidance on on-shore windfarm developments;
- SEPA (2017b). Guidance Note 31 – Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE);
- Scottish Government, SNH and SEPA (2017). Peatland Survey – Guidance on Developments on Peatland;
- European Commission (EC) (2011). Wind energy developments and Natura 2000;
- Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), Historic Scotland (2015). Good Practice During Windfarm Construction (3rd Edition);
- SNH (2015). Scotland's National Peatland Plan;
- SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments;
- Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation trust (BCT);
- Hundt, L. (2012). Bat Surveys: Good Practice Guidelines (2nd edition). BCT;
- Natural England (2014). Natural England Technical Information Note TIN 051. Bats and Onshore Wind Turbines – Interim Guidance (3rd Edition);
- Rodrigues et al. (2014). Guidelines for consideration of bats in wind farm projects. Revision 2014. EUROBATS Publication Series No. 6; and
- SNH, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Ecotricity Ltd., the University of Exeter and the BCT (2019). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

7.7 Questions for Consultees

- Do consultees agree that the methodology and scope of the assessment is appropriate?
- Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ecological assessment?

8.0 Ornithology

This section describes the baseline conditions, identified potential sources of impacts, consultation to date, proposed methods of assessment and reporting, and scope of assessment of the Proposed Development in relation to ornithological features.

The assessment is being undertaken by Rafe Dewar, a Principal Ornithologist at MacArthur Green, with 17 years' experience working in the consultancy sector on a large number of onshore and offshore renewables developments across the UK. He has been the lead author of various EIA Report chapters, Habitats Regulations Appraisals, technical reports and Habitat Management Plans for onshore and offshore developments. His involvement in projects has extended through all aspects of onshore wind farm developments from scoping to public hearings and post-consent advice.

8.1 Baseline Conditions

Baseline ornithology conditions have been/will be established from the following sources:

- Results of baseline ornithology surveys undertaken from September 2017 to August 2018, and those ongoing since March 2022 that will continue until March 2023;
- Historic baseline data that overlaps with the Site boundary, that was collected up to 2011 for the consented Muaitheabhal Wind Farm Main Consent[25], Muaitheabhal East Extension[26] and Muaitheabhal South Extension[27] (it should be noted that these projects are consented and have been or are being implemented but are not built and that the Proposed Development would replace these consented projects);
- Long-term local golden eagle *Aquila chrysaetos* and white-tailed eagle *Haliaeetus albicilla* breeding data provided by Robin Reid (Lewis & Harris Raptor Study Group member);
- Satellite data from local golden eagle and white-tailed eagle tagged as part of a programme conducted by Natural Research Projects and associates; and
- A desk study to confirm the location and qualifying features of designated sites within potential zones of influence of the Proposed Development.

8.1.1 Baseline Surveys

The following baseline surveys have been undertaken to date (June 2022) or will be completed by the end of March 2023. All surveys are undertaken in line with the appropriate guidance (SNH 2017, Hardey *et al.* 2013, Gilbert *et al.* 1998) and survey areas are detailed below. All survey areas were created using survey-specific buffers based on a maximum developable turbine area (larger than the scoping layout) provided at the time of survey commencement.

- Flight activity surveys: five Vantage Point (VP) locations, September 2017 to August 2018 and March 2022 to March 2023 (two breeding seasons and two non-breeding seasons; minimum of 36 hours per season as per SNH 2017);

[25] Consented January 2010.
[26] Consented December 2011.
[27] Consented September 2015.

- Scarce[28] breeding bird surveys: 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;
- 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.

8.1.2 Designated Sites

There are no statutory designations containing ornithological features 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, as listed below.

- Lewis Peatlands SPA (underpinned by the Lewis Peatlands Ramsar site) – 7.2km to the north and 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) – 10.8km to the south east and 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 – 13km to the west and designated for golden eagle.
- West Coast of the Outer Hebrides marine SPA (mSPA) – 16km to the south west 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.

8.1.3 Ornithological Activity

The Site boundary overlaps with two, and possibly three golden eagle territories, with other territories adjacent. 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 Site. Long-term breeding data, and satellite tag data are available for both species.

Merlin was recorded breeding within the Site during the 2017-18 surveys and it is likely birds have also attempted to breed there in 2022. Other raptor species such as hen harrier *Circus cyaneus* and peregrine *Falco peregrinus* are occasionally present but there has been no breeding evidence at least since 2018.

Both black-throated divers and red-throated divers are present on waterbodies within the 2km survey area (see Section 8.2.2 for a description of study areas), during the summer, and one black-throated diver breeding attempt has been confirmed in 2022. In 2018, at least two pairs of black-throated diver attempted to breed within 2km of the Site, and at least two pairs of red-throated diver showed signs of territorial behaviour; however, no evidence of a successful nesting attempt was recorded.

[28] 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.

Wader species that breed within the site and surrounding area include greenshank around waterbodies, and dunlin and golden plover on the higher moorland areas. In 2018, it was considered there were a minimum of six greenshank territories, 11 dunlin territories and 47 golden plover territories within the 2018 survey area.

During non-breeding surveys in 2017-18, wildfowl were uncommon, with a small number of whooper swan *Cygnus cygnus* and pink-footed goose *Anser brachyrhynchus* flights recorded.

8.2 Potential Sources of Impact

8.2.1 Potential Sources of Impact

The assessment will consider the following identified potential impacts associated with construction and operation of the Proposed Development as detailed below. Where appropriate, these construction and operational impacts will also be considered within a cumulative assessment context.

- Construction Impacts
    - Temporary and permanent habitat loss/alteration/fragmentation associated with the Proposed Development infrastructure, including loss of nesting, roosting or foraging habitat; and
    - Temporary visual and noise disturbance associated with construction activities.
- Operational Impacts
    - Displacement from nesting, roosting or foraging habitats around operational turbines and other permanent infrastructure, including barrier effects;
    - Risk of collisions with operational wind turbine blades or any other permanent infrastructure; and
    - Impacts relating to turbine lighting.

8.2.2 Study Area

The EIA Report will incorporate the following study areas which will all be buffered from the final layout:

- Designated sites: the Site and a 20km study area (SNH 2016a);
- Collision risk modelling: the results of the flight activity surveys will be used to inform collision risk modelling. A Collision Risk Analysis Area (CRAA) will be created using GIS Delaunay triangulation[29] around the outermost proposed turbine locations to create a wind farm area which will then be buffered by 500m (as per SNH 2017);
- Scarce breeding birds: the Site and a 2km study area (800m for an access track) (SNH 2017);
- Breeding waders and wintering waders, raptors, owls and wildfowl: Proposed Development and a 500m study area (SNH 2017); and
- Cumulative assessment: as per SNH (2018a), the Natural Heritage Zone (NHZ) level is considered practical and appropriate for breeding species not connected to designated sites (for the Site, the relevant NHZ will be Coll, Tiree and the Western Isles NHZ 3).

[29] Delaunay triangulation is a form of mathematical/computational geometry where a given set of points (in this case the turbine locations) are all joined to create discrete triangles. Further information is available here: https://uk.mathworks.com/help/matlab/math/delaunay-triangulation.html

8.2.3 Key Features to Consider in Assessment

Whilst it is not possible to definitively scope out specific target species from the assessment prior to completion of surveys, undertaking collision modelling, and a review of the ornithological baseline against the final design, considering the information available regarding the species assemblage and distribution onsite, it is considered that breeding Schedule 1 and/or Annex I species are likely to be considered as the Important Ornithological Features (IOFs), as per CIEEM 2018 guidance and therefore scoped into the assessment. These are most likely to be: black-throated diver, red-throated diver, golden eagle, white-tailed eagle, merlin, greenshank, dunlin and golden plover.

8.3 Consultation

All consultation relating to ornithological matters that was conducted as part of the consented Muaitheabhal Wind Farm Main Consent, Muaitheabhal East Extension and Muaitheabhal South Extension will be considered for the Proposed Development, where appropriate.

NatureScot was consulted in March and April 2022 (meeting and subsequent email communication) to reach agreement on the scope of the 2022 breeding season bird surveys, and vantage point coverage for flight activity surveys. Confirmation was received in May 2022 that the planned surveys are suitable and sufficient.

8.4 Method of Assessment and Reporting

8.4.1 Assessment Methodology

Impacts on IOFs will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential impacts will follow guidelines published by CIEEM (2018) and NatureScot (SNH 2018b, 2018c).

The assessment will involve the following process:

- Identifying potential impacts of the Proposed Development;
- Considering the likelihood of occurrence of potential impacts;
- Defining the nature conservation importance and conservation status of relevant populations for each IOF to determine overall sensitivity;
- Establishing the magnitude of the likely impact (both spatial and temporal) on each IOF;
- Based on the above information, making a judgement as to whether or not the consequent 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 impact where required;
- Considering opportunities for enhancement where appropriate; and
- Concluding residual effects after mitigation, compensation, and/or enhancement.

Where appropriate, the assessment will take into consideration specific measures of analysis, most likely collision risk modelling using the Band *et al.* (2007) model, and population modelling, to help quantify levels of significance.

8.4.2 Guidance and Legislation

The key sources of guidance and legislation relating to ornithology are listed below.

The assessment will be undertaken in line with the following European legislation and guidance:

- Directive 2009/147/EC on the Conservation of Wild Birds (the EU Birds Directive);
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (the Habitats Directive); and
- Environmental Impact Assessment Directive 2014/52/EU (the EIA Directive).

The following national legislation and policy advice will be considered as part of the assessment:

- The Wildlife and Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act 2004 (as amended);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) (The Habitats Regulations);
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations);
- Circular 1/2017: The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
- Planning Advice Note 60: Planning for Natural Heritage (Scottish Government 2000); and
- Planning Advice Note (PAN) 1/2013 – Environmental Impact Assessment, Revision 1.0 (Scottish Government 2017).

The following guidance will be considered as part of the assessment:

- CIEEM (2018) Guidelines for Ecological Impact Assessment;
- NatureScot guidance on assessment of effects of wind farms on birds (SNH 2000, 2009, 2016a, 2016b, 2017, 2018a, 2018b, 2018c, 2019; NatureScot 2020a, 2020b);
- Scottish Executive Rural Affairs Department (SERAD) (2000);
- The Western Isles Local Biodiversity Action Plan;
- Birds of Conservation Concern (BoCC) 5th report (Stanbury *et al.* 2021); and
- The Scottish Biodiversity List[30].

8.4.3 Mitigation

Significant impacts on birds will be avoided/minimised where possible during the design layout process, based on the locations of known nest and roost sites, key foraging areas, and likely sensitivities of IOFs. Good practice during construction (SNH 2019) and operation of the Proposed Development will also be implemented (and the assessment will be undertaken on the assumption of this). This would include the following:

- A Bird Disturbance Management Plan (BDMP) would be implemented as part of a Construction Environmental Management Plan (CEMP) or similar during the construction phase, to ensure that all reasonable precautions are taken to adhere to the relevant wildlife legislation;
- Pre- and during-construction surveys carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ornithologist would take place as part of the BDMP; and

[30] Available at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list

- A Habitat Management Plan (HMP) would be developed for the operational phase and agreed with consultees, to mitigate or enhance habitat for IOFs and to provide wider biodiversity improvements.

Where unmitigated significant effects on IOFs are identified, additional measures to prevent, reduce and where possible offset these adverse impacts will be proposed, in order to conclude a non-significant residual effect.

8.4.4 Reporting

The ornithology chapter of the EIA Report will consider the potential direct, indirect, and cumulative impacts that the construction and operation of the Proposed Development could have on IOFs. The assessment will be supported by technical appendices that will include details of survey methodologies, all survey data and details of any collision risk modelling or population modelling. Sensitive information relating to the location of nest sites of Schedule 1 species will be included in a Confidential Annex.

Consideration of effects on SPAs will be undertaken within a Habitats Regulations Appraisal context, with information to inform an appropriate assessment being included, should any likely significant effects to any SPA qualifying features be identified.

8.4.5 Cumulative Assessment

The ornithology chapter will assess potential cumulative effects of the Proposed Development combined with other relevant projects.

NatureScot (SNH 2018a) has provided guidance on assessing the cumulative effects on birds. The assessment will follow the principles set out in that guidance.

Cumulative effects may include cumulative disturbance-displacement, collision mortality, habitat loss or barrier effects.

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.

8.5 Potential Impacts/Features Scoped Out of Assessment

On the basis of the baseline data available to date, experience from other relevant projects and policy guidance or standards (e.g., CIEEM 2018, SNH 2018c), the following species will be scoped out since significant effects are considered unlikely:

- 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);
- 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; 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.

Subject to the results of the collision risk modelling, any target wader, raptor or owl species not identified to be breeding within the relevant study area will be scoped out of the assessment.

On the basis of the SPA connectivity guidance provided by NatureScot (core foraging ranges, SNH 2016a), the habitats present on and surrounding the Site (upland moorland) and the qualifying features for which the SPAs, Ramsar sites and SSSIs within 20km are designated (section 8.1.2), there is considered to be no connectivity between the Lewis Peatlands SPA (and associated Ramsar site), North Harris Mountains SPA, Shiant Isles SPA (and associated SSSI) or West Coast of the Outer Hebrides mSPA and the Proposed Development. It is therefore proposed to scope all designated sites out of the assessment.

8.6 References and Standard Guidance

- Band, W., Madders, M. and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at Windfarms. In: de Lucas, M., Janss, G.F.E. and Ferrer, M. (eds.) Birds and Windfarms: Risk Assessment and Mitigation. Pp. 259-275. Quercus, Madrid.
- CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Gilbert, G., Gibbons, D. W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.
- Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: a field guide for surveys and monitoring (3rd edition). The Stationery Office, Edinburgh.
- NatureScot (2020a). General Pre-application and Scoping Advice to Developers of Onshore Wind Farms.
- NatureScot (2020b). The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures.
- Scottish Natural Heritage (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action. SNH Guidance Note.
- Scottish Natural Heritage (2009). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees.
- Scottish Natural Heritage (2016a). Assessing connectivity with Special Protection Areas (SPAs).
- Scottish Natural Heritage (2016b). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees Version 2.
- Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms.
- Scottish Natural Heritage (2018a). Assessing the cumulative impacts of onshore wind farms on birds. SNH Guidance Note.
- Scottish Natural Heritage (2018b). Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas.
- Scottish Natural Heritage (2018c). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.
- Scottish Natural Heritage joint publication (2019). Good Practice during Wind Farm Construction. 4th Edition.
- SERAD (2000) Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ('the Habitats and Birds Directives'). Revised Guidance Updating Scottish Office Circular No 6/1995.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114:723-747.

8.7 Questions for Consultees

- Do consultees agree that, subject to further information becoming available from the field surveys and a desk study, the scope of IOFs to be included in the assessment is appropriate?
- Do consultees agree that all designated sites can be scoped out of the assessment?
- Do consultees agree that the desk study and the baseline surveys (September 2017 to August 2018 and March 2022 to March 2023) will provide sufficient data to inform a robust impact assessment?
- Do consultees agree that the methodology and scope of the assessment is appropriate?
- Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ornithology assessment?

9.0 Soils, Geology, Hydrogeology and Hydrology

This section outlines the proposed scope of the EIA to assess the significant effects from the Proposed Development on soils, geology, hydrogeology and hydrology.

Much is already known about the application Site as a result of the previous Muaitheabhal Wind Farm Main Consent, Muaitheabhal East Extension and Muaitheabhal South Extension Section 36 consent applications and the studies completed to inform these assessments. The scope of the proposed soils, geology, hydrogeology and hydrology assessment reflects the previous studies and existing knowledge of the Site and surrounding area.

The Soils, Geology, Hydrogeology and Hydrology assessment will be undertaken by experienced members of SLR's hydrology and Land Quality & Remediation groups. Members of the team have worked on more than 100 wind farm developments providing both pre and post consent services, in hydrological and geological services.

9.1 Baseline Conditions

9.1.1 Description

The Site is located in the south east of Lewis within the Park (Pairc) peninsula. Elevations on the Site vary between 280m Above Ordnance Survey (AOD) near the summit of Beinn Mheadhanach to approximately 10m AOD along the banks of Loch Eisgein within the centre of the Site and 0m AOD along the banks of the sea loch Loch Sealg along the southern Site boundary.

Geology and Hydrogeology

The site is shown by the British Geological Survey (BGS) to be underlain by units of the Outer Hebrides Thrust Zone Mylonites Complex, comprising protocataclasite, cataclasite and mylonite. A small area within the northern extent of the site is shown to be underlain by amphiboles of the Lewisian Complex. Several inferred faults are noted across the Site.

BGS indicate that no superficial deposits have been mapped at the Site, with the exception of a small area of peat and till recorded within the western and south western extent of the Site respectively.

The superficial deposits recorded and the bedrock beneath the Site are unlikely to contain significant groundwater. The bedrock has been classified by BGS as a low productivity aquifer whereby small amounts of groundwater may be present within the near surface weathered zone or secondary fractures.

Soils and Peat

Soil mapping shows that the soils at the Site comprise peaty gleys and peaty gleyed podzols with distrophic semi-confined peat.

Peat probing exercise has been completed as part of the previous planning applications. Peat probing was generally confined to the proposed wind farm layout (turbines and access roads etc) of the different planning applications. More than 12,000 peat probes were recorded across the Site so peat depths are well understood. However, additional peat probing will be required to survey areas which have no data, in line with best practice guidance (SEPA Peatland Survey Guidance, 2017).

Published priority peatland mapping by NatureScot indicates that the majority of the site is located within Class 1 or Class 2 peatland which is considered to be of high conservation value.

Hydrology

The Site is located in an area with a dense network of surface water features with numerous watercourses and lochs noted across the Site.

The majority of the Site is located within the surface water catchment of Loch Sealg, in particular sub catchments of the Abhainn Cheothadail and the Abhainn Gleann Airigh an Domhnall. The Abhainn Cheothadail flows generally eastward through the centre of the Site before discharging into Loch Sealg near Eisgein (Eishken) within the south eastern corner of the Site. The Abhainn Gleann Airigh an Domhnall drains the south western corner of the Site and flows generally eastward before discharging into Loch Sealg along the southern boundary. The southern extent of the Site is drained by several smaller tributaries of Loch Sealg.

The north western extent of the Site is located within surface water catchment of the Abhainn Glas which is part of the larger Seaforth River catchment. The Abhainn Glas flows generally northwards before discharging into the Abhainn Gleann Quirn approximately 1km north of the site. The Seaforth River flows westwards to the north of the Site before discharging into Loch Seaford approximately 1.8km north west of the Site.

Given the rural nature of the Site, no public water supplies are expected within the Site. The properties near Eisgein (Eishken) are thought to be supplied by private water supplies; however, this will be confirmed as part of the EIA.

SEPA flood mapping confirms flood extents within the Site are typically confined to the watercourse corridors and loch edges. A slightly wider floodplain is noted within the centre of the Site, associated with the Abhainn Cheothadail.

Review of NatureScot SiteLink website confirms that there are no geological or water dependent designated sites located within the Site boundary.

9.1.2 Datasets

The following datasets have been used to view and inform this section of the scoping report:

- previous Muaitheabhal Wind Farm Main Consent, Muaitheabhal East Extension and Muaitheabhal South Extension Section 36 consent applications;
- Magic Map, available at https://magic.defra.gov.uk/MagicMap.aspx to view topographic and watercourse data;
- BGS Onshore GeoIndex, available at https://www.bgs.ac.uk/map-viewers/geoindex-onshore/;
- James Hutton Institute National Soils map of Scotland and Carbon and peatland 2016 map, available at https://soils.environment.gov.scot/; and
- NatureScot SiteLink, available at https://sitelink.nature.scot/home;
- SEPA flood maps available at https://www.sepa.org.uk/environment/water/flooding/flood-maps/.

9.1.3 Key Receptors to consider in assessment

The geological, hydrogeological and hydrological receptors that will be considered as part of the EIA include slope stability, deep peat, watercourse locations, surface water and groundwater quality, areas of potential flooding, private water supplies, and groundwater dependent terrestrial ecosystems.

9.2 Potential Sources of Impact

9.2.1 Potential Sources of Impact

Without mitigation or adherence to best practice, impacts on soils and peat, geology, hydrology and hydrogeology could occur during the two main stages of development (construction and operation). A summary of the potential effects on ground conditions and the water environment resulting from construction, and operation of a wind farm is provided below. These will be considered in the EIA Report.

Potential Impacts During Construction

- disturbance and loss of deposits of peat;
- ground instability (inc. peat slide risk);
- impacts on surface water and groundwater quality from pollution from fuel, oil, concrete or other hazardous substances;
- discharge of sediment-laden runoff to drainage system and watercourses;
- increased flood risk to areas downstream of the Site during construction through increased surface run-off;
- changes in groundwater levels from dewatering excavations;
- potential change of groundwater flow paths and contribution to areas of peat and groundwater dependent terrestrial ecosystems (GWDTEs);
- disturbance of watercourse bed and banks from the construction of culverts;
- potential pollution impacts to public and private water supplies; and
- disturbance and or pollution resulting from borrow pit formation and use.

Potential Impacts During Operation

- increased runoff rates and flood risks, resulting from increases in areas of tracks and hardstanding at turbines;
- changes in natural surface water drainage patterns (which may effect water contribution to areas of peat and GWDTE);
- changes to groundwater levels and groundwater movement;
- longer term impacts on abstraction for water supplies, particularly any supplies dependent on groundwater; and
- pollution impacts on surface water quality from maintenance work.

9.2.2 Study Area

The study area will include all the proposed site infrastructure and a 1km buffer from the Site boundary.

The study area for potential cumulative effects will use the catchments within the study area, with a maximum downstream distance of 5km from the Proposed Development. Beyond this 5km distance, any effect is considered to be so diminished as to be undetectable and therefore not significant.

9.3 Consultation

Consultation and data requests will be conducted with the following bodies:

- Comhairle nan Eilean Siar Council;
- SEPA;
- NatureScot;
- Scottish Water;
- Western Isles District Salmon Fisheries Board; and
- Outer Hebrides Fisheries Trust.

9.4 Method of Assessment and Reporting

The potential effects from the Proposed Development on ground conditions and the water environment will be assessed by completing a desk study and field investigation followed by an impact assessment, the processes of which are detailed below.

9.4.1 Baseline Data Collection

Desk Study

An initial desk study will be undertaken to determine and confirm the baseline characteristics by reviewing available information relating to soils and peat, geology, hydrology, and hydrogeology such as groundwater resources, licensed and unlicensed groundwater and surface water abstractions, public and private water supplies, surface water flows, flooding, rainfall data, water quality and soil data. This will include review of published geological maps, Ordnance Survey maps, aerial photographs and site-specific data such as site investigation data, geological and hydrogeological reports, digital terrain models (slope plans) and geological literature.

The desk study will identify sensitive features which may potentially be affected by the Proposed Development and will confirm the geological, hydrogeological and hydrological environment.

Field Study

The hydrological assessment specialists will liaise closely with the project ecology and geology / geotechnical specialists to ensure that appropriate information is gathered to allow a comprehensive impact assessment to be completed.

A detailed site visit and walkover survey will be undertaken, to:

- verify the information collected during the desk and baseline study;
- undertake a visual assessment of the main surface waters;
- identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- visit any identified GWDTEs (in consultation with the project ecologists);
- visit private water supply sources that might be affected by the Proposed Development to confirm details of the location of the abstraction, its type and use, as required;
- prepare a schedule of potential watercourse crossings;
- assess the site geomorphology and conduct additional peat depth probing as required; and
- inspect rock exposures, establish by probing an estimate overburden thicknesses (a probe is pushed vertically into the ground to refusal and the depth is recorded).

The desk study and field surveys will be used to identify potential development constraints and be used as part of the site design.

Once the desk study is completed and sensitive soil and peat, geological and water features are confirmed an impact assessment will be undertaken to assess the potential effects on soils and peat, geology and the water environment as a result of the construction and operation of the Proposed Development.

9.4.2 Assessment Methodology

A qualitative risk assessment methodology will be used to assess the significance of the potential effects. Two factors will be considered: the sensitivity of the receiving environment and the potential magnitude should that potential impact occur.

This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the Proposed Development. This approach also allows effort to be focused on reducing risk where the greatest benefit may result.

The sensitivity of the receiving environment (i.e., the baseline quality of the receiving environment as well as its ability to absorb the effect without perceptible change) and the magnitude of impacts will each be considered through a set of pre-defined criteria.

The sensitivity of the receiving environment together with the magnitude of the effect defines the significance of the effect, which will be categorised into level of significance.

9.4.3 Mitigation

The Proposed Development will undergo design iterations and evolution in response to constraints identified as part of the baseline studies and field studies so as to avoid and/or minimise potential effects on receptors where possible.

For example, it is expected that the following potential mitigation measures will be included in the design of the Proposed Development:

- a buffer of up to 50 m will be applied to watercourses;
- site-specific peat probing will be used to identify areas of potential deep peat and these will be avoided (where feasible);
- a site-specific peat landslide and hazard risk assessment will be prepared and areas of potential increased peat slide risk will be avoided;
- if required, a peat management plan will be prepared to show how the integrity of peat will be safeguarded; and
- impacts on private water supply sources and areas of GWDTE will be avoided.

There is much best practice guidance which has been developed to assist developers minimise the risks associated with wind farm construction, operation and decommissioning and this will be used to develop site specific mitigation measures. Measures will be proposed to control and mitigate, for example, pollution risk (from anthropogenic and geogenic sources), flood risk, watercourse crossings, impacts on surface and groundwater flow paths, and management of peat soils.

Mitigation measures will be specified for all stages of the site life (construction, operation and decommissioning).

Good practice measures will be applied in relation to pollution risk, and management of surface run-off rates and volumes. This will form part of the final CEMP to be implemented for the Proposed Development.

9.4.4 Reporting

The purpose of the assessment will be to assess potential effects on soils, peat, geology and the water environment (hydrology and hydrogeology) and specifically:

- identify any areas susceptible to peat slide, using site specific peat thickness and Digital Terrain Mapping (DTM) data to analysis slopes;
- assist micro siting turbines, tracks and other proposed infrastructure in areas of no peat or shallow peat, and areas where there is little peat landslide hazard risk;
- if required show how any disturbed peat will be managed and safeguarded, by preparing a peat management plan;

- determine what the likely effects of the Proposed Development are on the hydrological regime, including water quality, flow and drainage;
- allow an assessment of potential effects on identified licenced and private water supplies; and
- assess potential effects on water (including groundwater) dependent habitats.

It is anticipated that the impact assessment might include the following technical appendices:

- peat landside and hazard risk assessment;
- peat management plan;
- schedule of watercourse crossings;
- private water supply risk assessment; and
- groundwater dependent terrestrial ecosystems risk assessment.

9.4.5 Cumulative Assessment

A review of other existing and proposed developments within 5km of the Proposed Development will be undertaken and potential impacts on hydrology, hydrogeology and geology will be assessed to identify cumulative impacts. With regard to the Proposed Development, it is likely that mitigation measures will be proposed that will have a neutral effect or provide betterment compared to baseline conditions. It is considered unlikely that there will be any significant residual or cumulative impact to report.

9.5 Potential Impacts/Matters Scoped Out of Assessment

At this stage, it is proposed that the following can be scoped out of detailed assessment:

- It is proposed to scope out effects on geology. 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. Published mapping confirms that the Site is not located in an area of fluvial or coastal flood risk. It is proposed, therefore, that 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.
- Water Quality Monitoring. Classification data is available from SEPA for the watercourses at site and there are no known sources of potential water pollution at site that might give rise for the need for water quality monitoring.

9.6 References and Standard Guidance

The hydrology and soil chapter will be prepared with reference to best practice guidance and legislation, including (but not limited to):

9.6.1 Legislation:

- EC Water Framework Directive (2000/60/EC).
- Water Environment and Water Services (Scotland) Act 2003.
- Water Environment (Controlled Activities) Regulations 2011.
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017.

9.6.2 Policy:

- Scottish Planning Policy (SPP) (Scottish Executive, 2020).
- Outer Hebrides Local Development Plan

9.6.3 Guidance:

- Good Practice during Windfarm Construction, 4th Edition (Scottish Renewables, Scottish Natural Heritage (now NatureScot), Scottish Environment Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AEECoW, 2019).
- Land Use Planning System – SEPA Guidance Note 31 (Guidance on Assessing Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems), Version 3, (SEPA, 2017).
- Control of Water Pollution from Linear Construction Projects – Technical Guidance, C648 (CIRIA, 2006).
- The SuDS Manual C753 (CIRIA, 2015).
- Environmental Good Practice on Site C741 (CIRIA, 2015).
- Developments on Peat and Offsite Uses of Waste Peat (Scottish Environment Protection Agency, 2017).
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017).
- Developments on Peatland - Guidance on the assessment of peat volumes, re-use of excavated peat and the minimisation of waste (Scottish Renewables& SEPA, 2012).
- Peatland Survey – Guidance on Development on Peatland (Scottish Government, Scottish Natural Heritage (now NatureScot) & SEPA, 2017)
- Floating Roads on Peat - Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with particular reference to Wind Farm Developments in Scotland (Forestry Commission Scotland & Scottish Natural Heritage, 2010).
- Managing Geotechnical Risk: Improving Productivity in UK Building and Construction (Institution of Civil Engineers, 2001).
- Ground Engineering Spoil: Good Management Practice CIRIA Report 179 (CIRIA, 1997).
- Scottish Roads Network Landslides Study Summary Report (Scottish Executive, 2005).
- Guidelines for the Risk Management of Peat Slips on the Construction of Low Volume/Low Cost Roads on Peat (Forestry Commission, 2006).

9.7 Questions for Consultees

- Published mapping confirms that most of the Site area is not identified as being at flood risk. It is proposed, therefore, that a simple screening of potential flooding sources (fluvial, coastal, pluvial, groundwater etc.) is presented in the EIA Report. Is this approach acceptable?
- It is not proposed to prepare a detailed drainage design. Rather measures that would be used to control the rate and quality of runoff will be specified in the EIA Report. Again, is this acceptable?
- Site investigations, including detailed peat probing and private water survey, will be undertaken as part of the proposed assessment. Should any additional investigation or data sources be considered when assessing baseline conditions?

- It is not proposed to undertake any water quality sampling, establish groundwater monitoring points, surface water monitoring points or undertake leachability trials of any rock as there is published data that can be used to characterise baseline conditions and complete the impact. Is this acceptable?
- Please advise if there is any specific information or methodology that should be used / followed as part of the Private Water Supply risk assessment?
- Do you agree that the scope of the proposed assessment is appropriate?

10.0 Archaeology and Cultural Heritage

This section considers the scope of work required to assess potential significant effects associated with archaeology and cultural heritage during the construction and operational phases of the Proposed Development.

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. It also includes features or places in the landscape that have the capacity to provide information about past human activity, or 'intangible' aspects which have cultural significance due to associations with, for example, literary or artistic works, folklore or historic events. The 'setting' of an asset within the wider landscape may contribute to its cultural heritage significance.

The cultural heritage impact assessment will:

- identify cultural heritage assets that may be subject to significant impacts, both within the Site boundary and within 10km and 5km buffers from the proposed turbines (see Table 3);
- establish the potential for currently unknown archaeological assets that lie within the Site boundary;
- assess the predicted impacts on these assets; and
- propose a programme of mitigation where appropriate.

The assessment will consider direct impacts (such as physical disturbance), indirect impacts (such as might result from change to the settings of cultural heritage assets), and cumulative impacts (where the Proposed Development and foreseeable projects have adversely affected receptors in common).

The Archaeology and Cultural Heritage assessment will be undertaken by experienced members of SLR's heritage team which has over 25 years' experience and public inquiry experience,

10.1 Potential Sources of Impact

10.1.1 Study Area

There is no guidance from Historic Environment Scotland (HES) which defines a required study area for the archaeological and cultural heritage assessment of wind farms.

For purposes of assessing indirect impacts, a distance based approach is proposed to define the Study Area as set out in Table 3.

Table 3: Study Area Definition

Distance	Heritage Assets Considered
10km radius from Site boundary – Potential for Indirect Impacts upon nationally important assets.	World Heritage Sites, Scheduled Monuments, Inventoried Gardens and Designed Landscapes and Battlefields and Category A Listed Buildings
5km radius from Site boundary – Potential for Indirect Impacts upon regionally important assets.	Conservation Areas and Category B Listed Buildings
Within Site Boundary – Potential for Direct Impacts	Category C Listed Buildings and non-designated heritage assets

Non-Designated assets within the Site boundary will be assessed for direct impacts. Should Western Isles Archaeology Service on behalf of Comhairle nan Eilean Siar identify any non-designated assets that they consider to be of national/regional significance, and which they consider to derive significance from their setting, then the local authority should make this known to the Developer through their scoping response and this can be considered further in the EIA Report.

10.1.2 Potential Sources of Impact

Potential effects on cultural heritage associated with the construction and / or operation of the Proposed Development include:

- direct effects through partial or total removal during ground breaking operations on known or currently undiscovered buried remains of archaeological interest;
- indirect effects on heritage assets through changes to its setting, including those resulting from intervisibility between the asset and the Proposed Development; and
- cumulative effects on setting with other proposed developments.

On the basis of the work undertaken to date, the professional judgement of the cultural heritage team, and experience from other similar projects, it is not considered that any potential effects can be scoped out at this stage.

The baseline condition presented below is drawn from publicly available information on designated cultural heritage assets available from HES, and for undesignated sites from a search on Past Map (an online Web Mapping Services of the historic environment provided by HES which includes local authority Historic Environment Records (HER)), noting that data will be ordered from and consultation undertaken with the HER for inclusion in the EIA.

Within the Site Boundary

Within the Site boundary direct impacts upon heritage assets will be considered. There are no designated heritage assets within the Site boundary and a preliminary online review of HES online datasets including the National Record of the Historic Environment (i.e. Canmore) has indicated that there are 20 non designated heritage assets within this area. These assets include the following:

Table 4: Non Designated Heritage Assets within the Site Boundary

CANMOREID	HER ID	HER Name	Site type (Period)
4223	267	Lewis, Park, Allt Na Muilne	Grain Mill (Period Unassigned)
4224	268	Lewis, Park, Allt Na Muilne	Grain Mill (Period Unassigned)
134027	3758	Lewis, Gearraidh Raistail	Building(S) (Period Unassigned)
134031	3762	Lewis, Gearraidh Raistail	Building (Period Unassigned)
134041	3772	Lewis, Airighean Sgrihascro Mhor	Shieling Hut(S) (Post Medieval) (Possible)
134150	3841	Lewis, Allt Cheothadail	Shieling Hut (Post Medieval) (Possible)
134151	3842	Lewis, Ceothadal	Shieling Hut(S) (Post Medieval) (Possible)
134152	3843	Lewis, Airigh Na Gile Ruaidhe	Shieling Hut(S) (Post Medieval) (Possible)

CANMOREID	HER ID	HER Name	Site type (Period)
134153	3844	Lewis, Eishken	Head Dyke (Post Medieval), Township (Period Unassigned)
134154	3845	Lewis, Cleite Leathann	Shieling Hut(S) (Post Medieval) (Possible)
134020	3751	Lewis, Airigh Ruairidh	Shieling Hut(S) (Post Medieval) (Possible)
171471	11584	Lewis, Eishken Lodge	Lodge (Period Unassigned)
278111		Lewis, Eishken	Burnt Mound (Prehistoric)
316282		Lewis, Eishken, Loch Eisgein	General View
316284		Lewis, Eishken	Dam (Period Unassigned)
316285		Lewis, Eishken	Water Channel (Period Unassigned), Weir (Period Unassigned) (Possible)
336465	11100	Cleite Na Beathrach, Lochs	Shieling (Post Medieval)
336466	11101	Cleite Na Beathrach, Lochs	Shieling (Post Medieval)
336467	11102	Abhainn Sgrihascro, Lochs	Shieling (Post Medieval)

An assessment of the potential for direct impacts to these assets (and any other non-designated assets identified through baseline collection) would be scoped into the EIA process. This will determine the potential direct impact to individual assets arising from the development of infrastructure associated with the proposed wind farm and assist in determining the overall archaeological potential of the Site.

10.1.3 Outwith the Site Boundary

Outwith the Site boundary and within the Study Area there are no World Heritage Sites, Category A Listed Buildings, Conservation Areas, Inventoried Gardens and Designed Landscapes or Inventoried Battlefields present within the 10km Study Area. There are three Scheduled Monuments within 10km of the Site boundary, namely:

- Sideval stone circle (SM5351)
- St Columb's Church, Eilean Chaluim Chille (SM5345) and
- Dun Cromore, Broch (SM1670).

Within 5km of the Site boundary there is one Category B Listed Building within the 5km Study Area (Gravir, Former School and Schoolhouse Including Playground Walls).

The Scheduled Monuments would be considered with due regard to the potential for indirect effects through setting change that has the potential to impact their heritage significance. A wide scale ZTV has been provided in Figure 10.1 has been included for consultees information. The only assets that fall within the 10km Study Area as defined above and which correlate with the ZTV are the following two Scheduled Monuments:

- St Columb's Church, Eilean Chaluim Chille (SM5345) and
- Dun Cromore, Broch (SM1670).

The assessment of these assets is scoped into the EIA process. This will determine the potential effect to these assets. No other designated assets are anticipated to be scoped in unless they are highlighted by a consultee. With due regard to this, Comhairle nan Eilean Siar has requested specific consideration of Calanais Standing

Stones (SM90054) complex, given the Scheduled Monument's importance on the island as a nationally important scheduled monument. Due consideration will be given to the stones upon design freeze of the scheme.

10.2 Consultation

Consultation will be undertaken with HES with respect to the method of assessment employed and those heritage assets within their remit, including; Scheduled Monuments and to confirm the distances proposed for the study area are appropriate with regard to Category A Listed Buildings, Inventoried Gardens and Designed Landscapes (GDL's), and Inventoried Battlefields.

Based on the results of the baseline study already undertaken, consultation will concentrate on St Columb's Church (SM5345) and Dun Cromore Broch (SM1670) and the Calanais Standing Stones (as appropriate). However, constraint mapping will be generated using GIS software to show other heritage assets in the Study Area in relation to the ZTV, should HES wish to consider other assets for assessment. It will be used to identify and agree with consultees what the most potentially sensitive assets are and which of these may require computer-generated visualisations as part of their assessment; anticipated to be limited to St Columb's Church (SM5345) and Dun Cromore Broch (SM1670). Upon design freeze, a review on whether Calanais Standing stones will be considered for assessment will be conducted.

Western Isles Archaeology Service on behalf of Comhairle nan Eilean Siar will be consulted for designated heritage assets of regional and local significance, and any undesignated assets they consider to be of higher significance.

10.3 Method of Assessment and Reporting

10.3.1 Desk Study

Baseline assessment will consider datasets provided by HES and HER, any datasets held in a historic environment record, historic cartographic evidence, LiDAR and other resources as appropriate to inform on archaeological potential and the overall sensitivity of the historic environment.

10.3.2 Field Surveys

A targeted Site inspection will be carried out to identify the recorded assets that are within the Site boundary and likely to be directly impacted by the Proposed Development. The Site inspection will seek to establish the condition of any recorded assets and identify the potential for the existence of additional assets not currently identified but which may be present within the Site boundary.

For the designated assets identified as being potentially sensitive to change, field observations would be undertaken in consultation with HES with respect to any potentially sensitive viewpoints.

10.3.3 Assessment of Impact

The Proposed Development has the potential to result in impacts upon the significance of heritage assets where it changes their baseline condition and/or their setting.

In accordance with the EIA Regulations, the proposed assessment will identify any development impacts as either direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

Assessment will be undertaken separately for direct impacts and indirect impacts.

Direct impacts upon the significance of heritage assets will take into account the level of their heritage significance (where known) and the magnitude (extent) of the identified impacts.

Indirect impacts on the significance of heritage assets will be identified and assessed with reference to Managing Change in the Historic Environment: Setting (HES 2016b) and the guidance set out in SNH (2018) and HES (2018). Assessment will be carried out in the following stages:

- initial consideration of intervisibility and other factors leading to the identification of potentially affected assets;
- assessment of the heritage significance of potentially affected assets;
- assessment of the contribution of setting to the heritage significance of those assets;
- assessment of the extent to which change to any contributing aspects of the settings of those assets, as a result of the Proposed Development, would affect their significance (magnitude of impact); and
- determination of the significance of any identified impacts.

The settings assessment will be assisted by a ZTV calculation, prepared principally for the Landscape and Visual Impact Assessment and presented in Figure 10.1. The ZTV calculation will map the predicted degree of visibility of the Proposed Development from all points within a proportionate, defined study area around the Proposed Development, as would be seen from an observer's eye level (two metres above ground level). The ZTV model presented in Figure 10.1 is based on the maximum height of the blade tips of the Proposed Development.

10.3.4 Heritage Significance

The categories of heritage significance to be referred to within the EIA Report chapter are presented in Table 5 which will act as an aid to consistency in the exercise of professional judgement and provide a degree of transparency for others in evaluating the conclusions drawn.

The significance categories have been defined with regard to factors such as: designation, status and grading. For undesignated assets, consideration will be given to their inherent heritage interests, intrinsic, contextual, and associative characteristics as defined in Annex 1 of Historic Environment Policy for Scotland (HEPS) (2019b). In relation to these assets, this assessment will focus upon an assessment of the assets' inherent capability to contribute to our understanding of the past; the character of their structural, decorative and field characteristics as determined from the HER and Canmore records and / or site visits; the contribution of an asset to their class of monument, or the diminution of that class should an asset be lost; how a site relates to people, practices, events, and/or historical or social movements. Assessments of the significance of specific assets, where recorded within the HER, will be taken into account.

Table 5: Heritage Significance

Heritage significance	Explanation
Highest	Sites of international importance, including: • World Heritage Sites.
High	Site of National importance, including: • Scheduled Monuments; • Category A Listed Buildings; • Gardens and Designed Landscapes included on the national inventory; • Designated Battlefields; and • Non-designated assets of equivalent significance.

Heritage significance	Explanation
Medium	Sites of Regional/local importance, including: • Category B and C Listed Buildings; • Some Conservation Areas; and • Non-designated assets of equivalent significance.
Low	Sites of minor importance or with little of the asset remaining to justify a higher importance.
None	Sites that are of no heritage significance.
Unknown	Further information is required to assess the significance of these assets.

10.3.5 Magnitude of Impact

Determining the magnitude of any likely impacts will include consideration of the nature of the activities proposed during the construction and operational phases of the Proposed Development.

Changes to heritage significance could potentially include direct change (e.g. ground disturbance), and indirect change (e.g. change to setting); this latter might include visual change for example. Impacts may be beneficial or adverse, and may be short term, long term or permanent. The magnitude of any impacts will be assessed using professional judgment, with reference to the criteria set out in Table 6.

Table 6: Magnitude of Impact

Magnitude of impact	Explanatory criteria
High Beneficial	The Proposed Development would considerably enhance the heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Medium Beneficial	The Proposed Development would enhance, to a clearly discernible extent, the heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Low Beneficial	The Proposed Development would enhance, to a minor extent, the heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Very Low Beneficial	The Proposed Development would enhance, to a very minor extent, the heritage significance of the affected asset, or the ability understand, appreciate and experience it.
Neutral/None	The Proposed Development would not affect (or would have harmful and enhancing impacts of equal magnitude upon) the heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Very Low Adverse	The Proposed Development would erode, to a very minor extent, the heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect impact would not be considered to affect the integrity of the asset's setting.

Magnitude of impact	Explanatory criteria
Low Adverse	The Proposed Development would erode, to a minor extent, the heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect impact would rarely be considered to affect the integrity of the asset's setting.
Medium Adverse	The Proposed Development would erode, to a clearly discernible extent, the heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect impact might be considered to affect the integrity of the asset's setting.
High Adverse	The Proposed Development would considerably erode the heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect impact would probably be considered to affect the integrity of the asset's setting.

10.3.6 Level of Impact

The categories of Impact referred to, and the criteria used in their determination, are presented in Table 7.

Table 7: Significance of Impact

Impact	Criteria
Major	Severe harm or enhancement, such as total loss of significance of the asset or of the integrity of its setting, or exceptional improvement of the heritage significance of the asset and/or the ability to understand, appreciate and experience it.
Moderate	Harm or enhancement, such as the introduction or removal of an element that would affect the heritage significance of the asset and the ability to understand, appreciate and experience it to a clearly discernible extent.
Minor	Harm or enhancement to the asset's heritage significance and/or to the ability to understand, appreciate and experience it to a modest extent, such that the majority of the asset's inherent interests and aspects of setting would be preserved.
Very Minor	Harm or enhancement to the asset's heritage significance and/or to the ability to understand, appreciate and experience it, that is barely discernible.
Nil	The development would not affect the heritage significance of the asset and/or the ability to understand, appreciate and experience it, or would have harmful and enhancing impacts of equal magnitude.

Table 8 provides a matrix that relates the heritage significance of the asset to the magnitude of impact on its significance, to produce the overall level of impact. This assessment will be undertaken separately for direct impacts and indirect impacts, the latter being principally concerned with impacts resulting from change to the setting of heritage assets.

Table 8: Significance of Impact Matrix

Magnitude of Impact	Heritage Significance (excluding unknown)			
	Highest	High	Medium	Low
High beneficial	Substantial	Substantial	Moderate	Slight
Medium beneficial	Substantial	Moderate	Slight	Very slight
Low beneficial	Moderate	Slight	Very slight	Very slight
Very low beneficial	Slight	Very slight	Negligible	Negligible
Neutral/None	Neutral/Nil	Neutral/Nil	Neutral/Nil	Neutral/Nil
Very low adverse	Slight	Very slight	Negligible	Negligible
Low adverse	Moderate	Slight	Very slight	Very slight
Medium adverse	Substantial	Moderate	Slight	Very slight
High adverse	Substantial	Substantial	Moderate	Slight

Professional judgment will be used in the determination of whether any impacts are 'Significant' or 'Not Significant' for purposes of EIA.

With reference to the matrix presented in Table 8, any impacts identified as 'Substantial' within the matrix would almost certainly be considered 'Significant', while any impacts identified as 'Moderate' within the matrix might be considered 'Significant'.

A clear statement will be made as to whether any identified impacts are 'Significant' or 'Not Significant' for purposes of EIA.

10.3.7 Mitigation

Where adverse impacts on cultural heritage are identified, measures to prevent, reduce and/or, where possible, offset these impacts, will be proposed. Potential mitigation measures can be discussed in terms of Direct and Indirect impact.

Suitable measures for mitigating direct impacts might include:

- the micro-siting of Proposed Development infrastructure away from sensitive locations;
- the fencing off or marking out of heritage assets or features in proximity to construction activity in order avoid disturbance where possible;
- a programme of archaeological work where required, such as an archaeological watching brief during construction activities in or in proximity to areas of archaeological sensitivity, or excavation and recording where impact is unavoidable; and/or
- a working protocol to be implemented should unrecorded archaeological features be discovered.

Suitable measures for mitigating any indirect impacts might include:

- alteration of the proposed turbine layout;
- reduction of proposed turbine heights; and/or
- changing the proposed colour of select turbines.

10.3.8 Residual Impact

Residual impacts are those that remain even after the implementation of suitable mitigation measures. Residual impacts will be identified, and the level of those residual impact defined with reference to Table 7 and Table 8.

The significance of those residual impacts for purposes of EIA would then be defined as either 'Significant' or 'Not Significant'.

10.3.9 Cumulative Impact

A cumulative impact is considered to occur when there are common receptors affected by the Proposed Development and other developments within the planning system.

Consideration of the other developments will be limited to:

- wind farm planning applications that have been submitted and have a decision pending; and
- wind farm planning applications which have been granted permission but not yet constructed.

Any impact resulting from operational wind farms would be considered as part of the baseline impact assessment. Cumulative impact would be considered in two stages:

- identification of common adversely affected receptors through a review of planning submissions; and
- reference to a potential combined impact for consideration of the decision maker.

10.4 Potential Impacts/Matters Scoped Out of Assessment

On the basis of the work undertaken to date, the professional judgement of the cultural heritage assessor, and experience of other comparable projects, it is considered that indirect and cumulative impacts of the Proposed Development on Category C Listed Buildings can be scoped out of the EIA in relation to cultural heritage. As per best practice guidance within SNH EIA Handbook (2018), Category C Listed Buildings are of local rather than national or regional importance, unless in the opinion of an assessor the designation should be higher. Stakeholders should highlight any specific anomalous Category C Listed Buildings within their scoping responses.

It is also considered that any assets that fall outwith the ZTV (and where those assets' approaches also fall outwith the ZTV) can be scoped out of the EIA in relation to cultural heritage.

10.5 References and Standard Guidance

10.5.1 Legislation

The assessment will be undertaken in accordance with the following principal relevant legislation:

- The Ancient Monuments and Archaeological Areas Act 1979;
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997;
- The Historic Environment (Amendment) (Scotland) Act 2011; and
- Scottish Statutory Instrument No. 101 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

10.5.2 Planning Policy

The Scottish Government and HES have issued a number of statements of policy with respect to dealing with the historic environment in the planning system:

- National Planning Framework 3 (NPF3; 2014);

- Scottish Planning Policy (SPP; 2014);
- Onshore Wind Turbines: Planning Advice (2014);
- Planning Advice Note 2/2011: Planning and Archaeology;
- Our Place in Time (OPiT; 2014); and
- Historic Environment Policy for Scotland (HEPS 2019).

10.5.3 Guidelines and Technical Standards

Relevant guidance and technical standard documents comprise:

- Historic Environment Scotland Guidance on Managing Change in the Historic Environment: Setting (2016);
- A Guide to Climate Change Impact: On Scotland's Historic Environment (2019);
- Scottish National Heritage and Historic Environment Scotland Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (2018); and
- Chartered Institute for Archaeologists Standard and Guidance for Historic Environment Desk Based Assessment (2014, updated 2017).

Questions for Consultees

- Do consultees agree with the methodology set out?
- Do consultees agree with assets and matters scoped out?
- Are there any assets that key consideration should be given to?
- Do consultees have any specifications on visualisations and their locations?

11.0 Noise and Vibration

This section considers the scope of work required to assess potential significant effects associated with noise and vibration during the construction and operational phases of the Proposed Development. It draws on information supplied, and assessments carried out, for the extant Section 36 consents for Muaitheabhal Wind Farm Main Consent (33 turbines), Muaitheabhal East Extension (6 turbines and Muaitheabhal South Extension (5 turbines) (ECU Reference: EC00005222, EC00005223 and EC00002096).

The Noise assessment will be undertaken by Richard Carter of Bow Acoustics who has over 20 years' experience as an Acoustics and has undertaken noise assessments for over 50 windfarms across the UK.

11.1 Baseline Conditions

11.1.1 Description

The Proposed Development is located in an area of remote moorland currently utilised recreationally for hunting, fishing and deer stalking.

A baseline noise survey was carried out as part of the 2004 EIA undertaken for Muaitheabhal Wind Farm Main Consent (33 turbines). Chapter 10 of the 2004 EIA Report describes the existing baseline across the study area for the original main wind farm, which includes the area Eisgein 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.

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.

11.1.2 Datasets

Where necessary, the proposed noise assessment will draw upon data from the following sources:

- noise assessment for the 2004 Muaitheabhal Wind Farm Main Section 36 Consent application, ECU Reference: EC00005222, Chapter 10 of the EIA Report;
- noise assessment for the 2010 eastern extension Section 36 Consent application, ECU Reference000052223, Chapter 10 of the EIA Report;
- noise assessment for the 2013 southern extension Section 36 Consent application, ECU Reference00002096, Chapter 10 of the EIA Report; and
- wind turbine manufacturer's warranted sound power and octave band data for the candidate machine.

11.1.3 Key Receptors to consider in assessment

A number of potential Noise Sensitive Receptors (NSRs) have been identified, as detailed in Table 9. This list is not exhaustive and NSRs may be added to or removed from the list subject to further assessment work. Table 9 also includes the approximate distance to the nearest turbine to the nearest 10m. It is understood that all of the dwellings are associated with Eishken Lodge and are financially involved with the Proposed Development.

Table 9: Noise Sensitive Receptors

ID	Name	Easting	Northing	Distance to nearest turbine, m	Nearest turbine
NSR01	Loch Shell House	132642	912107	830	T13

ID	Name	Easting	Northing	Distance to nearest turbine, m	Nearest turbine
NSR02	The Cottage	132627	912035	900	T13
NSR03	Burnside Cottage	132617	911967	960	T13
NSR04	Eishken Lodge	132600	911861	1070	T13
NSR05	Glenburn Cottage	132666	911865	1170	T13

11.2 Potential Sources of Impact

11.2.1 Potential Sources of Impact

The construction of the Proposed Development would introduce temporary noise sources in the form of plant and construction activities, along with the movement of vehicles. Noise would be generated during the construction of access tracks, excavation for turbine foundations, including any borrow bit blasting and as a result of the haulage of materials within the Site.

With respect to operational noise, wind turbines generate noise by two mechanisms; mechanical noise from the gearbox and generator in the nacelle; and aerodynamic noise caused by the noise of wind passing over the turbine blades. Wind turbines are designed to minimise mechanical noise, for example noise sources in the nacelle are contained within insulated enclosures. Aerodynamic noise is minimised by the design of the turbine blades; however, some aerodynamic noise is unavoidable. Aerodynamic noise increases in proportion with the speed of the turbine blade; therefore, noise levels generally increase with wind speed.

11.2.2 Study Area

The study area considers wind farms within an approximate radius of 10km and NSRs within a radius of approximately 5km from the Proposed Development boundary.

The exact study area used for the EIA will be determined by the final layout and defined as the 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 $_{LA90,\ 10min}$.

11.3 Consultation

No consultation has taken place regarding the noise assessment for the current proposals by Uisenis Power Ltd, although consultation has taken place as part of the assessment of the consented scheme (total of 45 wind turbines), and discharge of planning conditions associated with the extant Section 36 consents. As part of the assessment for the 26 turbine scheme, the Environmental Health Department of CnES will be consulted to agree the approach to the assessment.

11.4 Method of Assessment and Reporting

The assessment will consider the potential effects of the Proposed Development due to noise associated with the construction, operational and decommissioning phases, including consideration of the impact of construction traffic, as set out below. The assessment will follow national and local guidance, in particular the Outer Hebrides Local Development Plan Supplementary Guidance for Wind Energy Development, 2021 (SGfWED).

11.4.1 Assessment Methodology – Construction and Decommissioning phases

The assessment of temporary construction noise effects will include the calculation of noise levels from the anticipated plant and activities at the identified NSRs. Predictions of construction noise levels will be undertaken in accordance with BS5228-1:2009+A1:2014, Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise, (BS5228) using published source noise level data. The calculations will be undertaken in accordance with Annex F2.2, 'Method for Activity L_{Aeq}' and Annex F2.4, 'Method for Mobile Plant in a Defined Area'.

The predictions of construction noise levels will be assessed against appropriate threshold values to identify the significance of temporary construction noise effects. Guidance on noise limits during construction activities will be taken from BS5228.

The impact of traffic associated with the construction phase will be based on the result of the Transport Assessment (detailed in Section 0), where consideration will be given to the increase in traffic flows generated on the proposed transport route(s). This will be based on the baseline and predicted flows and assessed following the guidance detailed within the Design Manual for Roads and Bridges (DMRB). It may be possible that the total vehicle flows on some quieter roads are below the calculation threshold set out in the Calculation of Road Traffic Noise (CRTN). In such cases, changes in noise from vehicles using these roads will be calculated using the Haul Route method set out in BS5228.

It is anticipated that some rock extraction from borrow pits by means of blasting operations may be required in some instances. The analysis of the related potential impacts will be made in accordance with Planning and Advice Note PAN50, BS6472-2:2008 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration' and BS5228.

Decommissioning is likely to result in less noise than during construction of the 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.

The residual effects of construction noise and construction traffic will be undertaken in accordance with relevant good practice, policy and guidance.

11.4.2 Assessment Methodology – Operational phase

The overall approach for the operational noise assessment will be undertaken in accordance with ETSU-R-97 'the Assessment and Rating of Noise from Wind Farms' (ETSU-R-97), whilst also following the recommendations detailed within the Institute of Acoustics 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise' (IOA GPG), as endorsed by national planning guidance and the noise section of SGfWED.

ETSU-R-97 states that the assessment should take account of the effect of noise from all existing consented or, in some cases, proposed wind turbines that may affect a particular noise sensitive receptor. In this respect, cumulative noise will be the primary focus of the assessment and other turbines in the area will be included. Potential cumulative noise effects are typically restricted to wind farms containing large turbines within 5km; as such, a 10km search ensures that all potential developments are identified and considered for inclusion where necessary. At this time, no other wind turbines have been identified to be within a distance of 10km from the Proposed Development which would have the potential to cumulatively add to noise at the NSRs. During the consultation any other potential wind farms will be discussed which are in the planning system that need to be considered in the assessment.

Noise limits will be determined following ETSU-R-97 and the IOA GPG. At this stage it is considered likely that the noise limits for the Proposed Development will be based on a fixed limit for all wind speeds and times of the day. The 2004 baseline noise survey may be used to inform a noise limit that is related to background noise, if this is considered appropriate. Therefore, at this stage, further baseline noise surveys are not proposed to be

carried out. Reference will be made to ETSU-R-97, the IOA GPG and SGfWED when selecting an appropriate fixed portion of any noise limit. At this stage, it is envisaged that these would be:

- 35 dB $L_{A90, 10\ min}$ during the daytime hours (0700-2300) when assessing the Proposed Development in isolation of any other wind farms;
- 38 dB $L_{A90, 10\ min}$ during the night-time hours (2300-0700) when assessing the Proposed Development in isolation of any other wind farms;
- 38 dB $L_{A90, 10\ min}$ during the daytime hours when assessing the Proposed Development cumulatively with other wind farms;
- 40 dB $L_{A90, 10\ min}$ during the night-time hours when assessing the Proposed Development cumulatively with other wind farms; and
- 45 dB $L_{A90, 10\ min}$ during the daytime and night-time hours when assessing the Proposed Development in isolation of, and cumulatively with, other wind farms, when the NSR has financial involvement.

If, during the design process, a higher noise limit is considered to be more appropriate, then further consultation with CnES will be carried out and baseline noise surveys may be proposed and carried out at representative locations in accordance with ETSTU-R-97 and the IOA GPG.

11.4.3 Mitigation

In terms of operational turbine noise, impact will be considered throughout the design process in the form of changes to the proposed location of the turbines and/or the candidate turbine model.

Mitigation, if required, will be based on the results of noise level predictions, assessed against the appropriate daytime and night-time noise limits. Options for mitigation beyond the layout and candidate machine include noise reduced modes, wind sector control and trailing edge serrations. Such mitigation can help reduce operational noise either targeted at key wind speeds and directions or uniformly across all conditions.

The residual effects of operational noise will be undertaken in accordance with relevant good practice, policy and guidance.

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.

11.4.4 Reporting

The noise chapter of the EIA Report will provide an introduction to the assessment and any relevant policy and guidance documentation. The scope and method of assessment will be clearly set out for the operational and construction phases of the Proposed Development, making reference to the relevant policy or guidance documentation. This methodology will include any relevant criterion for determining the significance of effect any potential impacts may have on the nearby NSRs.

The existing and future baselines will be discussed and potential operational and construction impacts will be summarised and any significant effects determined. Where appropriate, mitigation will be recommended and any residual effects assessed.

11.4.5 Cumulative Assessment

Operational cumulative effects will be considered as an inherent part of the assessment methodology.

11.5 Potential Impacts/Matters Scoped Out of Assessment

11.5.1 Low Frequency Noise and Infrasound

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

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

Bowdler et al. (2009) 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."*

It is therefore not considered necessary to carry out a specific assessment of infrasound and low-frequency noise.

11.5.2 Amplitude Modulation

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

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

This research was updated in 2013 by an in-depth study undertaken by Renewable UK, which identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice (Renewable UK, 2013). The generation of AM is based upon the interaction of several factors, the combination and contributions of which are unique to each site. With the current knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM, and the incidence of AM occurring at any particular site remains low, as identified in the University of Salford study.

In 2016, the IOA proposed a measurement technique to quantify the level of AM present in any particular sample of wind farm noise (Institute of Acoustics, 2016). This technique is supported by the Department of Business, Energy & Industrial Strategy (BEIS, formerly the Department of Energy & Climate Change) who have published guidance, which follows on from the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition (BEIS, 2016).

Section 7.2.1 of the IOA GPG therefore remains current, stating:

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

It is therefore not considered necessary to carry out a specific assessment of AM.

11.5.3 Construction and Operational Vibration

Research undertaken by Snow found that levels of ground-borne vibration 100 m from an operational wind turbine were significantly below criteria for 'critical working areas' given by British Standard BS 6472:1992 Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz) and were lower than limits specified for residential premises by an even greater margin (Snow, 1997).

Ground-borne vibration from operational wind turbines can be detected using sophisticated instruments several kilometres (km) from a wind farm site, as reported by Keele University (Keele University, 2005). This report clearly shows that, although detectable using highly sensitive instruments, the magnitude of the operational vibration is orders of magnitude below the human level of perception and does not pose any risk to human health.

The nature of works and distances involved in the construction of a wind farm are such that the risk of significant effects relating to ground-borne construction vibration are very low. Notwithstanding this, in the event that stone is required to be extracted from borrow pits by blasting, such effects will be recommended to be managed through a Scheme of Blasting.

Extensive research has been carried out on the subject of traffic-induced vibration impacting a range of buildings of various ages and types, and no evidence has been found that this is a source of significant damage to buildings (Watts, 1990).

It is therefore not considered necessary to carry out a specific assessment of vibration.

11.6 References and Standard Guidance

The following legislative, policy and guidance documentation will be referenced and used to inform the assessment:

- Environmental Protection Act, 1990;
- Control of Pollution Act, 1974;
- Outer Hebrides Local Development Plan Supplementary Guidance for Wind Energy Development, 2021;
- Scottish Planning Policy, 2014;
- Planning Advice Note PAN 1/2011;
- Planning Advice Note PAN 50, 1996;
- Onshore Wind Turbine web-based guidance, 2014;
- Scottish Government Technical Advice Note, Assessment of Noise, 2011;
- ETSU-R-97, the Assessment and Rating of Noise from Wind Farms, 1996;
- Institute of Acoustics Good Practice Guide to ETSU-R-97, 2013;
- British Standard BS5228-1:2009+A1:2014; and
- British Standard BS64722:2008 Part 2.

11.7 Questions for Consultees

- Is identification of nearby noise-sensitive receptors considered sufficient?
- Can the name of sites that should be considered within the cumulative assessment be confirmed?
- Would the fixed noise limits set out in 11.4.2be acceptable without baseline noise surveys?

12.0 Site Access, Traffic and Transport

The section covers the predicted transport and access issues that may arise from the construction of the Proposed Development, the significance of these effects and what suitable mitigation can be put in place to avoid, minimise or offset any adverse impacts.

The Transport & Access EIA Report Chapter will be supported by a Transport Assessment report, Abnormal Load Route Survey and technical figures.

The key issues for consideration as part of the assessment will be:

- The temporary change in traffic flows and the resultant, temporary effects on the study network during the construction phase;
- The physical mitigation associated with the delivery of abnormal loads;
- The design of new access infrastructure; and
- The consideration of appropriate and practical mitigation measures to avoid, minimise or offset any temporary effects.

The potential effects of these will be examined in detail within the EIA report chapter.

The traffic assessment will be undertaken by experienced staff at Pell Frischmann. Pell Frischmann's Transport Planning team have been involved on numerous renewable projects across the United Kingdom, Republic of Ireland and northern Europe and have experience of over 500 wind farm projects.

12.1 Baseline Conditions

12.1.1 Description

The main road providing strategic access to the proposed development is the A859 which runs from Stornoway to the north east to Tarbert, Leverburgh and Rodel to the south. Turbines may be delivered to a berthing station or to the port at Arnish and transported along the A859.

Access to the Proposed Development from the A859 will be taken from the unclassified Eisgein Road just to the south west of the A859/B8060 junction. The Eisgein Road is a single track with passing places and runs south east from the A859 into the site with some isolated dwellings accessed from the road. Construction traffic associated with the development will approach from the A859 using the Eisgein Road that will be upgraded, where required, to suit the proposed traffic volumes and composition.

Access for Abnormal Indivisible Loads (AIL) associated with turbine component delivery will be taken either via the Eisgein Road or via a new marine facility to be built to the south of the proposed site on shore of Loch Sealg. Abnormal Indivisible Loads (AIL) associated with the turbine will be detailed in a Route Survey Report that will be appended to the EIA Report. Swept path assessments and traffic management requirements necessary for the safe and efficient delivery of the loads will be detailed in this report.

The access junction will be described in the transport submissions and an indicative layout plan of the junction will be provided.

12.1.2 Key Receptors to consider in assessment

The assessment will consider the effects on the following receptors and groups:

- Users of the A859;
- Residents living along the A859;

- Residents in Stornoway living alongside the A859;
- Residents in Tarbert living alongside the A859;
- Users of the unclassified Eisgein Road; and
- Residents living along the Eisgein Road.

12.2 Potential Sources of Impact

12.2.1 Potential Sources of Impact

Potential impacts that may arise during the assessment may include the following for users of the road and those resident along the delivery routes for the construction phase:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian amenity;
- Fear and intimidation; and
- Accidents and safety.

The impacts on receptors within the study area will be reviewed during the construction phase, with a peak construction period assessment undertaken. This will review the maximum impact and presents a robust assessment of the effects of construction traffic on the local and trunk road networks.

The effects that will be considered will be based upon percentage increases in traffic flow and reviewed against the impacts noted above.

12.2.2 Study Area

The study area for the transport will reflect the access routes for the delivery of construction materials and will include the following:

- The A859 between Tarbert and Stornoway; and
- The Eisgein Road from its junction with the A859 to Eishken Lodge.

The AIL Route Survey Report will be undertaken as an immediate priority action to confirm the access route to the Site.

12.3 Consultation

Consultation with the Comhairle nan Eilean Siar (Western Isles Council) Transport Planning team will be undertaken to agree the detailed transport elements of the project.

12.4 Method of Assessment and Reporting

12.4.1 Baseline Data Collection

Existing traffic count data will be used from the Department for Transport (DfT) database for the A859. New Automatic Traffic Count (ATC) surveys will be undertaken on the unclassified Eisgein Road. These will be commissioned and deployed for one week to record classified traffic data for a neutral month.

Future year baseline traffic flows will be determined through the use of Low National Road Traffic Forecast (NRTF) growth factors.

Five years of traffic accident data will be collected using the online resource crashmap.co.uk for proposed study area to inform the baseline review.

Online sources such as the National Cycle Route map and Ordnance Survey maps will be used to obtain details of the sustainable travel network.

12.4.2 Assessment Methodology

The Guidelines for the Environmental Assessment of Road Traffic (IEMA 1993) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:

- Potential impacts (of changes in traffic flows) on local roads and the users of those roads; and
- Potential impacts (of changes in traffic flows) on land uses and environmental resources fronting these roads, including the relevant occupiers and users.

The following rules taken from the guidance will be used as a screening process to define the scale and extent of the assessment:

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs 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.

Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the Proposed Development will therefore be assumed to result in no discernible environmental impact and as such no further consideration will be given to the associated environment effects.

The estimated traffic generation of the Proposed Development will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage increase in traffic.

Potentially significant environmental effects will then be assessed where the thresholds as defined above are exceeded. Suitable mitigation measures will be proposed, where appropriate.

It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works. A reduced scope Transport Assessment is therefore proposed.

Each turbine is likely to require between 11 and 14 abnormal loads to deliver the components to site. The components will be delivered on extendable trailers which will then be retracted to for the return journey.

Detailed swept path analyses will be undertaken for the main constraint points on the route from the port of entry through to the site access junction to demonstrate that the turbine components can be delivered to site and to identify any temporary road works which may be necessary.

12.4.3 Mitigation

Standard mitigation measures that are likely to be included in the assessment are:

- Production of a Construction Traffic Management Plan;
- The design of suitable access arrangements with full consideration given to the road safety of all road users;
- A Staff Sustainable Access Plan; and

- A Framework Abnormal Load Transport Management Plan.

Additional mitigation will be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.

12.4.4 Reporting

The Transport and Access Chapter of the EIA Report will be supported by the following:

- Transport Assessment report (TA), including framework Construction Traffic Management Plan proposals; and
- Abnormal Indivisible Load (AIL) Route Survey Report.

12.4.5 Cumulative Assessment

Committed development traffic, i.e., those from proposals with planning consent, will be included in baseline traffic flows, where traffic data for these schemes is considered significant and is publicly available. Developments that are proposed or at Scoping would not be included.

12.5 Potential Impacts/Matters Scoped Out of Assessment

Once operational, it is envisaged that the level of traffic associated with the Proposed Development will be minimal. Regular monthly or weekly visits would be made to the wind farm for maintenance checks. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the wind farm for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed. It is proposed to scope impacts arising from operational traffic out of the assessment as there are not anticipated to be likely significant effects.

The traffic generation levels associated with the decommissioning phase will be less than those associated with the development phase as some elements such as access roads will likely be left in place on the site. As such, the construction phase is considered the worst case assessment to review the impact on the study area. An assessment of the decommissioning phase will therefore not be undertaken, although a commitment to reviewing the impact of this phase will be made immediately prior to decommissioning works proceeding. The EIA Report will refer to construction phase effects as representative of the decommissioning phase.

12.6 References and Standard Guidance

The following policy and guidance documents will be used to inform the EIA Report Chapter:

- Transport Assessment Guidance (Transport Scotland, 2012);
- The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993); and
- SPP (Scottish Government, 2014).

12.7 Questions for Consultees

We would be grateful if the consultees could consider the following queries:

- That the proposed methodology is acceptable?
- That the methods, number of locations and scope for traffic flow data and accident statistics are acceptable?

- That the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?
- What committed development schemes should be included in the assessment?

13.0 Socio-Economics, Tourism, Recreation and Land Use

This Chapter assesses the potential impacts that the Proposed Development may have on the socio-economics and land use of the area within which it would be located, including effects on recreation and tourism. Effects will also be considered within the rest of Scotland and the UK, where relevant.

The impacts on socio-economics may come as a result of direct or indirect interaction between the Proposed Development and the socio-economics and land use of the area/region and may be positive or adverse.

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.

Once operational, impacts on the local labour market arising from employment associated with operation and maintenance would be more limited. However, there is potential for further long-term socio-economic benefits to the community such as those arising from improved infrastructure. The potential for adverse effects during the operational phase on tourism and recreation assets is also considered.

The socio-economics, tourism, recreation and land use assessment will be undertaken by staff at SLR who have over 30 years of professional experience in supporting planning applications and Environmental Impact Assessments for major projects throughout the UK including wind farms, and other renewable energy projects.

13.1 Baseline Conditions

13.1.1 Description

Socio-economics

According to ONS population estimates (2021a), the population of Na H-Eileanan Siar in 2020 was approximately 26,500; 13,400 females (50.6%) and 13,100 males (49.4%). Of this population, the number of those who are considered to be of 'working age' (16-64) is 15,400, which is approximately 58.1%, split evenly between males and females. This compares with Scotland (63.9%) and Great Britain (62.4%). It is evident that Na H-Eileanan Siar has an older population than average, with 26.3% over the age of 64, compared with 19.3% in Scotland and 18.7% in Great Britain.

Despite an aging population, Na H-Eileanan Siar has a significantly higher than average economic activity rate of 82.6% (13,400 economically active residents), compared to Scotland (76.2%) and Great Britain (78.4%), in 2021 (ONS, 2022a), with 63.6% of the total employee jobs being full time (approximately 7000). This high economic activity rate is reflected in the higher-than-average monthly earnings in Na H-Eileanan Siar, estimated to be a Gross Weekly Pay of £669.90, compared with £622.40 in Scotland and £612.80 in the wider Great Britain, in 2021 (ONS, 2022b).

In terms of *what* people do in Na H-Eileanan Siar, there is a higher-than-average number of people involved in 'Human Health and Social Work Activities' (ONS, 2021b), 20.5% of the population, compared to Scotland (16.6%) and Great Britain (13.6%), and significantly more people work in 'Public Administration and Defence; Compulsory Social Security', 11.4% of the population compared to 6.5% in Scotland and 4.6% in Great Britain.

Where Na H-Eileanan Siar is less represented than its comparators are in the 'Information and Communication' industry, with 1.6% of the population compared with 3.7% and 4.5% in Scotland and Great Britain, respectively. This is also the case for 'Financial and Insurance Activities', where 0.5% of Na H-Eileanan Siar work, compared with 3.3% of Scotland and 3.5% of Great Britain.

Of relevance to the construction stage of the Proposed Development is the number of residents working in the construction industry; in Na H-Eileanan Siar there are 700 people involved with this industry, equating to 6.4% of the population, this is higher than the averages for Scotland (5.1%) and Great Britain (4.8%), alluding to a potentially adequate supply of available workers to construct the wind farm.

In summary, the latest publicly available data shows that the Na H-Eileanan Siar population has 5.8% less residents of 'working age' than the comparative averages, however that has not impacted the economic activity rate, which is still higher than Scotland and Great Britain. Na H-Eileanan Siar also has a higher proportion of employees working in industries which are traditionally associated with the public sector; comparatively, it has lower than average numbers of people working in industries associated with IT and finance, which are traditionally associated with high-speed internet and new technologies.

Tourism

The tourism industry in Na H-Eileanan Siar is estimated to be adding £65million to the economy each year and, according to the last Outer Hebrides Visitor Survey in 2017 (Comhairle nan Eilean Siar and VisitScotland, 2018), with this projected to grow at approximately 5% per year.

The same study found that in 2017, approximately 219,000 visitors came to the islands, which equates to around 8.25 times their own population of 26,500, with approximately 45% of these visitors going to Lewis; however, due to many tourists moving around between islands, the respective attraction of each island cannot truly be accounted for. It is estimated that tourism accounts for approximately 10-15% of the economic activity and directly supports 1,000 Full Time Equivalent (FTE) jobs, with further indirectly supported through supply chain and transportation industries.

In terms of attractions for those who visited Lewis for leisure, the survey found that 78% of visitors visited the Callanish Stones, approximately 21km north west of the site, 46% visited the Butt of Lewis, approximately 55km north of the site, 41% visited Gearrannan Blackhouse Village, approximately 30km north west of the site, and 36% visited Carloway Broch, approximately 30km north west of the site.

Recreation

The area within and around the Site is predominately used for recreational walking. To the south of the Site is Loch Sealg, where visitors are also able to undertake walking, as well as boating and angling.

The land within the Site is currently utilised recreationally for hunting, fishing and deer stalking for visitors to the Eishken Estate Lodge with the Site boundary falling within the wider Eishken Estate area. Eishken Lodge is available for visitors to hire as luxury sporting accommodation and has an access track which passes through the Site, connecting it with the A859.

Land Use

Predominant land use within the Site is heather moorland interspersed with freshwater lochans and an expansive network of tributaries.

Although the Site boundary includes no Core Paths, it does include a footpath which is part of the 'Wider Path Network', where the Comhairle nan Eilean Siar identifies paths which, although not a Core Path, are, or have previously been, of importance and pose a potential usage for recreational activity.

13.1.2 Datasets

- Comhairle nan Eilean Siar and VisitScotland (2018), *The Outer Hebrides Visitor Survey 2017*, Progressive
- Office of National Statistics (2021a), *Population estimates - local authority based by five year age band*, nomis – official census and labour market statistics.
- Office of National Statistics (2021b), *Business Register and Employment Survey*, nomis – official census and labour market statistics.
- Office of National Statistics (2022a), *annual population survey,* nomis – official census and labour market statistics.

- Office of National Statistics (2022b), *annual survey of hours and earnings - resident analysis*, nomis – official census and labour market statistics.

13.1.3 Baseline Information to Inform the Assessment

The desktop baseline survey will cover the following topic areas:

- demographic and labour market characteristics (covering the occupational profile and the availability of skills within the labour force);
- employment, economic activity and unemployment trends;
- commuting and travel to work relationships;
- business demography: the number, size profile and sectoral representation of the business base;
- the tourism profile for the area, including tourism attractions and accommodation businesses;
- recreational receptors such as footpaths shooting; and
- land use of the Site.

13.1.4 Key Receptors to Consider in Assessment

The key receptors to be considered in the assessment of the socio-economic, tourism, recreation and land use effects during the Proposed Development's construction and operation phases are:

- local and national GVA during the construction phase;
- local and national employment during the construction phase;
- local supply chain during the construction phase;
- accommodation assets, due to competition from construction workers;
- land use of the Site, including recreational assets, such as attractions or footpaths;
- tourism assets and employment including regionally/nationally promoted recreational assets; and
- local and national employment during the operational phase.

13.2 Potential Sources of Impact

13.2.1 Study Area

A two-tiered study area is proposed for the assessment, defined as follows:

Wider Study Area (WSA)

The WSA is intended to encompass the area within which 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 wide area. The WSA area will primarily be set at the area of the Comhairle nan Eilean Siar administrative area, but effects are also considered within the rest of Scotland and the UK where relevant.

Local Area of Influence (LAI)

The LAI forms the focus for assessment of both direct and indirect effects on those receptors that are likely to experience effects at a more local level, particularly recreation and tourism assets. The LAI for such projects is generally defined by the Site together with an area extending to 5km from the Site boundary. However, due to

remoteness of the Site, a 5km boundary would not be an accurate reflection of this baseline, therefore, a 15km boundary around the proposed turbines 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. The LAI would also need to include accommodation businesses in Stornoway, approximately 20.5km 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.

13.2.2 Potential Sources of Impact

During construction there are likely to be beneficial effects on the regional and Scottish economy, including employment opportunities for construction businesses in the region, and increased spend on local services and accommodation for workers. The Proposed Development would lead to investment within the Na H-Eileanan Siar region and Scotland and the assessment would identify the potential benefit to the regional supply chain and seek to quantify the potential effect on the WSA.

Construction activities may also have a temporary adverse impact on certain local receptors including walkers and other users of recreational routes, such as people travelling along the footpath within the Site, which is part of the Comhairle nan Eilean Siar Wider Path Network. Effects on local accommodation businesses could be adverse (for example if there is any disruption caused by construction traffic) or beneficial (if used by construction workers).

Socio-economic effects during operation of the Proposed Development include employment associated with management and maintenance of the wind farm, albeit at relatively low staffing numbers.

A number of studies have examined whether there is a link between the development of wind farms and changes in patterns of tourism spend and behaviour, and generally the conclusion is that there is little effect. The assessment will draw upon the findings of these studies when examining whether the operational development may have an adverse effect on the local visitor economy. The presence of the wind farm may also affect individual tourism and recreational receptors through visual and other impacts; these will be assessed taking account of the findings of other assessments such as visual effects.

13.3 Consultation

The assessment will use desk-based information sources to assess the likely effects, supplemented by consultation with stakeholders if relevant. Information to inform the baseline will be sought from various sources, including:

- Comhairle nan Eilean Siar;
- Local Community Councils (Kinloch and Pairc Community Councils);
- British Horse Society Scotland;
- Cycling Scotland;
- Scottish Association for Country Sports;
- Scottish Rights of Way and Access Society;
- Sustrans Scotland;
- Visit Outer Hebrides; and
- VisitScotland.

Any consultation would have three key objectives:

- to verify published information;
- to identify potential effects; and
- to help assess significance of potential impacts.

13.4 Method of Assessment and Reporting

There is no industry standard guidance for this assessment. The proposed method for the assessment, based on experience from similar projects, is detailed below and will take into consideration any matters raised in this scoping exercise. The assessment will:

- consider the social and economic policy context at the local, regional and national level;
- review socio-economic and recreation baseline conditions within the relevant study areas;
- assess the likely scale, scope, permanence and significance of identified effects, taking account of any embedded environmental or social measures proposed within the application;
- recommend mitigation measures, where appropriate; and
- assess cumulative effects of the scheme with other proposed schemes.

13.4.1 Baseline Data Collection

The assessment would use 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 will be identified in citations throughout, and a proposed schedule of data sources to be used is contained in a reference list in Section 13.6.

13.4.2 Assessment Methodology

Receptor sensitivity will be 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 the local construction supply chain or a right of way) is considered less sensitive if there are alternatives with capacity within the relevant study area. In assigning receptor sensitivity, consideration has been given to the following:

- the capacity of the receptor to absorb or tolerate change;
- importance of the receptor e.g. local, regional, national, international;
- the availability of comparable alternatives;
- the ease at which the resource could be replaced; and
- the level of usage and nature of users (e.g. sensitive groups such as people with disabilities).

In order to aid clear and robust identification of significant effects, specific and targeted criteria for defining the magnitude of impacts have been developed for this assessment based on experience on other similar projects. The following four levels of magnitude will be adopted using professional judgement: high; medium; low and negligible. These reflect the level of change relative to baseline conditions and /or whether the change would affect a large proportion of the existing resident population or would result in a major change to existing patterns of use.

These impacts can be beneficial, adverse or neutral.

The level of effect of an impact on socio-economic receptors is initially assessed by combining the magnitude of the impact and the sensitivity of the receptor. 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 would be subject to professional judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear or are borderline between categories or the impact is intermittent.

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.

A statement of residual effects, following consideration of any specific mitigation measures, will be provided.

13.4.3 Mitigation

The assessment will take account of any environmental principles that are incorporated into the design of the Proposed Development. These could 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 would be set out in a Construction and Environmental Management Plan (CEMP) and/or Construction Traffic Management Plan (CTMP). Any additional mitigation measures that would reduce the level of any significant effects would be considered prior to assessing residual effects.

13.4.4 Reporting

To identify and assess the impact of the Proposed Development, the report will:

- consider the social and economic policy context at the local, regional and national level;
- review baseline conditions within the relevant study areas;
- assess the likely scale, scope, permanence and significance of identified effects, taking account of any embedded environmental or social measures proposed within the application;
- recommend mitigation measures, where appropriate; and
- assess cumulative effects of the scheme with other proposed schemes.

13.4.5 Cumulative Assessment

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 would be 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 would be able to make a quantitative judgement on potential loss of benefit due to cumulative projects. Enhancement of opportunity is identified only in qualitative terms.

Other cumulative effects may arise if the construction and/or operation of a number of wind farms were to affect receptors in the LAI.

13.5 Potential Impacts/Matters Scoped Out of Assessment

Based on past experience of onshore wind farm projects of this scale, it is not expected that there would be a large influx of workers' families to the area during the construction phase and those who would be working in the area, would be there temporarily, for approximately 18-24 months; consequently it is not expected that there would be a significant effect on the demand for permanent housing, health or educational services.

Regarding permanent employees for the operation of the windfarm, these numbers are expected to be low and, as such, the demand for permanent housing, health or educational services is expected to low.

Recreational activities outwith the Site are scoped out unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.

The impacts during the decommissioning phase are expected to be largely the same as those during the construction phase, albeit to a lesser degree and in approximately 40 years. To avoid a repetition of the construction phase assessment, the impacts on socio-economics, recreation, tourism and land use during the decommissioning phase have been scoped out of the assessment.

13.6 References and Standard Guidance

Socio-economic assessments do not have a standardised methodology; however, the assessment will follow current best practice guidance as set out in the following documents:

- Scottish Planning Policy (2014), in particular paragraph 29;
- National Planning Framework 3 (2014);
- Scottish Natural Heritage (2013) A handbook on environmental impact assessment;
- Scottish Government (2019) Good Practice Principles for Shared Ownership of Onshore Renewable Energy Developments;
- Scottish Government (2019) Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments;
- Scottish Government (2016) Draft Advice on Net Economic Benefit and Planning;
- Scottish Natural Heritage (2015) Good Practice During Wind Farm Construction; and
- Tourism Scotland 2020.

13.7 Questions for Consultees

- Do consultees agree with the extent of the baseline description?
- Do consultees agree that the number and extent of the Study Areas are appropriate?
- Do consultees agree with the proposed methodology?
- Do consultees agree with the potential impacts that have been highlighted and those which have been scoped out of the assessment?

14.0 Other Environmental Issues

14.1 Introduction

A number of other environmental issues will be considered in relation to the Proposed Development. The approach to the following topics is discussed:

- aviation;
- infrastructure;
- telecommunications;
- television reception;
- shadow flicker;
- climate and carbon balance;
- air quality;
- population and human health; and
- waste and environmental management.

Some of these topics have previously been proven not to be significant issues for wind farms in the vicinity of the Site and therefore it is anticipated that these can be scoped out of the EIA, where relevant. These topics, including reference to how they will be assessed or if they are proposed to be scoped out, are discussed in turn in the following text.

14.2 Aviation

14.2.1 Baseline Conditions

The Site lies under an area of uncontrolled airspace, from approximately 22km south west of Stornoway Airport. It is remote from all lower airspace airways and within a low priority military low flying zone.

14.2.2 Key Receptors to consider in assessment

The key aviation stakeholders are Stornoway Airport, operated by Highlands and Islands Airports Limited (HIAL), National Air Traffic Services (NATS) En-route and the Ministry of Defence (MoD). NATS and the MoD have the potential to be concerned only if the Proposed Development would have impacts on any of their infrastructure, with radars being the primary concern.

There are no other aerodromes sufficiently close to have any potential for impacts.

14.2.3 Potential Sources of Impact

The Proposed Development has the potential to impact on aviation activities simply as a large physical structure or through electromagnetic interference effects; both essentially occurring during wind turbine operation only. The potential effects include but are not limited to:

- Physical obstruction;
- clutter generation, desensitisation and distortions on Primary Surveillance Radar (PSR); and
- impacts on the performance of Communications, Navigation and Surveillance (CNS) equipment.

An initial impact assessment has been conducted and determined that the Proposed Development will impact the MOD range radar at West Freugh. No other radars in the area are affected.

There are no impacts to navigational aids, radio stations or weather radar.

14.2.4 Study Area

The impact assessment aims to identify all stakeholders potentially affected by the Proposed Development. This involves considering all military and civil aerodromes in the wider area out to circa 60km, all radar installations out to the limit of their range, all navigational aids, air-ground-air communications stations and low flying activities.

14.2.5 Consultation

No consultation has been conducted ahead of scoping. A desk based impact assessment has been conducted to determine potential effects and relevant stakeholders.

14.2.6 Assessment Methodology

The acceptability of the Proposed Development, in terms of net effects on aviation related interests, is established through direct consultation with all relevant stakeholders within the consenting process. The initial task is to independently assess the potential effects and, where significant effects may occur, to enter into a dialogue with the affected stakeholders. Where impacts are of concern additional analysis may be required and where impacts are deemed unacceptable, further mitigation solutions would be identified and explored with the goal of reducing impacts to acceptable levels. While the aim of this dialogue is to avoid objection from all stakeholders before full submission, this is not always possible where stakeholders will only engage once the application has been submitted.

An obstacle lighting scheme will be designed to minimise the visual impacts. Approval for a lighting scheme will be sought from the Civil Aviation Authority (CAA), having consulted with local airspace users such as the Maritime and Coastguard Agency (MCA), Scottish Air Ambulance and Police Services and HIAL.

14.2.7 Potential Impacts

The initial aviation impact assessment has determined no impacts to radars, Navigational Aids, Radio Communication Stations or to low flying.

The Proposed Development is within the Instrument Flight Procedure (IFP) safeguarding zone for Stornoway Airport. This will require that a full IFP impact assessment is conducted by a CAA approved procedure design organisation.

As effects relate to the location of the turbines and their design and only occur during the operational phase of the Proposed Development due to the movement of the turbine blades, it is proposed to scope out construction effects.

14.2.8 References and Standard Guidance

CAA guidance, within CAP 764 (CAA Policy and Guidance on Wind Turbines), sets out recommended consultation and assessment criteria for the impacts of wind turbines on all aspects of civil aviation.

The CAA involvement in the Wind Farm Pre-Planning Consultation Process has ceased; CAP 764 now states that *'developers are required to undertake their own pre- planning assessment of potential civil aviation related issues*' and that *'it is incumbent upon the developer to liaise with the appropriate aviation stakeholder to discuss – and hopefully resolve or mitigate – aviation related concerns without requiring further CAA input.'*

The primary planning policy document is the Scottish Planning Policy document (SPP), which states a requirement to assess impacts on aviation, other defence matters and seismological recording. As well as this primary document reference will be made, where appropriate to:

CAA CAP 393, The Air Navigation Order and Regulations, specifies the statutory requirements for the lighting of onshore wind turbines over 150 m tall;

As a statutory consultee, the MoD will be consulted through the scoping application. They publish a guidance document called 'Wind farms: MoD safeguarding', Updated 21 Jul 2021. The MoD wind energy team liaises with a broad range of experts to formulate a comprehensive MOD response. Where the MoD has concerns about a development, the team will work with the developer to look for ways to mitigate them.

14.3 Infrastructure

Details and locations of infrastructure including overhead power lines and underground cables will be checked and taken into account during the design of the Proposed Development.

14.4 Telecommunications

Wind farms produce electro-magnetic radiation, which has the potential to interfere with broadcast communications and signals.

In order to determine the potential impact of the Proposed Development, initial consultation will be undertaken with the following consultees:

- Ofcom (Scotland);
- Joint Radio Company;
- British Telecom; and
- any relevant mobile phone operators.

All fixed links within a 4km radius of the Site will be checked. The probability of a significant impact on fixed radio links will be assessed on the basis of site proximity to transmitter-receiver paths and calculation of Ofcom-recommended clearance zones. Potential changes to the telecommunications environment as a result of the development will be predicted by an assessment of the proximity of the proposed turbines to radio facilities and consultations with Ofcom.

14.5 Television Reception

Wind turbines 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.

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.

14.6 Shadow Flicker

Shadow flicker occurs when a certain combination of conditions prevail at a certain location, time of day and year. It firstly requires the sun to be at a certain level in the sky. The sun then shines onto a window of a residential dwelling from behind the wind turbine rotor. As the wind turbine blades rotate it causes the shadow of the turbine to flick on and off. This may have a negative effect on residents in affected properties. If shadow

flicker cannot be avoided through design, technical mitigation solutions are available, such as shutting down turbines when certain conditions prevail.

In the UK, significant shadow flicker is only likely to occur within a distance of 10 times the rotor diameter (of a wind turbine), from an existing residential dwelling and within 130 degrees either side of north[31].

Once the final turbine layout and parameters are fixed, the locations of residential properties in proximity to the Site will be verified and if any are situated within 10 rotor diameters from the proposed turbine locations, a shadow flicker model will be run to predict potential levels of effect.

14.7 Climate and Carbon Balance

The EIA Regulations 2017 include for consideration of potentially significant effects on climate, which includes greenhouse gas emissions. As a renewable energy project, the Proposed Development is likely to result in a significant saving in carbon and therefore benefit to the UK climate.

The main aims of the calculation are: to quantify sources of carbon emissions associated with the Proposed Development (i.e., from construction, operation and transportation of materials, as well as loss of peat as relevant); to quantify the carbon emissions which will be saved by constructing the Proposed Development; and to calculate the length of time for the project to become a 'net avoider', rather than a 'net emitter' of carbon dioxide emissions. The length of time is termed the 'payback time'.

A carbon balance assessment will be undertaken for the Proposed Development using guidance Calculating Potential Carbon Losses and Savings from Wind Farms on Scottish Peatlands[32]

14.8 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.

Consideration will be given within the Ecology and Hydrology and Soils Chapters to the potential impacts that dust generation could have on any identified sensitive ecological or hydrological receptors. If required, detailed mitigation measures will be proposed within these EIA Report Chapters. Otherwise air quality is scoped out of the EIA.

14.9 Population and Human Health

The EIA Regulations 2017 include a requirement to assess as part of the EIA process, the potential significant effects on population and human health resulting from the Proposed Development. These requirements will be addressed in the EIA and EIA Report, as appropriate, under each of the other topic headings e.g. noise or socio-economic effects. Where no significant effects are likely these will be scoped out of the EIA.

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[31] Parsons Brinckerhoff Consultants on behalf of DECC (2010) Update of UK Shadow Flicker Evidence Base. Available at: http://www.decc.gov.uk/en/content/cms/meeting_energy/renewable_ener/ored_news/ored_news/uk_shad_flick/uk_shad_flick.aspx (Accessed on 28/03/2017)

[32] Calculating Potential Carbon Losses and Savings from Wind Farms on Scottish Peatlands, Nayak et al., 2008; Nayak et al., 2010 and Smith et al., 2011

14.10 Waste and Environmental Management

Uisenis Power Ltd is committed to pollution prevention and environmental protection. As such an environmental management strategy to minimise environmental effects of the proposed Uisenis Wind Farm during construction will be developed. The principles of this strategy will be presented in an outline Construction Environmental Management Plan (CEMP) appended to the EIA Report. Should consent be granted, the outline CEMP would be revised and updated to a CEMP, the content of which would be agreed with Comhairle nan Eilean Siar through consultation and enforced via a planning condition. The CEMP would be used by the Contractor to ensure appropriate environmental management is implemented throughout the construction phase of the Proposed Development.

15.0 Proposed EIA Report Structure

It is proposed that the EIA Report would contain the chapters set out below:

- Introduction;
- Site Description;
- Development Description;
- Site Selection and Design Strategy;
- Approach to EIA and Scoping;
- Technical Chapters:
    - Landscape and Visual;
    - Onshore Ecology;
    - Ornithology
    - Soils, Geology, Hydrogeology and Hydrology
    - Cultural Heritage and Archaeology;
    - Noise and Vibration;
    - Traffic and Transport;
    - Socio-economics, Tourism and Recreation; and
    - Other Environmental Issues.
- Summary of Key Effects

A Non-Technical Summary of the EIA Report would be provided as a stand-alone document.

A Schedule of Mitigation will be included in the EIA Report. This Chapter will summarise the mitigation measures proposed in the preceding Chapters of the EIA Report to reduce or offset the effects of the Proposed Development on the environment. These are the measures that have been agreed with the relevant stakeholders and will 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.

The EIA Report would be accompanied by the necessary planning application forms, notices and certificates together with a Planning Statement. The Planning Statement would contain information in support of the planning application that is not relevant to an EIA Report. The Planning Statement would, amongst other matters, address how the Proposed Development is consistent with the Development Plan, together with any material considerations.

16.0 Invitation to Comment

You are invited to provide comment on this Scoping Report. Please send all Scoping responses to the Energy Consent Unit at:

Energy Consents Unit

5 Atlantic Quay

150 Broomielaw

Glasgow

G2 8LU

Econsents_Admin@gov.scot

If you wish to discuss matters contained in this report in greater detail prior to responding to the scoping exercise, please contact:

Matt Faulkner

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Oxon Business Park

Shrewsbury

SY3 5HJ

mfaulkner@slrconsulting.com

17.0 Closure

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of Uisenis Power Ltd and Eurowind Energy A/S; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

APPENDIX A: PROPOSED CONSULTEE LIST

Stakeholder Name:	Topics:
Comhairle nan Eilean Siar (CnES), Western Isles Council	All topics
Historic Environment Scotland	Cultural Heritage
NatureScot	Landscape and Visual Impact Assessment methodology and receptors, Onshore Ecology Ornithology
Scottish Environmental Protection Agency (SEPA)	Hydrology Hydrogeology Carbon emissions Peat Management (only if there is a concern regarding disposal of peat) Onshore Ecology
Marine Scotland Science (MSS)	Hydrology Onshore Ecology - fish
Western Isles Archaeology Service (on behalf of CnES)	Cultural Heritage
British Horse Society	Socio-economics and Tourism
British Telecom (BT)	Telecommunications
Cycling Scotland	Socio-economics and Tourism
Highlands and Island Airports Limited (on behalf of Stornoway Airport)	Aviation
Joint Radio Company (JRC)	Telecommunications
Ministry of Defence (MoD)	Aviation
MET Office	Aviation
NATS En-route	Aviation
Ofcom (Scotland)	Telecommunications
Outer Hebrides Fisheries Trust (OHFT)	Onshore Ecology - fish

Stakeholder Name:	Topics:
Scottish Association for Country Sports	Socio-economics and Tourism
Scottish Rights of Way and Access Society	Socio-economics and Tourism
Sustrans Scotland	Socio-economics and Tourism
Visit Scotland	Socio-economics and Tourism
Kinloch Community Council	
PAIRC Community Council	
PAIRC Trust (Urras na Pairce)	
Civil Aviation Authority - Airspace	
Defence Infrastructure Organisation	
Association of Salmon Fishery Boards	
BAA (Glasgow Airport)	
BAA (Edinburgh Airport)	
District Salmon Fisheries Board	
Fisheries Trust Scotland	
John Muir Trust	
Joint Radio Company	
Mountaineering Council of Scotland	
NATS Safeguarding	
RSPB Scotland	
Scottish Forestry	
Scottish Water	
ScotWays	
The Crown Estate	
Transport Scotland	

APPENDIX B: ECOLOGY DESK STUDY

UISENIS WIND FARM

Ecology Desk Study Report
Prepared for: **Uisenis Power Ltd**

SLR Ref: 405.V6341.00001
Version No: 1
June 2022

BASIS OF REPORT

This document has been prepared by SLR Consulting Limited with reasonable skill, care and diligence, and taking account of the manpower, timescales and resources devoted to it by agreement with Uisenis Power Ltd (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

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Appendix 01: Protected/ Notable Species Records

1.0 Introduction

SLR was commissioned by Uisenis Power Ltd in April 2022 to undertake an ecological desk study for the proposed Uisenis Wind Farm (the Proposed Development). The wind farm site (the Site) is located in the Eisgein (Eishken) Estate on the Isle of Lewis, approximately 20 km south of Stornoway. This desk study was completed in June 2022 and the results will be used to inform constraint plans for the Proposed Development and the associated Environmental Impact Assessment (EIA) Report as well as to support the Section 36 Application.

1.1 Site Description

The Site, centred at NB 31500 13500, is located in the south east of Lewis approximately 7 km east of the A859 spine road which connects the Isle of Harris to the south with Stornoway approximately 20km north of the Site. The Site is located in the north of the Park (Pairc) peninsula. The peninsula is defined by two long and narrow sea lochs, Loch Erisort (Eireasort) to the north, and Loch Seaforth (Shiophoirt) to the south, the latter forming part of the boundary between Lewis and Harris.

The Site consists predominantly of mire habitat interspersed with freshwater lochans and an expansive network of tributaries.

Primary watercourses intersecting the wider Site are Abhainn Ghlas, which flows northwards along the extent of Eisgen Road before discharging to Loch Sgiobacleit; Abhainn Sgrihascro, which drains steep outcrops and slopes north west of Loch Eisgein (approximately 1.07km north west of the Lodge); and Allt Loch nan Lub which marks the furthest eastern extent of the wider Site. The site overlies three nested catchments -to the west Abhainn Cheothadail, to the east Abhainn Mhor and Abhainn Ghleann Quirn (centre, north).

1.2 Surrounding Area

The immediate surrounding area is remote and residential dwellings are restricted to Eishken Lodge and inner estate. Land in the surrounding area is predominantly used for recreational activities such as hunting and fishing.

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 is approximately 13km south west of the Site, located on Harris. Beyond this, there are core paths east of Maraig, Harris (14km south west), Rhenigidail (14km south) and west Stornoway (22km north).

1.3 Site History

The Site has consent by Scottish Ministers (under Section 36 of the Electricity Act 1989) for the development of Muaitheabhal Wind Farm that was initially consented in 2010 (ECU Reference: EC00005222) and then extended via Muaitheabhal East Extension Wind Farm in 2011 (ECU Reference: EC00005223). In 2015, Muaitheabhal South Extension was also consented (ECU Reference: EC00002096) on land to the south and west of Loch Sealg, also within the Eishken Estate boundary. In total the three Section 36 consents comprise 45 turbines all located within the Site Boundary:

- Muaitheabhal Wind Farm Main Consent (33 turbines up to 145 m to tip consented in January 2010);
- Muaitheabhal East Extension (6 turbines up to 150 m to tip consented in December 2011); and
- Muaitheabhal South Extension (5 turbines up to 150 m to tip and 1 turbine up to 130 m to tip consented in September 2015).

The consents have been implemented through development of a bell mouth junction for the Main Consent and East Extension and via other limited ongoing infrastructure works for the South Extension.

1.4 Desk Study Scope

The desk study is designed to give an overview of the potential nature conservation value of the Site and assist in planning of targeted field survey work. In order to inform the desk study report, information relating to protected and notable species within 2km (extended to 10km for bats), statutory designated sites within 15km, and non-statutory designated sites within 5km of the Site were obtained. This report summarises the commercially available records of data gathered from local environmental records centres, biodiversity recording websites and web-based applications relating to Protected Areas across Scotland.

2.0 Methods

2.1 Existing Ecological Data

Where possible, data were extracted from existing ecological records and Site information gathered to inform previous wind farm applications for the Site, including:

- Land Use Consultants (2004). Muaitheabhal Windfarm: Environmental Statement (ES);
- Land Use Consultants (2006). Muaitheabhal Windfarm: Supplementary Environmental Information;
- Land Use Consultants (2009). Muaitheabhal Windfarm: Supplementary Environmental Information;
- Land Use Consultants (2011). *Muaitheabhal Windfarm East Extension Environmental Statement, Supplementary Environmental Information;*
- Land Use Consultants (2013). *Muaitheabhal Windfarm South Extension: Environmental Statement.*

2.2 Protected and Notable Species

Desk study data relating to protected and notable species were acquired from Outer Hebrides Biological Recording Group (OHBRG). A search for commercially available records was also carried out on the National Biodiversity Network (NBN) website. Ornithological searches were not included. Searches for protected and notable species data from OHBRG and NBN included:

- Data from all available years; and
- Within 10km of the Site for all bat species; and
- Within 2km of the Site for all other protected and/or notable species.

2.3 Designated Sites

Information relating to statutory designated nature conservation sites within an approximate 15km radius of the centre point of the Site was acquired using the NatureScot Sitelink website and viewed using the Multi-Agency Geographic Information for the Countryside (MAGIC) online GIS tool.

Information relating to non-statutory designated sites within approximately 5km of the Site were requested from OHBRG. Designated sites of relevance to this desk study report are summarised below.

- Non-avian sites of international importance:
  - Special Areas of Conservation (SACs);
- Non-avian sites of national importance:
  - Sites of Special Scientific Interest (SSSIs); and
  - National Nature Reserves (NNRs)
- Sites of local importance:
  - Local Nature Conservation Sites (LNCS) including Local Wildlife Sites (LWS), Local Nature Reserves (LNR) and Scottish Wildlife Trust Reserves.

In addition, the search included woodlands listed on the Ancient Woodland Inventory within 10km.

2.4 Nomenclature

The common (English) names and Latin names for species are used within the main body of the report and appendices (unless a species has no common name).

3.0 Results

The results of the 2022 desk study are provided below. A more detailed summary is provided in **Appendix 01**: Protected/ Notable Species Records (from all data sources) and **Appendix 02**: Non-statutory Sites and Designations. Note that information relating to sites designated for ornithological conservation and historic data relating to ornithology has not been included within this report (ornithological considerations are provided by MacArthur Green in separate reporting).

3.1 Existing Ecological Data

3.1.1 Habitats

Field work carried out to inform the 2004, 2011 and 2013 ES identified that the Site was formed primarily of wet dwarf shrub heath and blanket bog habitat, with open water in the form of lochs and lochans interspersed throughout. Small pockets of dry dwarf shrub heath and acid grassland communities were also recorded on slopes and in elevated areas within the Site.

3.1.2 Protected Species

A review of existing ecological records gathered to inform previous ES chapters identified the following protected and/or notable species within the Site and surrounding area:

- Otter (*Lutra lutra*) – evidence of activity in the form of both spraints and resting places was recorded throughout the Site during previous field surveys;
- Seals – historic records indicating that Loch Seaforth and Loch Sealg are well frequented by seals;
- Whales and dolphins – Harbour porpoise (*Phocoena phocoena*) and Minke whale (*Balaenoptera* acutorostrata) have been recorded within both Loch Sealg and Loch Seaforth;
- Fish – Brown trout (*Salmo trutta*), juvenile Atlantic salmon (*Salmo salar*), European eel (*Anguilla anguilla*) and stickleback (*Gasterosteidae* sp.) were recorded during fisheries surveys carried out to inform previous ES chapters; and
- Slow worm (*Anguis fragilis*) – recorded during field surveys carried out to inform the 2004 ES.

3.2 Designated Sites

3.2.1 Statutory Designated Sites

There are six non -avian statutory designated sites located within 15km of the site boundary, including one SSSI, two SACs, one SPA, and one Ramsar site. **Table 3.1** details the sites and their distance and direct from the application site.

Table 3.1: Statutory Designated Sites

Site Name and Designation	Qualifying/ Notifying Features	Distance from Site	Direction from Site
Lewis Peatlands Ramsar	Blanket bog, oligotrophic lochs, dystrophic lochs, lochans and pools, wet heath	9.2km	North

Site Name and Designation	Qualifying/ Notifying Features	Distance from Site	Direction from Site
Lewis Peatlands SAC	Blanket bog, depressions on peat substrates, acid-stained lakes and ponds, wet heath, clear-water lakes with aquatic vegetation and poor to moderate nutrient levels, otter	10.6km	North
Inner Hebrides and the Minches SAC	Harbour porpoise	11.5km (adjacent to south of site)	East
Loch nan Eilean Valley Bog SSSI (part of Lewis Peatlands SAC)	Blanket bog, valley fen	12.5km	North west
Achmore Bog SSSI (part of Lewis Peatlands SAC)	Blanket bog	13.6km	North

3.2.2 Non-statutory Designated Sites

At the time of writing, no data had been received from OHBRG. Any additional information received will be used to inform the assessment.

3.2.3 Ancient Woodlands

Woodland habitat is generally rare on the isle of Lewis and generally tends to occur in steep-sided valleys and on the edge of lochs; locations that are generally out of reach from grazing animals. There is a small area of woodland adjacent to the Eisgein Estate. No ancient woodlands are present within 10km of the site.

3.2.4 Carbon and Peatland Map

The Scottish Natural Heritage (SNH) (now NatureScot) Carbon and Peatland 2016 Map (SNH, 2016c) was reviewed. This provided a value indicating the likely presence of carbon-rich soils, deep peat and priority peatland habitat for each individually mapped area, at a coarse scale across Scotland. The following habitats are indicated to be present on site:

- Class 1: Predominantly peat soil on peatland; covers a moderate amount of the site;
- Class 2: Peat soil with occasionally peaty soil on peatland or areas with high potential for peatland restoration; covers a large portion of the site;
- Class 3: Predominantly peaty soil with some peat soil supporting peatland with some heath present; covers a small area of the site;
- Class 5: Peat Soil (no peatland vegetation) covers a small area of the site; and
- Mineral soil: covers a small section to the west of the site.

3.3 Protected and Notable Species

Details of protected or notable species recorded within 2km of the Site are located in Table 1, **Appendix 01**. The combined desk study data (from the local records centre and relevant ecological reports), included:

- One record of otter;
- No notable invertebrate species were returned;
- No species of reptiles and amphibians were returned from desk study; and
- No species of bat or bat roosts were returned within 10km of the Site.

3.3.1 Invertebrates

No records of species of invertebrates recorded within 2km of the Site were returned in the data search.

3.3.2 Fish and Aquatic Invertebrates

Records of three species of fish were returned in the data search records: European eel (*Anguilla anguilla*), Atlantic salmon (*Salmo salar*), and Brown trout (*Salmo trutta*). No records of aquatic invertebrates were returned through the data search or held within previous assessments within 2km of the Site.

3.3.3 Invasive/Non-native Species

No records of invasive non-native species were returned through the data search.

References

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APPENDIX 01

Protected/ Notable Species Records

Appendix 01, Table 1: Summary of Protected/ Notable Species Records

Species	Nearest Location to Site	Data Source	Last Record	Details/additional comments on record closest to site	Protection/ Conservation Status (see Table 2 for Definitions)
Mammals					
Eurasian otter *Lutra lutra*	On site	NBN	1991		WCA5, UK PS, ScotSBL.

Appendix 01, Table 2: Glossary of Codes for Species Protection/ Conservation Status

Abbreviation	Full Designation	Type	Description
ANNEX 1	Annex 1 listed species European Commission Birds Directive	International	Annex 1 is a list of 194 species and sub-species which are particularly threatened under the European Commission Birds Directive. Now legislated for purely via the 'Habitat Regulations'.
ANNEX 2.1 & 2.2	Annex 2.1/2.2 listed species European Commission Birds Directive	International	Annex 2 is a list of 82 bird species can be hunted European Commission Birds Directive. However, the hunting periods are limited and hunting is forbidden when birds are at their most vulnerable: during their return migration to nesting areas, reproduction and the raising of their chicks. Now legislated for purely via the 'Habitat Regulations'.
Bern-A3	Bern Convention Appendix 3	International	Special protection through 'appropriate and necessary legislative and administrative measures', of the listed wild fauna species. Now legislated for purely via the 'Habitat Regulations'.

Abbreviation	Full Designation	Type	Description
BoCC Amber/Red	Birds of Conservation Concern 4 Amber Birds of Conservation Concern 4 Red	National	Birds of Conservation Concern 4: the Red List for Birds, is a standardised criteria and assessment for assigning 244 species with breeding, passage or wintering populations in the UK. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group.
HabRegs2	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 2)	National Legislation	Schedule 2- European protected species of animals.
HabRegs4	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 4)	Legislation	Schedule 4- Animals which may not be taken or killed in certain ways.
HabRegs5	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 5)	National Legislation	Schedule 5- European protected species of plants.
Protection of Badgers Act (1992)	Protection of Badgers Act (1992)	National Legislation	The Protection of Badgers Act 1992 protects badgers from taking, injuring, killing, cruel treatment, selling, possessing, marking and having their setts interfered with, subject to exceptions.
S1 WCA	Schedule 1 listed species Wildlife and Countryside Act 1981 (as amended)	National Legislation	Schedule 1 of the Wildlife and Countryside Act 1981 lists species of birds and their young, for which it is an offence to intentionally or recklessly disturb at, on or near an 'active' nest.
S2 WCA	Schedule 2 listed species Wildlife and Countryside Act 1981 (as amended)	National Legislation	Schedule 2 of the Wildlife and Countryside Act 1981 lists birds which are protected during the close season (1 February to 31 August).
S2(4)	Section 2 (4) Nature Conservation (Scotland) Act	National Legislation	Nature conservation orders and related orders

Abbreviation	Full Designation	Type	Description
ScotBL	Scottish Biodiversity List of species of principal importance for biodiversity conservation	National	The Scottish Biodiversity List is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation. The development of the list has been a collaborative effort involving a great many stakeholders.
UKPS	UK Priority Habitats and Priority Species	UKPS	The UK List of Priority Species and Habitats contains 1150 species and 65 habitats that have been listed as priorities for conservation action. The UKPS is no longer extant but many of the priority habitats and species remain conservation priorities.
WCA5/9.1k/l	Wildlife and Countryside Act 1981 (as amended in Scotland)(Schedule 5 Section 9.1 (killing/injuring))	National Legislation	Section 9.1. Animals which are protected from intentional killing or injuring.
WCA5/9.1t	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.1 (taking))	National Legislation	Section 9.1 Animals which are protected from taking.
WCA5/9.2	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.2)	National Legislation	Section 9.2 Animals which are protected from being possessed or controlled (live or dead).
WCA5/9.4a	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4, subdivision a)	National Legislation	Section 9.4 subdivision a - Animals which are protected from intentional damage or destruction to any structure or place used for shelter or protection.
WCA5/9.4b	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4b)	National Legislation	Section 9.4 Animals which are protected from intentional disturbance while occupying a structure or place used for shelter or protection.
WCA5/9.4c	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4c)	National Legislation	Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed.
WCA5/9.5a	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.5a)	National Legislation	Section 9.5 Animals which are protected from being sold, offered for sale or being held or transported for sale either live or dead, whole or part.

Abbreviation	Full Designation	Type	Description
WCA5/9.5b	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.5b)	National Legislation	Section 9.5 Animals which are protected from being published or advertised as being for sale.
WCA8	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 8)	National Legislation	Plants which are protected from intentional picking, uprooting or destruction (Section 13 1a); selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a); advertising (any of these) for sale.
WCA9/INV	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 9)	National Legislation	Includes all non-native species listed in Schedule 9 (parts 1 and 2) covering animals and plants which may not be released or allowed to escape into the wild plus additional invasive non-native species.

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