Appendix 2A
Request for Scoping Opinion

Lewis Wind Power

wood.

Stornoway Wind Farm Limited

Stornoway Wind Farm

Scoping Report

Wood Environment & Infrastructure Solutions UK Limited – July 2018

Report for

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Doc Ref. 40001CGos012R

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Document revisions

No.	Details	Date
1	Draft Report	10 April 2018
2	Updated Draft Report	17 May 2018
3	Updated Draft Report v2	13 July 2018
4	Final Report	18 July 2018

Executive summary

Purpose of this report

This scoping report has been prepared by Wood on behalf of Stornoway Wind Farm Limited (SWL). SWL is a subsidiary of Lewis Wind Power, which is a joint venture between EDF Energy Renewables (EDF ER) Holdings Ltd and Amec Project Investments Ltd in partnership with the Stornoway Trust.

This report sets out the proposed scope of the Environmental Impact Assessment (EIA), the findings of which will be presented in an Environmental Impact Assessment Report (EIA Report). This purpose of this report is to serve as a formal request to the Scottish Ministers to provide a scoping opinion under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

The EIA, which this scoping request will inform, relates to a forthcoming application under section 36 of the Electricity Act 1989 (as amended) to construct and operate a wind farm on the site of the Consented Stornoway Wind Farm.

Summary Findings of the Scoping Report

The Proposed Development has the benefit of being able to draw on previous surveys (carried out between 2010 – 2014) and assessment work relating to the Consented Stornoway Wind Farm. Therefore, this scoping report draws on these quantitative results to identify where significant effects are likely in terms of each of the relevant environmental topics.

The following environmental topic areas are proposed to be scoped into the EIA Report:

- Landscape and Visual;
- Historic Environment;
- Ornithology;
- Ecology;
- Fisheries;
- Geology, Hydrogeology and Hydrology;
- Traffic and Access;
- Noise;
- Socio-economics, Tourism and Recreation;
- Shadow Flicker; and
- Human Health; and
- Major Accidents and Disasters.

Terminology

For the purposes of this report the following terminology is used:

- The '**Consented Stornoway Wind Farm**' - the 36 turbines and associated infrastructure granted consent by the Scottish Ministers in September 2012, which was subsequently amended in March 2016, and for which an extension of the commencement of the development date was granted in June 2017;
- The '**Proposed Development**' - the revised wind farm subject to the 2018 EIA, which is currently anticipated to comprise approximately 33 turbines (approximately 25 turbines with a blade tip height of 187m and a rotor diameter of 164m; and around 8 turbines with a blade tip height of 155m and a rotor diameter of 135m). The Proposed Development layout is illustrated in **Figure 2.2** in **Appendix A**;
- The '**2011 ES**' - the Lewis Wind Power Stornoway Wind Farm Environmental Statement (Entec UK Ltd, June 2011);
- The '**2015 ES**' - the Lewis Wind Power Stornoway Wind Farm ES supporting an Application for Variation of Consent (Lewis Wind Power, May 2015);
- The '**Site**' means the site of the Consented Stornoway Wind Farm located approximately 1.5km west of the town of Stornoway, Isle of Lewis (and centred on National Grid Reference (NGR) E137149 N933373). The Site is shown on **Figure 1.1** in **Appendix A**;
- The '**Applicant**' means Stornoway Wind Farm Limited (SWL), a subsidiary of Lewis Wind Power, which is a joint venture between EDF Energy Renewables Holdings Ltd and Amec Project Investments Limited in partnership with the Stornoway Trust.

Contents

1. Introduction

1.1 Introduction

1.1.1 Stornoway Wind Farm Limited (the 'Applicant') is proposing to submit an application under section 36 of the Electricity Act (1989) (as amended) to construct and operate a wind farm currently anticipated to comprise around 33 turbines with a generating capacity in excess of 50MW on the site of the Consented Stornoway Wind Farm. The application for the proposed wind farm scheme is hereafter referred to as the 'Proposed Development'.

1.1.2 The Consented Stornoway Wind Farm gained section 36 consent and deemed planning permission in September 2012 to construct and operate 36 wind turbines. In May 2015, an application was made under the Electricity Act 1989 to amend this consent with regard to the layout, output and size of the wind turbines, with this being granted in spring 2016. Stornoway Wind Farm currently has a consented maximum generating capacity of 180MW, with each turbine having an output of up to 5MW. A further direction to extend the commencement of development date to 06 September 2020 was granted in June 2017.

1.1.3 The site of the Consented Stornoway Wind Farm (hereafter referred to as the 'Site') is located to the south west of the town of Stornoway on the Isle of Lewis and centred on National Grid Reference (NGR) E137149, N933373. The general site location is shown on **Figure 1.1** in **Appendix A**.

1.1.4 The Proposed Development would comprise a different layout, with turbine tip heights of approximately 155m and 187m and turbine rotor diameters of approximately 135m and 164m respectively. The proposed blade tip heights and rotor diameters would maximise potential renewable energy generation at the Site.

1.1.5 In recognition of the scale and nature of the Proposed Development, the Applicant will undertake an EIA to assess potentially significant environmental effects. Under section 36 of the Electricity Act 1989 (as amended), the Proposed Development would require development consent from the Scottish Ministers as it would be a generating station in excess of 50MW.

1.1.6 The Proposed Development falls under Schedule 2 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (the 'EIA Regulations): *a generating station, the construction of which (or the operation of which) will require a section 36 consent but which is not Schedule 1 development*. A Schedule 2 development constitutes EIA development if the application is supported by an EIA Report, or if the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location. Due to the size and scale of the Proposed Development, and the location of the Site, the Applicant acknowledges that an EIA will be required.

1.2 Contents of this Report

1.2.1 This report sets out the proposed scope of the EIA for the Proposed Development, which is to be submitted to the Scottish Ministers as a formal request for a scoping opinion. A scoping opinion is defined under the EIA Regulations as *"as opinion adopted by the Scottish Ministers as to the scope and level of detail of information to be provided in the EIA Report"*. The purpose of this Scoping Report is therefore to:

- Outline the Proposed Development being considered (**Chapter 2**);

- Outlining the consenting and EIA requirements in relation to the Proposed Development (**Chapter 3, Chapter 4**);
- Outline the proposed scope of the work/methodologies that will be used to assess the significance of any potential impacts during the EIA (**Chapter 3**) for the Proposed Development;
- Outline the aspects of the Proposed Development that could potentially result in significant environmental effects (**Chapter 5 – 15**);
- Prepare a proposed contents list for the EIA Report (**Chapter 17**); and
- Outline the proposed statutory and non-statutory organisations to be consulted during the EIA process (**Chapter 18**).

1.2.2 A summary of the scope of the EIA Report is presented in **Table 16.1** of **Chapter 16**.

1.3 The Applicant

1.3.1 Stornoway Wind Farm Limited (SWL) is a subsidiary of Lewis Wind Power Holdings Limited (LWP), which is a joint venture between EDF Renewables Ltd and Amec Project Investments Limited in partnership with the Stornoway Trust.

1.3.2 The Site is owned by the Stornoway Trust, a community owned charitable trust established in 1923, with responsibility for an area covering some 28,000ha. The population within the Stornoway Trust landholding is approximately 12,000, with 45 crofting townships and some 1,347 crofters within the population. The Stornoway Trust has been a long-standing supporter of the development of a renewable energy industry in the Western Isles and over the past ten years has explored a range of options to stimulate renewable energy projects on its land.

1.3.3 In addition to the Proposed Development, LWP is also proposing to develop Muaitheabhal Wind Farm on the Eisgen (Eishken) Estate in the south-east of the Isle of Lewis. The Muitheabhal scheme benefits from three consents that allow for the installation of up to 45 wind turbines. The Muaitheabhal Wind Farm, was acquired by LWP (via lease) in September 2016. LWP intend to develop both wind farms, however the consenting programmes for each of the wind farms will proceed independently.

1.4 The Agent

1.4.1 Wood Environment & Infrastructure Solutions UK Limited (hereinafter referred to as 'Wood') has been commissioned to prepare this report. It requests a *'Scoping Opinion'* from the Scottish Ministers in relation to a proposal to construct and operate a wind farm with a generating capacity in excess of 50MW, on the site of the Consented Stornoway Wind Farm.

1.4.2 Wood is one of the UK's largest multidisciplinary environmental and engineering consultancies. Our business forms part of a global business supplying consultancy, engineering and project management services. From 12 office locations around the UK, our people contribute across the business cycle from policy setting through strategy into implementation, development and operational effectiveness. With skills ranging from development planning and design through an array of environmental and engineering disciplines, we have a comprehensive service portfolio and applied experience in a wide range of markets.

1.4.3 The EIA will be carried out by Wood to standards that comply with quality standards identified by the Institute of Environmental Management and Assessment (IEMA). The EIA Quality Mark scheme was introduced in 2011 and Wood (through its previous entities Amec Foster Wheeler, Amec and

Entec UK Ltd) was a founder member and has held continuous membership since then. Each year, Wood is required to show that it meets seven commitments relating to EIA management, team capabilities, regulatory compliance, EIA context and influence, EIA content, and improving EIA practice. Wood's approach to these matters are examined by IEMA through a number of methods, including reviewing EIA reports we produce, interviewing staff, case studies provided for IEMA to publish and presentations made at conferences.

2. Project Description

2.1 The Site

2.1.1 The Site is located approximately 1.5km west of the town of Stornoway, Isle of Lewis (see **Figure 1.1** in **Appendix A**). It is centred at National Grid Reference (NGR) E137149 N933373. The Site area extends to approximately 1,700 ha, although the wind farm infrastructure would occupy only a small part of the overall Site.

2.1.2 The topography of the Site ranges between 50 – 150m Above Ordnance Datum (AOD), with three hillocks within its northern, central and southern areas. The Site is dominated by blanket bog and associated mosses and heather, though there are some areas of woodland present. There are also a large number of water bodies on Site, both standing and flowing, none of which have any conservation designations.

2.1.3 Access to the Site is via the A859. The A858 runs through the northern part of the Site, and partly along the western boundary.

2.1.4 The nearest settlement to the Site is Stornoway, located 1.5 km to the east, while the nearest residential property Druim Dubh is located at E138299 N 930506 approximately 3km from the Site centre. This property is unoccupied and owned by the Applicant and is likely to be removed as part of the development. LWP are considering opportunities to use the property as either a visitor centre or an operations and maintenance office or stores; any proposals to re-use the property will be subject of a separate planning permission.

2.1.5 Other than the residential area of Stornoway to the east, the area surrounding the Site consists predominantly of boggy, undeveloped peatland. The Site is not subject to any environmental designations.

2.1.6 A large part of the area to the west of the Site is included in the Lewis Peatlands, which is designated as a RAMSAR Site, Special Protection Area (SPA) and Special Area of Conservation (SAC) primarily on the basis of its blanket bog habitats and bird population.

2.1.7 The operational three turbine Beinn Ghrideag Wind Farm is located on the western edge of the Site within the red line boundary. The operational Pentland Road seven turbine scheme is located to the north west of the Site, and the single Bridge Cottages Newmarket turbine is located to the north east. The operational Creed single turbine is located to the south east, as is the three turbine Arnish Moor scheme. The Baile au Truseil three turbine scheme is located approximately 15km to the north of the Site and the Horshader single turbine a similar distance to the north west. There are a number of consented schemes in the area, including the 45 turbine Muaitheabhal scheme located approximately 20km to the south of the Site, which is also owned by LWP, and the North Tolsta and Druim Leatherann schemes which are located 18km to the north east of the Site. These schemes are illustrated on **Figure 2.1** in **Appendix A**.

2.2 Historic and Current Site Uses

2.2.1 The Site is owned by the Stornoway Trust and is primarily used for grazing, forestry, angling and peat cutting. In addition, the former Bardon Quarry, which is now used as the Bennadrove Landfill site and recycling point, is located in the northern third of the Site, close to Loch Àirigh na Lìc.

2.2.2 As noted, the Site has consent for the 36 turbine Stornoway Wind Farm.

2.3 Background Context: Consented Development

2.3.1 On 7 September 2012 the Scottish Ministers granted consent under section 36 of the Electricity Act 1989 (as amended) and deemed planning permission for Stornoway Wind Farm. The Consented Stornoway Wind Farm comprises up to 36 turbines, each with a maximum blade-tip height of 143.5m, and associated infrastructure. It would have a maximum generating capacity of 129.5MW and an operational period of 25 years before being decommissioned. The application was accompanied by the Stornoway Wind Farm ES (Entec UK Ltd, 2011).

2.3.2 On 22 March 2016 the Scottish Ministers granted consent under section 36C of the Electricity Act 1989 (as amended) and varied the deemed planning permission for the Consented Stornoway Wind Farm. The variation was sought in respect to the layout, output and size of the wind turbines, such that a maximum blade-tip height of 145m and a maximum generating capacity of 180MW was consented. The application was accompanied by the Stornoway Wind Farm ES (Lewis Wind Power Ltd 2015) in order to support an Application for Variation of Consent.

2.3.3 A direction was granted by the Scottish Ministers on 16 June 2017, which related to an extension of time to the commencement of development from 7 September 2017 to 6 September 2020.

2.4 The Proposed Development

Project Description

2.4.1 At this stage in the design process, the Proposed Development would comprise the construction and installation of approximately 33 wind turbines and associated infrastructure. twenty four turbines would have a blade tip height of up to 187m and a rotor diameter of up to 164m, while the other nine would have a blade tip height of up to 155m and a rotor diameter of 135m. The project would comprise the following elements:

- Approximately 33 wind turbines and associated infrastructure including foundations and hardstandings;
- Construction of site entrance;
- Upgrade and construction of internal tracks and passing bays;
- Establishment and working of up to seven borrow pits;
- Construction of a temporary site compound(s), including batching plant(s);
- Construction of a new on-site control building and substation;
- Erection of two permanent anemometry masts.
- Installation of Battery Storage System.

2.4.2 The location of individual elements of infrastructure within the wind farm would be determined through the application of a number of design principles which would include the avoidance of:

- Overhead lines (including relevant buffer zones around them);
- Residential properties (including a buffer of 1.5km)[1];
- Heritage assets;

[1] Except Druim Dubh.

- Radio and telecommunications links (including relevant buffer zones);
- Roads (with relevant buffer zones);
- Ecologically sensitive areas;
- Sensitive hydrology, hydrogeology, geology, geotechnical features; and
- Water bodies (with relevant buffer zones).

Timeframes

2.4.3 The Proposed Development would be designed with an operational life of 25 years. Provided there has been no approval to extend operational life, it is expected that the wind farm would then be decommissioned.

Wind Turbines

2.4.4 The candidate turbine models would be selected through a competitive tendering exercise and, as such, their parameters are yet to be finalised. However, a range of turbine height options is being considered in order to maximise the generating capacity at the Site. The turbines for the Proposed Development would not exceed the dimensions of candidate turbine model 2 as detailed in **Table 2.1**.

2.4.5 The number of turbines, turbine parameters and coordinates detailed below are indicative and may be subject to change during the EIA process.

Table 2.1 Candidate Turbine Parameters (Scoping)

	Candidate Turbine Model 1	Candidate Turbine Model 2
Blade Tip Height	155	187
Rotor Diameter	135	164
Hub Height	c.80-90m	105

2.4.6 The indicative turbine coordinates and tip heights of each turbine, as illustrated on the layout in **Figure 2.2** in **Appendix A**, are presented in **Table 2.2**.

Table 2.2 Turbine Coordinates

Turbine Number	Easting	Northing	Maximum Blade Tip Height
1	134912	931497	187
2	135246	930907	187
3	135895	931064	187
4	136535	931467	187
5	136800	931025	187
6	137233	931605	187
7	137518	931202	187

Turbine Number	Easting	Northing	Maximum Blade Tip Height
8	138079	931143	155
9	138050	931752	155
10	138463	932490	155
11	138217	933061	155
12	138512	933966	155
13	138728	934704	155
14	138660	935274	155
15	139269	935736	155
16	138719	935884	187
17	138069	935727	187
18	137469	935215	187
19	136859	935205	187
20	136220	934979	187
21	137450	932746	187
22	136682	932687	187
23	136033	932835	187
24	135551	932107	187
25	136181	931959	187
26	136938	932097	187
27	137725	932254	187
28	137755	933425	187
29	137322	933877	187
30	136584	934477	187
31	137282	934497	187
32	138030	934949	187
33	138138	934310	155

Turbine Foundations and Hardstandings

2.4.7 The typical foundations for the turbines would be concrete base with a steel mesh cage. The foundation concrete would be a high strength structural grade, which is not prone to the leaching of alkalis and therefore would minimise adverse impacts on the peatland. Foundations would be taken down to competent load bearing strata by means of excavating through the peat and

founding on either bedrock or glacial till. Where deep peat is encountered, it is anticipated that foundations would be piled. Where local conditions allow consideration is also being given to alternative foundation designs such as rock anchors.

2.4.8 The crane hardstandings would be built adjacent to the turbine foundation. These areas would provide a stable base on which to lay down turbine components ready for assembly and erection, and to accommodate the cranes necessary to lift the tower sections, nacelle and rotor into place. The hardstanding would be large enough to accommodate all heavy equipment manoeuvring and component storage during turbine installation.

2.4.9 Where turbines are located at the end of a track, long vehicle turn areas would be provided within the hardstanding.

Tracks

2.4.10 Access to the wind turbines and ancillary structures would be provided by a network of graded stone tracks. The tracks would be designed to the appropriate geometry and would have sufficient strength and durability to convey heavy loads to their destination throughout the lifetime of the wind farm. Temporary passing places would be provided as required to facilitate traffic movements.

2.4.11 The design of a particular length of track would depend on local geological, ecological, topographical and drainage conditions. To achieve a track structure that meets these requirements, a variety of designs would be adopted, namely; a) upgraded internal track, b) floating track, c) excavated track, and d) terraced track.

2.4.12 The primary objectives that would inform the design of the access tracks would be:

- Requirements to maintain water flows across tracks and minimise disruption to peat hydrology;
- Minimisation of peat spoil by routing tracks through areas of shallower peat where possible;
- Selection of an access track design for any location that minimises the potential for peat spoil;
- Maintaining and/or improving stability of soft unstable areas of peat;
- Serviceability requirements for construction and wind turbine delivery vehicles; and
- Constructability and safety considerations.

2.4.13 It is anticipated that a substantial proportion of material for track construction would be won from on-Site borrow pits (subject to rock suitability).

Watercourse Crossings

2.4.14 The access track layout would be designed to avoid crossing watercourses as far as possible. However, due to the number of watercourses on the Site, it would not be possible for the Proposed Development to take place without some crossings. The appropriate method of watercourse crossing would be selected based on the topography, hydrology and ecology of each watercourse individually.

2.4.15 All watercourse crossings would be designed in accordance with the SEPA Good Practice Guide for the construction of River Crossings (2010). Single span bridge crossings would be used where possible, but where small channel size or indistinct topography dictates, culverts would be used. Where culverts are required, they would have regard for SEPA's position statement WAT-PS-06-02 on culverting of watercourses, and would be designed in accordance with the CIRIA Culvert Design and Operation Guide (C689). All watercourse crossings would be designed to convey a 1 in 200

year return period flood event and individually sized and designed to suit the specific requirements and constraints of its location.

Site Access

2.4.16 Site access would be required for the delivery of the turbine components, construction materials and plant, and for general construction traffic. Access to the Site is likely to be gained via locations on the A859 as well as via the A858 (Pentland Road).

2.4.17 Construction Heavy Goods Vehicles (HGVs) associated with the delivery of turbine components and construction materials is proposed to be routed to the site via the Arnish Point access road and the A859 respectively, or a new access road to the A859 via the Creed Enterprise Park[2] and then transported to the wind farm site.

Borrow Pits

2.4.18 It is anticipated that the majority of rock used in the construction of access tracks, hardstandings, bridges, foundations and compounds would be sourced from borrow pits within the Site. However, at the beginning of construction, some stone would be imported to construct the Site access and the track to at least one internal borrow pit (with tracks to other borrow pits potentially being constructed with stone won from this and others as they are opened up).

2.4.19 The use of up to seven borrow pits was identified in the 2011 ES and the 2015 ES and it is likely that each of these would be required in order to construct the Proposed Development.

Temporary Construction Compound

2.4.20 One main construction compound and up to two other temporary compounds plus equipment laydown areas would be required on the Site. The compounds would contain site offices, welfare facilities and provide storage for plant and materials.

Electrical Systems

Electrical Layout and Substation Compound

2.4.21 The proposed wind turbines would be connected by underground cabling between each turbine which would ultimately connect to a new control building and substation located at the east of the Site. The substation compound, of approximately 90m x 60m, would comprise an area of hardstanding on which would be sited a single storey control building, of approximately 40m x 6.5m, housing switchgear, metering, protection and control equipment as well as welfare facilities. The substation would then be connected to the SHET transmission system.

Battery Storage

2.4.22 A battery storage facility able to both import and export power to the SHET network is proposed. The battery storage facility would provide back-up power to National Grid for the benefit of providing stability to the electricity supply network and the integration of more renewable energy generation.

[2] Planning Permission was renewed in September 2017 (planning application 17/00290/PPD) for improvements to Arnish Road and the creation of a new access road to the A859 via the Creed Business Park.

2.4.23 The battery storage facility would comprise a series of Energy Storage Units (ESU) and each ESU would include:

- 2 x 40ft battery containers;
- 1 x Transformers;
- 1 x HVAC Coolers;
- A perimeter fence; and
- Electrical cabling connecting to the electrical substation.

2.4.24 Each battery container would be of steel construction and appear very similar to a shipping container. These would be arranged in tandem i.e. two containers on a combined plinth with a shared transformer unit and coolers.

2.4.25 A separating wall between the pair of containers is the highest elevated point at 3.8m. Each ESU would measure approximately 17.1m by 7.6m and would be 3.8m at its maximum height.

2.4.26 A security fence of up to 3m would be installed around the perimeter and the site would be served via a locked access gate.

Grid Connection

2.4.27 The Proposed Development substation would be connected to the electricity transmission network via overhead or underground electricity transmission cables. The grid connection is subject to a separate consenting regime and would be the responsibility of the electricity transmission network operator, SHET. Information on the route of the grid connection would be set out in the EIA Report, which would accompany the application for the Proposed Development.

Anemometer Masts

2.4.28 It is likely that two permanent supervision anemometry masts would be required. These would be required throughout the lifetime of the Proposed Development for:

- Formal testing of turbine manufacturers' power curves, for warranty purposes;
- To enable long and short-term power predictions;
- Ongoing performance monitoring;
- To measure wind speed during any required noise monitoring; and
- To assist with compliance with Health and Safety requirements during maintenance activities that are dependent on low wind speeds (e.g. blade inspections).

2.4.29 The exact details of the structures are yet to be confirmed, however they are expected to be free standing lattice type construction at the hub height of the nearest wind turbine.

2.5 Rationale for the Proposed Development

2.5.1 In May 2008, the Scottish Government appointed Halcrow Group Ltd to undertake an independent study with the key objective *"…to help the Western Isles to deliver economic and community benefit by identifying renewable energy potential, including the role for different scales of energy generation compatible with environmental obligations"*.

2.5.2 A secondary objective of the study was to *"…identify other opportunities for sustainable development"*.

2.5.3 The study was undertaken in conjunction with the key economic and environmental stakeholders: Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA), Comhairle nan Eilean Siar (CnES), Highlands and Islands Enterprise (HIE) and the Scottish Government. The results of the study were published in January 2009 in the 'Economic and Community Benefit Study, Final Report' (the 'Halcrow Report').

2.5.4 A sustainability appraisal undertaken as part of this study identified that there was strong stakeholder support for a large scale commercial wind farm development near Stornoway, but less so in most rural areas of Lewis. The sustainability appraisal identified that the only feasible area for a large scale onshore wind farm development in North Lewis was an area south-west of Stornoway, outside of the Lewis Peatlands Special Protection Area (SPA). The Halcrow Report further states that *"It is our view that up to 150MW of installed capacity could be developed in this area without impacting on* [the] *integrity of environmental designations, although further assessment is still required to confirm the scale of permissible development, particularly in relation to the collision risk with red throated divers"*.

2.5.5 The Proposed Development Site is based on this area identified in the Halcrow Report. The development site boundary lies immediately to the south-east of the Lewis Peatlands SAP and RAMSAR site and at is closest is 1.5km south-east of the Lewis Peatlands Special Area of Conservation (SAC). The development site itself is not designated.

2.5.6 The Proposed Development is further informed by the 'Outer Hebrides Local Development Plan Supplementary Guidance for Wind Energy Development' (CnES, December 2016). The Proposed Development Site lies within an 'Area of Constraint' where wind farms may be appropriate in some circumstances. CnES will consider wind farm developments in these areas subject to a satisfactory assessment against the Local Development plan and the wind energy supplementary guidance document.

2.5.7 The application for the Proposed Development could increase the efficiency of the scheme and the renewable energy yield compared with that of the Consented Stornoway Wind Farm development and maximise the potential for renewable energy generation at the Site based on the most up to date turbine technology. This would make an important and substantial contribution to achieving multiple existing targets regarding the deployment of renewable energy technologies and greenhouse gas emissions reduction in pursuit of climate change mitigation.

Energy Policy Rationale

2.5.8 The Scottish and UK legislative and policy framework on climate change is shaped by international climate change legislation. These incorporate binding targets in the reduction of greenhouse gas emissions and in the generation of energy from renewable sources.

2.5.9 In January 2008 the European Commission (EC) published a '20-20-20' targets package. Through this package, the EU adopted a target of at least 20% of its total energy needs to be generated from renewable resources by 2020. In October 2014 the EU agreed the 2030 Climate & Energy Policy Framework, which introduced the binding target of at least 27% of all energy consumed to come from renewable energy in 2030. While the most recent EU Directive targets may not necessarily become UK policy due to Brexit, the Scottish Government intends to still move forward with ambitious plans to reduce emissions.

2.5.10 The Scottish Government has recently published three new documents pertaining to energy:

- The Climate Change Plan (February 2018);

- The Scottish Energy Strategy (December 2017); and
- The Onshore Wind Policy Statement (December 2017).

2.5.11 The Climate Change Plan provides a plan for meeting the Scottish Government's greenhouse gas emission reduction targets to 2032, by which time it is envisaged that Scotland's electricity will be largely from renewable sources.

Scottish Energy Strategy: The Future of Energy in Scotland (2017)

2.5.12 The Scottish Energy Strategy, which was published in December 2017, sets out the Scottish Government's 2050 vision for the future energy system in Scotland:

"A flourishing, competitive local and national energy sector, delivering secure, affordable, clean energy for Scotland's households, communities and businesses." (page 6).

2.5.13 The Strategy reiterates the role that Scotland can play in delivering international and national commitments on reducing greenhouse gas emissions and notes that renewable energy and its associated infrastructure is now a major industrial sector in its own right, helping to sustain economic growth and employment.

2.5.14 Two new targets for the Scottish energy system by 2030 are set out:

- *"The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources;*
- *An increase by 30% in the productivity of energy use across the Scottish economy."* (page 7).

2.5.15 The 2050 vision is built around six priorities. Of particular relevance to this proposal is the priority regarding 'Renewable and low carbon solutions'. Against this priority the Scottish Government state that it will:

"continue to champion and explore the potential of Scotland's huge renewable energy resource, and its ability to meet our local and national heat, transport and electricity needs – helping to achieve our ambitious emissions reductions targets." (page 8).

2.5.16 The role of renewable energy generation to achieve climate change targets is therefore recognised by the Strategy and the vital role of onshore wind in power generation is identified (page 44).

2.5.17 The Strategy recognises that Scotland is well on its way to achieving the target of generating 100% of its electricity demand from renewables in 2020, with provisional statistics showing that 54% of Scotland's electricity needs were met from renewables in 2016. It is reported that renewable energy sources now supply the equivalent of 18% of Scottish final energy consumption (up from around 8% in 2009) and that renewables generated 42% of Scotland's electricity production in 2015, meeting the majority of Scottish demand.

The Climate Change Plan (2018)

2.5.18 The Climate Change Plan, which was published in February 2018, sits alongside the Scottish Government's Energy Strategy. It sets out policies and proposals on how the Scottish Government intends to meet its greenhouse gas emission reduction targets from 2018 – 2032, which provide the strategic framework for transition to a low carbon Scotland. The plan includes transformational outcomes in transport, heat, electricity generation and energy efficiency, along with increased natural carbon sinks and more efficient agricultural practices. The plan aims that by 2032, Scotland will have reduced its emissions by 66% against 1990 levels. Policy ambitions in the electricity sector include:

- By 2032 – Scotland's electricity system will be largely from renewable sources; and
- From 2020 onwards, Scotland's electricity grid intensity will be below 50g of CO_2 per kilowatt hour.

2.5.19 The achievement of these ambitions is to be aided by the *"high penetration of renewables, using a range of technologies including onshore wind"* (page 74) amongst others.

Onshore Wind Policy Statement

2.5.20 Alongside the Energy Strategy and Climate Change Plan, the Scottish Government also published an Onshore Wind Policy Statement in December 2017, which sets out its position on Onshore Wind.

2.5.21 The Statement notes that onshore wind development is essential to Scotland's transformation to a fully decarbonised energy system by 2050 and brings opportunities which underpin the vision to grow a low carbon economy and build a fairer society. As a result of this, it is identified that:

"Scotland will continue to need more onshore wind development and capacity, in locations across our landscape where it can be accommodated" (paragraph 4).

2.5.22 The Statement reaffirms the Scottish Government's commitment to existing onshore wind policy, which is to support deployment of onshore wind whilst protecting the environment and residential amenity and maximising local benefits. The Statement recognises that onshore wind is a mature sector and is the lowest cost renewable electricity at scale, but does face a period of uncertainty due to changes to subsidies at the UK level. The Statement establishes that the Scottish Government is supportive of the need to design new wind farms to maximise efficiency and return, and hence increase viability.

2.5.23 The Scottish Government acknowledges that onshore wind technology is moving towards larger and more powerful turbines and that, by necessity, these will mean taller towers and blade tip heights. It is noted that fewer but larger wind turbines may also present an opportunity for landscape improvement, as well as increasing the amount of electricity generated. The Statement sets out that the Scottish Government:

"…Fully supports the delivery of large wind turbines in landscapes judged to be capable of accommodating them without significant adverse impacts" (paragraph 25).

Installed Renewable Energy Generation

2.5.24 On any given development site, the rotor diameter of a wind turbine is of critical importance, with a larger rotor diameter having the potential to generate a greater amount of renewable electricity.

2.5.25 Through the use of a larger turbine model, as is sought for the Proposed Development, it could be possible to construct a wind farm that could increase the power output of the scheme within an existing site boundary.

3. EIA Process and Consultation

3.1 EIA Overview

3.1.1 EIA is a systematic process that must be followed for certain categories of project before they can receive development consent. It aims to identify a project's likely significant effects through the scoping process, and then assess those effects in an EIA Report. This helps to ensure that the importance of the predicted effects and the scope for mitigation measures to reduce them are properly understood by the public and, in this instance, the Scottish Ministers, before it makes a decision. Consultees are encouraged to provide confirmation of agreement to the proposed scope in terms of what is included and excluded, the methodology and the receptors identified.

3.1.2 The EIA process should be systematic, analytical, impartial, consultative and iterative allowing opportunities for environmental concerns to be addressed in the design of a project. Typically, a number of design iterations take place in response to environmental constraints identified during the EIA process prior to the final design being reached.

3.1.3 The EIA process will identify the different methodologies used for the assessment and these should be based on recognised good practice and guidelines specific to each technical area as set out in **Section 4.7**.

3.2 EIA Terminology

Impacts and Effects

3.2.1 The terms *impact* and *effect* are often used synonymously and this can lead to confusion. For clarity, a cause and effect logic will be applied to the EIA of the Proposed Development, whereby impacts are the changes that arise as a result of the development (e.g. changes in drainage pattern) and effects are the consequences of those changes (e.g. habitat becomes degraded by the altered drainage pattern).

Type of Effect

3.2.2 The EIA Regulations (Schedule 4, Part 5) require consideration of a variety of types of effect, namely direct / indirect, secondary, cumulative, positive / negative, short / medium / long-term, and permanent / temporary. In the EIA Report that will follow this scoping report, effects are considered in terms of how they arise, their nature (i.e. whether they are positive or negative) and duration. Each will have a source originating from the development, a pathway and a receptor and may fall into one of several categories:

- Direct effects are readily identified because of the physical connection between some element of the development and an affected receptor;
- Indirect effects require some additional pathway for the effect to arise, for example, a listed building may not be directly impacted by any elements of a development, but, if the development affected the setting of the listed building there would be an indirect effect;
- Secondary effects would typically require further pathway connections, for example, an effect on a receptor population A could have a secondary effect on receptor population B, if B was itself dependent on A in some way, as, for example, a food source; and

- Cumulative effects arise when the receptors affected by one development are also affected by other developments resulting in the aggregation of environmental effects or the interaction of impacts.

3.2.3 Most predicted effects will be obviously positive or negative, and will be described as such. However, in some cases it is appropriate to identify that the interpretation of a change is a matter of personal opinion, and such effects will be described as 'subjective'.

Temporal and Spatial Scope

3.2.4 In its broadest sense, the spatial scope is the area over which changes to the environment would occur as a consequence of the development. In practice, an EIA should focus on those areas where these effects are likely to be significant.

3.2.5 The spatial scope varies between environmental topic areas. For example, the effect of a proposed development on the landscape resource and visual amenity is generally assessed within a zone of up to 35km from the wind turbines (and potentially up to 70km for cumulative effects), whilst noise effects are assessed within a much smaller area encompassing those representative properties close to a development site.

3.2.6 The temporal scope of environmental effects will be stated in the EIA Report where known. Effects are typically described as:

- Temporary – these are likely to be related to a particular activity and will cease when the activity finishes. The terms 'short-term' and 'long-term' may also be used to provide a further indication of how long the effect will be experienced; and
- Permanent – this typically means an unrecoverable change.

3.2.7 Effects during the following key stages of a proposed development will generally be considered in the EIA Report:

- Construction – the effects may arise from the construction activities themselves, or from the temporary occupation of land. Effects are often of limited duration although there is potential for permanent effects. Where construction activities create permanent change, the effects will continue into the operational period;
- Operation – effects may be permanent, or they may be temporary, intermittent, or limited to the life of a proposed development until decommissioning (as in the case of wind power developments which gain planning permission for a defined and finite number of years); and
- Decommissioning - effects may arise from the decommissioning activities themselves, or from the temporary occupation of land. The effects would generally be temporary and of limited duration. Additional permanent change would normally be unlikely unless associated with restoration.

Defining Significance

3.2.8 Development proposals affect different environmental elements to varying degrees and not all of these are of sufficient concern to warrant detailed investigation or assessment within the EIA process. The EIA Regulations identify those environmental resources that warrant investigation as those that are *"likely to be significantly affected by the development"* (Schedule 4(4)).

3.2.9 The EIA Regulations themselves do not define significance and it is therefore necessary to state how this will be defined for the EIA. Conclusions about significance of effects are derived with reference to available information about the nature of the development proposal, the

environmental receptors (or 'receiving environment') and with reference to prediction about the potential changes that a proposed development would cause.

3.2.10 In each of the environmental topic chapters, professional judgement is used in combination with relevant guidance to assess the interaction of the receptor's 'sensitivity' (this may be defined in terms of importance, value, rarity, quality) against the predicted magnitude of change to identify a level of effect. **Table 3.1** provides a general indication of how receptor sensitivity and magnitude of change can be combined to establish the level of effect.

3.2.11 Note however that the categorisation illustrated in **Table 3.1** provides a guide only, and may be moderated by the specialist that undertakes the assessment in accordance with professional judgement and experience. In particular, the divisions between categories of receptor sensitivity, magnitude of change, and level of effect should not be interpreted as definitive, and the lines that represent the boundaries between categories should in many cases be considered as 'blurred'. In some cases, the judgement can be guided by quantitative values, whilst in other cases qualitative descriptions are used. The significance of the effect may also need to be qualified with respect to the scale over which it may apply (e.g. local, regional, national and international). There are also specific variations for some topics, for example noise where the assessment establishes whether a proposed development would meet or exceed limit values defined by the relevant guidance methodology, rather than establishing whether a significant effect would occur. Any such variation is described within the individual technical chapters in this scoping report.

Table 3.1 Guide to Establishing the Level of Effect

		Importance or Sensitivity of Receptor			
		HIGH	**MEDIUM**	**LOW**	**NEGLIGIBLE**
Magnitude of Change	**LARGE**	Very substantial or substantial	Substantial / moderate	Moderate / slight	Negligible / no effect
	MEDIUM	Substantial / moderate	Moderate	Slight	Negligible / no effect
	SMALL	Moderate / slight	Slight	Slight / negligible	Negligible / no effect
	NEGLIGIBLE	Negligible / no effect	Negligible / no effect	Negligible / no effect	Negligible / no effect
Key		Significant in terms of the EIA Regulations			
		Not significant in terms of the EIA Regulations			

3.2.12 In its simplest form, the outcome of the assessment of a given effect on a particular receptor would be a determination that it is either significant or not significant. However, there may be instances where it is appropriate to further sub-divide the category of 'not significant': for example, by the use of the terms 'slight' and 'negligible' in terms of the level of effect. The use of the category of 'slight' may for example be used in acknowledgement that there are instances whereby there may be an effect, albeit that this is not likely to be significant. This approach may better facilitate assessment of cumulative effects, where cumulatively several slight effects could be significant. While in general, environmental effects are categorised as substantial, moderate, slight, negligible or no effect; specific technical assessment may deviate from this, though this would be explained in the relevant methodology section.

3.2.13 Having defined a level of effect, professional judgement in combination with guidance and standards are then applied to identify which of those levels of effect are then considered to be equivalent to significant effects in terms of the EIA Regulations. For some of the topics that would be assessed in the EIA Report that would follow this scoping report, there is published guidance about significance evaluation and, where such topic-specific guidance exists, it will be used to inform the development of the significance evaluation methodologies. For other topics, a level of effect of substantial or moderate / substantial is generally of most importance to the decision-maker and so these effects are considered significant in terms of the EIA Regulations. Where the level of effect is considered to be moderate or less, these are generally not deemed significant in terms of the EIA Regulations. However, depending on the receptor being considered, it is possible that some potentially moderate effects could be judged as significant in terms of the EIA Regulations, and where this is considered to be the case, the rationale for this conclusion will be provided in the technical assessments.

3.3 EIA Scoping

3.3.1 The results of the EIA process are reported in an EIA Report and Schedule 4(4) of the EIA Regulations specifies that the EIA Report should describe those:

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

3.3.2 Regulation 4(2) of the EIA Regulations requires the interaction between these factors to be considered. In addition, Regulation 4(4) requires EIA Reports to consider:

"…the expected effects deriving from the vulnerability of the development to risks, so far as relevant to the development, of major accidents and disasters."

3.3.3 Establishing which aspects of the environment are likely to be significantly affected by a particular project is captured in the EIA scoping process. Scoping is the process of identifying those aspects of the environment and associated issues that need to be considered when assessing the potential effects of a proposed development. This recognises that there may be some environmental elements on which the project is unlikely to have a significant effect and hence where there is no need for further investigation to be undertaken as part of the EIA.

3.3.4 The Proposed Development has the benefit of being able to draw on previous survey work (carried out between 2010 and 2018) and assessment work. Therefore, this scoping report draws on existing survey data and assessment work to identify where significant effects are likely in terms of each of the relevant environmental topics. This allows a more quantitative approach than is usually possible at scoping stage for 'scoping in' those environmental topics that are likely to result in significant effects and 'scoping out' those environmental topics that are not in terms of the Proposed Development.

3.3.5 The proposed scope of the EIA for the Proposed Development with respect to the following environmental topics is set out in **Chapters 5** to **15** of this report and summarised in **Chapter 16**. These include:

- Landscape and Visual Assessment;
- Historic Environment;
- Ornithology;

- Ecology;
- Fisheries;
- Geology, Hydrology and Hydrogeology;
- Traffic and Access;
- Noise;
- Socio-economics, Tourism and Recreation; and
- Shadow Flicker.

3.3.6 The scope and assessment methodologies proposed in **Chapters 5** to **15** are based on recognised good practice and guidelines specific to each topic area. Each environmental topic chapter identifies where significant effects are anticipated as a result of the Proposed Development, taking account of:

- The description of the Proposed Development;
- Baseline data from the 2011 ES, the 2012 ES Addendum and the 2015 ES where appropriate, and ongoing ornithology survey work;
- Changes to guidance on assessment methodologies since these previous ES's;
- Existing conclusions regarding significant effects for the Consented Stornoway Wind Farm 2011 ES and the decisions made by the Scottish Ministers (where relevant); and
- Any cumulative effects, which may arise.

3.3.7 The potential for any significant effects to arise as a result of the Proposed Development are set out in each environmental topic area, and these would be carried forward into the relevant EIA Report chapter.

3.4 Cumulative Effects

3.4.1 Cumulative effects can arise from the interaction between a proposed development and other developments already built or proposed. In line with standard practice, for the purpose of the EIA, other wind farm developments which are operational, subject to planning approval or subject to a full and validated planning application (subject to a cut-off date to be established) will be included in the consideration of potential cumulative effects.

3.5 Mitigation

3.5.1 Some mitigation measures to avoid, reduce or offset the consequences of the Proposed Development would be embedded within the design of the Proposed Development whilst others may require adherence to particular constraints on construction methodology or mode of operation. For the purpose of this EIA, 'embedded mitigation' or 'inherent mitigation' (i.e. measures to reduce environmental effects that are included as standard practice, or offered as part of the design of the Proposed Development) will be identified in each of the environmental topic chapters, and reference to the potential for relevant conditions identified.

3.5.2 The final assessment of will take into account the mitigation measures and constraints that have been incorporated into Proposed Development, and will therefore be an assessment of residual effects.

3.5.3 It is likely that the following management plans, which will include details of mitigation measures relevant to the particular topic area, will be submitted as part of the EIA or as a post-consent condition:

- Construction Environmental Management Plan (CEMP) ;
- Habitat Management Plan (HMP) and Species Protection Plan;
- Peat Management Plan (PMP); and
- Traffic Management Plan (TMP).

3.6 EIA Methodology

3.6.1 All the relevant environmental topics have previously been subject to survey, investigation and assessment, and only those individual topic chapters that are likely to result in significant effects would be carried forward in the EIA Report to accompany the Proposed Development. For those environmental topic areas which are unlikely to result in significant environmental effects, the rationale for this is set out in this scoping report.

3.6.2 The EIA Report will identify the assessment methodologies based on recognised good practice and guidelines specific to each of the relevant environmental topic areas. In general terms, the technical studies undertaken for each topic area and chapter to be included in the EIA Report to accompany the Proposed Development would include:

- Collection and collation of existing baseline information about the receiving environment and surveys to fill any gaps in knowledge or to update any historic information, together with identification or any relevant trends in, or evolution of, the baseline. This will be known as the 2018 Baseline, and will be informed by the 2011 ES and the 2015 ES;
- Consultation with experts and relevant consultees to define the scope of the assessment and study area and subsequent consultation in response to emerging study findings;
- Consideration of the potential effects of the Proposed Development on the baseline, followed by identification of design changes (or mitigation measures) to seek to avoid or reduce any predicted adverse effects;
- Engagement with other technical topic specialists and engineers / designers in a design iteration process seeking to optimise the scheme for the differing environmental effects and to identify any appropriate mitigation measures; and
- Assessment of the final scheme design and evaluation of effects, together with an evaluation of any residual significant effects that remain, after mitigation measures have been implemented.

3.7 Consultation

3.7.1 Consultation is an essential element of the EIA process and will be reported within the EIA Report and supporting documentation as required.

3.7.2 The Applicant is committed to promoting dialogue with statutory and non-statutory consultees and the local community and is therefore seeking to engage those with an interest in the Proposed Development. A consultation event will be arranged to allow opportunity for the public, local councillors and other interested parties to comment and engage with the Applicant about the Proposed Development.

3.7.3 Further details of the consultees who will be provided a copy of this report are set out in **Chapter 18**.

4. Energy and Planning Policy Context

4.1 Introduction

4.1.1 The EIA will be progressed taking account of applicable legislation, policy and guidance. This chapter of the EIA Report will outline the regulatory framework and energy and planning context applicable to the Proposed Development from a European, UK and Scottish perspective. A review of the framework of relevant national and local planning policy that relates to the Proposed Development would be undertaken and emerging policy would also be considered in the context of the proposed Local Development Plan. Finally, supplementary guidance would be given consideration.

4.1.2 Policies related to individual disciplines would be examined within the relevant technical chapters of the EIA Report. A separate Planning Statement would be prepared in addition to the EIA Report, which would consider the compatibility of the Development with planning policy.

4.2 Regulatory Context

4.2.1 The Proposed Development would have an installed capacity of over 50MW and, as such, would be determined under section 36 of the Electricity Act 1989 (as amended). Section 36 sets out the requirements for a generating licence. It states:

"(1) Subject to subsections (2) and (4) below, a generating station shall not be constructed, extended or operated except in accordance with a consent granted by the Secretary of State."

4.2.2 Section 57 (2) of the Town & Country Planning (Scotland) Act 1997 states:

"On granting a consent under section 36 or 37 of the Electricity Act 1989 in respect of any operation or change of use that constitutes development, the Secretary of State may direct that planning permission for that development and any ancillary development shall be deemed to be granted, subject to such conditions (if any) as may be specified in the direction".

4.2.3 The EIA Regulations provide the requirements for undertaking the EIA process for development to be consented under the Electricity Act 1989 (as amended). The EIA Report would be prepared in accordance with Schedule 4 of the EIA Regulations.

4.3 Energy Policy Context

4.3.1 The following legislation and policy are relevant to the Proposed Development and would be considered in the EIA Report:

- The Renewable Energy Directive (2009/28/EC);
- The EU 2030 Climate & Energy Policy Framework;
- Climate Change (Scotland) Act 2009;
- The Climate Change Delivery Plan 2009;
- Low Carbon Economic Strategy for Scotland 2010;
- Low Carbon Scotland – Meeting the Emissions Reduction Targets 2013-2027;

- The Scottish Government Renewables Action Plan June 2009 and 2011;
- Electricity Generation Policy Statement 2013;
- 2020 Renewables Routemap June 2011, updated October 2012 and December 2013;
- The Climate Change Plan 2018;
- The Scottish Energy Strategy 2017; and
- The Onshore Wind Policy Statement 2017.

4.4 Scottish Planning Policy & Guidance

4.4.1 There are legal, policy and advice documents which would be material considerations in the determination of the section 36 application for the Proposed Development, including those noted in the following sections:

National Planning Framework 3 (NPF3)

4.4.2 NPF3 (June 2014) provides the statutory framework for Scotland's long term spatial development. It sets out the Scottish Government's spatial development priorities for the next 20 to 30 years and what is expected of the planning system and the outcomes it must deliver. NPF3 reaffirms the Scottish Government's commitment to renewable energy targets (30%) of overall energy demand from renewable sources by 2020) and recognises the role of onshore wind in achieving these targets. The Framework supports the deployment of appropriately located onshore wind energy development.

Scottish Planning Policy (SPP)

4.4.3 SPP (June 2014) sets out national planning policies that reflect the priorities of the Scottish Ministers for the operation of the planning system and the development and use of land through sustainable economic growth. The SPP recognises that renewable energy generation will contribute to more secure and diverse energy supplies and support sustainable economic growth. The commitment to increase the amount of electricity generated from renewable sources is a vital part of the response to climate change. The SPP requires Local Development Plans to include reference to spatial frameworks for the most appropriate areas for wind farms.

National Planning Advice, Circulars and Advice Sheets

4.4.4 National planning policy is supported by Planning Circulars, Planning Advice Notes (PANs) and Specific Advice Sheets and Ministerial / Chief Planning Letters to Planning Authorities, which set out detailed advice from the Scottish Government in relation to a number of planning issues. The PANS and Specific Advice Sheets considered relevant to the Proposed Development include:

- Planning and Noise (PAN 1/2011), March 2011;
- Planning and Archaeology (PAN 2/2011), July 2011;
- Community Engagement (PAN 3/2010), August 2010;
- Planning, Environmental Protection and Regulation (PAN 51), October 2006;
- Natural Heritage (PAN 60), January 2000;
- Sustainable Urban Drainage Systems (PAN 61), July 2011;

- Planning for Transport (PAN 75), August 2005;
- Water and Drainage (PAN 79), September 2006;
- Wind Farm Developments on Peat Land, May 2013;
- Specific Advice Sheet: Peatland Survey 2017: Guidance on Developments on Peat Land;
- Specific Advice Sheet (updated 28 May 2014): Onshore Wind Turbines;
- Spatial Planning for Onshore Wind Turbines – Natural Heritage Consideration, June 2015; and
- Chief Planner Letter regarding Energy Targets and Scottish Planning Policy, 2015.

4.5 Local Development Planning Policy

4.5.1 In considering the overall legal framework within which the Proposed Development would require to be assessed, the terms of the statutory Development Plan is a consideration which should be taken into account in the round with all other relevant considerations; however section 25 of the Town and Country Planning (Scotland) Act 1997 is not engaged.

The Statutory Development Plan

4.5.2 The statutory Development Plan applicable to the Site comprises the Outer Hebrides Local Development Plan (LDP) (adopted 2012) together with statutory Supplementary Guidance, including that for Wind Energy Development (adopted 2016).

4.5.3 The key Development Plan policy of relevance to the Proposed Development is Policy 19: Energy Resources. This policy sets out assessment criteria to determine the acceptability of onshore renewable energy projects and oil and gas operations.

4.5.4 There are no relevant Development Plan designations on the Site but the applicable Development Plan Policies are listed in **Table 4.1**.

Table 4.1 Relevant Policies within the Outer Hebrides Local Development Plan (2012)

Policy Reference	Policy Title
Policy 2	Assessment of Development
Policy 4	Siting and Design
Policy 5	Landscape
Policy 6	Water and Waste Water
Policy 7	Flooding
Policy 9	Water Environment
Policy 10	Soil Resources
Policy 19	Energy Resources
Policy 24	Countryside and Coastal Access
Policy 28	Natural Heritage

Policy Reference	Policy Title
Policy 31	Listed Buildings
Policy 32	Conservation Areas
Policy 34	Archaeology

Emerging Development Plan

4.5.5 The CnES is undertaking a review of the Outer Hebrides LDP (Outer Hebrides LDP 2). The Proposed Plan was published in January 2017 and was submitted to Scottish Ministers for examination in July 2017.

4.5.6 The Examination is underway and the appointed Reporters are currently considering the issues raised, including the approach to wind energy developments. The current target date for completion of the Examination is June 2018. Given this timescale, it is likely that the Outer Hebrides LDP 2 will be the adopted Development Plan at the time of the section 36 application.

Table 4.2 Relevant Emerging Outer Hebrides LDP 2 Policies

Policy Reference	Policy Title
DS1	Development Strategy
EI1	Flooding
EI3	Water Environment
EI4	Waste Management
EI5	Soils
EI7	Countryside and Coastal Access
EI8	Energy and Heat Resources
EI11	Safeguarding
NBH1	Landscape
NBH2	Natural Heritage
NBH3	Archaeology
NBH6	Historic Areas

4.6 Supplementary / Supporting Planning Guidance

Comhairle Spatial Strategy for Wind Farms

4.6.1 CnES published the Comhairle Spatial Strategy for Wind Farms Supplementary Planning Guidance (SPG) in December 2016. This guidance sets out that the Stornoway Wind Farm Site is located in an *Area of Constraint* (although with potential for development in some certain circumstances). The

Comhairle would consider wind farm development in *Areas of Constraint* subject to satisfactory assessment against the Local Development Plan and the requirements set out in the SPG.

Western Isles Landscape Character Assessment

4.6.2 The Western Isles Landscape Character Assessment (LCA) (SNH Report No. 92, 1998) notes that the Site is located in *'Boggy Moorland'* which is defined as:

"Large scale undulating peat moorlands interspersed with numerous lochans, covering large parts of the Western Isles, particularly Lewis and the Uists. Predominantly uninhabited, it is a simple landscape of few elements and an upland remote character".

4.6.3 The LCA notes that vertical elements tend to become particularly pronounced due to the vastness of the horizontal scape of this landscape type. The guidance set out in the LCA requires that:

"…the planning of new elements within this landscape type should encourage development accessed by existing roads thus minimising the need for new roads through these remote areas".

Landscape Capacity Study for Onshore Wind Energy Development in the Western Isles

4.6.4 Specific guidance on wind energy development in the Western Isles is set out in the Landscape 'Capacity Study for Onshore Wind Energy Development in the Western Isles' (SNH report no. 042, 2014) (the 'Capacity Study').

4.6.5 The Site is located within Boggy Moor 1 Landscape Character Type (LCT). According the Capacity Study, *"large commercial scale development would relate to the large horizontal scale and open landscape"* that is characteristic of the Boggy Moor 1 LCT. Furthermore, its overall or inherent sensitivity to commercial scale wind farm development is described as low to medium.

4.7 Further Technical and Legislation Guidance

4.7.1 The following legislation and guidance would inform applicable technical sections of the EIA as outlined in **Chapter 5** onwards.

5. Landscape and Visual Assessment

5.1 Introduction

5.1.1 The Landscape and Visual Impact Assessment (LVIA) is one of the key components of the EIA for wind farm development and would include consideration of the following elements:

- Landscape Effects – assessment of effects on areas of landscape character, including key characteristics, elements, landscape qualities and landscape designations;
- Visual Effects – assessment of effects on the views and visual amenity experienced by residents, tourists/visitors, recreational users and road users; and
- Cumulative Effects – assessment of effects in combination with and in addition to other existing, consented and proposed wind farms, referred to as Cumulative Landscape and Visual Impact Assessment (CLVIA).

5.1.2 The LVIA would consider the landscape and visual effects likely to arise from the construction, operation and decommissioning of the Proposed Development.

5.2 Guidance and Reference Material

5.2.1 The LVIA would be undertaken in accordance with best practice guidance including the following:

- *Guidelines for Landscape and Visual Impact Assessment*, Third Edition, Landscape Institute and IEMA (2013);
- *Visual Representation of Windfarms*, Version 2.2, SNH (February 2017);
- *Siting and Designing Windfarms in the Landscape*, Version 3, SNH (February 2017);
- *Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments*, SNH (2012);
- *Visual Assessment of Windfarms: Best Practice*, University of Newcastle for SNH (2002): Commissioned Report F01AA303A;
- *Landscape Character Assessment, Guidance for England and Scotland*, SNH (2002);
- *Western Isles Landscape Character Assessment, Review No. 92,* SNH (1998);
- *Assessing the impacts on Wild Land Areas* (Consultation Draft) – Technical Guidance, SNH (2017);
- *Wild Land Area Descriptions*, SNH;
- *Mapping of Scotland's Wildness and Wild Land*: Non-technical Description of the Methodology, SNH; and
- *Supplementary Guidance for Wind Energy Development,* Comhairle nan Eilean Siar (2016).

5.3 Baseline Conditions

The Study Area

5.3.1 SNH guidance on the *Visual Representation of Windfarms* (February 2017) recommends that for proposed wind farm developments of over 150m to blade tip, an initial study area of 45km is used for landscape and visual assessments. The study area is illustrated in **Figure 5.1** in **Appendix A**. The guidance states that "*The extent of ZTV* [Zone of Theoretical Visibility] *required may need to be adjusted inwards or outwards according to the specific characteristics of a landscape and/or proposed development. The extent of the final ZTV should be discussed and agreed with the determining authority and consultees*." A ZTV (**Figure 5.2** in **Appendix A**) has been generated based on an initial layout of 152m and 187m turbine heights. This is a comparative ZTV illustrating the theoretical visibility of the Consented Stornoway Wind Farm and the Proposed Development. It should be noted that the ZTV does not account for the effect of screening provided by buildings and vegetation. **Figure 5.2** shows that there is very limited visibility (negligible on land) of the Proposed Development between 35 and 45km from the Site. The magnitude of change in respect of views at this distance is likely to be Negligible and therefore significant effects are unlikely. On this basis, an initial study area of 35km is considered appropriate for the Proposed Development.

5.3.2 The cumulative assessment would cover a study area to be agreed with CnES and SNH. An initial review of the broad wind farm context within a 60km radius, based on the latest SNH mapping of large scale wind farm development, has been undertaken. A plan showing the locations of wind farms within 35km that are operational, under construction, consented or which are at application stage and where the turbines are greater than 50m to blade tip is shown in **Figure 2.1**. Exceptionally, scoping stage sites may be included where they are considered to be of specific relevance to the Proposed Development.

5.3.3 Based on this initial review of the cumulative context, it is considered that any such effects that occur would arise because of the pattern of development within the 35km study area radius rather than because of changes beyond this. A 35km cumulative study area is therefore proposed.

Landscape Character

5.3.4 SNH has prepared LCAs for the whole of Scotland and these provide a consistent and valuable source of information against which the development or management of land can be assessed, albeit that it is recognised within SNH's '*Siting and Designing Windfarms Guidance*' that they have some limitations; "*It should be noted that many of the LCAs were produced during the 1990s and, although they remain relevant as descriptors of landscape character, do not necessarily address the sensitivity of particular landscape character types to wind farm development...*". These LCAs also do not address the extent to which landscape character has been altered by the presence of built wind farm developments.

5.3.5 The relevant SNH LCA is the '*Western Isles landscape character assessment*' and this would be referred to in the baseline character assessment. The Site is located within the Boggy Moor I Landscape Character Type (LCT) identified in the SNH LCA study. This is the same LCT in which existing Creed, Arnish Moor, Baile an Truseil, Pentland Road and Point and Sandwick wind farms are located (as is the Consented Stornoway Wind Farm). The ZTV (**Figure 5.2**) illustrates that visibility of the Proposed Development is very limited beyond 15km and it is therefore proposed that the assessment would only focus on LCTs within this distance as significant effects on landscape character are unlikely to occur beyond this. LCTs beyond 15km would therefore be scoped out of the assessment.

Landscape Designations

5.3.6 There are two national landscape designations within the study area which would be considered in the assessment:

- National Scenic Areas (NSA):
  - South Lewis, Harris & North Uist (22km, south-west).
- Gardens and Designated Landscapes (GDL):
  - Lews Castle and Lady Lever Park (2km east).

5.3.7 There are no regional or local landscape designations within the study area.

Wild Land

5.3.8 No part of the Site is located within a Wild Land Area (WLA), though there are two within the study area:

- 30: Harris – Uig Hills (8km south-west); and
- 31: Eisgein (20km south).

5.3.9 The ZTV (**Figure 5.2**) illustrates that there would be very limited visibility of the Proposed Development from both WLAs and it is therefore considered unlikely that any special qualities of these would be affected. The WLAs are also influenced by the consented Muaitheabhal Beinn Mhor and Extension wind farms (Uisenis), and operational Monon turbine located to the east and south. It is therefore proposed that a detailed Wild Land Assessment is scoped out.

Visual Receptors

5.3.10 The LVIA would assess the likely visual effects of the Proposed Development through consideration of a selection of representative viewpoints and by considering the wider effects on visual amenity with reference to a range of principal visual receptors. Representative viewpoints would be assessed within the 35km study area while as with landscape character, effects on visual amenity would focus only on receptors within 15km due to the very limited visibility of the Proposed Development beyond this distance (and hence significant effects are unlikely to occur beyond this).

5.3.11 The baseline of visual receptors (people) would draw upon the ZTV, site visits and analysis of viewpoints within 15km, including representative examples within the following categories:

- Views from settlements;
- Views experienced whilst travelling through the landscape (road users, ferry users, walkers, horse riders, cyclists and anglers, for example); and
- Views from tourist and recreational destinations.

5.3.12 National level recreational routes would include the Sustrans Route 780, and the Hebridean and Timeless Way Long Distance Footpaths.

5.3.13 The assessment would consider the visual effects on transport routes within 15km including the A857, A858, A859, A866, B895, B897, B8060, B8011, B8069 and Pentland Road. Ferry routes to be considered include the Stornoway to Ullapool route.

5.3.14 Local recreational routes included within the assessment will be based on the Core Path Network sourced from CnES's Core Path Plan and known Rights of Way, and other local promoted walks.

5.3.15 Recreational and tourist destinations would include those features that appear as prominent landmarks or landscape features and locations associated with passive recreation such as walking and where there is a clear relationship between the feature / destination and the landscape. The key attractions include including the Calanais Standing Stones, Stornoway War Memorial, Stornoway Golf Club / Lews Castle and Lady Lever Park GDL, Tiupman Head, and key summits such as An Cliseam further afield.

5.3.16 A residential visual amenity assessment would be undertaken for individual or groups of residential properties within 2km from the outer proposed turbines.

Visualisations

5.3.17 Visualisations and figures would be produced to SNH's standards as set out in *'Visual Representation of Wind Farms Guidance: Version 2.2*' (February 2017). These would include 90-degree baseline photographs from each representative viewpoint and accompanying wireframes showing the Proposed Development and all other operational, under construction, consented and application stage cumulative wind farm developments. Wireframes and photomontages at 53.5° would also be included to show the Proposed Development at a larger scale.

5.3.18 Viewpoint photography would be undertaken during period of fine weather with clear visibility to allow visualisations of appropriate quality to be prepared.

Viewpoint Selection

5.3.19 The proposed viewpoint list, shown in **Table 5.1** below, is drawn from the Consented Stornoway Wind Farm project. The locations of the viewpoints are shown on **Figure 5.2**. The viewpoints were selected to represent sensitive visual receptors with the potential to undergo significant effects. They were also selected to represent landscape receptors and with consideration of the potential for cumulative effects to arise. The agreement of CnES and SNH is sought on the suggested viewpoints through this scoping exercise.

5.3.20 At a pre-scoping workshop, which took place on 30 April 2018, CnES suggested an additional location on the A857 at Barvas Moor near a weather station. This location is relatively close to viewpoint 7 located further south (on a layby) on the same road and provides a more representative view for users along this route. Viewpoint 21 at Barvas is also located along the same road to the north and provides a representative view for users along this route and the settlement. On this basis, Barvas Moor is therefore excluded from the viewpoint assessment. Wireframes for viewpoints 7, 21 and Barvas Moor have been provided in **Appendix B** for comparison.

Table 5.1 Proposed Assessment Viewpoints

Viewpoint	Distance	Photomontage or Wireframe
VP1: A858	1.2km	Photomontage
VP2: Lewis War Memorial	2.7km	Photomontage
VP3: A859 North of Luirbost (Leurbost)	2.9KM	Photomontage
VP4: Cnoc na Croich (Gallows Hill)	3.1km	Photomontage
VP5: Beinn Mholach	3.8km	Photomontage
VP6: Eitseal (Eitshal)	3.9km	Photomontage

Viewpoint	Distance	Photomontage or Wireframe
VP7: A857 between Stornoway and Barabhas (Barvas)	4.4km	Photomontage
VP8: Stornoway – Ullapool Ferry Route (A)	4.6km	Wireframe only
VP9: Tunga (Tong)	5.3km	Photomontage
VP10: Raon na Creadha Stornoway	5.5km	Photomontage
VP11: Ranais (Ranish)	6.6km	Photomontage
VP12: Col (Coll)	8.4km	Photomontage
VP13: Rathad a' Phentland (Pentland Road)	10.2km	Photomontage
VP14: An Rubba: An Cnoc (Eye Peninsula: Knock)	10.6km	Photomontage
VP15: Gearraidh Bhaird (Garyvard)	10.7km	Photomontage
VP16: Stornoway – Ullapool Ferry Route (B)	12.6km	Wireframe only
VP17: Standing Stones of Calanais (Callanish)	13.2km	Photomontage
VP18: An Rubha: Sulaisiadar (Eye Peninsula: Shulishader)	13.7km	Photomontage
VP19: Pairc: Mullach Breac Mhalasgair (Park: Malasgair)	14.9km	Photomontage
VP20: B8011 East of Giosla	15.9km	Photomontage
VP21: A857 near Barabhas (Barvas)	16.1km	Photomontage
VP22: Tolastadh bho Thuath (North Tolsta)	17.2km	Photomontage
VP23: An Cliseam (Clisham)	30.7km	Wireframe only

5.4 Potential Landscape and Visual Effects

5.4.1 The landscape and visual assessment would assess the potential effects of the Proposed Development on landscape character and visual receptors around the study area. This includes the effects of the access tracks, substation, operations and maintenance building, and other associated infrastructure, as well as the turbines.

5.4.2 The assessment would be carried out using a methodology that accords with '*GLVIA3*' and has been specifically devised by Wood for the landscape and visual assessment of wind farms. The potential effects of the Proposed Development on the landscape and visual resource are grouped into four categories: direct (physical) effects, effects on landscape character, effects on views, and cumulative effects.

Landscape Effects

5.4.3 Landscape effects are defined by the Landscape Institute as "*An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern … is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. … The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed Development may influence in a significant manner.*" The landscape effects occurring during the construction, decommissioning and operational phases of the Proposed Development may potentially include the following:

- Changes to landscape elements: the addition of new elements (wind turbines) or the removal of existing elements such as trees, vegetation and buildings and other characteristic elements of the landscape character type;
- Changes to landscape qualities: degradation or erosion of landscape elements and patterns and perceptual characteristics, particularly those that form key characteristic elements of landscape character types or contribute to the landscape value;
- Changes to landscape character: landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities (including perceptual characteristics) and the cumulative addition of new features, the magnitude of which is sufficient to alter the overall landscape character type of a particular area; and
- Cumulative landscape effects: where more than one wind farm may lead to a potential landscape effect.

5.4.4 Development may have a direct (physical) effect on the landscape as well as an indirect effect which would be perceived from the wider landscape, outside the immediate site area and associated landscape character.

Visual Effects

5.4.5 Visual effects are identified for different receptors (people) who will experience the view at their places of residence, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

- Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view; and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

Sequential Assessment

5.4.6 Cumulative sequential assessments of the Proposed Development would be undertaken for the following receptors:

- A859;
- Pentland Road; and
- Stornoway – Ullapool ferry route.

Cumulative Landscape and Visual Effects

5.4.7 The CLVIA would be conducted in accordance with SNH Guidance, taking account of the cumulative landscape and visual effects likely to result from other existing, consented and proposed (planning application submitted) wind energy developments in addition to the Proposed Development. It will focus on wind energy developments considered to have potential to give rise to significant cumulative effects. This is likely to be those wind farms within 35km of the Proposed Development but will be subject to more detailed consideration. Turbines under 50m to tip and single turbines beyond 5km from the Proposed Development will not be included.

5.4.8 The current cumulative situation is indicated in **Table 5.2** and illustrated in **Figure 2.1**. We anticipate that CnES will agree this list in their Scoping Opinion and advise on any further developments that they are aware of in the planning system.

5.4.9 Wind energy developments which may be at the scoping stages are likely to be excluded from further assessment on the basis that sufficient detail (on location and size of turbines) is seldom available to allow meaningful assessment.

5.4.10 An application for a single turbine up to 145m to blade tip (Sandwick North St Community Wind Turbine) was submitted to CnES in February 2017. The location of this turbine is within the red line boundary of the Proposed Development (and shares the same location as T27 of the Consented Stornoway Wind Farm). It is understood that the proposed turbine would only proceed if Stornoway Wind Farm is not built. Considering that the Proposed Development relates to the same site as the Consented Stornoway Wind Farm and taking a pragmatic approach, this proposed single turbine will be scoped out of the cumulative assessment.

Table 5.2 Wind Farms within 35km of the Radius of the Proposed Development Site

Name of wind farm	Distance (from Proposed Development)	Number of wind turbines	Height to blade tip (m)	Status
Beinn Ghrideag Community Wind Farm (Point and Sandwick)	0.5km	3	125	Existing
Creed Enterprise Park	1.1km	1	61.14	Existing
Pentland Road	1.6km	6	121.2	Existing
Arnish Moor	1.6km	3	76	Existing
Baile an Truseil	16.9km	3	81	Existing
Horshader (Cnoc Airigh Mhic)	17km	1	81	Existing
Monan Community	33.2km	3	86	Existing
Bridge Cottages Newmarket	2.7km	1	39.5	Existing
Druim Leathann[3]	16.3km	14	126.5	Consented
North Tolsta	16.8km	1	77	Consented
Collectively known as Uisenis Wind Farm				

[3] Subject to new application to increase tip heights. PAN submitted to LPA and public exhibitions completed.

Name of wind farm	Distance (from Proposed Development)	Number of wind turbines	Height to blade tip (m)	Status
Muaitheabhal Beinn Mhor	16.6km	33	145	Consented
Muaitheabhal East Ext	17km	6	150	Consented
Muaitheabhal South Ext	17km	6	150 / 130	Consented

5.5 Night-time Lighting

5.5.1 It is likely that the Proposed Development would include turbines in excess of 150mto blade tip, which would require visible lighting. A Night-time Lighting Assessment therefore, would be undertaken.

5.5.2 Construction and decommissioning lighting is proposed to be scoped out of the assessment, as effects relating to lighting during these phases are unlikely to result in significant effects. This is because these activities would be for a temporary period of time, and any effects can be mitigated through the implantation of a construction or decommissioning environment management plan.

5.5.3 The assessment is likely to include 4-5 photomontages illustrating the proposed lighting effects, selected from the viewpoint list in Table 5.1. The night time visualisations will show the turbine light positions and provide an artist's impression of the lighting and appearance. The viewpoints likely to be included will be locations where people are more likely to be after dark, and include:

- Viewpoint 3 - A859 North of Luirbost (Leurbost);
- Viewpoint 7 – A857 between Stornoway and Barabhas (Barvas);
- Viewpoint 9 - Tunga (Tong);
- Viewpoint 11 – Ranais (Ranish); and
- Viewpoint 14 – An Rubba: An Cnoc (Eye Peninsula: Knock).

5.5.4 A night time ZTV of the turbine lighting positions at hub height and half tower height will accompany the visualisations which will aid the assessment.

5.5.5 The extent of the study area is likely to be restricted to 10-15km from the outer turbine positions according to the technical criteria of the proposed candidate light fixtures.

5.6 Significance of Effects

5.6.1 The broad objective in assessing the effects of the Proposed Development is to determine what effects on the landscape and visual resource will be significant. The significance of effects will be assessed through a combination of two considerations; (i) the sensitivity of the landscape element, landscape character receptor, view or visual receptor, and (ii) the magnitude of change that would result from the introduction of the Proposed Development.

5.6.2 Sensitivity is an expression of the ability of a landscape element, landscape character receptor, view or visual receptor to accommodate the Proposed Development, and is dependent on baseline characteristics including susceptibility to change, value, quality, importance, the nature of the viewer, and existing character.

5.6.3 Magnitude of change is an expression of the scale of the change on landscape elements, landscape character receptors and visual receptors that would result from the Proposed Development.

5.6.4 The factors that are considered in the sensitivity and magnitude of change considerations are assimilated to assess whether the Proposed Development would have an effect that is significant or not significant. Wood's methodology for assessing wind farm development is not reliant on the use of a matrix to determine the significance of landscape and visual effects, nor does it define levels of significance. It is, however, considered useful to include a matrix in the methodology to illustrate how combinations of sensitivity and magnitude of change can give rise to a significant effect and to provide an understanding as to the threshold at which significant effects may arise as illustrated in **Table 3.1**.

5.6.5 Effects within the dark grey boxes in Table 3.1 are assessed to be significant in terms of the requirements of the EIA Regulations. Those effects that are within the white boxes may be significant, or not significant, depending on the specific factors and effect that is assessed in respect of a particular landscape or visual receptor. In accordance with GLVIA3 (paragraph 3.23), experienced professional judgement is applied to the assessment of all effects and the rationale supporting each conclusion is presented.

5.6.6 A significant effect occurs where the Proposed Development would provide a defining influence on a landscape element, landscape character receptor or view. A significant cumulative effect occurs where the combined effect of the Proposed Development with other existing and proposed wind farms would result in a landscape character or view being characterised primarily by wind farms.

Nature of Effects

5.6.7 The EIA Regulations state that the EIA Report should include a description of the likely significant effects of the Proposed Development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short and long-term, permanent and reversible, positive and negative effects of the Proposed Development. Guidance provided by the Landscape Institute on the 'Nature of Effect', in the GLVIA3, is limited to a single entry which states that *"One of the more challenging issues is deciding whether the landscape (or visual) effects should be categorised as positive or negative. It is also possible for effects to be neutral in their consequences for the landscape. An informed professional judgement should be made about this and the criteria used in reaching the judgement should be clearly stated."*

5.6.8 In relation to many forms of development, the LVIA would identify 'positive', 'neutral' and 'negative' effects by assessing these under the term 'Nature of Effect'. In respect of landscape and visual effects of wind farms however, there are no definitive criteria by which these can be measured as being categorically 'positive' or 'negative'. In some disciplines, such as noise or ecology, it is possible to quantify the effect of a wind farm in numeric terms, by objectively identifying or quantifying the proportion of a receptor that is affected by a proposed development, and assessing the nature of that effect in justifiable terms. However, this is not the case in relation to landscape and visual effects where the approach combines quantitative and qualitative assessment.

6. Historic Environment

6.1 Introduction

6.1.1 The historic environment is a material consideration within the planning process as set out in Scottish Planning Policy (SPP, Scottish Government, 2014). The historic environment chapter would aim to assess the potential impacts of the Proposed Development upon designated and non-designated assets that would be susceptible to substantial harm through:

- Direct Effects as a result of assets being disturbed or removed through construction activities;
- Indirect Effects as a result of the presence of the wind farm changing how an asset is experienced or understood; and
- Cumulative Effects occurring due to incremental changes within the setting of an asset and combined impacts resulting from two or more developments.

6.1.2 Any historic assets that may be subject to significant effects as a result of the Proposed Development, and would therefore likely require further consideration, would be identified and these potential impacts would be considered for its construction, operation and decommissioning phases.

6.2 Baseline Conditions

6.2.1 The Site is located west of Stornoway on the Isle of Lewis and consists of open heather moor, peat bogs and numerous lochs and lochans (a small inland loch) with a number of bedrock knolls/hillocks scattered throughout the area. The Site is bisected by the A858 carriageway from east to west.

6.2.2 This landscape has altered substantially over time and although it is now quite an inaccessible landscape, this would not have always been the case. Early birch scrubland was replaced by mixed birch, hazel and oak woodland by 8,000 years ago, when forests reached their greatest extent on the islands. Afterwards, forest cover went into decline and extensive expansion of blanket peat began when the climate became cooler and wetter some 6,000 years ago; with the islands probably being largely devoid of trees by the end of the Bronze Age (Goodenough & Merritt, 2011). Archaeological remains of Neolithic settlement in the Outer Hebrides survive, often with very high levels of preservation, but are frequently buried beneath later deposits of peat or sand (Henley, 2005). This coverage of early archaeological material by peat or sand means that the present appearance of the landscape is not a clear indicator of the potential for earlier activity on the Site. However, a trial pit investigation undertaken on the Site in February 2014 to investigate the peat depths within the area, monitored by an archaeologist (Buchanan, 2014), did not reveal evidence of artefactual material or archaeological features within areas sampled.

6.2.3 No designated heritage assets are present within the Site boundary, although a number are located within the surrounding area. This includes a concentration of designated heritage assets relating to the settlement of Stornoway, including the Stornoway conservation area, The Lews Castle and Lady Lever Park inventory garden and designed landscape, scheduled monuments and numerous listed buildings. Information gathered from previous assessments of the Site (Entec UK Limited, 2011) demonstrate that although no designated heritage assets are present within the application boundary, there are numerous non-designated heritage records present within it and the surrounding area, including chance finds and historic map features through to settlement and industrial sites ranging in date from the prehistoric to modern eras.

6.3 Methodology

6.3.1 The Historic Environment Assessment would be undertaken in reference to guidance documents produced by Historic Environment Scotland (HES) and the Chartered Institute for Archaeologists (CIfA), primarily Managing Change in the Historic Environment: Setting, (HES, 2016a). Other documents that would be referenced include:

- **HES Guidance:**
  - Historic Environment Scotland Policy Statement (2016b);
  - Managing Change in the Historic Environment: Gardens and Designed Landscapes (2016c); and
  - Calanais Standing Stones: Setting Document (produced by Historic Scotland, 2014 who have since been replaced by HES).
- **CIfA Guidance:**
  - Standard and guidance for archaeological advice by historic environment services (2014a); and
  - Standard and guidance for commissioning work or providing consultancy advice on archaeology and the historic environment (2014b).

Baseline Establishment

6.3.2 The historic environment baseline has been established through previous historic environment assessments of the Site (AMEC Earth & Environmental, 2010 and Entec UK Limited, 2011). These assessments would be reviewed and data updated as necessary using readily available documentary sources. Elements of research that would not have changed such as historic map regression and aerial photography would not be repeated as part of the assessment of the Proposed Development, and the previous reports noted would be referred to for these elements.

Direct Effects

6.3.3 Due to the availability of previous historic environment assessments (AMEC Earth & Environmental, 2010 and Entec UK Limited, 2011) and the nature of the historic landscape that may be affected, it is considered that a site walkover would provide very limited, if any, new information. As such, it is considered that a walkover would not be required for the purposes on informing the baseline situation at the Site.

6.3.4 A review of the previous historic environment assessments would be undertaken as part of the baseline description in conjunction with a new search of the CnES (Western Isles) Sites and Monuments Record (SMR). The SMR data would be gathered within and out to 500m from the Site boundary to assess whether previously unknown heritage assets have been recorded since the earlier assessments were undertaken.

6.3.5 Any previously recorded or previously unknown non-designated heritage assets within the SMR that would be susceptible to disturbance as a result of the construction of the Proposed Development would be included within the assessment of effects. The judgement of whether an asset is at potential of disturbance will follow the criteria as set out in **Table 6.1** and **6.2** below and applied to the significance matrix shown in **Table 6.3 (**which follows the principles of **Table 3.1)**.

6.3.6 Assessments of direct effects would also consider any available geotechnical data and peat investigations in order to assess the potential for further as yet unknown archaeological remains to be present and palaeoenvironmental potential.

Indirect Effects

6.3.7 Data relating to designated heritage assets, obtained through the HES Spatial Downloads website, would be gathered for a study area extending 15km from the Site boundary. Assets contained within this study area would then be identified for further assessment dependent upon a number of factors including their level of importance, how the asset is understood and appreciated and its location within the landscape.

6.3.8 Due to the nature of indirect effects being predominantly related to the visibility to or from a heritage asset, the full scope of indirect effects would be determined upon the finalised ZTV for the Proposed Development. This scope would also inform whether any further photomontage or wireframe visualisation not already incorporated into the LVIA assessment will be required to support the assessment of historic assets. Any designated assets that are shown to have no visibility of the Proposed Development would be scoped out.

6.3.9 For heritage assets that are shown to have potential visibility of the Proposed Development, their setting would be investigated. An assessment of how views of the Proposed Development may affect the understanding and experience of heritage assets will be undertaken and where views out towards the Site could contribute to the experience of these assets and/or understanding of their importance, these would be assessed further and visited where possible. Intervisibility of related assets such as the Calanais Standing Stones would also be considered.

6.3.10 Where there are concentrations of related assets such as Lady Lever Park or Stornoway, these would be considered as a group for the purpose of the assessment; although the level of significance for each element would still be explained.

6.3.11 The assessment of indirect effects would refer to the LVIA and, where relevant, viewpoints would be requested for known sites of sensitivity such as the Calanais Standing Stones.

6.3.12 A number of designated assets within the study area may be in locations that do not have clear access or within areas with ground conditions that may pose a safety risk to visit. In these instances, these assets would be assessed using wireframe illustrations.

Establishment of Importance and Significance

6.3.13 The levels of effect upon a heritage asset for either direct or indirect effects would largely depend upon its level of importance and the potential magnitude of change. **Tables 6.1-6.3** provide details on how the historic environment assessment would establish these qualities, which would then inform the conclusion as to the level of effect upon the asset.

6.3.14 The rationale contained within **Table 6.1** is predominantly based on information provided within the SPP (Scottish Government, 2014) and the associated supporting documents; HES Policy Statement (HES, 2016b) and the Scottish Planning Policy Historic Environment Circular 1 (HES, 2016d). Note that the categorisation of the relative importance of those assets which are of less than national importance generally relies on professional judgement.

Table 6.1 Categorisation of Importance

Importance	Rationale
National and International	World heritage sites are designated on the basis of 'Outstanding Universal Value' and would normally be considered of international importance. By legal definition, scheduled monuments are considered as being of national importance. As the process of scheduling is ongoing and as scheduling is a representative designation, there are further assets which are not scheduled but which may be of equivalent importance. HES describes Category A listed buildings as buildings of national or international importance, either architectural or historic; or fine, little-altered examples of some particular period, style or building type (HES website - Categories of listed building). The SPP states that sites identified within the Inventory of Historic Battlefields and the Inventory of Gardens and Designed Landscapes are of national and/or international importance. Conservation areas rated by HES as of Outstanding quality (where such appraisals have been made) could be considered as being of national importance.
Regional	These include archaeological sites which do not merit scheduling but which are nevertheless of interest or which could make a substantial contribution to established regional research agendas. HES describes Category B listed buildings as buildings of regional or more than local importance; or major examples of some particular period, style or building type, which may have been altered (HES website - Categories of listed building). The principles of selection for designation of conservation areas do not explicitly include valuations of national, regional or local importance, although most examples would be of importance on a regional level. Designed landscapes that are recognised by local authorities but not included within the Inventory of Gardens and Designed Landscapes would usually be considered to be regionally important.
Local	The majority of non-designated assets would normally be considered of local importance. HES describes Category C listed buildings as buildings of local importance; lesser examples of any period, style or building type, as originally constructed or moderately altered; and simple, traditional buildings that group well with other listed buildings (HES website - Categories of listed building).
Lesser	These include those features which are no longer extant, where there are no further known or surviving remains (e.g. locations of previous archaeological work), or where assets may have minimal importance, such as modern quarries.

Table 6.2 Potential Magnitude of Change

Magnitude	Definition
High	Loss of significance of an order of magnitude that would result from total or substantial demolition/disturbance of a heritage asset or from the disassociation of an asset from its setting.
Medium	Loss of significance arising from partial disturbance or inappropriate alteration of asset which will adversely affect its importance. Change to the key characteristics of an asset's setting, which gives rise to harm to the significance of the asset but which still allows its archaeological, architectural or historic interest to be appreciated.
Low	Minor loss to or alteration of an asset which leave its current significance largely intact. Minor and short term changes to setting which do not affect the key characteristics and in which the historical context remains substantially intact.
Negligible	Minor alteration of an asset which does not discernibly affect its significance. Minor and short term or reversible change to setting which do not affect the significance of the asset.

Table 6.3 Matrix of Significance – Level of Effect

	Importance		
Magnitude of Change	**National**	**Regional**	**Local**
High	Significant	Significant	Not Significant
Medium	Significant	Not significant	Not significant
Low	Not significant	Not significant	Not significant
Negligible	Not significant	Not significant	Not significant

Consultation

6.3.15 It is anticipated that consultation with Historic Environment Scotland and the Western Isles Archaeologist attached to CnES will be undertaken during the course of the assessment (for example to agree upon the finalised selection of heritage assets for further assessment).

6.4 Embedded Mitigation

6.4.1 Data gathered for both designated and non-designated heritage assets would be made available to the design team to allow consideration for avoidance of direct impacts upon the heritage assets within the Site and to identify areas of higher sensitivity, such as Stornoway, where there are high concentrations of designated assets.

6.5 Potential Impacts

6.5.1 Direct effects could arise from physical disturbance to either known or as yet undiscovered heritage assets through construction activities relating to the turbines and associated infrastructure of the Proposed Development. Although there are no designated heritage assets within the Site, there are numerous non-designated records, the majority of these being of local or lesser importance. Nonetheless, there is the potential for buried archaeology within the Site that may be of a higher importance as demonstrated by the numerous prehistoric sites in the surrounding area.

6.5.2 Indirect effects could occur upon the setting of heritage assets if turbines are visible in views of the heritage asset, from the heritage asset or in views of related assets. Depending upon the nature of the historic asset, further perceptual change may affect its setting, such as noise (for example if turbines could be heard to a distracting level within a peaceful setting such as a cemetery).

6.6 Cumulative Assessment

6.6.1 Although individual developments may not cause significant effects on their own, they may do so when they are combined with others in the surrounding area. In order to establish the potential for cumulative effects upon identified heritage assets, existing, consented and proposed wind farms in the surrounding area will be considered in the assessment.

6.7 Summary of Effects

6.7.1 A summary of potential effects for direct, indirect and cumulative effects upon the historic environment would be provided together within details of any embedded mitigation for these and/or potential for further mitigation to occur including but not limited to agreed programmes of archaeological investigation.

7. Ornithology

7.1 Introduction

7.1.1 No significant effects were found on ornithological receptors, in either the 2011 ES, or the ES produced in 2015 for the variation to the scheme. The EIA for the Proposed Development (see **Figure 2.2**) would utilise the information contained in both these previous ESs.

7.1.2 In addition, further survey work was undertaken in the northern section of the Proposed Development in 2016 and a comprehensive suite of survey work was initiated in 2017 and is continuing in 2018 to provide up to date baseline information.

7.2 Guidance and Reference Material

7.2.1 The ornithology assessment would be undertaken in accordance with best practice guidance including the following:

- Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive);
- The Wildlife & Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act (2004);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- Survey methods for use in the assessment of the impacts of onshore wind farms on bird communities (SNH 2010);
- Assessing significance of impacts of onshore wind farms on birds outwith designated areas (SNH 2006);
- Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model. SNH guidance note (SNH 2016); and
- Assessing the cumulative impact of onshore wind energy developments (SNH 2012).

7.3 Baseline Conditions

Consultation

7.3.1 Consultation about the scope of the non-breeding bird survey work for 2017 and 2018 was carried out with SNH in October 2017. Further consultation with SNH was undertaken in early 2018 with regards the full extent of the breeding season programme for 2018.

7.3.2 In its response SNH highlighted:

- The need for more intensive breeding raptor surveys (including coverage of the whole Proposed Development Site plus a 2km buffer rather than only the northern part of it, and the implementation of hen harrier focal watches if any nesting attempts were recorded); and
- The requirement for surveys during two breeding seasons rather than the single year (2018).

7.3.3 Following subsequent telephone discussions in March 2018, SNH were provided with further information on the extensive historical baseline data available to inform the EIA and HRA, including

data collected in 2015/2016 illustrating the coverage of the "more sensitive" (in terms of hen harrier) northern part of the Site.

7.3.4 SNH responded in April 2018, stating that a single year of survey work may be acceptable; though noting "*We still consider that a full 2 years' work is preferable. The only option for less than 2 years would be if the southern section was surveyed fully this year* [2018] *and didn't find hen harrier, which is the main change since the original survey work (or any other major changes from previous survey).*"

7.3.5 It is therefore proposed to continue with the full suite of surveys and include the extra breeding raptor surveys of the southern part of the Site as requested by SNH.

7.3.6 It was agreed with SNH at a Pre-Scoping Workshop held on 30th April 2018 that survey findings would be reviewed at the end of the 2018 breeding bird season to determine if there is a need for any further survey work.

Field Studies and Assessment

7.3.7 In 2009 / 10, a desk study was undertaken which indicated potential ornithological issues on the proposed Stornoway Wind Farm site were flights by breeding and non-breeding golden eagles, and breeding sites and flights of red-throated and black-throated divers. In addition, breeding merlin, waders and migratory whooper swan were initially considered to be potential ornithological issues. A survey programme, inclusive of the breeding and non-breeding seasons, was therefore carried out between April 2009 and April 2010. A single year of survey was confirmed as adequate by SNH at that time due to the large amount of contextual information available for this area, and the methodology for these surveys was agreed with SNH prior to commencement.

7.3.8 This survey work included vantage point watches from April to August 2009, with red-throated and black-throated divers, golden eagle, merlin, golden plover and snipe being the target species noted most frequently. Less frequent flights were also recorded for dunlin, greenshank, curlew, lapwing and common sandpiper. Additionally, ground nesting raptor surveys were undertaken and merlin was the only target species recorded. Diver surveys recorded red-throated diver and black-throated diver territories.

7.3.9 Vantage point (VP) surveys then continued through the winter period of 2009/10, with frequent flights of target species recorded, in particular, golden eagle, golden plover and hen harrier. Red-throated diver, white-tailed eagle, whooper swan and merlin were also regularly observed within the survey area.

7.3.10 Surveys were subsequently carried out in 2015 /16 in an area referred to at the time as the 'North-West Extension'[4].

7.3.11 A summary of the 2015/16 surveys is as follows:

- VP watches were undertaken from two locations in order to record flight activity of golden eagle in the north west of the Proposed Development area. VP watches were undertaken from September through to February, with nine hours of observation per month per vantage point from 16/09/2015-26/02/2016. The same two VPs were used during the 2016 breeding season, with nine hours per month of observations from each between 2/03/2016 and 15/08/2016;

[4] This comprised the general area where five turbines, known in the original application as T1, T5, T10, T11 and T15, were removed from the original Section 36 consent due to potential impacts on golden eagle. However, following the subsequent construction of the six turbine Pentland Road Wind Farm to the north-west, it was considered likely that habitat use by golden eagle would have changed, potentially reducing collision risk posed by the turbines in this 'North West Extension' area. Further desk-study and field survey work was therefore undertaken in 2015/2016 to ascertain this.

- A moorland bird survey (MBS) was undertaken with four survey visits (each visit lasting two working days) within the north-west sector of the Proposed Development site between 28/04/2016 and 27/06/2016. The survey area consisted of a minimum convex polygon (MCP) around the previously proposed turbines T1, T5, T10, T11 and T15 plus a 500m buffer;
- A ground nesting raptor survey was undertaken in conjunction with the MBS. In those areas within 2km of the MCP that were not covered by the MBS, two survey visits were made in May 2016. These areas were surveyed following a standard methodology derived from Gilbert et al. (1998), with transects set a maximum of 500m apart (i.e. all areas were visited to within 250m). Approximately 60% of the (then) whole Proposed Development fell within the 2km survey buffer;
- Hen harrier focal watches were introduced following the identification of an active hen harrier nest. These were aimed at understanding the pattern of hen harrier activity in the area and were undertaken from an ad-hoc VP chosen as it provided reasonable visibility (noting that the nest site was located within a shallow valley between two hillocks) whilst being far enough away to avoid disturbance. Each focal watch followed the same procedure as a standard VP watch (i.e. a 2km 180° viewshed viewed for a period of three hours) with the exception that only hen harrier activity was formally recorded. Focal watches were undertaken on six days from 06/07/2016 until 01/08/2016;
- Golden eagle breeding surveys were undertaken, with checks at two historical nests known to be present within 6 km of the Study Area). These surveys were undertaken by a surveyor who had recorded activity at these nest sites in previous years for the Lewis and Harris Raptor Study Group. Two visits were made to each potential nesting location (each pair had more than one potential nesting location), once in late April and once in late June. Where possible, nest sites were approached to determine the presence of eggs; however if adult birds were judged by the surveyor to be at risk of disturbance, nest sites were observed from an appropriate distance only;
- Breeding diver surveys were undertaken on all water bodies within a 1km buffer of the MCP, these being visited on two occasions (between 6/6/2016 and 7/7/2016) to check for the presence of red-throated and black-throated divers. Where breeding divers were noted as present, further checks to determine productivity were undertaken on 21/07/2016 or 27/07/2016;
- Focal watches were undertaken where breeding divers were confirmed to be present to determine the typical flight lines taken by the provisioning adults between the nesting location and feeding areas. Breeding was confirmed at a single location and focal watches from one location, chosen to provide good views without leading to disturbance of the divers were undertaken. These surveys began at dawn or ended around dusk in order to maximise the potential for observing birds leaving/returning to the breeding site. Each watch lasted for three hours and used the same methods as for the VP watches (with the exception that only diver activity was formally recorded). In total, seven diver focal watches were undertaken during the 2016 survey programme.

7.3.12 A single year of survey work commenced in October 2017 and will continue throughout 2018 until September (as described below) to provide updated information on the ornithological baseline at the Site:

- Non-breeding bird surveys (VP surveys and hen harrier roost watches), from October 2017 to March 2018, covering 3x3 hour surveys each month at eight VP locations. All VP locations were the same as those used in the 2009-2010 non-breeding VP surveys with the exception of replacing the original VP 10 and 11 with the original VP 6 and 7 in order to capture any flight

activity associated with a new golden eagle nest location that has been established since the 2009-2010 surveys were carried out;

- Breeding bird VP surveys from the same eight locations used in the 2017-18 non-breeding bird surveys, for 3x3 hours each month between April and September 2018;
- A four visit MBS based on an adaptation of Brown & Shepherd (1993) between April and July 2018, covering the Proposed Development Site plus a 500m buffer around its boundary, to record breeding waders, ground nesting raptors, skuas, gulls, red grouse and some wildfowl species. Visits have been planned to be undertaken during dry weather/low winds to and to cover peak detectability for greenshank;
- Raptors: surveys will cover an area out to 2km from the Proposed Development Site to survey for breeding raptors, principally hen harrier, merlin and short-eared owl (following Hardey et al. (2009)). A five visit survey would take place between April and August 2018. Hen harrier focal watches will be undertaken at any active nest location found within the 2km search area from the time the nest is located until such time that the chicks fledge and are no longer reliant upon the adults for food or it is confirmed that the nest has failed. Standard VP procedures will be followed (a 2km 180° viewshed for three hours) with the exception that only hen harrier flight activity will be formally recorded by height bands;
    - Proposed surveys for breeding activity at known golden eagle nest sites will be coordinated with the Lewis and Harris Raptor Group.
- All water bodies within a 1km buffer of the Proposed Development Site will be visited three times between the end of May and mid-August 2018 to check for the presence of breeding red-throated and black-throated divers. Surveys will follow standard methodology based on Gilbert et al. (1998). Where breeding divers are present, focal watch surveys will then take place, the aim being to record a total of 20-30 hours of incoming and outgoing flights for each breeding location, dependent on the success of breeding attempts. Standard VP procedures will be followed (a 2km 180° viewshed for three hours) with the exception that only breeding diver flight activity will be formally recorded by height bands. These would follow SNH guidelines to determine typical flight lines, covering the period dawn to dusk and following the standard VP watch methodology.

Designated Sites

7.3.13 The 2011 ES considered all Natura 2000 sites within the Western Isles, along with those Sites of Special Scientific Interest (SSSI) with ornithological interests within a 20km search radius of the Proposed Development Site. Fifteen Special Protection Areas (SPAs) and three SSSIs were identified, although 12 of the SPAs were scoped out of the assessment. The designated sites which were assessed were:

- Lewis Peatlands SPA (also a Ramsar Site);
- North Harris Mountains SPA;
- Ness and Barvas SPA;
- Loch Orasay SSSI;
- Tong Saltings SSSI;
- Loch Laxavat Ard and Locah Laxavat Lorach SSSI (which is a constituent part of the Lewis Peatlands SPA).

Species of Conservation Concern

7.3.14 On the basis of previous EIA studies for the Site and the current 2017/2018 bird surveys, the following have been identified as being the most likely occurring species of conservation concern:

- Red-throated diver;
- Black-throated diver;
- Golden eagle;
- White-tailed eagle;
- Merlin;
- Hen harrier;
- Dunlin;
- Greenshank;
- Golden Plover; and
- Whooper swan.

7.4 Methodology for Establishment of Effects

7.4.1 The assessment of the significance of predicted effects on ecological receptors is based on the 'value' or 'sensitivity' of a receptor and the predicted magnitude of change that the Proposed Development would cause to the receptor.

7.4.2 Effects on biodiversity may be direct (e.g. the loss of species or habitats) or indirect (e.g. effects due to noise, dust or disturbance on receptors located within or outside the Site). The ornithological assessment will, in principle, followed the assessment methodology outlined in Chapter 3 EIA Process, but with regard to the specific methods and criteria as defined below, including the Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management [CIEEM], 2016).

7.4.3 The assessment of impacts will be informed by:

- Collision risk modelling (CRM) of flight activity data from the VP surveys for the final proposed turbine layout;
- Population Viability Analysis (PVA) in regard of the red-throated diver population on Lewis and also the population within the Lewis Peatlands SPA. This will include assessing the effects of any additional mortality as a result of increased collision risk due to the operation of the Proposed Development; and
- Predicting Aquila Territory (PAT) modelling. The PAT model is a GIS tool that can be used to predict the range use of resident pairs of golden eagles, and can be used to measure the extent of habitat loss. A PAT model was produced for the original application in 2010, but since then, data indicates additional nest sites have become established within existing territories that lie closer to the Site boundary.

Reporting

7.4.4 An EIA Report chapter would be produced which would summarise the findings of the baseline non-breeding and breeding reports. These and previous surveys/desk-study would form the

baseline against which the potential impact of the development on birds will be assessed, based on both the 'importance' of the receptor and the nature and magnitude of the impact that the development would have on it. Recommendations would be made for mitigation where considered necessary. Cumulative impacts would also be assessed.

Habitats Regulations Appraisal / Appropriate Assessment (AA)

7.4.5 Habitats Regulations Appraisal (HRA) screening will be carried out to determine if the Proposed Development would have a likely significant effect on the conservation objectives of any SPA whose qualifying features may have connectivity to the Proposed Development (and to determine if an AA would be required). Pending confirmation from SNH, and based on HRA screening carried out in support of previous applications, the HRA screening will consider the following three SPAs and their qualifying features:

- Lewis Peatlands SPA: red-throated diver, black-throated diver, golden eagle, merlin, golden plover, dunlin and greenshank;
- Ness and Barvas SPA: corncrake;
- North Harris Mountains SPA: golden eagle.

7.5 Potential Impacts

7.5.1 Potentially significant impacts which could result from the Proposed Development have been identified as:

- Direct habitat loss due to land take by turbine bases, access tracks and ancillary structures;
- Indirect habitat loss due to displacement of birds as a result of construction and maintenance activities or due to the presence or barrier effect of operational turbines close to nesting or feeding sites;
- Killing or injury of birds due to collision with rotating turbine blades or other infrastructure;
- The beneficial contribution made by the Proposed Development towards countering climate change. Uncertainties regarding climate change predictions mean that it is not possible at present to carry out a quantitative assessment of these effects on birds.

7.6 Cumulative Assessment

7.6.1 The previous EIA work in 2011 and 2015 assessed the potential for cumulative effects between the Proposed Development being considered at those times and other wind farms (those constructed, consented or in planning) within the Western Isles. Issues considered were:

- Cumulative effects of collision for the populations of golden eagle; white-tailed eagle and red-throated diver;
- Potential displacement of a breeding pair of golden eagle due to the presence of turbines of the Stornoway Wind Farm and the consented Pentland Road scheme; and
- Effects on designated sites.

7.6.2 These assessments found that there were no significant cumulative effects which resulted from Stornoway Wind Farm with regard to ornithology.

7.6.3 A cumulative effects assessment for the Proposed Development would be undertaken to consider the issues as noted in **paragraph 7.5.1**.

7.7 Summary of Effects

7.7.1 No significant effects on ornithological receptors were predicted during previous EIA studies and it is not expected that the baseline situation would have substantially changed since 2015. However, birds are highly mobile and their use of the Site and surrounding area may have changed in the intervening period. Therefore, it is proposed that the assessment will consider the designated sites and species of note identified in **Section 7.2**.

8. Ecology

8.1 Introduction

8.1.1 The EIA would utilise the information contained in previous ESs undertaken in 2011 and 2015. However, an updated desk study and further survey work will also be undertaken in 2018 to update baseline information.

8.2 Guidance and Reference Material

8.2.1 The ecology assessment would be undertaken in accordance with best practice guidance including the following:

- Chartered Institute of Ecology and Environmental Management guidelines (CIEEM 2016);
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive) as translated into UK law by the Conservation (Natural Habitats) Regulations 1994 (as amended);
- The Wildlife & Countryside Act 1981 (as amended);
- The Nature Conservation (Scotland) Act (2004); and
- The Wildlife and Natural Environment (Scotland) Act 2011.

8.3 Baseline Conditions

Desk Study

8.3.1 The desk study would comprise consultation with CnES, SNH and the National Biodiversity Network to determine the presence and location of designated sites, together with records of notable species and habitats (including up to date information on freshwater pearl mussel status and distribution). Information gathered for the 2011 & 2015 ESs would also be reviewed.

Field Studies and Assessment

8.3.2 In 2010, a combined Phase 1 Habitat and National Vegetation Classification (NVC) Survey was undertaken within the red line boundary at that time. This survey was also used to gather information on blanket bog condition, particularly relating to the "activity" status of this resource. This work identified an extensive range of plant communities including mires, rush pastures, flushes, soakways and springs (both acidic and base-rich), dry and wet heaths and both acid and mesotrophic grasslands. In the absence of any substantial change in land management during the intervening years, it is likely that habitats would remain largely unchanged during the intervening period. It is therefore proposed to rely upon the results of the 2010 Phase 1 / NVC survey and that no further vegetation survey will be undertaken.

8.3.3 Otter, freshwater pearl mussel (FWPM) and freshwater invertebrates were 'scoped in' to the 2011 EIA, based on a scope agreed with SNH and other relevant consultees. Potential effects on these species were also considered in the 2015 EIA.

8.3.4 For the 2018 EIA, it is proposed to undertake an otter survey to update information on this species. The 2011 ES notes that otter signs were recorded along the majority of watercourses in all four catchments (River Laxdale, Glen River, River Creed and River Tope). Signs included spraints, spraint sides, paths, prints or claw marks, feeding remains and a number of resting sites. Since otter are active throughout the Site and are highly mobile European Protected Species (EPS), it is proposed that surveys are undertaken that consider proposed turbine / borrow pit / substation locations (plus 250m buffer) and tracks (+100m buffer)[5] in summer 2018. The results of this work would determine if additional survey effort is then required.

8.3.5 For FWPM and freshwater invertebrates, it is proposed to rely upon previous data for the following reasons:

- **Freshwater Pearl Mussel:** surveys were undertaken to support the 2011 ES focussing on 500m downstream and 100m upstream of the 20 watercourse crossings proposed for that development. No signs of FWMP were recorded; six stretches were classed as unsuitable, 11 as sub-optimal and two as optimal. At this stage, it is proposed not to undertake any additional FWMP survey to support the EIA for the Proposed Development, since the previous survey covered a substantial proportion of the Site and the majority of the survey stretches had habitat that was either unsuitable or sub-optimal for this species. Furthermore, as FWPM is a sedentary species, it is considered unlikely that a viable population would have become established in the intervening period; and
- **Freshwater Invertebrates:** Macroinvertebrate communities were sampled using standard kick sampling methods[6] from four sites to inform the 2011 ES. Invertebrate communities largely consisted of common and widespread species typical of watercourses in north-west Scotland and no rarities or protected species were identified. At this stage, no additional invertebrate survey to support the EIA is proposed as it is considered unlikely that this would have changed significantly in the intervening period as land management/habitats remain largely unchanged. It is therefore proposed that the 2011 baseline would be referenced to provide contextual baseline condition information.

8.3.6 Bats were scoped out of the 2011 and 2015 EIAs and we believe that they are unlikely to be affected by the Proposed Development due to the lack of suitable habitat features within the site boundary to support bat activity. However, we proposed to carry out a single bat transect survey to test whether this assumption is correct. This will comprise a driven transect along the road that cuts across the site (the A858) and will be carried out in good weather conditions during summer 2018, extending for two hours after sunset. The results will be used to determine whether further survey effort may be required.

8.3.7 Reptiles and amphibians were also 'scoped out' of the 2011 and 2015 EIAs. In the absence of any substantial change in land management during the intervening period, it is proposed that reptiles and amphibians are scoped out of the EIA.

Designated Sites

8.3.8 The 2011 ES identified the Lewis Peatlands Special Area of Conservation (SAC) and Ramsar site, the Stornoway Castle Woodlands SSSI, the Loch Orasay SSSI, Tong Saltings SSSI and Achmore Bog SSSI as designated sites which could lie within the potential zone of influence of the (then) Proposed Development. These sites were also considered in the 2015 ES and will be considered in the EIA for the Proposed Development.

[5] These buffer distances are stipulated in SNH: Otters and Development: http://www.snh.org.uk/publications/on-line/wildlife/otters/default.asp

[6] SEPA (2001) Sampling of Freshwater Benthic Invertebrates. Method number NWM/ECOL/002.

Species and Habitats of Conservation Concern

8.3.9 From the previous EIA work undertaken, the following species and habitats have been identified as being the most likely occurring baseline features of conservation concern that may be affected by Proposed Development.

- Blanket bog, marshy grassland, acid flush, dry heath, wet heath, acid grassland, groundwater dependent terrestrial ecosystems (GWDTEs), and watercourse habitats; and
- Otters.

8.4 Methodology for Establishment of Effects

8.4.1 The assessment of the significance of predicted effects on ecological receptors is based on the 'value' or 'sensitivity' of a receptor and the predicted magnitude of change that the Proposed Development would cause to the receptor.

8.4.2 Effects on biodiversity may be direct (e.g. the loss of species or habitats) or indirect (e.g. effects due to noise, dust or disturbance on receptors located within or outside the Site). The ecological assessment would, in principle, follow the assessment methodology outlined in Chapter 3, EIA Process but with regard to the specific methods and criteria as defined below, including the Guidelines for Ecological Impact Assessment in the UK and Ireland (Chartered Institute of Ecology and Environmental Management [CIEEM], 2016).

Reporting

8.4.3 An Ecology chapter would be produced that would summarise the findings of the desk study and survey reports. These would form the baseline against which the potential impact of the development on ecological receptors would be assessed, based on both the ecological importance of the receptor and the nature and magnitude of the impact that the development would have on it. Recommendations would be made for mitigation where considered necessary. Cumulative impacts will also be assessed.

Habitats Regulations Appraisal / Appropriate Assessment

8.4.4 For previous submissions, an AA was not carried out for the Lewis Peatlands SAC habitats, or the Lewis Peatlands Ramsar site as the wind farm was outwith the zone of hydrological effects on the designated features (the SAC is 850m from the redline boundary).

8.4.5 A Habitats Regulations Appraisal (HRA) Screening Report will be produced for discussion with SNH and subsequent submission to the Competent Authority. In line with the previous submissions, it is assumed at this stage that this would demonstrate that an AA would not be required in respect of the habitats of the Lewis Peatlands SAC and Ramsar.

8.5 Potential Impacts

8.5.1 The potential significant impacts which could result from the Proposed Development have been identified as:

- During construction, there is potential for effects on the designated habitat features of the Lewis Peatlands SAC and Ramsar site, the Stornoway Castle Woodlands SSSI, the Loch Orasay SSSI, Tong Saltings SSSI and Achmore Bog SSSI, due to their locations close to or downstream of the Proposed Development;

- There is potential for loss and damage of sensitive habitats, disturbance to blanket bog hydrology and/ or pollution of water courses through the construction, operation and decommissioning of the Proposed Development;
- There is potential for disturbance to otters during construction (through noise, human presence and artificial light), disturbance or loss of resting sites, loss of food resources and risk of traffic related injury or death during all phases of the Proposed Development.

8.6 Summary of Effects

8.6.1 Both the 2011 and 2015 ESs found only one effect in relation to ecological receptors that was considered to be significant; a moderate effect in respect of predicted blanket bog habitat loss. However, both ESs concluded that the effect of habitat loss would reduce to not significant in the medium term due to compensatory restoration of bog habitat in drained/ plantation areas which would increase the active blanket bog habitat following construction.

8.6.2 In the absence of any major changes in land management during the intervening period, it is unlikely that the baseline situation would have changed substantially since 2015. Nonetheless, there are some features that have the potential to be significantly affected and it is therefore it is proposed that the assessment includes considerations of the designated sites and species and habitats of concern identified in **Section 8.2** of this report.

9. Fisheries

9.1 Introduction

9.1.1 For the purposes of the EIA, and as previously considered in the 2011 and 2015 EIAs, the term 'fisheries' is defined as natural fish populations and recreational fisheries interests, with key receptors being the populations of fish species and their habitats. Both the 2011 and 2015 ES concluded that there would be no significant effects on any of the receptors identified. This EIA would consider information from 2011 and 2015 EIAs in addition to further information gathered in 2018.

9.2 Baseline Conditions

Desk Study

9.2.1 Information gathered for the 2011 ES would inform the desk based study, which would also include the following reference sources:

- SNH (www.snh.gov.uk);
- SEPA online interactive map (http://map.sepa.org.uk/rbmp);
- Fisheries Management Scotland website (http://fms.scot/);
- Outer Hebrides Fisheries Trust (OHFT) website (http://www.outerhebridesfisheriestrust.org.uk);
- Scottish Government Salmon Fishery Statistical Bulletins (http://www.gov.scot/Topics/marine/Publications/stats/SalmonSeaTroutCatches);
- Fish Hebrides website (http://www.fishpal.com/Scotland/Hebrides/?dom=Hebrides);
- Western Isles District Salmon Fisheries Board (http://www.outerhebridesfisheriestrust.org.uk/fisheries-board/); and
- Stornoway Angling Association website (http://syangling.com/).

Field Studies and Assessment

9.2.2 Important fish populations that are present in close proximity the Proposed Development include Atlantic salmon, brown and sea trout, European eel, lamprey species and three-spined stickleback. Electrofishing surveys were completed by OHFT in 2010 on the four main river catchments: the River Creed (11 sites), Glen River (three sites), River Tope (three sites) and River Laxdale (two sites). Salmonids (trout/salmon) were recorded within the watercourses on Site.

9.2.3 A similar approach to the 2010 surveys is proposed for this EIA, whereby OHFT be contacted to request that the surveys are repeated. Surveys would be carried out in accordance with standard Scottish Fisheries Co-ordination Centre (SFCC) protocols.

Designated Sites

9.2.4 There are no designated sites (European or national) within the Site boundary which are designated for fish interests. The nearest such designation is Langavat SAC which is located 13km to the south west and which has Atlantic Salmon listed as a qualifying feature of interest.

Species of Importance/Conservation Concern

9.2.5 From the previous EIA work undertaken, the following have been identified as being the most likely species of note that may be affected by the Proposed Development:

- Atlantic salmon;
- brown and sea trout;
- European eel;
- Lamprey species (brook, river or sea lamprey); and
- three-spined stickleback.

9.3 Methodology for Establishment of Effects

9.3.1 The methodology would follow that outlined within Section 8.3.

9.4 Potential Impacts

9.4.1 The main potential impacts during construction and, to a lesser extent, decommissioning are:

- Loss of riparian / instream habitat resulting from construction of new water crossings;
- Increases in silt and sediment loads;
- Obstruction to upstream and downstream migration both during and after construction;
- Disturbance of spawning beds;
- Point source pollution incidents and drainage issues;
- Disturbance to existing hydrological flow regime;
- Noise emissions; and
- Impacts upon angling interests.

9.4.2 Operational effects on fisheries are highly unlikely and we propose that these should be scoped out of the assessment.

9.5 Summary of Effects

9.5.1 From the previous EIA work, no significant effects were found on fisheries receptors and it as habitats/ Site management remain largely unchanged, it is considered likely that the baseline situation will be similar. While it is therefore considered unlikely that significant effects would occur as a result of the Proposed Development it is proposed that fisheries is **scoped in** to assess this and the designated sites and species of importance/conservation concern identified in **Section 9.2.** The assessment will focus on the effects arising during construction. Operational effects on fisheries are proposed to be **scoped out.**

10. Geology, Hydrology and Hydrogeology

10.1 Introduction

10.1.1 Both the 2011 and 2015 ES concluded that there would be no significant effects on any geological, hydrological or hydrogeological features due to the proposed developments considered. This EIA would take account of information from the 2011 and 2015 ES's. Further survey work is also being undertaken in 2018 to provide up to date baseline information.

10.2 Guidance and Reference Material

10.2.1 The geology, hydrology and hydrogeology assessment would be undertaken in accordance with best practice guidance including the following:

- The EU Water Framework Directive (WDF, 2000/60/EC) and resulting Water Environment and Water Services (Scotland) Act 2003;
- Water Environment (Controlled Activities) (Scotland) Regulations, 2011 (as amended) (CAR);
- The EU Floods Directive (2007/60/EC) and resulting Flood Risk Management Act (Scotland) 2009;
- Scottish Government (April 2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition);
- Scottish Government, SNH & SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, online version only;
- SEPA Position Statements and Good Practice Guides including WAT-SG-25 Good Practice Guide – River Crossings (SEPA, 2012);
- SEPA Land Use Planning System Guidance Note (LUPS-GU31): Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems;
- SEPA (2015) The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended): A Practical Guide; and
- Good Practice During Windfarm Construction (Scottish Renewables, SNH, SEPA, Forestry Commission Scotland, Historic Environment Scotland) 2015.

10.3 Baseline Conditions

Desk Study

10.3.1 For the 2011 EIA, SEPA was consulted regularly throughout the process, and it also provided data relating to water quality, Controlled Activities Regulations (CAR) licences and other regulated activities. Information about private water supplies was obtained from CnES. The private water supply situation was also reviewed in 2014 and no changes were identified.

10.3.2 It is proposed to submit a data request to SEPA as part of this EIA for up to date licensed abstraction information and review private water supply information (which is now available on-line).

Field Studies and Assessment

10.3.3 For the 2011 and 2015 EIAs, a site walkover was undertaken to survey water features, including crossing locations. The assessment also used information from the ecology and fisheries assessments.

10.3.4 These EIAs identified a number of receptors to be assessed, including watercourses on the Site (and associated lochs/lochans), geology, aquifers, GWDTEs, properties potentially at risk of flooding, and abstractions.

10.3.5 The existing baseline information would be updated by way of a site walkover in 2018, which would be largely observational and include photographed records of water features and approximate channel dimensions of crossing locations. Previous habitat survey data would also be used.

Designated Sites

10.3.6 Neither the 2011 or 2015 ES identified any relevant designated sites relating to geology, hydrology or hydrogeology. It is not considered that this situation has changed since then.

Receptors Likely to Require Assessment

10.3.7 The following receptors have been identified as having potential for concern:

- Watercourses on the site (and associated lochs/lochans):
  - River Laxdale (including Loch nan Caorann and Loch Garbhaig);
  - Allt Hogaraid;
  - Allt Hulabie;
  - Glen River (including Loch Airigh na Lic) (also known as Bayshead River);
  - Allt Airigh na Beiste (including Loch na Beiste Mhòir);
  - Unnamed tributary from Loch a‟Leadharain (including Loch a‟Leadharain);
  - River Creed (including Loch Bhatandiop, Loch an Ois, Loch a Chlachain);
  - Feadan Loch Lochan (including Loch Speireag);
  - Unnamed tributaries of River Creed to south of Feadan Loch Lochan (including Loch Druim nan Sgorach, Loch Uisg‟ an t-Solius, Loch Airigh Riabhach, Loch nan Sgiath, Loch Faoileag, Loch a‟ Bhuna, Loch Breugach, Loch Breag Cnoc a‟Choilich);
  - Unnamed tributary from Loch Briodag to northeast (including Loch Briodag, Loch Cnoc a‟ Choilich).
- Geology;
  - Peat deposits;
  - Alluvial deposits.
- Aquifers;
  - Superficial deposits (‘peat’);
  - Low productivity aquifer in solid geology.
- Groundwater dependent terrestrial ecosystems (GWDTEs);

- Flood risk;
  - Properties downstream of the site on the River Laxdale;
  - Properties downstream of the site on the Glen River.
- Abstractions;
  - Scottish water abstraction from Loch Orasaigh;
  - Creed Hatchery abstraction from River Creed;
  - Maybank Quarry borehole abstraction;
  - Druim Dubh private water supply;
  - Lews Castle private water supply.

10.4 Methodology

10.4.1 The assessment would consider a comprehensive range of potential impacts resulting from construction, operation and decommissioning, relating to: drainage; flood risk; surface water and groundwater quality; abstractions; and GWDTEs. It would take account of all infrastructure elements, in particular turbine and construction compound locations, routes of access tracks and locations of watercourse crossings. Some changes to the assessment approach from 2011/2015 may be required where it is considered that they could be improved for this redesign application: this includes taking account of SEPA's comments in 2015 in relation to flood risk and GWDTEs.

10.4.2 All baseline data would be reviewed and updated where necessary, for example, updating water body status information to the 2015 River Basin Management Plans (RBMPs), and incorporating any more recent water quality data.

10.4.3 The assessment would take account of the recently updated version of SEPA's guidance on assessing the impacts of development on groundwater abstractions and GWTDEs (LUPS-GU31).

10.4.4 Previous habitat survey data will be used for the re-assessment of impacts on GWDTEs. A stand-alone GWDTE assessment would be produced as an appendix.

10.4.5 A separate Private Water Supply (PWS) assessment is not proposed since there are relatively few such supplies in and around the Site. As such, it is considered that they can be adequately addressed within the chapter rather than as a stand-alone assessment.

10.4.6 Assuming that no significant infrastructure is proposed for areas of floodplain and there are no third-party receptors for fluvial flood displacement or conveyance effects in the vicinity of the Site (in line with the 2011/2015 assessments), it is not intended to produce a stand-alone Flood Risk Assessment (FRA). Necessary flood risk considerations, e.g. associated with changes to drainage and watercourse crossings, will be incorporated into the EIA Report chapter. This approach is consistent with Scottish Planning Policy requirements.

10.4.7 The Site has been subject to a number of peat assessments, including peat probing surveys, peat landslide risk assessments and targeted trial pitting, all of which will inform design of the Proposed Development. The extent of peat within the Proposed Development Site is illustrated on **Figure 10.1.** A peat assessment, taking account of previous assessment work, would be undertaken in accordance with the EIA methodology already employed for other aspects of the water environment and will be supplemented with additional phase 2 peat probing once a site layout has been designed.

10.4.8 A peat slide risk assessment may be undertaken, if required, in accordance with Scottish Government Best Practice, in order to assess the susceptibility to peat slide risk during construction and operation as well as how to mitigate the risk. If required, the assessment would include an on-site peat survey covering the areas of the proposed structures and infrastructure making use of data from historic surveys.

10.4.9 A peat management plan (PMP) will be prepared in accordance with Scottish Renewables and SEPA guidance[7] to provide mitigation for any impacts and risks identified.

10.4.10 A carbon balance assessment for the Proposed Development will be undertaken using Scottish Government guidance on Calculating Carbon Savings from Wind Farms on Scottish Peatlands and the latest version of the carbon calculator spreadsheet produced by the Scottish Government (currently version 1.4.0).

10.5 Potential Effects

10.5.1 Construction of the scheme has the potential to impact:

- Water quality, water quantity and watercourse morphology of surface water bodies;
- Groundwater levels, flow and recharge;
- Groundwater quality;
- The quality or quantity of water available for abstractions (from groundwater or surface water);
- The hydrological conditions associated with peatland and GWDTE habitats;
- Risks of flooding to the Site or downstream;
- The stability or integrity of peat deposits.

10.5.2 Some of these effects could remain, to a lesser extent, during the operational phase.

10.5.3 It is anticipated that decommissioning effects would be equivalent or less than construction phase effects. Decommissioning effects would be discussed within the EIA Report alongside construction effects.

10.6 Summary of Effects

10.6.1 The 2011/2015 EIAs concluded no significant effects on geological, hydrological or hydrogeological receptors. It is not expected that the baseline situation would have substantially changed since 2015 to the extent that significant effects would now be likely. However, this would be confirmed following the gathering of updated baseline information in relation to Hydrology, Hydrogeology and Peat, and assessment against the revised scheme design.

10.6.2 Given that solid geological conditions would not have changed, and that the construction techniques utilised would be the same as assessed in the previous EIAs, it is however considered that the assessment on this receptor would not reach different conclusions. Therefore, it is proposed that solid geology is **scoped out** as a receptor, but that hydrology, hydrogeology and superficial geology are **scoped in**. It is proposed that the assessment would include consideration of the receptors of concern identified in **Section 10.2**.

[7] Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste (Scottish Renewables, SEPA, 2012).

11. Traffic and Access

11.1 Introduction

11.1.1 The Traffic and Access chapter of the EIA Report would determine the significance of transport related effects of the Proposed Development. The main potential effects associated with transportation would be the heavy goods vehicles (HGVs) movements to and from the site during construction and, to a lesser extent, during decommissioning. Other effects associated with transportation would relate to site operatives travelling to and from the Site during the construction/decommissioning phase. Once operational, it is envisaged that the traffic associated with the Proposed Development would be minimal; comprising visits in light vans or similar for maintenance and fault investigation and occasional HGV deliveries.

11.1.2 The Site is adjacent to the A859 and the A858 runs through the northern part of it and partly along its western boundary. Access to the Site would be gained via two site entrances off the A859.

11.1.3 It is anticipated that the turbine components would be transported by sea to the Arnish Point dockland. From there, they would be transported by road along either The Arnish Road for approximately 3.2km before reaching the A859, or a new access road to the A859 via the Creed Enterprise Park[8] and then transported to the wind farm site via Access Point A.

11.1.4 The use of up to seven borrow pits was identified in the 2011 ES and 2015 ES. It is anticipated that, subject to more detailed ground investigation works and testing, the majority of the aggregate material required for the onsite tracks, hardstandings, water crossings, foundations and compounds would be sourced from these onsite borrow pits, although at the beginning of construction, some aggregate material would need to be imported to construct site access tracks to at least one internal borrow pit. Material for tracks to other borrow pits may be won from the first borrow pit opened and others are they are opened up. If aggregate material (and concrete) have to be sourced offsite then a potential source would be Marybank Quarry.

11.1.5 Although it is likely that aggregate material would be sourced from onsite borrow pits, the worst-case scenario assuming off-site sources would be assessed within the EIA.

11.2 Guidance and Reference Material

11.2.1 The traffic and access assessment would be undertaken in accordance with best practice including the following:

- Institute of Environmental Assessment (IEA) publication Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic (1993);
- The Highways Agency *et al* – Design manual for roads and bridges, Volume 11: Environmental Assessment (1993); and
- Scottish Executive – Transport Assessment for development proposals (2002) 12.8.1 (2006) Development Control: Planning for Air Quality).

[8] Planning Permission was renewed in September 2017 (planning application 17/00290/PPD) for improvements to Arnish Road and the creation of a new access road to the A859 via the Creed Business Park.

11.3 Baseline Conditions

11.3.1 The A859 is the main land transport route in the Eilean Siar. It links the settlement of Stornoway located in North Lewis, to Leverburgh on the Isle of Harris and beyond to Lochboisdale in South Uist. It is a single carriageway two-way road and predominately rural in its nature, sided by open moorland used for sheep and deer grazing and domestic peat cutting. The A859 is subject to a 60mph speed limit; however, this reduces to 40mph upon entering Stornoway and as it routes past the Marybank Quarry.

11.3.2 The A858 is a two-way, single carriageway road which passes through the northern part of the Site and then forms part of its western boundary. It has a limited width, measuring between 2.75m - 3.40m. Much of the road is sided by grass verge and passing bays are located at regular intervals.

11.3.3 The Arnish Road routes between the Arnish Point Dockyard, where the Arnish Fabrication Facility is located, and the A859. For approximately 3.2km, the access road routes across an undulating topography. The road is single track, measuring approximately 3.30m - 3.80m in width with a number of passing bays measuring approximately 2.80m wide.

11.3.4 The new access road would route between the Arnish Road and the A859 via the Creed Enterprise Park. The road would be approximately 1.75km in length with a 6 metre wide running surface from the Creed Enterprise Park to the Arnish Road. The new road is proposed to serve the Muaitheabhal Wind Farm at Eishken, Lochs, Isle of Lewis which is also an LWP scheme.

11.4 Methodology

11.4.1 The Traffic and Access chapter would set out the impacts of construction, operational and decommissioning traffic from the Proposed Development on the local road network.

11.4.2 The following policy documents would be reviewed and used to inform the chapter:

- National Policy Statement for Renewable Energy Infrastructure (EN-3);
- Scottish Planning Policy (June 2014);
- PAN 1/2013: Environmental Impact Assessment (June 2017);
- PAN 75 Planning for Transport (August 2005);
- Transport Assessment Guidance (Transport Scotland, 2012);
- Good Practice During Wind Farm Construction (Scottish Renewables / SNH / SEPA / Forestry Commission / Historic Scotland) (September 2015);
- Relevant policies from the Local Development Plan.

11.4.3 The methodology used will accord with the Institute of Environmental Assessment (IEA) publication Guidance Notes No. 1: Guidelines for the Environmental Assessment of Road Traffic 1993 (IEMA) referred hereafter as GEART. The methodology used in the assessment will therefore focus on:

- Potential impacts on local roads and the users of those roads; and
- Potential impacts on land uses and environmental resources fronting those roads, including the relevant occupiers and users.

11.4.4 The following rules, taken from the IEA's guidelines, would 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. These include locations with vulnerable road users, such as schools, nursing homes and locations with high pedestrian activity.

11.4.5 It should be noted that according to GEART, predicted traffic flow increases below 10% are generally not considered to be significant as daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flows below this level are, therefore, assumed not to result in significant environmental effects and would therefore not be assessed.

11.4.6 The sensitivity of each highway link would be assigned a rating in accordance with GEART. This is based on the proximity of sensitive receptors to the highway link and the highway environment.

11.4.7 **Table 11.1** summarises the rationale used to determine the sensitivity against the corresponding receptors as part of the assessment as contained in GEART. Professional judgement is also used to determine the sensitivity of the receptor.

Table 11.1 Receptor Sensitivity

Sensitivity	Description/reason	Receptor
High	Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident blackspots, retirement homes and urban/residential homes without footways that are used by pedestrians and cyclists	Residents/workers travelling to and from work or home on foot and by bicycle, school children, leisure walkers and equestrians
Medium	Traffic flow sensitive receptors including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycle ways, community centres, parks, recreation facilities.	Residents/workers travelling to and from work or home on foot and by bicycle, people visiting these land uses.
Low	Receptors with some sensitivity to traffic flows: places of worship, public open space, nature conservation areas, listed buildings, tourist/visitor attractions and residential areas with adequate footway provision.	Residents/workers travelling to and from work or home on foot or bicycle and people visiting these land uses.
Negligible	Receptors with low sensitivity to traffic flows: Motorway and Dual Carriageways and/or land uses sufficiently distant from affected routes and junctions.	Residents/workers travelling by foot or by bicycle.

11.4.8 Sensitivity judged as High or Medium results in Rule 2 being considered for that highway link. Sensitivity judged as Low or Negligible results in Rule 1 being considered for that highway link.

11.4.9 **Table 11.2** provides details of thresholds used to determine the magnitude of levels of each transport effect.

Table 11.2 Magnitude of Effect

Transport Effect	Magnitude of Effect			
	Substantial	**Moderate**	**Minor**	**Neutral / Negligible**
Severance	Change in total traffic or HGV flows over 90%. And/or Where there will be a temporary maximum increase in pedestrian journey length of 500m or more along a road or other public right of way for more than 6 months over a 12 month period.	Change in total traffic or HGV flows of 60-90%. And/or Where there will be a temporary maximum increase in pedestrian journey length of 250m – 500m along a road or other public right of way for a 3-6 month period over 12 months.	Change in total traffic or HGV flows of 30-60%. And/or Where there will be a temporary increase in pedestrian journey length of up to 250m along a road or other public right of way for 1-3 months over a 12 month period.	Change in total traffic or HGV flows of less than 30%. And/or Where there will be no temporary increase in pedestrian journey length.
Driver delay	Change in total traffic or HGV flows over 90%.	Change in total traffic or HGV flows of 60-90%.	Change in total traffic or HGV flows of 30-60%.	Change in total traffic or HGV flows of less than 30%.
Pedestrian amenity and delay	Change in total traffic or HGV flows over 90%.	Change in total traffic or HGV flows of 60-90%.	Change in total traffic or HGV flows of 30-60%.	Change in total traffic or HGV flows of less than 30%.
Accidents and road safety	Informed by a review of existing collision patterns and trends based upon the existing personal injury accident records and the forecast increase in traffic.			

11.4.10 To determine the traffic generated by the Proposed Development, estimates of the levels of construction traffic based on a schedule of construction activities would be made. The estimated traffic generation would be distributed across an appropriate construction schedule to determine the profile of traffic movements per month, therefore identifying the month of peak activity. Daily traffic flows for each month would then be estimated based on the likely number of working days per month. The resultant daily flows for the peak month would then be assigned onto the local highway network. The likely percentage increase in traffic would be determined by comparing estimates of traffic generated by the Proposed Development with existing traffic levels on the routes to be used.

11.4.11 To determine existing traffic levels on the routes to be used, information set out in the 2011 ES would be reviewed for the construction routes to the Site to provide a baseline from which to growth traffic to the anticipated year of construction, subject to consultation with the local highways authority. If required and subject to consultation with local highways authority, new traffic surveys would be commissioned to establish the existing baseline and used to factor to the future baseline (first year of construction).

11.4.12 The assessment would not cover the operation or decommissioning of the Proposed Development, since the former would generate very little traffic and the latter cannot be assessed at this time due to unforeseen changes to the highway network over the course of its lifetime; furthermore, it is likely to be less than that associated with the construction works since most sub-surface infrastructure will remain in situ. As such, the construction phase will be the main focus of this assessment.

11.4.13 The environmental effects (as identified within GEART) that can occur as a result of traffic during the construction phase of the Proposed Development would be subject to assessment, are as follows:

- Severance: the separation of people from places and other people;
- Driver delay: traffic delays to non-development traffic;
- Pedestrian delay: the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions of the site;
- Pedestrian amenity: the effect on the relative pleasantness of a pedestrian journey as a result of changes in traffic flow, traffic composition and pavement width/separation from traffic;
- Fear and intimidation: the levels experienced by receptors as a result of an increase in traffic volume and its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths;
- Accidents and safety: the risk of accidents occurring where development is expected to produce a change in the character of traffic; and
- Hazardous loads: the effect of transportation of dangerous or hazardous loads by road, though as no movement of hazardous loads are anticipated, this element is scoped out.

11.4.14 In some cases, professional judgement would be used to assess the findings in relation to each of these criteria to assess significance for each effect. The assessment would identify the activity causing the impact; the receptors affected and their sensitivity; the type of effect; the magnitude of the impact; the overall level of effect of its significance.

11.4.15 Records of personal injury accidents for the routes affected by the Proposed Development would be obtained from the local highway authority for the last five complete years to identify any trends in incident locations/frequency that may need to be accounted for in the assessment.

11.4.16 An abnormal indivisible load study (AIL study) would also be included within the assessment.

11.4.17 Should environmental effects be assessed as being significant, appropriate environmental measures would be proposed that seek to minimise impact magnitude during construction.

11.5 Cumulative Assessment

11.5.1 There are a number of proposed wind farm developments on the Isle of Lewis. The potential for significant cumulative traffic impacts associated with these developments commencing in tandem with the Proposed Development will be discussed with CnES during consultation and cumulative impacts will be assessed in the EIA Report if required.

11.6 Potential Impacts

11.6.1 The main transport effects would be associated with the movements of abnormal loads and HGVs travelling to and from the Site during construction and, to a lesser extent, the decommissioning phases. The construction phase is expected to last up to 18 months, although it is likely that HGV movements would be concentrated into relatively shorter delivery periods within this overall programme. It is during these delivery periods that the largest percentage increase in traffic volumes would occur.

11.6.2 The temporary effects arising from the construction and decommissioning traffic can be minimised through the adoption of an appropriate locally focussed transport management plan. This would promote the safe and efficient transportation of materials and components to minimise disruption

to other road users and receptors along the routes. The transport management plan could include the following:

- An agreed route for construction and decommissioning traffic including abnormal loads;
- Escorts would be used for abnormal loads and the timing of deliveries would be within quiet periods with advance notice to public;
- All HGVs would be sheeted to reduce dust and stop spillage on public roads;
- Specific training and disciplinary measures would be established to ensure the highest standards are maintained;
- Site entrance roads would be well maintained and monitored and road cleaners would be available;
- HGVs would move at set times each week when traffic is low and so that members of the public would know when they are likely to encounter them;
- Site entrances would be designed to allow HGVs to turn off the highway easily, to keep disturbance to other users to a minimum.

11.6.3 Once operational, it is envisaged that the number of vehicles generated would be minimal as noted. Given the sporadic nature and vehicle numbers involved, it is considered that the effects arising from site operations would be negligible, and therefore, an assessment of only the construction phase of the Proposed Development is proposed (as noted, decommissioning impacts are likely to be of lesser magnitude than during construction).

11.7 Summary of Effects

11.7.1 The anticipated access routes to the Proposed Development would be the Arnish Road and the A859. The assessment would provide details of the proposed access routes to the point of access to the Site and an indication of the likely number of vehicle movements. The chapter would assess the potential effects on local roads due to construction. The significance of the effects on receptors would be evaluated against the IEA guidelines and, where possible, in line with the criteria used for the other environmental topic areas covered in the EIA Report.

11.7.2 The assessment would not cover the operation or decommissioning of the Proposed Development, since the former would generate very little traffic and the impacts during the latter are anticipated to be of lower magnitude than during construction; and also cannot be assessed at this time due to unforeseen changes to the highway network over the course of the wind farm's lifetime. It is therefore proposed that the operation and decommissioning phase assessment are therefore **scoped out**.

12. Noise

12.1 Introduction

12.1.1 The proposed scope of the noise assessment would include:

- Construction noise from the Proposed Development, including construction traffic noise for roads, where sufficient data is available; and
- Operational noise for the Proposed Development, including cumulative noise impacts from proposed, consented and operational wind developments in the area.

12.1.2 This section seeks agreement from CnES's environmental health representative on all proposed assessment methodologies, particularly that associated with the operational noise assessment.

12.2 Guidance and Reference Material

12.2.1 The noise assessment would be undertaken in accordance with best practice guidance including the following:

- ETSU-R-97 The Assessment and Rating of Noise from Wind Farms (ETSU 1996);
- Acoustics Bulletin, volume 34, number 2, March/April 2009; and
- Institute of Acoustics 'Discussion Document' on the 'Good Practice Guide to the Application of ETSU-R-97 for Wind Turbine Noise Assessment'.

12.3 Baseline Conditions

Data Sources

12.3.1 Comprehensive background noise monitoring was undertaken to inform the 2011 ES and this data will be used to inform the noise assessment of the Proposed Development. It is proposed that the results of the 2011 background noise monitoring as presented within the 2011 ES and the 2015 ES, would remain applicable for the Proposed Development and no further background noise monitoring is therefore proposed.

12.3.2 Review of the Proposed Development Site using current Ordnance Survey mapping and Aerial Photography has not identified any new sensitive receptors that would be considered in addition to those considered within the 2015 ES. However, the presence of any new noise sensitive receptors in the vicinity of the Proposed Development would be confirmed during a site walkover.

Summary of Baseline Conditions

12.3.3 The site is located in a remote semi-rural area and as such, the influence of road traffic noise to the prevailing noise climate is low.

12.3.4 At some noise sensitive receptors in the vicinity of the Proposed Development, it is possible that there may be particular instances of wind direction and wind speed where turbine noise immissions are audible, namely from Arnish Moor Wind Farm; Pentland Wind Farm; Point and Sandwick Wind Farm; and Creed Business Park Single Turbine. No other existing, consented or proposed wind

developments have been identified within the study area which would have the potential to result in noise impacts at any of the assessed sensitive receptors.

12.3.5 On the basis that there have been no substantial changes to the management of the Site and surrounds, it is anticipated that the prevailing baseline noise conditions have not changed significantly from those presented within the 2011 ES. It therefore follows that the results of background noise monitoring, and the associated noise limits derived using methodology advocated within the ETSU-R-97 Guidance, would remain applicable for the Proposed Development. This is the same approach agreed and adopted for the 2015 ES noise assessment.

12.4 Methodology

Construction Noise

12.4.1 The assessment methodology will follow the guidance advocated within BS5228-1:2009+A1:2014 *'Code of practice for noise and vibration control on construction and open sites. Noise'* (2014). Outcomes will be confirmed using calculations of construction noise immissions at sensitive receptors based upon details of the proposed construction programme and phasing.

12.4.2 Where traffic flows are sufficient to allow calculations, an assessment of construction traffic noise would also be presented, using the Department of Transport publication *'Construction of Road Traffic Noise'* (1988) and the *'Design Manual for Roads and Bridges'* (Vol 11. Noise and Vibration).

Operational Noise

12.4.3 The proposed operational noise assessment would be undertaken in accordance with *'ETSU-R-97: The Assessment and Rating of Noise from Wind Farms'*, (ETSU-R-97 Guidance) (1996), and the assessment methodology advocated within the Institute of Acoustics *'A Good Practice Guide to Applications of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'* (IoA GPG) (2013).

12.4.4 The ETSU Guidance advises that any noise restrictions placed on a wind farm must balance its environmental impact against the national and global benefits that would arise through the development of renewable energy sources:

"The planning system must therefore seek to control the environmental impacts from a wind farm whilst at the same time recognising the national and global benefits that would arise through the development of renewable energy sources and not be so severe that wind farm development is unduly stifled".

12.4.5 In this respect, the wind turbine noise levels imposed by Planning Conditions 47 and 47A on the Consented Stornoway Wind Farm are acknowledged by the Applicant. The final selection of turbine model for the Proposed Development would follow a competitive tendering process and would be required to comply with the noise criterion levels established by the planning conditions.

12.4.6 The majority of noise related guidance and standards (including the ETSU Guidance) are not directly related to the concepts of 'significant' and 'not significant' effects that underpin EIA. However, for the purposes of the proposed assessment, the determination of effect significance for each phase of the Proposed Development is based upon compliance with the applicable noise limit i.e. a breach of the noise limits indicates a significant effect, whereas compliance with noise limits indicates an effect which is not significant. As noise levels exceeding the ETSU Guidance noise limits are deemed to be significant, further consideration with a view to implementing appropriate mitigation would be required where this were the case.

12.5 Potential Impacts

Construction Impacts

12.5.1 There is potential for noise to be generated from on-Site construction operations and from the movement of construction traffic. The construction phase is expected to last up to 18 months, and the greatest noise impacts are likely to occur during the construction of the foundations and erection of the turbines. There is also the potential for noise levels to be temporarily increased due to construction traffic movements.

12.5.2 It is assumed that decommissioning noise would be generally less, or at most, similar to that experienced during the construction period. Therefore, it is proposed that the assessment of noise from decommissioning activities is **scoped out**.

Operational Impacts

12.5.3 When operational, wind turbines emit two types of noise – mechanical noise and aerodynamic noise. The main sources of mechanical noise are from internal components housed within the nacelle, such as the gearbox and generator. Mechanical noise from a modern wind turbine is negligible, as the nacelles are insulated to reduce noise emissions and the various mechanical components housed within the nacelle are acoustically isolated to prevent structure-borne noise.

12.5.4 Aerodynamic noise occurs from the movement of the blades passing through the air. At higher wind speeds, aerodynamic noise is usually masked by the increasing sound of wind blowing through trees and around buildings. The level of masking determines the perceived audibility of the wind farm. The proposed impact assessment establishes the relationship between wind turbine noise and the natural masking of noise resulting from features of the surrounding environment and assesses noise levels against established standards.

12.5.5 For the impact assessment, a range of turbine models, appropriate for the Proposed Development, would be considered. The final selection of turbine would follow a competitive tendering process and thus the actual model of turbine may differ from those upon which the assessment has been based. However, the final choice of turbine will be required to comply with the noise criterion levels which have been established by the Consented Stornoway Wind Farm.

12.6 Potential Mitigation

12.6.1 Noise modelling would be undertaken using software adopting the IoA GPG advocated methodologies. In the event that exceedances of the associated noise limits are determined for a specified site layout or associated turbine model, mitigation options would be investigated. These may include: adoption of quieter turbines; revised layout; reducing the power rating, and thus the noise emission of particular turbines in particular wind environments; or design of a noise management plan which varies the operation of the wind turbines dependent on the wind direction.

12.7 Summary of Effects

12.7.1 The Proposed Development is not likely to result in any significant effects in terms of decommissioning, and it is therefore proposed that this is **scoped out** of the assessment.

12.7.2 However, there is the potential for significant effects during the construction and operational phase of the Proposed Development and this will be considered in the assessment.

13. Socio-economics, Tourism and Recreation

13.1 Introduction

13.1.1 Wind farms have the potential to have both beneficial and negative effects on socio-economics, tourism and recreation. Potential beneficial effects include:

- Generation of local jobs through use of local contractors for construction and maintenance;
- Increased spend in the local community during the construction stage and to a lesser degree during the operational stage with workers staying in the area and using local facilities.

13.1.2 Negative effects of wind farms are often linked to perceptions and attitudes towards wind energy development, which could potentially result in reduced use of tourism and recreation facilities and the associated impacts this could have on the local economy.

13.2 Baseline Conditions

The Economy

13.2.1 Much of the economic and social activity in the Eilean Siar is generated from within the islands but it relies heavily on connections with the mainland for essential supplies and export. There is a physical distance from its main markets which result in certain challenges for maintaining population and diversifying the local economy.

13.2.2 The main source of employment in 2016 was the public sector. Other important industries include aquaculture and fisheries. Despite the economic pressures on fishing, the total numbers employed in the catching sector have remained fairly stable in recent years. Commercial and industrial development remains predominantly small scale. Tourism is a growth industry and much employment depends on visitors to the islands.

13.2.3 Between October 2016 and September 2017, there was 13,600 economically active people in the Eilean Siar, with 80.5% being in employment. This compares favourably to Scotland (77.3%) and Great Britain (78%). In 2016, there was 11,000 employee jobs, with over half being part time. Gross weekly pay in the Eilean Siar was the third lowest in Scotland in 2017, at £479.80 (full time workers). The figures for Scotland and Great Britain were £547.70 and £552.70 respectively. In 2015, the Gross Value Added (GVA) per head was £16,989. The UK figure was £25,351 and Scotland's was £23,685.

13.2.4 Crofting is the predominant form of land use in the Eilean Siar and this is apparent within the Site which is used for grazing as well as areas used for forestry, angling, peat cutting and landfill.

Tourism and Recreation

13.2.5 Employment in the tourism industry has fluctuated over the years, but in 2015, sustainable tourism employment in the Eilean Siar accounted for around 1,100 employees, representing approximately 10% of total employment. Sustainable tourism GVA in 2014 was £39.5 million.

13.2.6 3% of visitors to Scotland in 2016 visited the Eilean Siar. The 2016 visitor survey undertaken by Visit Scotland indicates that the main reason for visits to the Eilean Siar was the scenery and landscape, with the beaches featuring strongly as visited areas.

13.2.7 There are a range of tourism and recreation facilities and attractions in Eilean Siar including accommodation, food and drink, heritage attractions and outdoor pursuits. The top five visitor attractions in the Eilean Siar in 2016 were:

- An Lanntair mulit arts venue in Stornoway, approximately 2.5km from the Site;
- The Calanais Visitor Centre, approximately 13km to the west of the Site;
- The Gearrannan Blackhouse Village, approximately 26km from the Site;
- Taigh Chearsabhagh Museaum and Arts centre on North Uist;
- Balranald Nature Reserve on North Uist.

13.2.8 Other activities near to the Site include the Lewis Karting Centre on the Creed Business Park as well as activities within Stornoway such as the golf course.

13.2.9 The nearest tourism accommodation to the Site includes: Lochl (self-catering cottage), Woodside Guest House, Park House (self-catering cottage) all located on the A859; and Glen Gravis (self-catering cottage) on the A858. There are also several hotels, guest houses, bed and breakfasts and holiday cottages within Stornoway.

Public Access

13.2.10 In Scotland, under the Land Reform (Scotland) Act 2003, everyone has the right to be on and cross land on the provision of responsible behaviour. This right to access is in addition to rights of way and core paths. The Hebridean Way is a 250km long distance walking route and separate 300km long distance national cycle network route (NCN 780). The northern part of the route follows the A858 which forms the western boundary of the Site before cutting east through the northern part of the Site. Core Path 6 lies east of A859, approximately 2km from the Site and is associated with Lews Castle grounds. Core Path 4 is a very short length (400m) of path with a specialised all ability surface, approximately 3km from the Site. There are three other core paths within 20km of the Site – Core Paths 2, 3 and 5.

13.3 Methodology

13.3.1 The Socio-economic, Tourism and Recreation chapter would focus on the impacts of construction, operation and decommissioning on visitor attractions, recreational facilities and public access, as well as direct and indirect effects on local employment. The conclusions in other technical chapters, particularly landscape and visual and the historic environment, would be used to assess the direct impacts on tourism, supplemented by reference to various attitude surveys.

13.3.2 The significance of effects would be determined using the approach set out in **Chapter 3, Section 3.2** and assessed using the criteria set out in **Table 3.1**.

The Economy

13.3.3 A review would be conducted of local and national socio-economic planning policies and strategies including NPF3, SPP and the Eilean Siar Local Development Plan. Economic characteristics would be described using sources such as the Office for National Statistics, Scottish Neighbourhood Statistics and the Scottish Index of Multiple Deprivation. The economic effect in the area would be considered in terms of employment and direct support to the local economy. This would include an assessment against the main phases of the Proposed Development, including job creation during the construction phase.

13.3.4 Indirect effects (the economic activity generated as a result of purchases in the supply chain) and the induced effects (the effects of spending by households in the local economy as a result of direct and indirect effects activity related to the Proposed Development) would also be assessed.

13.3.5 Other potential aspects to be considered include the community benefit fund, lease rental payments to the Stornoway Trust, compensatory payments to crofters and the implications for the subsea connector.

Tourism and Recreation

13.3.6 The chapter would include an assessment of the impact of the Proposed Development on visitor attractions and tourism. A review would be conducted of national and local tourism strategies, together with visitor statistics. The key visitor attractions and facilities within 15km of the Proposed Development would be identified using publicly available sources such as Visit Scotland's website. The assessment would take into account the relative scale of the impact on tourism and any potential positive effects associated with the Proposed Development.

13.3.7 The tourism assessment would include a review of available attitude and perception literature to provide an up to date summary of any reported links between wind farm development and tourism. Consideration would be given to the following documents:

- Wind Farms and Tourism Trends in Scotland (BiGGAR Economics, 2016);
- Tourism Impact of Wind Farms (Aitchison, 2012);
- Wind Farm Consumer Research Topic Paper (VisitScotland, 2011); and
- The Economic Impacts of Wind Farms on Scottish Tourism (Glasgow Caledonian University, 2008).

13.3.8 The assessment of impacts on recreational activities will have regard to the guidance within Appendix 5 of "A Handbook on Environmental Impact Assessment" (SNH 2014).

Public Access

13.3.9 The chapter would include assessment of the impact of the Proposed Development on designated routes, including core paths, long distance routes, known right of ways and multi-use trails. This would focus on the potential direct impacts on physical access during construction, operation and decommissioning. Indirect impacts would be informed by other technical chapters, in particular Landscape and Visual. The assessment of effects on public access will also have regard to the guidance within Appendix 5 of "A Handbook on Environmental Impact Assessment" (SNH 2014).

13.4 Potential Impacts

Economic & Employment

13.4.1 Onshore wind farms can have a positive socio-economic impact in terms of providing employment and income to the local economy. For the Proposed Development these may include:

- Supply chain: procurement of local goods and services, such as security, catering, hotel facilities or maintenance;
- Infrastructure: potential upgrade of the road network;
- Employment: contractors or manufacturers will be required and, if possible, procurement may be local;

- Local expenditure: new spending power generated from employees directly and indirectly associated with the Proposed Development. An amount of the earning capacity of these individuals would be expected to be spent locally, for example, shopping, accommodation and leisure.

13.4.2 Recreation and tourism provisions and businesses may however be temporarily disrupted during construction.

13.4.3 There may also be changes to land use on the Site both during construction and operation. For instance, construction activities would be likely to affect the areas that can be used for crofting, grazing, peat cutting, forestry and fishing. However, there may be alternative areas that can be used for these during the construction period; and during the operational phase, these uses could be reinstated over much of the Site. There is the potential for greater impacts on anglers, who would have restricted access during construction and may be more sensitive to the operational wind farm.

Tourism & Recreation

13.4.4 Stornoway is one of the main gateways for tourism arrivals in the Eilean Siar with many of the visitors arriving via the Ullapool to Stornoway ferry. The LVIA undertaken as part of the 2011 ES indicated that the upper portions of the turbines would be visible from much of the ferry route.

13.4.5 The 2016 visitor survey indicates that the most popular activities in the Eilean Siar were general sightseeing, beaches, historical sights, walking and watching wildlife. Tourism on the Eilean Siar appears to rely heavily on the natural landscape. The conclusions of the LVIA chapter would be used to inform the potential impacts of the Proposed Development on tourism and recreation.

Public Access

13.4.6 There is the potential for public access and rights of way to be disrupted during construction, although there is limited recreational walking within the Site. The main walking route is the access path along the River Creed which is used primarily by anglers, with limited use by other users. Guidance on public access and wind farm good practice documents would be referred to and, where possible, incorporated as embedded mitigation within the scheme design. Ways of retaining the public access or creating alternate access during construction and operation would be investigated.

13.5 Summary of Effects

13.5.1 There is the potential for significant effects on the economy, tourism, recreation and public access during the construction, operation and decommissioning of the Proposed Development and these will be considered in the assessment.

14. Shadow Flicker

14.1 Introduction

14.1.1 Impacts from shadow flicker only occur during the operational phase of a wind farm. Shadow Flicker can only occur in sunny weather conditions when the blade of a wind turbine blocks the sunlight passing into a small opening (window) of a property on each revolution. This briefly reduces/blocks the intensity of light within the room, and causes a flickering to be perceived.

14.1.2 In the open, shadow flicker is generally not a disturbance as light outdoors is reflected from all directions. In order for shadow flicker to occur, the receptor must be directly in line with the wind turbines when the sun is low in the sky.

14.1.3 It is stated within the Scottish Government's Onshore Wind Turbines planning advice note (May 2014) that where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), 'shadow flicker' should not be a problem.

14.2 Guidance and Reference Material

14.2.1 The shadow flicker assessment would be undertaken in accordance with best practice including the following:

- Draft Northern Irish planning guidance PPS 18: Renewable Energy, Annex 1; and
- Department of Energy and Climate Change, Update of UK Shadow Flicker Evidence Base, 2011.

14.3 Methodology

14.3.1 An assessment would be undertaken using appropriate software to calculate the shadow flicker from the wind farm. This software calculates the position of the sun throughout the year and checks if a shadow would be cast on a specified window at a specific location for each wind turbine. The window configuration and orientation of any property within 10 rotor diameters would be established to inform the assessment conclusions.

14.3.2 Any properties within 10 times the maximum rotor diameter, plus a 50m mircositing allowance will be included within the assessment.

14.4 Potential Impacts

14.4.1 The Proposed Development would result in the installation and operation of wind turbines with rotor diameters of between 130m and 164m. This would result in an area of potential shadow flicker effects of up to 1690m (10 rotor diameters including a 50m mircositing allowance).

14.4.2 Based on the proposed layout as illustrated on **Figure 2.2** in **Appendix A**, the nearest closest inhabited dwellings to the Proposed Development are located 1.5km from the wind turbines, and are therefore located within 10 rotor diameters of these. The nearest residential property is located at Druim Dubh, however this property is owned by the Applicant and is intended to be used as part of the Proposed Development. However, some residential receptors are located within the area that may be potentially affected by shadow flicker impacts and these will be considered in the assessment.

14.5 Potential Mitigation

14.5.1 Mitigation of turbine shadow flicker is achieved partly through appropriate layout design and turbine selection, which can reduce impacts, or in some cases prevent this from occurring. The potential for mitigation of shadow flicker will be implemented through the iterative wind farm design process and if this is not able to mitigate impacts, then a range of technical solutions are available. The most prevalent mitigation measure is a control module in the turbines that can be programmed to shut down the turbine(s) when a combination of sunny conditions, wind speed and time of day combine such that shadow flicker may occur at a property.

14.6 Summary of Effects

14.6.1 Based on the available guidance and current baseline, there is the potential for shadow flicker to occur as a result of the Proposed Development and this will be considered in the assessment. However, as shadow flicker is readily mitigated, significant effects are unlikely.

15. Other Issues

15.1 Introduction

15.1.1 This chapter of the Scoping Report sets out the proposed approach to the assessment of a number of other topics that would be considered within the EIA Report.

15.2 Existing Infrastructure, Telecommunications and Broadcast Services

15.2.1 Specific Advice Sheet Onshore Wind Turbines (Scottish Government, May 2014) identifies that wind turbines might impact on infrastructure, telecommunications and broadcast services. Effects may, for example, include disruption of microwave rebroadcast links or local radio communication systems. The quality of television reception may be affected, through to a lesser extent than prior to the switchover to digital transmissions, and viewers may suffer reduction of picture quality and acoustic interference. Turbines can also potentially interfere with communication networks.

15.2.2 Whilst it is not strictly an EIA issue, it is relevant to note that a range of investigations would be undertaken to establish the presence of existing infrastructure associated with utilities such as water, gas, electricity and telecommunications links to establish either the absence of effects or to identify appropriate mitigation to overcome any effects. These matters would be addressed through consultation with the relevant system operators and during the iterative design process of the Proposed Development as necessary.

15.3 Air Safeguarding

15.3.1 Specific Advice Sheet Onshore Wind Turbines (Scottish Government, May 2014) identifies that wind turbines might impact on air safeguarding issues. Wind turbines reflect radio waves and can therefore interfere with radar. The reflections from the turbines show up on radar as 'clutter' and radar operators are often concerned that wind farm clutter might affect aviation safety. Due to their height, wind turbines could also potentially present a collision risk to low flying aircraft, interfering with military low-level training flights.

15.3.2 In line with article 222 of the UK Air Navigation Order 2016 and guidance set out in the associated CAA Policy Statement (June 2017), aviation lighting on the wind turbines would be required given that proposed blade to tip height would exceed 150m above ground level. The potential impacts of aviation lighting would be addressed within the Night-time Lighting Assessment (NLA), which would be reported in the Landscape and Visual chapter of the EIA Report.

15.3.3 An Aviation Impact Assessment (Pager Power, 2011[1]) undertaken in relation to the Consented Stornoway Wind Farm considered the impact of the then proposed wind farm upon Stornoway Airport and NATS En-Route radar at Sandwick.

15.3.4 As a result of this assessment, the original (and varied) consent for Stornoway Wind Farm required SWL to agree mitigation with the Highlands and Islands Airport Ltd (HIAL) in respect of approach procedures at Stornoway Airport. Suitable mitigation was agreed with HIAL and has now been implemented and the associated planning condition has been discharged.

15.3.5 It was also identified that the Consented Stornoway Wind Farm may impact on the Sandwick Air-Ground-Air Voice Communication System. In response to a planning condition, SWL had studies

undertaken to determine the extent of the impact, following which the radar operator, NERL (NATS (National Air Traffic Services) En-route plc) considered that mitigation was not required and the associated planning condition was discharged.

15.3.6 Furthermore, NERL also considered that the impact on the Secondary Surveillance Radar at Sandwick would be operationally acceptable and therefore, did not raise any objection in that respect.

15.3.7 It was also previously identified in the 2011 ES that the wind farm was likely to cause *"some localised interference for low scan elevations at Druim A' Starraig Meteorological radar in terms of Shadowing, Clutter and Doppler"* (Pager Power, 2011[2]). As a result of this, the original (and varied) consent for Stornoway Wind Farm required SWL to develop a 'Radar Mitigation Scheme' to prevent, remove or reduce to an acceptable level any adverse impacts on the weather radar. In response to this, SWL has secured a site at Campar Mos, Ness for a replacement weather radar to be sited. This site has been deemed acceptable by the MOD, on behalf of the Meteorological Office (the 'Met Office'), and planning consent has been granted[9]. SWL will not implement the mitigation until construction Stornoway Wind Farm commences.

15.3.8 The Proposed Development would be designed to ensure that there would be no compromise of the mitigation agreed in respect of Stornoway Airport, the Sandwick Air-Ground-Air Voice Communication System and the Druim A'Starraig Meteorological radar. A NERL Technical and Operational Assessment (TOPA) will be undertaken. This would include technical and operational assessments in relation to airport assets which would be taken into account in the design of the Proposed Development. The design of the Proposed Development would take cognisance of Planning Circular 2/2003 Safeguarding of Aerodromes, Technical Sites and Military Explosive Storage Areas, Scottish Executive, 2003;

15.4 Emission of Pollutants

Dust and Air Quality

15.4.1 The Site lies in an open rural setting comprising peat bogs and agricultural land and it is assumed that the air quality in the area is good. The potential impact associated with the construction and decommissioning of the Proposed Development would relate to:

- Dust generated by excavation and earthworks, and the movement of construction vehicles on unpaved access routes; and
- Construction vehicle exhaust emissions of NO_2 and PM_{10}/$PM_{2.5}$, which could potentially impact on local air quality.

15.4.2 The potential generation of airborne dust would be limited to the duration of the construction and decommissioning works. The majority of dust generated from a source is considered to be deposited within 200m[10], with concentrations of the finer fractions of dust being significantly diluted beyond this distance, due to atmospheric dispersion and further deposition.

15.4.3 Best practice mitigation measures, which are routinely and successfully applied to construction projects throughout the UK, would be detailed within a Construction Environmental Management Plan (CEMP) and would be implemented to minimise air pollutant releases. These control measures

[9] CnES granted planning consent on 04 February 2014 (application reference no: 13/00504) and the consent was renewed on 22 March 2017 (application reference no: 17/00013).
[10] Guidance on the assessment of dust from demolition and construction, Version 1.1 (IAQM, 2014).

should ensure that there would be no significant impact on sensitive receptors (ecological and people).

15.4.4 Construction vehicle exhaust emissions of NO_2 and PM_{10} would be limited to the duration of the construction and decommissioning works. Given the existing good air quality at, and in proximity to the Site, the contribution of NO_2 and PM_{10}/$PM_{2.5}$ from construction vehicles is not predicted to significantly impact upon local air quality. Construction vehicles would be compliant with European legislation on emissions standards and be subject to regular maintenance, details of which would be stated within the CEMP.

15.4.5 The potential local air quality impacts associated with dust and particulate matter from construction and decommissioning activities, and from onsite vehicle and plant exhaust emissions during construction and future site maintenance activities, are therefore proposed to be **scoped out** of the EIA.

15.4.6 The air quality impacts associated with the operation of the Proposed Development would relate to exhaust emissions from maintenance vehicles periodically serving the Site and a negligible impact is therefore anticipated. Therefore, potential air quality impacts during operation are proposed to be **scoped out** of the EIA.

Vibration

15.4.7 Potential ground borne vibration effects may arise during the construction of the Proposed Development, particularly as a result of opening up borrow pits which would require periodic blasting and the use of excavation and stone crushing equipment. The use of appropriately silenced equipment, publicity over blasting, adherence to operational hours and the considerable distance to residentials would provide the main mitigation for such effects which are anticipated to be well within limits of acceptability established by guidance. Vibration is therefore proposed to be **scoped out** of the proposed assessment.

Heat and Radiation

15.4.8 The Proposed Development, once operational, would not emit heat or radiation. Therefore, these aspects are not considered relevant and are proposed to be **scoped out** of the EIA.

Lighting

15.4.9 Lighting may be required to facilitate construction/decommissioning activities of the Proposed Development. However, significant light pollution during these phases is unlikely as this can be controlled using standard construction practices and good site management (by use of directional lighting for example). Lighting associated with construction/decommissioning will therefore be scoped out of the assessment.

15.4.10 The SNH guidance Siting and Designing Windfarms in the Landscape, Version 3 (February 2017) advises that turbines in excess of 150m require visible lighting and that a Night-time Lighting Assessment (NLA) is required. The Proposed Development includes turbines of 152m and 187m to blade tip and therefore an NLA would be prepared. The results would be reported in the Landscape and Visual Assessment chapter of the EIA Report.

15.5 Population and Human Health

15.5.1 Environmentally related population and human health issues resulting from the Proposed Development (both beneficial and adverse) may for example include exposure to traffic emissions,

changes in living conditions resulting from noise and shadow flicker and increased employment opportunities. It is therefore proposed that population and human health effects of the Proposed Development are incorporated within the relevant technical chapters such as Socio-economics, Traffic, Noise and Shadow Flicker.

15.5.2 However, for ease of reference it is proposed that a summary table that identifies the potential population and human health effects and the EIA Report chapter that considers the matter in more detail would be provided (either as an appendix or within a succinct section of the 'Other Issues' chapter).

15.6 Climate

15.6.1 As a source of renewable energy, it is widely accepted that wind farms can help to reduce emissions of greenhouse gases that would otherwise have been released to the environment by burning fossil fuels to produce the equivalent energy output. As wind farms are therefore considered to be inherently beneficial in respect of climate change, it is not proposed to prepare a separate EIA Report chapter on 'Climate'.

15.6.2 The vulnerability of the Proposed Development to climate change and extreme climate events would be considered within the engineering design. A Carbon Balance and Peat Slide Risk Assessment would be conducted as part of the Geology, Hydrology and Hydrogeology Assessment. The volume of greenhouse gas emission savings as a result of the Proposed Development generating power rather than this being generated by conventional means will be calculated; though given the non-emitting nature of a wind farm and the fact that it is a renewable technology, an additional greenhouse gas assessment has not been proposed.

15.7 Sustainable Resource Use

15.7.1 Although Wind turbine development can encompass large areas of land, the actual built development covers a relatively small percentage of the land take and in most circumstances, farming and other land based activities would continue in and around the Site. As a result of this, significant environmental effects in terms of land use is unlikely.

15.7.2 In terms of soil and peat, the design will take into account track lengths, turbine foundation design, hardstanding design, compound design etc in order to minimise the amount of soil disturbance. Where soils and peat would be excavated, they would be stored on site in accordance with a Peat Management Plan and CEMP and then used in the restoration of the site post construction to minimise the loss of soil and peat resource.

15.7.3 With regards to construction/decommissioning works, the water resource would be managed in accordance with a CEMP, a draft of which would be included in the 'Project Description' chapter of the EIA Report. Effects on surface and groundwater, for example flood risk and pollution risk, would be set out in the Hydrology, Hydrogeology and Geology chapter of the EIA Report.

15.7.4 The potential effects of the Proposed Development on biodiversity resource would be addressed within the Ecology, Fisheries and Ornithology chapters of the EIA Report, within which appropriate mitigation would be set out in order to minimise the potential impacts. Mitigation measures would also be detailed in a Habitat Management Plan, which it is expected would be required by planning condition and also within the CEMP.

15.8 Major Accidents and Disasters

15.8.1 The scope for the EIA to consider major accidents and disasters has been initially considered in **Table 15.1** below. Major accidents or disasters have been **scoped in** where they represent a high risk to the Proposed Development, either from the proposed location or from the project itself. A high risk is considered to be where there is reasonable likelihood of the accident or disaster occurring, or where the effect of the accident or disaster would lead to mitigation which is beyond the usual scope of construction or operational activities. Where an accident or disaster has been scoped in, the EIA Report chapter(s) identified would consider the matter in more detail. This further detail may show that no further assessment is needed, or it may lead onto an appropriate level of assessment and/or mitigation.

Table 15.1 Major Accidents and Disasters

Major Accident or Disaster	Risk due to location	Risk due to project	Scoped in/out due to risk	Potential Effect	EIA Report Chapter
Biological hazards: epidemics	No	No	Out		
Biological hazards: animal and insect infestation	No	No	Out		
Earthquakes	No	No	Out		
Tsunamis / tidal waves / storm surges	No	No	Out		
Volcanic eruptions	No	No	Out		
Famine / food insecurity	No	No	Out		
Displaced populations	No	No	Out		
Landslide / subsidence	Yes	Yes	In – peat and bog ground conditions are susceptible to landslide. Wind farm construction could trigger an event.	Landslides leading to loss of peatland and pollution of watercourses with peat material.	Site Selection and Design evolution and Geology, Hydrology and Hydrogeology.
Severe weather: storms	Yes	No	In – exposed landscape received regular storm conditions.	Damage to turbines or infrastructure from weather.	Site Selection and Design Evolution (plus other chapters depending if a constraint is still within topple distance).
Severe weather: droughts	No	No	Out		

Major Accident or Disaster	Risk due to location	Risk due to project	Scoped in/out due to risk	Potential Effect	EIA Report Chapter
Severe weather: extreme temperatures	Yes	No	In – severe cold weather could lead to ice build-up on blades.	Ice build-up could lead to ice throw, or to blade damage and throw.	Site Selection and Design Evolution (other chapters depending if a constraint is still within 'safe distance').
Floods	Yes	No	In – land around watercourses on site is within identified flood zones.	Damage to turbines or infrastructure from flooding, or increase in flood risk elsewhere from development in flood zones.	Site Selection and Design Evolution and Hydrology, Hydrogeology & Geology.
Terrorist incidents	No	No	Out		
Cyber attacks	No	No	Out		
Disruptive industrial action	No	No	Out		
Public disorder	No	No	Out		
Wildfires	No	No	Out		
Severe space weather	No	No	Out		
Poor air quality events	No	No	Out		
Transport accidents	No	Yes	In – abnormal loads and increase in traffic from construction.	Abnormal loads or an increase in traffic could lead to an increased risk of accidents. Highway network may be unsuitable for such traffic, further increasing accident risk.	Site Selection and Design Evolution and Traffic and Transport.
Industrial accidents	No	Yes	In – from construction and maintenance activities.	Manual labour, working at height and use of specialist plant bring risk of accidents.	Construction activities are covered by separate H&S legislation and guidelines. Site Selection and Design Evolution, Geology, Hydrology, and Hydrogeology and Ecology (pollution).

Major Accident or Disaster	Risk due to location	Risk due to project	Scoped in/out due to risk	Potential Effect	EIA Report Chapter
Electricity, gas, water supply or sewerage system failures	No	Yes	In – site contains electricity and may contain gas infrastructure.	Construction activities or turbine collapse could damage electricity or gas infrastructure.	Site Selection and Design Evolution; and Existing Infrastructure, Telecommunications and Broadcast Services.
Urban fires	No	No	Out		

16. Summary of Scope

Table 16.1 Summary of Scope

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Landscape and Visual	The LVIA considers the potential impacts of the turbines, meteorological masts, access tracks and other infrastructure during construction, operation and decommissioning. A study area of 35km is proposed. The landscape character assessment covers landscape elements, landscape character areas and landscape designations. The assessment will focus on Landscape Character Types (LCTs) within 15km as significant effects on landscape character are unlikely to occur beyond this range. Effects on the South Lewis, Harris & North Uist National Scenic Areas and Lews Castle and Lady Lever Park Gardens and Designated Landscapes (GDL) would be considered within the assessment. The visual amenity assessment would take account of the specific visual effects of the Proposed Development. The assessment would focus on receptors within 15km due to the very limited visibility of the Proposed Development beyond this. Such receptors will include: - Views from settlements; - Views from residential receptors; - Views experienced whilst travelling through the landscape; and - Views from tourist and recreational destinations. 23 representative viewpoints have been considered and would be assessed within the 35km study area: 1. A858 2. Lewis War Memorial 3. A859 North of Luirbost (Leurbost) 4. Cnoc na Croich (Gallows Hill) 5. Beinn Mholach 6. Eitseal (Eitshal) 7. A857 between Stornoway and Barabhas (Barvas) 8. Stornoway – Ullapool Ferry Route (A) 9. Tunga (Tong) 10. Raon na Creadha Stornoway 11. Ranais (Ranish) 12. Col (Coll) 13. Rathad a' Phentland (Pentland Road) 14. An Rubba: An Cnoc (Eye Peninsula: Knock) 15. Gearraidh Bhaird (Garyvard) 16. Stornoway – Ullapool Ferry Route (B) 17. Standing Stones of Calanais (Callanish) 18. An Rubha: Sulaisiadar (Eye Peninsula: Shulishader) 19. Pairc: Mullach Breac Mhalasgair (Park: Malasgair) 20. B8011 East of Giosla 21. A857 near Barabhas (Barvas) 22. Tolastadh bho Thuath (North Tolsta) 23. An Cliseam (Clisham)	On the basis of initial desk work undertaken, professional judgement, experience from other relevant projects and policy guidance or standards, it is proposed that the following topic areas are 'scoped out' of the assessment: - LCTs beyond 15km; - Wild Land Assessment; and - Visual receptors beyond 15km. Lighting during construction and decommissioning activities will not be considered.

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
	The LVIA would assess the cumulative effects from the Proposed Development and other existing and proposed wind farm development within a 35km radius. Cumulative sequential assessments will be undertaken along the A859, Pentland Road and Stornoway – Ullapool ferry route. The LVIA would identify significant effects and cumulative effects, the nature of these effects and duration and reversibility of these effects. The LVIA would assess the effects of aviation lighting required for turbines >150m tall.	
Historic Environment	The assessment would identify the potential for direct and indirect effects on archaeology and cultural heritage in accordance with relevant guidance. An assessment of direct effects on known and potential heritage assets within the footprint of the Proposed Development would be considered for the construction phase. An assessment of the potential for significant indirect effects on heritage assets up to 15km from the Site boundary during the operational phase would be carried out.	Any designated assets that are shown to have no visibility of the Proposed Development would be scoped out of the assessment of indirect effects.
Ornithology	Field surveys based upon SNH survey methodology guidance are being undertaken across relevant parts of the Site and, in combination with baseline information from the 2011 ES and 2015 ES, these would provide a suitable basis for the ornithological impact assessment. It is envisaged that the assessment would focus on the following species: - Red-throated diver; - Black-throated diver; - Golden eagle; - White-tailed eagle; - Merlin; - Hen harrier; - Dunlin; - Greenshank; - Golden Plover; and - Whooper swan. An assessment of the construction, operation and decommissioning of the Proposed Development on birds would be carried out. Habitats Regulations Appraisal screening would be carried out to determine if the Proposed Development would be likely to have a significant effect on: - Lewis Peatlands SPA: red throated diver, black-throated diver, golden eagle, merlin, golden plover, dunlin and greenshank; - Ness and Barvas SPA: corncrake; and - North Harris Mountains SPA: golden eagle.	

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Ecology	A series of ecological surveys were undertaken to inform the 2011 ES and 2015 ES in respect of habitats, protected species and aquatic environment in accordance with accepted guidance across the relevant parts of the Site. This information will be used to inform the baseline for the Proposed Development. Further survey work in respect of otter would be undertaken since they are active throughout the Site and are highly mobile European Protected Species. A single bat transect survey will be carried out to determine the presence of bats on site. As assessment of the construction, operation and decommissioning of the Proposed Development on ecological receptors would be carried out. Habitats Regulations Appraisal screening would be carried out in respect of the Lewis Peatlands SAC, SPA and Ramsar site.	A combined Phase 1 / NVC survey is would not be carried out on the basis that it is unlikely that the habitats have changed in any significant way since survey work was undertaken in 2010. Reptiles and amphibians were scoped out of the 2011 and 2015 EIAs. In the absence of any substantial change in land management during the intervening period, it is proposed to scope these out of the 2018 EIA. Additional Freshwater Pearl Mussel (FWPM) surveys would not be carried out to since: the previous surveys covered a substantial proportion of the Site; FWPM is a sedentary species; the majority of the survey stretches had habitat that was either unsuitable or sub-optimal for this species; and previous surveys to support the 2011 ES recorded no signs of FWMP. Additional surveys for freshwater invertebrates would not be carried out on the basis that the 2011 survey baseline would provide sufficient contextual information relating to baseline conditions.
Fisheries	Electro-fishing surveys would be undertaken across the Site and these would provide a suitable basis for the fisheries impact assessment. An assessment of the construction and decommissioning of the Proposed Development would be carried out.	Operational effects on fisheries are highly unlikely and it is proposed that these should be scoped out of the assessment
Geology, Hydrology and Hydrogeology	The assessment would consider a comprehensive range of potential effects for construction, operation and decommissioning, relating to drainage, flood risk, surface water and groundwater quality, abstractions and GWDTEs. The assessment would take account of previous habitat surveys and other baseline data presented in the 2011 ES and 2015 ES. The impacts of the construction and decommissioning phases of the Proposed Development would be assessed and mitigation measures considered as necessary. A peat slide risk assessment may be undertaken, if required, in accordance with Scottish Government Best Practice, in order to assess the susceptibility to peat slide risk during construction and operation as well as how to mitigate the risk. If required, the assessment would include an on-site peat survey covering the areas of the proposed structures and infrastructure making use of data from historic surveys.	It is proposed that impacts on solid geology is scoped out of the assessment on the basis that geological conditions would not have changed since the 2011 ES and 2015 ES were prepared, and that the construction techniques utilised would be the same as assessed in the previous EIAs. As such, significant effects are unlikely.

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Traffic and Access	Construction and decommissioning traffic associated with the Proposed Development would be assessed. The following effects will be assessed based on standard guidance: - Severance; - Driver delay; - Pedestrian delay; - Pedestrian amenity; - Fear and intimidation; and - Accidents and safety. The estimated volume of vehicles generated during construction would be compared with background traffic flows (based on information in the 2011 ES) in order to determine percentage change on routes used by construction and delivery vehicles. Any environmental effects considered significant are assessed for those receptors likely to be sensitive to change. An abnormal indivisible load study (AIL) would be included in the assessment.	Traffic during the operational phase would be minimal and is therefore proposed to be scoped out of further assessment. Decommissioning impacts are anticipated to be lower magnitude than during construction on the basis that much of the sub-surface infrastructure would be left in situ. Furthermore, unforeseen changes to the highway network over the course of the lifetime of the Proposed Development mean that it is not possible to robustly assess impacts. As such, it is proposed that decommissioning impacts are scoped out of the assessment.
Noise	The following elements will be included within the noise assessment: - Construction noise; - Construction traffic noise (where traffic flows are sufficient to allow calculations); and - Operational noise.	It is proposed that decommissioning noise is scoped out of the assessment as it is anticipated that this would be generally less, or at most, similar to that experienced during the construction period.
Socio-economics, Tourism and Recreation	The baseline position of economic and social position would be examined. The assessment would focus on the potential impacts on visitor attractions, recreational facilities and public access as well as direct and indirect impacts on local employment. The conclusions in other technical chapters, particularly landscape and visual and historic environment, would be used to assess the direct impacts on tourism, supplemented by reference to various attitude surveys. The assessment would consider the construction, operation and decommissioning phases of the Proposed Development	
Shadow Flicker	An impact assessment would be undertaken using appropriate software to calculate the potential frequency, duration and timing of shadow flicker events as a result of the proposed wind turbines. Any properties within 10 times the rotor diameter would be included within the analysis.	Any properties located at a distance greater than 10 times the rotor diameter would be excluded from the analysis as shadow flicker is unlikely to occur beyond these.
Existing Infrastructure, Telecommunications and Broadcast Services	Investigations would be undertaken to determine the presence of existing infrastructure associated with utilities such as water, gas, electricity and telecommunications links to establish either the absence of effects or to identify appropriate mitigation to overcome any effects.	
Air Safeguarding	A NATS En-route Technical and Operational Assessment will be undertaken. This would include a technical and operational assessment in relation to airport assets.	

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Dust and Air Quality	None	No significant effects anticipated and it is therefore proposed that Dust and Air Quality is scoped out of the assessment.
Vibration	None	No significant effects are anticipated and it is therefore proposed that Vibration is scoped out of the assessment.
Heat and Radiation	None	No significant effects are anticipated and it is therefore proposed that Heat and Radiation are scoped out of the assessment.
Lighting	A Night-time Lighting Assessment (NLA) would be provided within the Landscape and Visual Impact Assessment to consider the potential for significant environmental effects to arise as a result of turbine lighting for turbines in excess of 150m.	It is proposed that an assessment of impacts from lighting during construction and decommissioning is scoped out on the basis that these would be controlled by standard construction practices and good site management.
Population and Human Health	No significant effects are anticipated. It is however acknowledged that environmentally related health issues (both beneficial and adverse) may, for example, result from exposure to traffic, changes in living conditions resulting from noise, and increased employment opportunities. It is therefore proposed that population and human health effects of the Proposed Development are incorporated within the relevant technical chapters such as Socio-economics, Traffic, Noise and Shadow Flicker.	
Climate	None	No significant effects are anticipated and it is therefore proposed that Climate is scoped out of the assessment.
Sustainable Resource Use	**Soils and Peat** The management of soil and peat resource would be undertaken in accordance with a Peat Management Plan and Construction Environmental Management Plan. **Water** Environmental effects on the water environment would be discussed within the Hydrology, Hydrogeology and Geology chapter of the EIA Report. Measures for managing the impacts of construction and decommissioning on the water resource would be set out in a Construction Environmental Management Plan. **Biodiversity** The potential impacts of the Proposed Development on biodiversity would be assessed within the Ecology, Fisheries and Ornithology chapters of the EIA Report. Mitigation measures would also be detailed in a HMP and the CEMP.	No significant effects are anticipated i respect of Land take and it is therefore proposed that this is scoped out of the assessment.

Environmental Topic	Summary of Proposed Scope of Assessment	Element proposed to be Scoped Out
Major Accidents and Disasters	Risks to the project from the following potential major accidents or disasters that could arise are scoped into the assessment and will be considered within the relevant EIA Report chapters as identified in Table 15.1: - Landslide / subsidence; - Severe weather: storms; - Severe weather: extreme temperatures; - Floods; - Transport accidents; - Industrial accidents; and - Electricity, gas, water supply or sewerage system failures	The following major accidents or disasters are not considered to pose a risk due to the location or the project and have been scoped out of further assessment: - Biological hazards: epidemics; - Biological hazards: animal and insect infestation; - Earthquakes; - Tsunamis / tidal waves / storm surges; - Volcanic eruptions; - Famine / food insecurity; - Displaced populations; - Severe weather: drought; - Terrorist incidents; - Cyber-attacks; - Disruptive industrial action; - Public disorder; - Wildfires; - Severe space weather; - Poor air quality events; or - Urban fires.

17. Proposed Outline Contents List for the EIA Report

17.1.1 A possible contents list (subject to change) for the EIA Report is set out below:

- Non-Technical Summary as a stand-alone document;
- **Chapter 1, Introduction**, background information about Stornoway Wind Farm Limited and an overview of the Proposed Development;
- **Chapter 2, EIA Process**, an overview of the EIA process, its regulatory context and an outline of the methodology used to assess impacts and ensure a consistent and transparent approach to assessment including a description of the scoping and consultation process that assisted in the identification of likely significant environmental effects to be given further consideration;
- **Chapter 3, Site Selection and Design Evolution**, details of the site selection process and assessment of alternatives within the process of design evolution;
- **Chapter 4, Planning Policy Context**, an overview of national, regional and local planning policy that applies to the proposed extension;
- **Chapter 5, Description of the Proposed Development**, details of the design and layout of the proposed development and how it will be constructed, operated and decommissioned;
- **Chapter 6, Renewable Energy and Carbon Balance**, details on relevant climate change policy, expected energy yield, carbon dioxide savings, carbon payback and peat management;
- **Chapters 7 - 15** provide the assessment of likely significant environmental effects in respect of the following topics:
  - Landscape and Visual;
  - Historic Environment;
  - Ornithology;
  - Ecology;
  - Fisheries;
  - Geology, Hydrology and Hydrogeology;
  - Traffic and Access;
  - Noise;
  - Socio-economics, Tourism and Recreation;
  - Shadow Flicker;
  - Other Issues.
- **Chapter 16**, a summary of the mitigation measures proposed and residual significant effects for the proposed extension.

18. Consultation

18.1.1 Consultation is an essential element of the EIA process and would be reported within the EIA Report and potentially supplementary documentation. Stornoway Wind Farm Limited is committed to promoting dialogue with statutory and non-statutory consultees and the local community.

18.1.2 The following statutory consultees, non-statutory consultees and interested parties will be notified of the Proposed Development:

- Statutory Consultees:
  - Comhairle nan Eilean Siar;
  - SNH;
  - SEPA; and
  - Historic Environment Scotland.
- Non-Statutory Consultees
  - Scottish Water;
  - Marine Scotland;
  - Fisheries Management Scotland;
  - Highlands and Islands Airport Limited (HIAL);
  - Forestry Commission Scotland;
  - Marine Scotland;
  - Transport Scotland;
  - Association of Salmon Fisheries Board;
  - BT;
  - Civil Aviation Authority – Airspace;
  - The Crown Estate;
  - Defence Infrastructure Organisation;
  - Joint Radio Company;
  - NATS Safeguarding;
  - RSPB Scotland;
  - Mountaineering Council of Scotland;
  - Scottish Water;
  - John Muir Trust;
  - Scottish Wildlife Trust;
  - Nuclear Safety Directorate;

- British Horse Society;
- Scottish Rights of Way and Access Society (ScotWays);
- Visit Scotland;
- OFCOM;
- Stornoway Angling Association;
- Garden History Society of Scotland;
- Airwave Solutions;
- Arquiva;
- The Lewis and Harris Raptor Study Group;
- Outer Hebrides Fisheries Trust;
- Western Isles District Salmon Fisheries Board; and
- Western Isles Tourist Board.

18.1.3 In addition, the following interested parties would also be notified:

- North Lochs Community Council;
- Kinloch Community Council;
- Point Community Council;
- Sandwick Community Council;
- Tong Community Council;
- Pairc Community Council.

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Appendix A
Figures

Key

Development Boundary

0 2 4 6 8 10 12 14 16 18 km

Scale at A3: 1:300,000

Client

Lewis Wind Power
Cumhachd Gaoithe

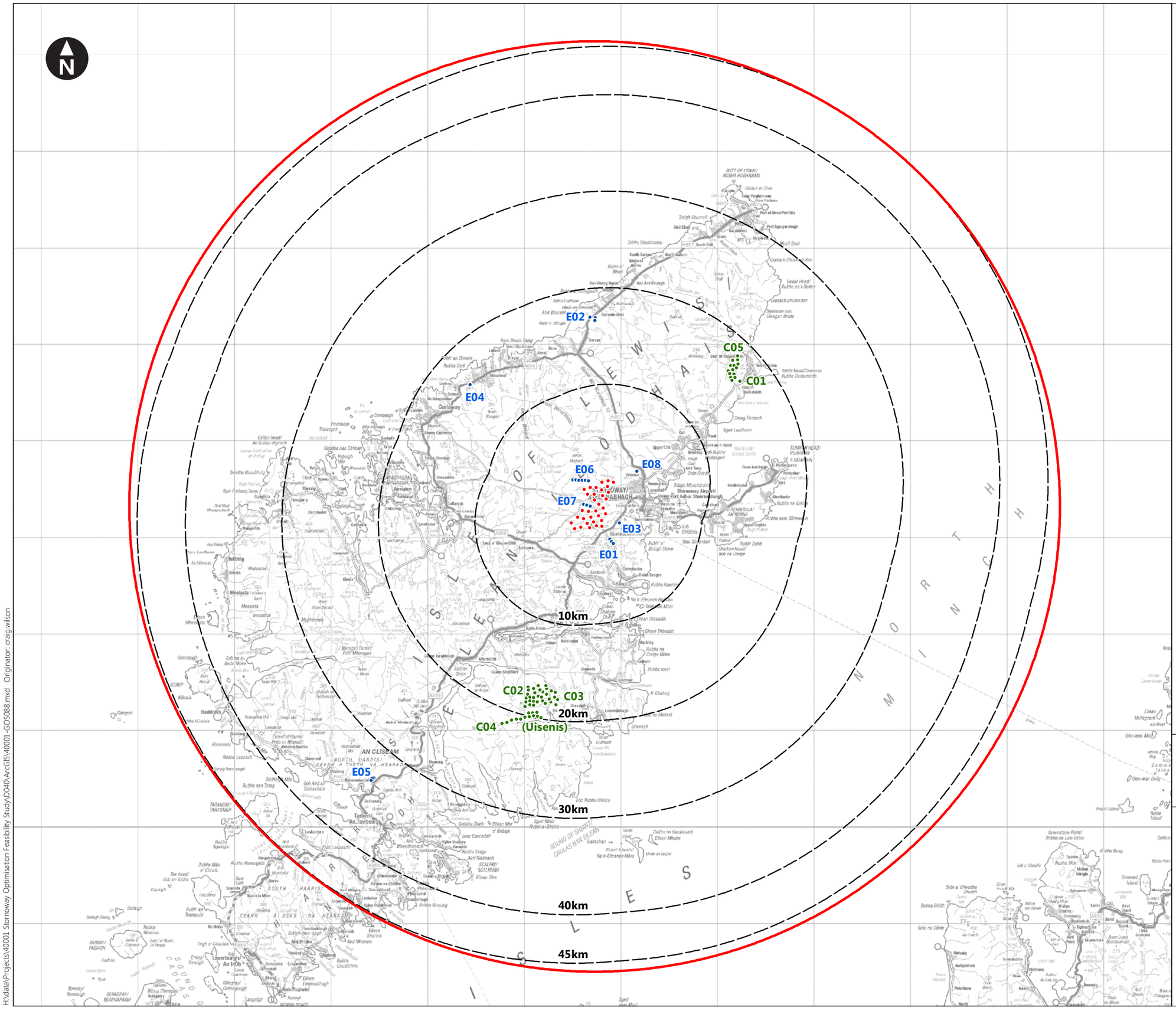
Stornoway Wind Farm
Scoping Report

Figure 1.1
Site Location Plan

May 2018

wood.

H:\data\Projects\40001 Stornoway Optimisation Feasibility Study\LD040\ArcGIS\40001_GOS084.mxd Originator: craig.wilson



Client

Lewis Wind Power
Cumhachd Gaoithe

Stornoway Wind Farm
Scoping Report

Figure 2.1
Cumulative Base Map

July 2018

wood.

H:\data\Projects\40001 Stornoway Optimisation Feasibility Study\DP40\ArcGIS\40001-GOS088.mxd Originator: craig.wilson

Key

- Proposed Turbines (187m Height to Blade Tip)
- Proposed Turbines (155m Height to Blade Tip)
- Existing Wind Farms
  - E01) Beinn Ghrideag
  - E02) Creed
  - E03) Pentland Road
- Development Boundary

0 0.25 0.5 0.75 1 1.25 1.5 km

Scale at A3: 1:25,000

Client

Lewis Wind Power
Cumhachd Gaoithe

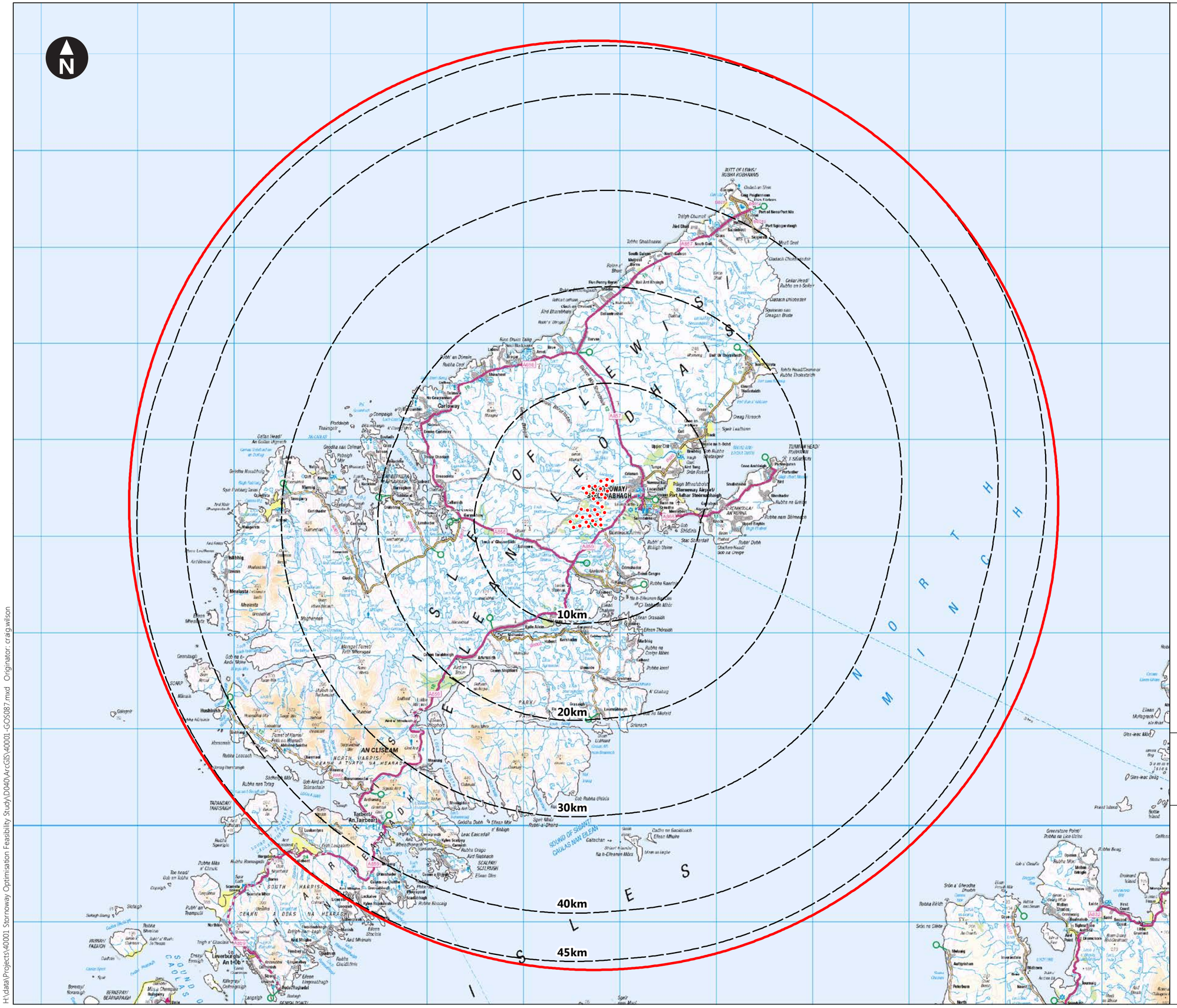
Stornoway Wind Farm
Scoping Report

Figure 2.2
Site Layout Plan

July 2018

wood.

H:\data\Projects\40001 Stornoway Optimisation Feasibility Study\D040\ArcGIS\40001-GOS085.mxd Originator: craig.wilson



Key

- Proposed turbine locations
- LVIA Study Area
  Note: The study area is based on a 48,194m radius circle that allows a minimum of 45km distance from each of the proposed turbine locations
- Lines indicating the distance from the proposed turbines

Client

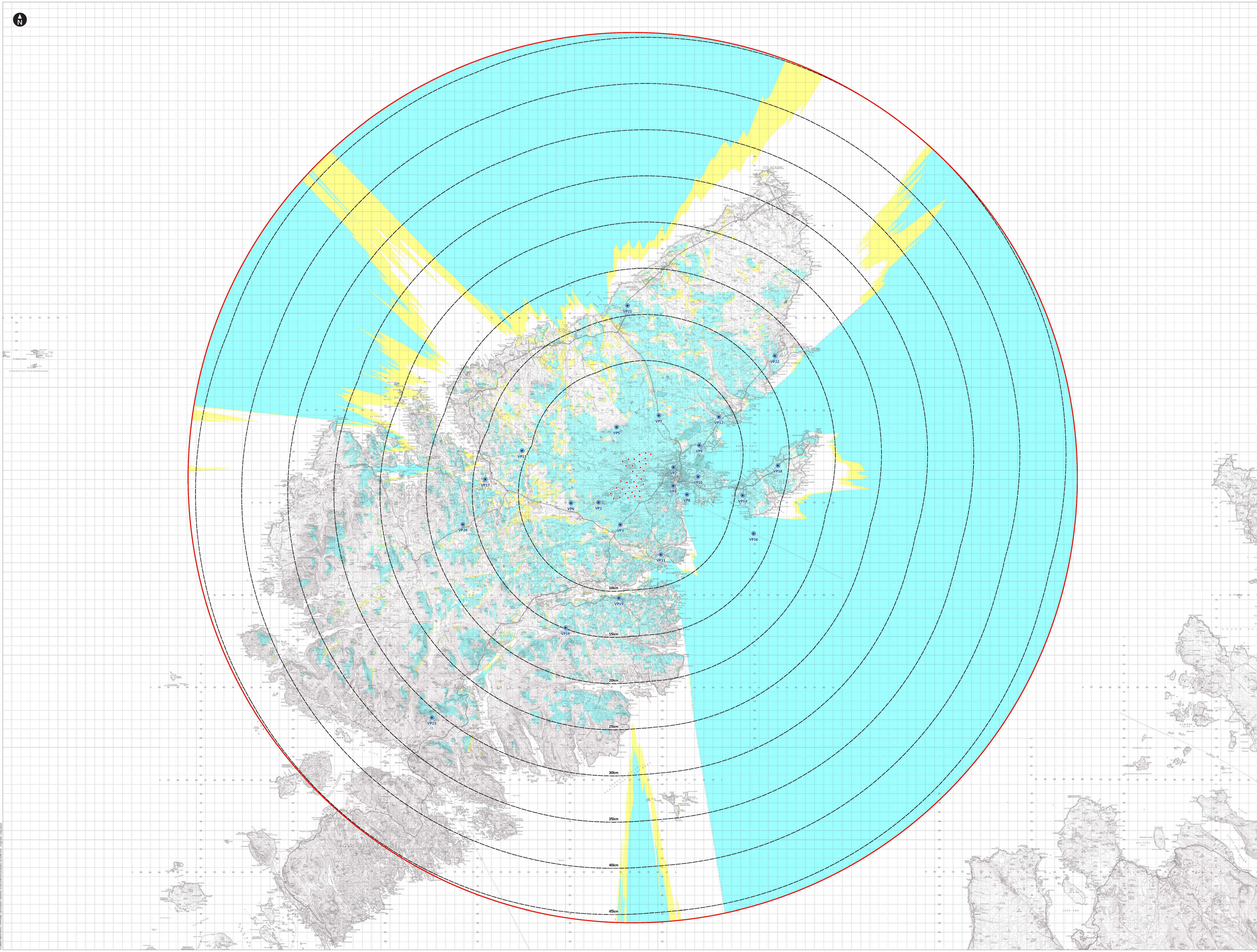
Lewis Wind Power
Cumhachd Gaoithe

Stornoway Wind Farm
Scoping Report

Figure 5.1
Landscape and Visual Study Area

July 2018

wood.



Key

Proposed turbine locations

LVIA Study Area

Note: The study area is based on a 48,194m radius circle that allows a minimum of 45km distance from each of the proposed turbine locations

Lines indicating the distance from the proposed development boundary

Combined zone of theoretical visibility of the Consented Stornoway Wind Farm and the proposed (Scoping) Wind Farm calculated to blade tip

Additional zone of theoretical visibility of the proposed (Scoping) Wind Farm calculated to blade tip

Additional zone of theoretical visibility of the Consented Stornoway Wind Farm calculated to blade tip

Proposed Viewpoints

VP1) A858
VP2) Stornoway (Lewis) War Memorial
VP3) A859 North of Liurbost (Leurbost)
VP4) Cnoc na Croich (Gallows Hill)
VP5) Beinn Mholach
VP6) Èitseal (Eitshal)
VP7) A857 Between Stornoway and Barabhas (Barvas)
VP8) Stornoway-Ullapool Ferry Route A
VP9) Tunga (Tong)
VP10) Raon na Crèadha, Stornoway
VP11) Ranais (Ranish)
VP12) Col (Coll)
VP13) Rathad a' Phentland (Pentland Road)
VP14) An Rubha: An Cnoc (Eye Peninsula: Knock)
VP15) Gearraidh Bhaird (Garyvard)
VP16) Stornoway-Ullapool Ferry Route B
VP17) Standing Stones of Calanais (Callanish)
VP18) An Rubha: Sulaisiadar (Eye Peninsula: Shulishader)
VP19) Pairc: Mullach Breac Mhalasgair (Park: Malasgair)
VP20) B8011 East of Giosla
VP21) A857 Near Barabhas (Barvas)
VP22) Tolastadh bho Thuath (North Tolsta)
VP23) An Cliseam (Clisham)

Notes:
This drawing is based on a computer generated Zone of Theoretical Visibility (ZTV). The areas shown indicate the maximum theoretical visibility of the proposed turbines using OS Terrain 50 data only and do not take account of any screening from vegetation or built-form. The ZTV also includes an adjustment that allows for the Curvature and Light Refraction of the Earth.

This figure has been based on the following parameters:
Consented Stornoway Wind Farm

Turbine layout file:	LSTORNOWAY002.WFL
Hub height:	91m
Rotor diameter:	107m
Height to blade tip:	145m

Proposed (Scoping) Stornoway Wind Farm

Turbine layout file:	LSTORNOWAY027.WFL
Hub height:	105m/87.5m
Rotor diameter:	164m/135m
Height to blade tip:	187m/155m

0 1 2 3 4 5 6 7 km
Scale at A0: 1:125,000

Client
Lewis Wind Power
Cumhachd Gaoithe

Stornoway Wind Farm
Scoping Report

Figure 5.2
Zone of Theoretical Visibility (ZTV) - Consented and Proposed Layouts

July 2018

wood.

Key

Development Boundary

Scoping Turbine Location

Peat Probing Points (m)

- 0.000000 - 0.500000
- 0.500001 - 1.000000
- 1.000001 - 1.500000
- 1.500001 - 2.000000
- 2.000001 - 3.000000
- 3.000001 - 4.000000
- 4.000001 - 5.000000
- 5.000001 - 6.000000
- 6.000001 - 7.000000

Interpolated Peat Depth (IDW, m)

- 0.0 - 0.5
- 0.5 - 1
- 1.000000001 - 1.5
- 1.500000001 - 2
- 2.000000001 - 3
- 3.000000001 - 4
- 4.000000001 - 5
- 5.000000001 - 6
- 6.000000001 - 7

0 500 1,000 1,500 m

Scale at A3: 1:25,000

Client

Lewis Wind Power
Cumhachd Gaoithe

Stornoway Wind Farm
Scoping Report

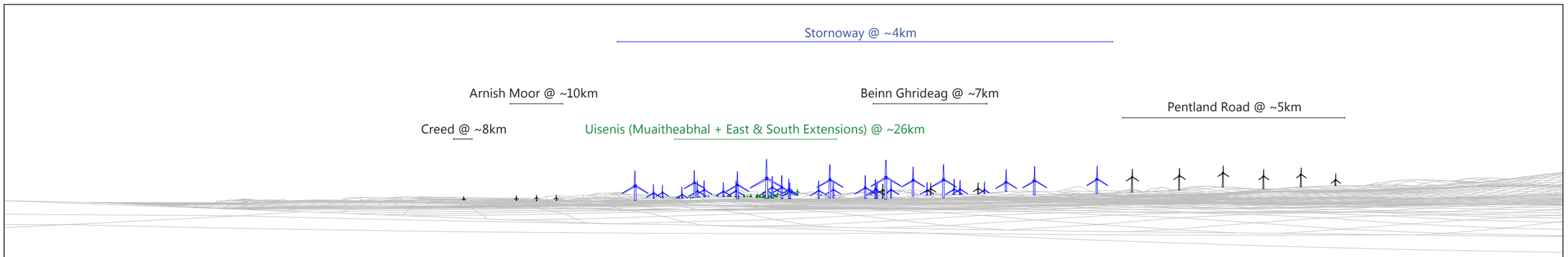
Figure 10.1
Existing Peat Depth Data

May 2018

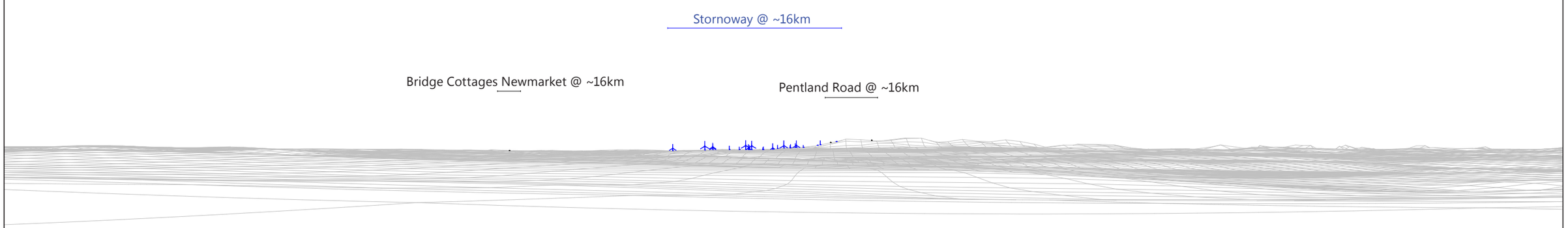
wood.

\\edi3-fs1\shared\data\Projects\39578 SUB Strannoch 2 EIA\DA040 Design\Templates\40001 Gos104b Figure 10.1 Existing Peat Depth Data.mxd Originator: Tim.Doggett

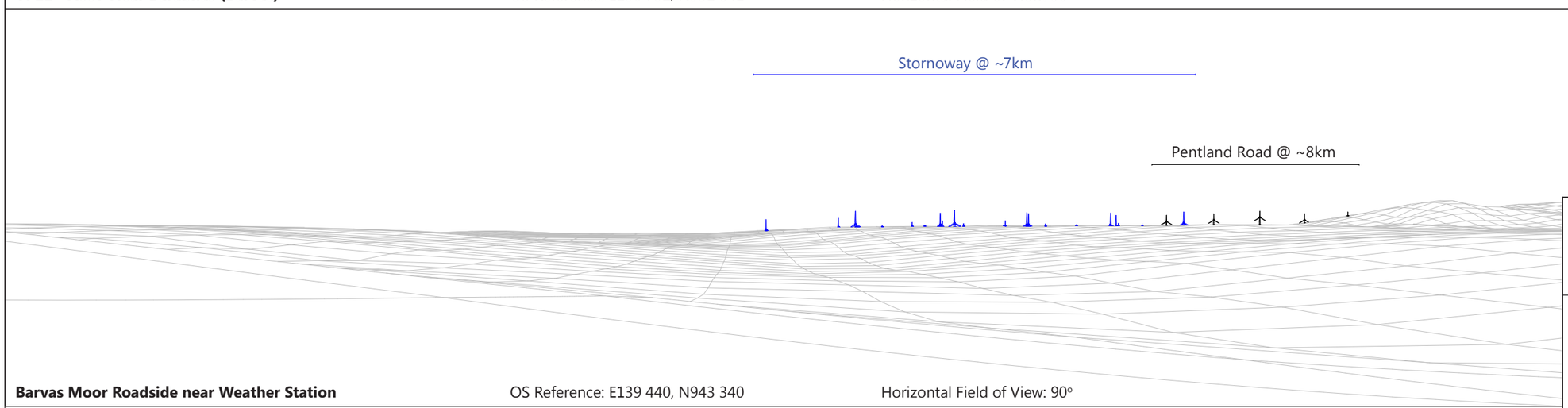
Appendix B
Comparative Wireframes



VP7 - A857 Between Stornoway and Barabhas (Barvas) OS Reference: E140 129, N939 954 Horizontal Field of View: 90°



VP21 - A857 Near Barabhas (Barvas) OS Reference: E136 732, N951 841 Horizontal Field of View: 90°



Barvas Moor Roadside near Weather Station OS Reference: E139 440, N943 340 Horizontal Field of View: 90°

Wind Farm Key: Stornoway Wind Farm | Existing | Consented

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Originator: craig.wilson

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