

MUSDALE WIND FARM EIA SCOPING REPORT

Request for Scoping Opinion under The Electricity Works
(Environmental Impact Assessment) (Scotland) Regulations 2017

On behalf of Vattenfall Wind Power Ltd

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GLOSSARY

Term	Definition
ALV	Abnormal load vehicle
AOD	Above ordnance datum
CEMP	Construction Environment Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CTMP	Construction Traffic Management Plan
DCLG	Department for Communities and Local Government
DECC	Department for Energy and Climate Change
DMRB	Design Manual for Roads and Bridges
ECU	Energy Consents Unit
EclA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EHO	Environmental Health Officer
EMF	Electromagnetic field
GPP	Guidance for Pollution Prevention
GWDTE	Ground Water Dependent Terrestrial Ecosystem
HGV	Heavy goods vehicle
HER	Historic Environment Record
HES	Historic Environment Scotland
IEMA	Institute of Environmental Assessment and Management
IEF	Important Ecological Feature
MW	megawatt
LCT	Landscape character type
LDP	Local Development Plan
LGV	Light goods vehicle
MAGIC	Multi-agency geographic information centre
OWPS	Onshore Wind Policy Statement
PAN	Planning Advice Note
PIA	Personal injury accident
PPG	Pollution Prevention Guidelines
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
SWSEIC	South West Scotland Environmental Information Centre
WFD	Water Framework Directive
ZTV	Zone of Theoretical Visibility

Contents

GLOSSARY 3

1	INTRODUCTION.....	1
	The Applicant.....	1
	Purpose of EIA	1
	Purpose of Scoping	1
	Purpose of this Scoping Report.....	2
2	THE SITE AND THE PROPOSED DEVELOPMENT	3
	The Site and its Surroundings	3
	Project Description	3
	Planning Context	6
3	GENERAL APPROACH TO EIA	8
	Requirement for Environmental Impact Assessment	8
	Information Required	8
	Structure of the EIA Report	10
	EIA Methodology	10
4	SCOPE OF ASSESSMENT	14
	Work Undertaken to Date	14
	Topics Scoped Out of Assessment	14
5	TECHNICAL ASSESSMENTS	21
	Chapter 1: Introduction	21
	Chapter 2: Project Description	21
	Chapter 3: Need and Alternatives Considered.....	21
	Chapter 4: Environmental Assessment Methodology	21
	Chapter 5: Landscape and Visual Resources	21
	Chapter 6: Ecology	36
	Chapter 7: Ornithology	44
	Chapter 8: Hydrology, Hydrogeology, Geology and Peat	50
	Chapter 9: Historic Environment	54
	Chapter 10: Noise and Vibration	56
	Chapter 11: Access, Traffic and Transport	59
	Chapter 12: Forestry.....	61
6	RESPONDING TO THIS SCOPING REPORT	64
7	REFERENCES	65

Tables

GLOSSARY 3

TABLE 4.1:	STRUCTURE OF THE EIA REPORT.....	20
TABLE 5.1:	PRELIMINARY APPRAISAL OF EFFECTS ON LANDSCAPE CHARACTER.....	27
TABLE 5.2:	PRELIMINARY APPRAISAL OF POTENTIAL EFFECTS ON LANDSCAPE DESIGNATIONS.....	30
TABLE 5.3:	PRELIMINARY APPRAISAL OF POTENTIAL EFFECTS ON WILD LAND	33
TABLE 5.4:	PRELIMINARY VIEWPOINTS.....	34

TABLE 5.5: DESIGNATED SITES IDENTIFIED WITHIN 10 KM OF THE PROPOSED DEVELOPMENT WHICH ARE RELEVANT TO ECOLOGICAL RECEPTORS36

TABLE 5.6: PROTECTED SPECIES IDENTIFIED IN PROXIMITY TO THE PROPOSED DEVELOPMENT FROM THE BEINN GHLAS AND CARRAIG GHEAL WIND FARMS.....39

TABLE 5.7: SUMMARY OF RECORDS OF PROTECTED SPECIES RECEIVED FROM THE ARGYLL BIOLOGICAL RECORDS CENTRE WITHIN A 10 KM RADIUS OF THE PROPOSED DEVELOPMENT40

TABLE 5.8: ECOLOGICAL RECEPTOR SURVEYS COMPLETED FOR THE PROPOSED DEVELOPMENT40

TABLE 5.9: DESIGNATED SITES IDENTIFIED WITHIN 10 KM OF THE PROPOSED DEVELOPMENT WHICH ARE RELEVANT TO ECOLOGICAL RECEPTORS45

TABLE 5.10: ORNITHOLOGICAL SURVEYS COMPLETED FOR THE PROPOSED DEVELOPMENT46

Figures

Figure 2.1	Site Location
Figure 2.2	Site boundary and access points
Figure 2.3	Cumulative Wind Farms (10km radius)
Figure 2.4	Preliminary Turbine Layout
Figure 5.1	Study Area (45km / A3)
Figure 5.2a	ZTV with viewpoints (45km @ A1)
Figure 5.2b	ZTV with viewpoints (20km @A3)
Figure 5.3a	ZTV with LCA (20km @ A3)
Figure 5.3b	LCA Legend
Figure 5.4	ZTV with Landscape Designations and Wild Land (20km @A3)
Figure 5.5	ZTV with PVRs (20km @A3)
Figure 5.6	CWF (40km @A3)
Figure 5.7	Core Paths (10km radius)
Figure 5.8	Ornithological survey areas
Figure 5.9	Ornithological Vantage Points
Figure 5.10	Ornithological Designations
Figure 5.11	Ecological Designated Sites and Data Search Area
Figure 5.12	Ecology Survey Area
Figure 5.13	Bat Survey Strategy
Figure 5.14	Phase 1 Peat Probing Strategy
Figure 5.15	Carbon rich soils and watercourses map
Figure 5.16	Heritage Assets Within and Adjacent to the Site
Figure 5.17	Designated Heritage Assets within 10km of the Site
Figure 5.18	Noise sensitive receptors
Figure 5.19a & b	Transport routes
Figure 5.20	Forest Cover

Appendices

Appendix A: Preliminary list of cumulative wind farm projects

1 INTRODUCTION

- 1.1 Vattenfall Wind Power Ltd ("the Applicant") intends to submit an application for consent under section 36 of the Electricity Act 1989 for the construction, operation and decommissioning of a wind farm at Musdale, approximately 5.5 km south east of the village of Kilmore and 9 km south east of Oban. The proposed development will have an installed capacity of greater than 50 megawatts (MW). The site lies within the administrative boundary of Argyll and Bute.
- 1.2 In addition to the application for consent in terms of section 36 of the Electricity Act, a request will also be made that a direction be issued under section 57(2) of the Town and Country Planning (Scotland) Act 1997 that planning permission be deemed to be granted. Therefore, no separate application for planning permission will be made to the planning authority. However, in processing the section 36 application the views of the planning authority as a statutory consultee will be sought by Scottish Ministers.

The Applicant

- 1.3 The Applicant, Vattenfall, is a leading European energy company with approximately 20,000 employees, owned by the Swedish state. For more than 100 years Vattenfall has powered industries, supplied energy to people's homes and modernised the way its customers live through innovation and cooperation.
- 1.4 Vattenfall aims to make fossil-free living possible within a generation and is leading the transition to a more sustainable energy system through growth in renewables and climate-smart energy solutions for our customers. Vattenfall has over 50 wind farms, onshore and offshore, across five countries and pioneered co-locating wind with solar and batteries. We have been in the UK since 2008, investing over £3.5 billion in enough wind to power nearly a million British homes. Vattenfall owns the largest onshore wind farm in England and Wales, Pen y Cymoedd, and in Scotland operates wind farms on the Isle of Skye and in Aberdeenshire.

Purpose of EIA

- 1.5 Environmental Impact Assessment (EIA) is the process of identifying and assessing the significant effects likely to arise from a proposed development. This requires consideration of the likely changes to the environment, where these arise as a consequence of the proposed development, through comparison with the existing and likely future baseline conditions in the absence of the proposed development. The findings of an EIA are presented in an EIA Report.

Purpose of Scoping

- 1.6 The process of identifying the issues to consider within an EIA Report (establishing the scope of the assessment) is known as scoping. Scoping is not a mandatory requirement under the EIA Regulations. However, it is recognised as a useful part of the assessment process which helps to identify the main effects that a project is likely to have on the environment.
- 1.7 The scoping of an EIA by which these main or significant effects are identified is therefore an important preliminary procedure which sets the context for the study. Through the scoping exercise, the key environmental issues are identified at an early stage, which permits subsequent work to concentrate on those environmental topics for which significant effects may arise as a result of a proposed development.
- 1.8 This Scoping Report has four main functions as follows:
- to identify the technical subject areas that may be subject to significant environmental effects as a result of the proposed development proceeding and therefore require further study;
 - to identify the technical subject areas that are unlikely to be subject to significant environmental effects and can consequently be scoped out from further study;
 - to provide a basis for a consultation process to agree the scope and content of the EIA with the Scottish Ministers; and

- to provide a basis for agreeing methodologies for undertaking the required studies with Scottish Ministers, based upon currently available baseline data, site characteristics and best practice in individual technical disciplines.
- 1.9 In arriving at its formal scoping opinion, it is anticipated that Scottish Ministers will consult the planning authority, Scottish Natural Heritage (SNH), the Scottish Environment Protection Agency and other relevant consultees and incorporate their views within the response.
- 1.10 Consultees are also requested to provide any relevant baseline information relating to the site and the surrounding area that may assist in completing the assessments.
- 1.11 By establishing this information at an early stage in the EIA process, the potential environmental impacts of the proposed development can be identified, and adverse effects avoided, reduced or offset through mitigation measures. Such measures will impact on the final design of the proposed development. The EIA process is iterative and therefore the scope may change during project development, for example as a result of the findings of technical studies or information supplied by consultees.

Purpose of this Scoping Report

- 1.12 This Scoping Report has been prepared by RPS on behalf of the Applicant to support a request for a scoping opinion from the Scottish Ministers under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended ("the EIA Regulations"). It proposes the scope of environmental assessment and EIA Report for the proposed wind farm at Musdale (the proposed development).
- 1.13 This document sets out details of the proposed development, the proposed EIA methodology and the proposed scope of technical assessments and invites comments from Scottish Ministers and their consultees regarding the scope of works. The intention of this scoping exercise is to gain agreement from all key parties regarding the proposed methodology and scope of assessment.
- 1.14 This Scoping Report has been informed by the following:
- pre-scoping discussions with the Energy Consents Unit (ECU);
 - pre-scoping discussions with key consultees (Argyll and Bute Council and Scottish Natural Heritage SNH);
 - desk-top studies, site visits and surveys;
 - review of relevant websites, such as those provided by statutory consultees;
 - local and national planning policy and guidance;
 - the EIA Regulations and EIA good practice guidance; and
 - experience of other similar developments.

2 THE SITE AND THE PROPOSED DEVELOPMENT

The Site and its Surroundings

- 2.1 The proposed development site occupies land approximately 5 km north-west of Inverinan on Loch Awe, 5.5 km south east of the village of Kilmore and 9 km south east of Oban, Argyll and Bute. The site's location is shown in Figure 2.1 attached to this report.
- 2.2 The land ownership boundary and access points are shown Figure 2.2. The site is irregular in shape with an overall area of approximately 1,840 hectares (ha). The proposed development site at Musdale can be described as a group of craggy hills which lie to the west of Loch Awe. Part of the site is forested and abuts Loch Nant.
- 2.3 The landform undulates mostly between 300 metres and 450 metres above ordnance datum (AOD) and comprises open moorland of rough and marshy moorland grasses with coniferous forestry occurring across the north-eastern extent of the site. Sior Loch is aligned east west through the site and separates the northern section which extends to cover land to the north of Loch Nant. Smaller lochans occur intermittently across the upland areas and small burns drain run-off down to the lochs and rivers. The land is generally marshy with watery mires occurring in wetter locations.
- 2.4 The northern section of the site occupies a forested area surrounding the summit of Creag Ruadh (373 metres AOD) and sloping down to form the north eastern shore of Loch Nant. The area is steep and undulating with a number of burn draining into Loch Nant
- 2.5 The high point on the site is Beinn Dearg. At 484 m AOD, which forms a distinct summit in the north-east to south-west ridge. This ridgeline marks out the south-east edge of the site and its alignment is replicated by the other glens and ridges to the north-west and south-east. Musdale farmhouse sits in a low bowl in the south west of the site where rivers converge and around which the hills form enclosure. The hills to the north-west add further enclosure to the site and depth to the overall upland area.
- 2.6 The hills form a steep and craggy ridge to enclose the south side of Sior Loch. Gentler slopes enclose the north side and behind these the elevated landform gently undulates as an upland plateau. Sior Loch and its enclosing ridgelines sit at a contrasting alignment to the predominant north-east to south-west alignment, to create an unusual configuration of landform in which the hills at the western end of the loch separate the glen around Musdale from Sior Loch.
- 2.7 There is little development on the site other than Musdale farmhouse, the minor road leading up to it and the rough track which accesses the northern shore of Sior Loch. This provides access to the small-scale hydro infrastructure around Sior Loch, which includes small dams and pipes. Carraig Gheal Wind Farm which occupies the land to the southeast and Beinn Ghlas Wind Farm, which occupies the land to the north, are visible from parts of the site.

Project Description

Overview

- 2.8 The proposed development is being designed to maximise the production of renewable energy generation, whilst balancing Vattenfall's duty to respect the environment (Schedule 9 of the Electricity Act 1989). This is in the context of the Scottish Ministers having declared a climate emergency and ambitious new targets having been set in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, which amends the Climate Change (Scotland) Act 2009 and sets targets to reduce Scotland's emissions of all greenhouse gases to net-zero by 2045 at the latest, with interim targets for reductions of at least 56% by 2020, 75% by 2030, 90% by 2040.
- 2.9 A range of wind turbine models may be suitable for the site, and the final choice of turbine model to be selected for the proposed development will be dependent on the wind analysis, turbine economics and available technology at the time of procurement. However, based upon a maximum blade tip height of up to 200 m, the installed capacity of each turbine will be approximately 6 MW.

Design progress and consultation to date

2.10 The design of the proposed development to date has been an iterative process since 2017 responding to historic data, survey results and consultee feedback.

Meeting	Comments
SNH / Energy Consents Unit / Argyll and Bute Council 26/06/2019	Pre-application meeting and site visit, in order to introduce the project, highlight the constraints and opportunities of the site, and identify the most sensitive landscape and visual receptors with susceptibility to the effects of the proposed development. Site visit included stops on the A816 at Kilmore and Loch Scammadale. Attended by representatives of Vattenfall, SNH, ECU and Argyll and Bute Council.
SNH 08/10/2019	Pre-application meeting between a landscape architect acting for Vattenfall and a representative of SNH, in order to undertake a design review of the current layout and consider potential ways to make improvements. This review was undertaken with the understanding that ultimately the developer requires a commercially viable scheme which means retaining as many turbines as possible, whilst responding to the technical and environmental constraints, in particular the steepness of slopes across most of the site and bird issues along the eastern edge. SNH identified Beinn Lora, Loch Scammadale and Oban Bay, as being the most sensitive receptors to the proposed development and which would be most important to consider in the design review.
SNH 04/03/2020	Pre-application meeting between representatives of Vattenfall, a landscape architect and a representative of SNH, in order to present and discuss an updated layout for the proposed development, which takes into account the key sensitivities highlighted by SNH at the previous meeting. Discussions centred around the improvements made to the views from Beinn Lora, Loch Scammadale and Oban Bay, whilst still working within the topographical constraints of the site. Overall, the proposed extension of the site to the north-east was considered a positive move as it would potentially increase the options in improving views from the previously identified sensitive receptors to the north-west, west and south-west.

2.11 The focus of the design iterations to date have been to understand the behaviour of key bird species and to respond sensitively to key views of the site as discussed in the above meetings.

2.12 In summary, and as a result of information and views collected, the concept design layout has evolved as follows:

- Scheme A - 27 No. turbines
- Scheme B - 21 No. turbines after several iterations to take account of birds and landscape considerations as identified on a site visit
- Scheme C – extension of the site to the north together with a refinement aimed at improving views from the south resulting in this scoping layout of 26 turbines.

Main Elements

2.13 The main elements of the proposed development are as follows.

- Approx. 26 variable pitch (three bladed) wind turbines, each with a maximum blade tip height of up to 200 metres.
- Battery storage.
- Permanent foundations supporting each wind turbine.
- Associated crane hardstanding at each turbine location.
- A series of new onsite access tracks with associated watercourse crossings.
- Widening/improvement works to existing tracks onsite.

- Borrow pits for the extraction of construction aggregates on site.
- A substation control building and compound.
- Underground cabling linking each turbine with the substation control building.
- A temporary construction compound and laydown area.
- A permanent anemometer mast.

- 2.14 The proposed development will have an installed capacity of greater than 50 megawatts (MW). A range of wind turbine models may be suitable for the site, and the choice of candidate turbine model for this application will be dependent on wind analysis and the findings of the relevant technical and environmental assessments to be undertaken. The final choice of turbine model for construction will be dependent on the turbine economics and available technology at the time of procurement.
- 2.15 At this stage the focus of the project work to date has been upon undertaking the initial ornithological and ecology survey work, consulting with key stakeholders and amending the layout design accordingly. The scoping layout presented in Figure 2.4 has been prepared based upon the known site constraints. For the purposes of this layout, the proposed turbines would have a maximum blade tip height of 200 metres.

Site Access Options

- 2.16 Access to the internal track system of the site will either be taken from the West Loch Awe Timber Haul Route (WLATHR) and through the existing Carraig Gheal wind farm or from the north via the Beinn Ghlas Wind Farm (see Figure 2.2).
- 2.17 In the case of the WLATHR route, it is expected that the majority of wind turbine components will be delivered to the site from Campbeltown Harbour. The route from Campbeltown would be via north on the A83 to Lochgilphead, then north on the A816 to the junction with the West Loch Awe Timber Haul Route (WLATHR) approximately 6 km north of Kilmartin. The Carraig Gheal wind farm access is approximately 20 km northeast of the junction with the A816 (see Figure 5.19a)
- 2.18 Access from the north will be via the A85 and Fearnoch Forest utilising the established access for Beinn Ghlas Wind Farm (see Figure 5.19b). This access route is approximately 8km from the junction with the A85.
- 2.19 A detailed access study will be carried out including swept path analysis for abnormal loads as discussed in paragraph 5.233 below.

Construction

- 2.20 Typical construction activities and work methods will be set out in the EIA Report. Information will also be provided on proposals for any forestry removal, an indicative construction programme, construction traffic generation and construction phasing. The EIA Report will also contain details of appropriate environmental management measures, including pollution prevention measures in line with Scottish Environment Protection Agency's (SEPA) Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs), and waste minimisation and management measures. Guidance will include:
- PPG 1: Understanding your environmental responsibilities - good environmental practices (SEPA et. al., 2013);
 - GPP 5: Works and maintenance in or near water (SEPA et. al., 2018); and
 - GPP 21: Pollution incident response planning (SEPA et. al., 2017).

Operation and Maintenance

- 2.21 The normal operating life of a wind farm is approximately 30 years. A wind farm is typically visited up to four times a month by a small maintenance crew. There would also be a requirement for maintenance of the access tracks and substation.

Decommissioning

- 2.22 At the end of the operational period, the wind farm will be decommissioned and the site reinstated in accordance with a Decommissioning, Restoration and Aftercare Plan to be agreed in writing with the Planning Authority in consultation with relevant consultees.

Planning Context

- 2.23 This section provides an overview of the key planning policy documents of relevance to the proposed development which will be considered throughout the EIA.

Planning History

- 2.24 A previous section 36 application (ref 13/01747/S36) for a wind farm at the proposed Musdale site was submitted by Infinis in July 2013. The previous proposals comprised 16 wind turbines of 132 metres to blade tip, with the turbines located predominantly across the southern part of the site. Infinis withdrew the previous application in February 2015 before it was determined.

National Policy

- 2.25 National policy relevant to the proposed development will include:
- National Planning Framework 3 (NPF3) (Scottish Government, 2014a);
 - Scottish Planning Policy (SPP) (Scottish Government, 2014b);
 - Scottish Government Advice Note on Onshore Turbines (Scottish Government, 2014c);
 - Scottish Government Onshore Wind Policy Statement (OWPS) (Scottish Government, 2017a); and
 - Scottish Energy Strategy (Scottish Government, 2017b).
- 2.26 The above policy documents establish the Scottish Government policy support for onshore wind as part of a mix of energy generating technologies in order to meet national renewable energy targets and the ambition to move to a low carbon economy. The current target, which was set by the Scottish Government in May 2011, is to generate the equivalent of 100% of Scotland's gross annual electricity consumption from renewables by 2020.
- 2.27 Although Scotland is on track to meet its 100% renewable energy target, the Scottish Government has confirmed that this target should not be regarded as a cap and that consequently the attainment or likely attainment of this target should not be regarded as a ceiling restricting the ability of further energy projects from coming forward and being consented. This was reconfirmed beyond all reasonable doubt in the Chief Planner's letter to all Heads of Planning in 2015 in which he states that *"the policy support [for new renewable energy developments, including onshore wind] continues in the situation where renewable energy targets have been reached."*
- 2.28 Despite the recent UK government removal of policy and subsidy support for the continued deployment of onshore wind, the Scottish Government 2017 publications – the OWPS and the Scottish Energy Strategy (Scottish Government, 2017 a & b)– reiterate and emphasise the Scottish Government's undiminished, in principle, policy support for further new onshore wind energy projects. This is made clear in paragraph 4 of the OWPS, which states that *"Scotland will continue to need more onshore wind development and capacity, in locations across our landscape where it can be accommodated."*
- 2.29 The necessity for taller turbines is recognised in paragraph 23 of the OWPS, which states that Scottish Government "acknowledge that onshore wind technology and equipment manufacturers in the market are moving towards larger and more powerful (i.e. higher capacity) turbines and that these by necessity will mean taller towers and blade tip heights". Paragraph 25 of the OWPS continues that the Scottish Government "fully supports the delivery of large wind turbines in landscapes judged to be capable of accommodating them with significant adverse impacts."

Local Policy

- 2.30 The site falls within the administrative boundary of Argyll and Bute Council. The Local Development Plan (LDP) was adopted by the council in March 2015 (Argyll and Bute Council, 2015) and forms the local planning framework for the council area. The LDP provides the general policy context against which planning applications should be addressed. Argyll and Bute are in the process of preparing a new LDP (LDP2) which will replace the adopted LDP. The LDP was open to consultation between November 2019 and January 2020.

Adopted Policy

- 2.31 Policy LDP 6 Supporting the Sustainable Growth of Renewables of the Argyll and Bute LDP (Argyll and Bute, 2015) sets out the support from the council for renewable energy projects. The policy states:

'The Council will support renewable energy developments where these are consistent with the principles of sustainable development and it can be adequately demonstrated that there would be no unacceptable significant adverse effects, whether individual or cumulative, including on local communities, natural and historic environments, landscape character and visual amenity, and that the proposals would be compatible with adjacent land uses.'

- 2.32 The policy goes on to list the criteria against which all applications for wind turbine developments would be assessed. The list includes environment aspects such as socio-economic effects, greenhouse gas emissions, cumulative effects, landscape and visual effects and the natural and historic environment, as well as the hydrological regime and traffic conditions.
- 2.33 Supplementary guidance (Argyll and Bute Council, 2016) provides further detail on the factors which the council will take into consideration when determining applications for renewable energy and contains a spatial framework for on shore wind energy developments. The supplementary guidance, in line with the SPP, separates land within its administration boundary into two groups: Group 1 are areas where wind farms would not be acceptable, Group 2 are areas of significant protection, and Group 3 are areas with the potential for wind farm development. The proposed development site is located in an considered to be within Group 2 and 3.
- 2.34 The supplementary guidance goes on to provide guidance on turbine siting, cumulative assessment, landscape impacts and any other additional considerations.

Emerging Policy

- 2.35 As with the adopted LDP, the proposed LDP2 (Argyll and Bute Council, 2019) has a policy centred around renewable energy. Policy 30: The Sustainable Growth of Renewables remains in line with Policy LDP 6 of the adopted LDP. Similarly, Policy 30 also refers to the supplementary guidance and spatial framework, as described above.

Section 32 of the Electricity Act 1989

- 2.36 A decision on a section 36 application under the Electricity Act 1989 is the principal decision in this case. Schedule 9 to the 1989 Act requires the decision maker (in this case the Scottish Ministers) to "have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest".
- 2.37 In summary, the schedule 9 sets out environmental features to which regard must be had in considering the section 36 application. There is no 'primacy' of the Development Plan in an application made under the 1989 Act. Rather, weight can be attributed by the decision-maker to all material considerations including the various levels of national and local energy and planning related policy and guidance as deemed appropriate. The development plan is one of a number of documents that can be attributed weight by the decision maker as a material consideration.

3 GENERAL APPROACH TO EIA

Requirement for Environmental Impact Assessment

- 3.1 The legislative framework for EIA is set by European Directive 2011/92/EU, as amended by Directive 2014/52/EU (collectively referred to as the EIA Directive). Directive 2014/52/EU requires Member States to transpose its requirements into national law by 16 May 2017 and set out arrangements for a transitional period from the regime laid down by Directive 2011/92/EU.
- 3.2 The EIA Directive requires an EIA to be completed in support of an application for development consent for certain types of project. For projects of this type in Scotland, the European legislative requirements are transposed into law by The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 as amended, which apply when “*an application under section 36 of the Electricity Act 1989(4) for consent to construct, extend or operate a generating station*” is made.
- 3.3 The process of identifying whether or not EIA is required for a development is known as screening. Projects of the type listed in Schedule 1 of the EIA Regulations require EIA in all cases. Projects of the type listed in Schedule 2 may require EIA in certain circumstances.
- 3.4 The proposed development would fall within Schedule 2 of the EIA Regulations as “*a generating station*”.
- 3.5 Schedule 2 developments require screening against the criteria set out in Schedule 3 of the Regulations. The criteria include the characteristics of the development, location of development and characteristics of the potential impact. Given the characteristics of the proposed development, it is likely to constitute an EIA development when considered against the criteria listed in Schedule 3. Therefore, the applicant has volunteered to undertake an EIA rather than request a formal screening opinion.

Information Required

- 3.6 Although there is no statutory provision as to the form of an EIA Report, it must contain the information specified in Regulations 5(2)(f) and 19(2), including any relevant information specified in Schedule 4 of the EIA Regulations, as set out below:
1. A description of the development, including in particular:
 - (a) a description of the location of the development;
 - (b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
 - (c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;
 - (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.
 2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
 3. A description of the relevant aspects of the current state of the environment (the “baseline scenario”) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of relevant information and scientific knowledge.

4. A description of the factors specified in regulation 4(3) 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.
5. A description of the likely significant effects of the development on the environment resulting from, inter alia:
 - (a) the construction and existence of the development, including, where relevant, demolition works;
 - (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
 - (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
 - (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);
 - (e) the cumulation of effects with other existing and/or approved development, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
 - (f) the impact of the development on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the development to climate change;
 - (g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in regulation 4(3) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the development including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC.

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to legislation of the European Union such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.
9. A non-technical summary of the information provided under points 1 to 8.
10. A reference list detailing the sources used for the descriptions and assessments included in the EIA report.

- 3.7 The information supplied in the EIA Report will provide a clear understanding of the likely significant effects of the project upon the environment. The following sections outline the overall approach to EIA in order to meet these legal requirements.

Structure of the EIA Report

- 3.8 The EIA Report will be structured logically, enabling all relevant environmental information to be found quickly and easily. The EIA Report will describe the EIA process and its findings, and will include the following sections:

- Non-Technical Summary (as a standalone document);
- Volume 1: Written Statement;
- Volume 2: Figures; and
- Volume 3: Technical Appendices.

EIA Methodology

Relevant EIA Guidance

- 3.9 The EIA process will take into account relevant government or institute guidance, including:
- Scottish Government Circular 1/2017 – The Town and Country Planning, (Environmental Impact Assessment) (Scotland) Regulations 2017 (May 2017) (Scottish Government, 2017c);
 - Environmental Impact Assessment Handbook, Version5 (April 2018) (Scottish Natural Heritage, 2018a);
 - Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment;
 - Institute of Environmental Management and Assessment (2011) The State of Environmental Impact Assessment Practice in the UK. Special Report;
 - Institute of Environmental Management and Assessment (2015a) Environmental Impact Assessment: Guide to Shaping Quality Development;
 - Institute of Environmental Management and Assessment (2015b) Climate Change Resilience and Adaptation;
 - Institute of Environmental Management and Assessment (2016) Environmental Impact Assessment: Guide to Delivering Quality Development;
 - Institute of Environmental Management and Assessment (2017) Environmental Impact Assessment: Assessing Greenhouse Gas Emissions and Evaluating their Significance; and
 - Institute of Environmental Management and Assessment (2017) Health in Environmental Impact Assessment: A Primer for a Proportional Approach.
- 3.10 Other topic-specific specialist methodologies and good practice guidelines will be drawn on as necessary.

Key Elements of the General Approach

- 3.11 The assessment of each environmental topic will form a separate chapter of the EIA Report. For each environmental topic, the following will be addressed:
- methodology and assessment criteria;
 - description of the environmental baseline (existing conditions);
 - identification of likely effects;

- evaluation and assessment of the significance of identified effects, taking into account any measures designed to reduce or avoid environmental effects which form part of the project and to which the developer is committed; and
- identification of any further mitigation measures envisaged to avoid, reduce and, if possible, remedy adverse effects (in addition to those measures that form part of the project).

Methodology and Assessment Criteria

- 3.12 Each topic chapter will provide details of the methodology for baseline data collection and the approach to the assessment of effects. Details of the proposed approach for each topic are provided in Section 5 of this Scoping Report. Each identified environmental topic will be considered by a specialist in that area. The identification and evaluation of effects will take into account relevant topic-specific guidance where available.

Description of the Environmental Baseline

- 3.13 The existing and likely future environmental conditions in the absence of the project are known as 'baseline conditions'. Each topic-based chapter will include a description of the current (baseline) environmental conditions. The baseline conditions at the site and within the study area form the basis of the assessment, enabling the likely significant effects to be identified through a comparison with the baseline conditions.
- 3.14 The baseline for the assessment of environmental effects will primarily be drawn from existing conditions during the main period of the EIA work. Consideration will also be given to any likely changes between the time of survey and the future baseline for the construction and operation of the project. In some cases, these changes may include the construction or operation of other wind farm developments in the area. Where such wind farm developments are built and operational at the time of writing the EIA Report, these will be considered to form part of the baseline environment. Where wind farm developments are not built or operational, but are the subject of valid applications or appeals, these will be considered within the assessment of cumulative effects instead.
- 3.15 The consideration of future baseline conditions will also take into account the likely effects of climate change, as far as these are known at the time of writing. This will be based on information available from the UK Climate Projections project (UKCP18), which provides information on plausible changes in climate for the UK (Environment Agency and Met Office, 2018) and on published documents such as the UK Climate Change Risk Assessment 2017 (Committee on Climate Change, 2016).

Assessment of Effects

- 3.16 The EIA Regulations require the identification of the likely significant environmental effects of the project. Each topic chapter will take into account both the sensitivity of receptors affected and the magnitude of the likely impact in determining the significance of the effect.

Sensitivity or Importance of Receptors

- 3.17 Receptors are defined as the physical resource or user group that would be affected by a proposed development. The baseline studies will identify potential environmental receptors for each topic and will evaluate their sensitivity to the proposed development. The sensitivity or importance of a receptor may depend, for example, on its frequency or extent of occurrence at an international, national, regional or local level.

Magnitude of Impact

- 3.18 Impacts are defined as the physical changes to the environment attributable to the project. For each topic, the likely environmental impacts will be identified. The magnitude of the impact will be described using defined criteria within each topic chapter.

- 3.19 The categorisation of the impact magnitude may take into account the following four factors:
- extent;
 - duration;
 - frequency; and
 - reversibility.
- 3.20 Impacts will be defined as either adverse or beneficial. Depending on discipline, they may also be described as:
- Direct: Arise from activities associated with the project. These tend to be either spatially or temporally concurrent;
 - Indirect: Impacts on the environment which are not a direct result of the project, often produced away from the project site or as a result of a complex pathway.
- 3.21 Impacts will be divided into those occurring during the construction phase and those occurring during operation. Where appropriate, some chapters may refer to these as temporary and permanent impacts.

Significance of Effects

- 3.22 Effect is the term used to express the consequence of an impact (expressed as the 'significance of effect'), which is determined by correlating the magnitude of the impact to the sensitivity of the receptor or resource.
- 3.23 The magnitude of an impact does not directly translate into significance of effect. For example, a significant effect may arise as a result of a relatively modest impact on a resource of national value, or a large impact on a resource of local value. In broad terms, therefore, the significance of the effect can depend on both the impact magnitude and the sensitivity or importance of the receptor.
- 3.24 Levels of significance that will be used in the assessment include, in descending order:
- substantial;
 - major;
 - moderate;
 - minor; and
 - neutral.
- 3.25 Where an effect is described as 'neutral' this means that there is either no effect or that the significance of any effect is considered to be negligible. All other levels of significance will apply to both adverse and beneficial effects. These significance levels will be defined separately for each topic within the methodology sections. In all cases, the judgement made as to significance will be that of the author of the relevant chapter with reference to appropriate standards/guidelines where relevant.

Cumulative Effects

- 3.26 The cumulative effects of the proposed development in conjunction with other proposed wind farms of 50 metres to blade tip or greater tip will be considered. That includes valid wind farm applications and appeals which have not yet been determined. Wind farm developments that are built and operational at the time of assessment will be considered as part of the baseline. A provisional list of proposed wind farm developments to be considered in the cumulative assessment and their status is included in Appendix A. A final list of wind farm developments relevant to the assessment of cumulative effects would be agreed when the point of a finalised design is reached (approximately four months from submission).

Mitigation Measures

- 3.27 The EIA Regulations require that where significant effects are identified 'a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce or, if possible, offset likely significant adverse effects on the environment' should be included in the EIA Report.
- 3.28 The development of mitigation measures is part of an iterative EIA process. Therefore, measures will be developed throughout the EIA process in response to the findings of initial assessments. The project that forms the subject of the section 36 application will include a range of measures designed to reduce or prevent significant adverse environmental effects arising, where practicable. In some cases, these measures may result in enhancement of environmental conditions. The assessment of effects will therefore take into account all measures that form part of the project and to which Vattenfall Wind Power Limited are committed.
- 3.29 The topic chapters will therefore take into account all measures that form part of the proposed development, including:
- measures included as part of the project design (sometimes referred to as primary or embedded mitigation);
 - measures to be adopted during construction to avoid and minimise environmental effects, such as pollution control measures. These measures would be implemented through the Code of Construction Practice (CoCP); and
 - measures required as a result of legislative requirements.
- 3.30 Where required, further mitigation measures will be identified within topic chapters. These are measures that could further prevent, reduce and, where possible, offset any residual adverse effects on the environment.
- 3.31 In some cases, monitoring measures may be appropriate, for example, to ensure that proposed planting becomes established. Where appropriate, monitoring measures will be set out.

Summary Tables

- 3.32 Summary tables will be used to summarise the effects of the project for each environmental topic.

4 SCOPE OF ASSESSMENT

Work Undertaken to Date

- 4.1 At this early stage, the focus of the project work to date has been upon undertaking updated bird survey work and preliminary analysis of this data rather than on developing a draft layout design for the site. However, for the purposes of this scoping opinion request, a concept layout has been prepared based upon these ornithological constraints, wider technical design considerations (such as wind speed and slope) and preliminary landscape and visual design input.
- 4.2 In addition to data collected for the previous scheme, the following studies have been undertaken or are currently ongoing in relation to the proposed development:
- ornithological surveys;
 - extended Phase 1 Habitat Survey; and
 - landscape photographic survey.

Topics Scoped Out of Assessment

- 4.3 Taking into account the findings of the above studies, together with knowledge of the site and surrounding area, it is proposed that the following topics are not included in the scope of the EIA Report:

Planning Policy Context

- 4.4 The EIA Report will provide an overview of relevant legislative and planning policy context within each topic chapter. The assessment will have regard to national and local policy documents, where relevant. However, it is not proposed to include a separate chapter on Planning Policy Context in the EIA Report. The draft guidance on EIA from the Department for Communities and Local Government (DCLG) 'EIA: A Guide to Good Practice and Procedures' (DCLG, 2006) (paragraph 155) states that there is no requirement to provide chapters on planning and sustainability in EIA Reports. A separate Planning Statement will be submitted with the planning application and the environmental topic chapters within the EIA Report will each set out the policy context relevant to that topic.

Material Assets

- 4.5 The EIA Regulations refer to 'material assets', including architectural and archaeological heritage. The phrase 'material assets' has a broad scope, which may include assets of human or natural origin, valued for socio-economic or heritage reasons. Material assets are in practice considered across a range of topic areas within an EIA Report, in particular the historic environment chapters. These topics are proposed to be included within the EIA Report (see Table 4.1). Therefore, no separate consideration of material assets is considered necessary.

Aviation and Telecommunications

- 4.6 Wind turbines have the potential to impact civil and military aviation and telecommunications infrastructure. However, these issues are of a technical nature and not capable of a significance assessment as part of the EIA.
- 4.7 Rather the approach to identifying and resolving possible issues will be through consultation with statutory undertakers and other relevant organisations to ascertain if the proposed development would have an impact on their services and if so, what mitigation if any would be necessary.
- 4.8 Where mitigation may have the potential to cause environmental effects such as in the example of aviation lighting, those issues will be assessed in the relevant topic chapter of the EIA Report.

Socio-economics and Recreation

- 4.9 The proposed development would bring the potential for beneficial economic effects at a local level in relation to employment opportunities and the use of local services by construction workers. However, the effects are not expected to be significant at the national level and would be temporary.
- 4.10 The potential effects on visual amenity for tourism and recreation locations will be fully assessed in the EIA Report as part of the landscape and visual impact assessment. A number of studies have been undertaken in order to determine the potential impact upon the tourism and recreation industry due to the presence of a wind farm(s). These show that for most tourists, wind farms are not a major factor in their decision making, whilst amongst those who do take note of them, most regard them as having either a positive or a neutral effect on the landscape (Scottish Government, 2008). On the evidence presented in these studies, it is concluded that there is no evidence that wind farm proposals have a negative impact upon tourism. This conclusion is supported by the findings in the Scottish Parliament's Economy, Energy and Tourism Committee's (2012) 'Report on the Achievability of the Scottish Government's Renewable Energy Targets' which concluded that there is *"no empirical evidence which demonstrates that the tourism industry in Scotland will be adversely affected by the wider deployment of renewable energy projects, particularly onshore and offshore wind."* On this basis it is concluded that the proposed wind farm would not result in any unacceptable impacts upon tourism and recreation.
- 4.11 The construction of the proposed development would not entail significant road works, closures or diversions which would have potential to adversely affect access to tourism assets and no potential for significant effects is identified.
- 4.12 The socio-economic and tourism effects are not considered to give rise to significant effects on a regional or national level, and as such will not be considered in an impact assessment chapter of the EIA Report. However, a separate factual statement on the socio-economic benefits will be included in the Planning Statement.

Air Quality

- 4.13 Pollutants released from stationary plant and as a result of traffic movements associated with the proposed development would not have the potential to impact air quality receptors as evidenced by the remoteness of the site. Furthermore, due to the scale of the proposed development and the temporary nature of the construction works, air quality impacts are not likely to be significant.
- 4.14 Similarly, dust impacts are unlikely to occur due to the distances of receptors from areas where earthworks are proposed to be undertaken. In addition, best practice measures would be put in place during construction to minimise dust impacts. Therefore, no significant dust effects are anticipated.
- 4.15 Taking the above into account, it is proposed that air quality is scoped out of the EIA process.

Climate Change

- 4.16 The EIA Regulations require consideration of climate change. Although a separate climate change chapter is not proposed, climate change would be considered throughout the EIA Report. The proposed approach is set out below.

Climate Change Resilience

- 4.17 Resilience to future climate change has been considered during the design process for the proposed development. The EIA Report for the proposed development will set out how the design has taken into account, for example, future flood risk and resilience to extreme weather events. The EIA Report will set out details of the proposed development's resilience to climate change in Chapter 2 (Project Description).

Climate Change: Changes to Future Environmental Conditions

- 4.18 Each topic chapter of the EIA Report will consider predicted changes in baseline environmental conditions, including changes resulting from climate change, where robust information regarding future climate change is available at the time of writing. The climate change information will cover the anticipated operational lifetime of the proposed development.
- 4.19 This will be based on the information available from the UK Climate Projections project (UKCP18), which provides information on plausible changes in the climate for the UK (Met Office, 2018) and on published documents such as the UK Climate Change Risk Assessment 2017 (Committee on Climate Change, 2016).
- 4.20 The assessment of effects for each topic will take into account identified trends or changes predicted to arise as a result of climate change.

Effects of the Project on Climate Change

- 4.21 Greenhouse gas (GHG) emissions can occur throughout the lifecycle of a development, including during construction and operation of a proposed development. This can be affected by factors such as material use and energy demand. The proposed development will incorporate measures during its construction by reducing fuel, energy and raw material consumption, and waste generation.
- 4.22 Construction of the proposed development would generate a limited amount of greenhouse gas emissions and the turbines would incorporate some embodied carbon. However, the contribution to overall greenhouse gas emissions is anticipated to be negligible given the nature and scale of the development.
- 4.23 The energy produced by the proposed development would offset energy that would otherwise be produced by forms of generation that produce greenhouse gasses as a by-product. Therefore, as a result of the proposed development there is likely to be positive impact on climate change. The Scottish Governments Carbon Calculator Tool (Scottish Environment Protection Agency *et al.*, 2018) will be used to produce a statement of the expected carbon savings over the lifetime of the proposed development which will be appended to Chapter 2 of the EIA Report. Carbon emissions associated with ground conditions, access works, foundations, materials used, transportation of materials and components to site, and any carbon loss through tree felling or through degradation of peaty soils will be taken into account.
- 4.24 Overall, no significant greenhouse gas emissions are considered likely to be attributable to the proposed development.
- 4.25 Taking into account the above approach, it is not considered that a separate chapter on climate change is required to form part of the EIA Report. However, as outlined in paragraph 4.23 an assessment of carbon savings over the project lifetime will be appended to Chapter 2 of the EIA Report.

Soils, Geology and Contamination

- 4.26 Due to the sites previous likely use for hill-farming, livestock grazing and forestry, major sources of contamination are unlikely. Generally, there is low potential for pesticides or herbicides to be present on site in the western and central areas of site predominantly where grazing and farming have taken place. In the east of the site in areas where forestry could have been active as part of the Caledonian Forest Reserve near Loch Nant there may be localised potential for hydrocarbons associated with increased vehicle or plant usage during forestry operations but not significant to be a risk of contamination. Risk to construction workers would be controlled by good hygiene practices and standard measures implemented during construction, such as hand washing and the use of personal protective equipment for site uses. During operation the majority of the site would be returned to agricultural use.
- 4.27 Contamination risks as a result of contaminated runoff and from substances stored on site during construction would also be controlled through good practices measures in line with the appropriate Pollution Prevention Guidance (PPGs), Guidance for Pollution Prevention (GPP) and the new Construction Site Licences provided by SEPA which are a requirement for sites over 4Ha in size or

which contain slopes in excess of 25 degrees. An assessment of potential effects on water quality should there be an accidental spillage or contaminated runoff will be included in Chapter 8 of the EIA Report. Therefore, further consideration of contamination is proposed to be scoped out of the EIA process.

- 4.28 According to the British Geology Survey online map viewer, the site is underlain by an extensive volcanic basement complex of igneous rock consisting of andesite and basalt with large intrusions of tuff and agglomerate associated with local volcanic eruptions through older strata. Frequent intrusions of vertical microdiorite dykes are noted across the bedrock crossing the site in a south west to north east orientation. In the west of the site, Superficial deposits are limited by the nature of the terrain with limited thickness's expected on hill slopes, where weathered bedrock may be close to surface overlain by shallow soils or localised peat. No significant major faults bisect the site.
- 4.29 In the west of the site, localised areas around the western end of the Allt an Loin Mhoir burn are shown to have hummocky (moundy) glacial deposits of Diamicton and Alluvium which is likely to contain sand and gravel or deposits of Quaternary age, overlain by more recent Alluvium deposits of clay, silt, sand and gravel on river margins. Locally around the small settlement of Musdale, pockets of both hummocky (moundy) glacial deposits of Diamicton and Alluvium are shown on the BGS online viewer along the extent of the Allt a' Choromaig burn. No significant effects related to geological features are anticipated.
- 4.30 Within the boundary of the site some localised pockets of peat are noted on British Geological Survey maps with a large pocket of peat noted directly north of Loch Nant just south of the Laggan Burn, and smaller pockets to the west of Lochan Creige Ruaidhe. In the western half of the site, another large area of peat is noted immediately west of the western most and highest point of Sior Loch.
- 4.31 Information on peat characteristics including an assessment of peat volumes, possible reuse of excavated peat, and minimisation of waste would be provided in a Stage 1 Peat Management Plan in line with Scottish Environment Protection Agency (SEPA) guidance (Scottish Renewables and SEPA, 2012) in an appendix to the Project Description chapter. Figure 5.15 shows the distribution of peat throughout the site based on data from SNH's carbon and peatland records. Further surveys to gather more detailed information on the peat present on site would be undertaken in accordance with the relevant guidance and will be used to inform the detailed design of the proposed wind farm. A proposed peat probing survey is shown in Figure 5.14 and the results of the peat survey would inform turbine placement and track routing to avoid areas of deep peat where possible. Pending results of the Peat survey, a Peat Slide Risk Assessment (PSRA) would be undertaken as necessary. With the above measures in place no significant effects in relation to peat as a result of the proposed development are anticipated.
- 4.32 According to Scotland's environment mapping service (Scottish Environment Protection Agency, n.d.) and the BGS GeoIndex Viewer the majority of the site is underlain by a low productivity aquifer yielding small amounts of groundwater in near surface weathered zone. Flow through both aquifers is virtually all through fractures and other discontinuities with rare springs near surface. No significant effects related to hydrogeological features are anticipated.
- 4.33 Overall, no significant soils, geology or contamination effects are anticipated and as such separate chapters assessing effects relating to these topics are not proposed to be included in the final EIA Report. However, as outlined in paragraph 4.23 an assessment of soils and carbon rich resources will be appended to Chapter 2.

Agricultural Land Use

- 4.34 The majority of the land within the proposed development site is grazed by livestock with a proportion forested. The Macaulay Land Use Research Institute's Land Capability for Agriculture in Scotland map indicates that the site is only capable of supporting rough grazing (classes 6 and 7) Current land uses support these classifications. The construction of the proposed development may reduce the area available for use as rough grazing, however the reduction would be small and not likely to cause significant adverse effects to the viability of farming activities. Therefore, an Agricultural Land Use chapter is not proposed.

Ice Throw

- 4.35 Turbines would include equipment capable of sensing the accumulation of ice on the blades. The turbines would be deactivated if an accumulation of ice was identified. In addition, signs in accordance with current guidance (Scottish Renewables *et al.*, 2019) warning staff and third parties of the risk would be included at the site entrance. Therefore, an assessment of the effects of ice throw is proposed to be scoped out of the assessment process.

Population and Health

- 4.36 Consideration has been given to the potential health pathways associated with the proposed development. The following potential health pathways have been identified:
- changes to local air quality during construction (equipment emissions and dust);
 - changes in traffic flows, noise levels and air quality during construction and operation;
 - mobilisation of contamination on site;
 - health effects related to socioeconomic effects
 - changes in exposure to Electro-magnetic Fields (EMF);
 - ice throw; and
 - peat slide.
- 4.37 Effects relating to air quality are not likely to be significant, where the emission concentration and receptor exposure are magnitudes of order lower than is required to quantify any measurable adverse health outcome, and will remain within air quality objectives protective of health during both construction and operation.
- 4.38 On this basis, health effects in relation to temporary, localised yet negligible changes in air quality are unlikely to be significant.
- 4.39 Effects as a result of noise and traffic generated by the proposed development will be covered within chapters 10 and 11 of the EIA Report.
- 4.40 Due to the previous site uses and with the implementation of good practice, health effects associated with the mobilisation of contaminants are not anticipated to be significant.
- 4.41 Health risks associated with ice throw and peat slide will be controlled through the measures outlined above.
- 4.42 The number of workers anticipated to be required for the construction of the proposed development would be beneficial at the individual level, but not materially impact upon local employment levels, and will not be of an order to create any pressure on local health care facilities. Once operational, employment for maintenance would be beneficial at the individual level but will not materially impact upon local employment levels. On the above basis, socio-economic effects are not considered significant, and have been scoped out.
- 4.43 Changes in electromagnetic field (EMF) from the generation and transmission of renewable energy will comply with the Department for Energy and Climate Change (DECC) Voluntary Code of Practice (DECC, 2012) for assessing EMF from electricity distribution infrastructure, overhead power lines or underground cables and ensure they are compliant by design with guideline exposure levels set to protect public health, as are substations (at or beyond their publicly accessible perimeter) (International Commission on non-Ionizing Radiation Protection (ICNIRP), 1998).
- 4.44 All generation and transmission infrastructure for the proposed development will comply with the guideline exposure limit set to protect health. On this basis, potential EMF risk is not significant; modelling and assessment is not required; and it is proposed to scope out a health assessment from changes in exposure to EMF.
- 4.45 Given the nature of the proposed development and the lack of any additional health pathways likely to result in significant effects, separate health assessment in the form of an additional

chapter or Health Impact Assessment is not considered necessary in this instance and is proposed to be scoped out of the EIA process.

Major Accidents and Disasters

- 4.46 The EIA regulations require consideration of vulnerability to major accidents and/or disasters. The proposed development is not likely to be vulnerable to major accidents and disasters. The risk of major accidents and disasters would be considered in the project description chapter of the EIA Report, therefore a separate chapter assessing the risk of major accidents and disasters is not considered necessary. Accidents related to traffic and flood risk will also be considered in the relevant topic chapters of the EIA Report, while accidents related to ice throw and peat slides will be controlled through the measures outlined above.

Radiation and Heat

- 4.47 Given the nature of the proposed development, no significant radiation or heat effects are anticipated, and these effects have been scoped out of the assessment.

Waste

- 4.48 Schedule 4 of the EIA Regulations requires consideration of the production of waste. Details of the broad types of waste produced as a result of the proposed development will be included within Chapter 2 (Project Description) of the EIA Report. The estimated waste types and volumes likely to be generated during the construction phase of the development will be identified and set out within a waste management plan prior to construction. The plan will also include a series of measures to manage waste in accordance with best practice and the waste hierarchy. A separate waste chapter is not considered necessary for this EIA Report.
- 4.49 An assessment of forest wastes will be included in Chapter 12 of the EIA Report (see Section 5 of this report).

Shadow Flicker

- 4.50 The Scottish Government's planning advice on wind farms (Scottish Government, 2014c) outlines the requirement 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."
- 4.51 Only Musdale Farm is sufficiently close to the proposed development to have the potential to be affected by shadow flicker. The dates, times and durations of shadow flicker events will be predicted for that group of properties and an assessment of any effects at these properties undertaken. The results of the assessment of shadow flicker will be appended to Chapter 2 (Project Description). Mitigation to prevent the effects of shadow flicker will be listed if required.
- 4.52 As a result of the above, significant effects are not anticipated and it is proposed to scope out shadow flicker from the EIA process.

Decommissioning

- 4.53 The proposed development is expected to operate for a period of 30 years. At the end of this period, if the operational period is not extended, the wind farm will be decommissioned and the site reinstated in accordance with a Decommissioning, Restoration and Aftercare Plan.
- 4.54 Decommissioning this far into the future is not an event that can be accurately assessed at this time due to changes in policy, legislation, best practice and technology. However, the predicted effects from the decommissioning phase are likely to be similar to those during construction and this is the approach that will therefore be taken by the technical assessment chapters.

Content of the EIA Report

4.55 Table 4.1 identifies the chapters that are proposed for inclusion in the EIA Report. Further details of the approach to the assessment and its scope are provided in Section 5 of this Scoping Report.

Table 4.1: Structure of the EIA Report

Structure of EIA Report	
Non-Technical Summary	Summary of the EIA Report using non-technical terminology
Volume 1: Text	
Glossary	
Chapter 1	Introduction
Chapter 2	Project Description
Chapter 3	Need and Alternatives Considered
Chapter 4	Environmental Assessment Methodology
Chapter 5	Landscape and Visual
Chapter 6	Ecology
Chapter 7	Ornithology
Chapter 8	Hydrology and Hydrogeology, Geology and Peat
Chapter 9	Historic Environment
Chapter 10	Noise and Vibration
Chapter 11	Access, Traffic and Transport
Chapter 12	Forestry
Volume 2: Figures	
Including all figures and drawings to accompany the text.	
Volume 3: Appendices	
Including specialist reports forming technical appendices to the main text.	

5 TECHNICAL ASSESSMENTS

Chapter 1: Introduction

- 5.1 This chapter will provide the introduction to the EIA Report, including details of the application, need for EIA and the structure of the EIA Report.

Chapter 2: Project Description

- 5.2 The EIA Report will include a description of the project, which will form the basis of the assessment of effects. The EIA Regulations require an EIA Report to include:
“A description of the development comprising information on the site, design and size and other relevant features of the development”
- 5.3 This project description chapter will include details of the site, together with a description of the key components of the proposed development. The description will include the following information, as far as practicable at the time of writing:
- construction phase - a description of the key works, activities and processes that would be required during the construction phase; and
 - operational phase - a description of the completed development and its use.
- 5.4 Where options remain at the time of the assessment (with regard to construction techniques, for example), the EIA Report will provide a clear explanation of the assumptions made. Where appropriate, the realistic worst-case scenario will be assessed.
- 5.5 Where mitigation measures have been identified and developed through the EIA process and have been incorporated as part of the project, details of these measures will be set out within the project description chapter.

Chapter 3: Need and Alternatives Considered

- 5.6 This chapter will briefly set out the need for the proposed development. In addition, the EIA Regulations require the alternatives considered by the applicant to be set out in the EIA Report:
“A description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment.”
- 5.7 This chapter will summarise the reasons for the selection of the site and provide an outline of the alternatives considered during the EIA process, including a description of the alternative design and layout options that have been considered.

Chapter 4: Environmental Assessment Methodology

- 5.8 Details of the overall approach to EIA will be set out in this chapter, together with details of the scoping process, consultation undertaken and the overall approach to the assessment of significance. Topic specific methodologies, such as survey methods, will be provided in each topic chapter.

Chapter 5: Landscape and Visual Resources

Overview

- 5.9 This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Landscape and Visual Impact Assessment (LVIA) for the proposed development. It also presents the suggested scope of the LVIA in terms of those landscape and visual receptors to be scoped in and scoped out of the assessment process. Justification of the

suggested scope is presented through a preliminary assessment of the relevant receptors in respect of their potential to be significantly affected by the proposed development.

- 5.10 The purpose of the LVIA is to identify and record the potential effects that the proposed development may have on the landscape and visual resource, taking into account effects on the landscape elements of the site; the landscape character of the site and surrounding area; areas that have been designated for their scenic or landscape-related qualities; Wild Land Areas and views from various locations such as settlements, routes, hilltops and other sensitive locations. The potential cumulative effects that may arise from the addition of the proposed development to other wind farms are also considered.
- 5.11 The LVIA will consider the potential effects of the proposed development during the following development stages:
- construction and decommissioning of the proposed development; and
 - operation of the proposed development.
- 5.12 Landscape and visual receptors may or may not be affected at all three development stages.
- 5.13 In this section of the Scoping Report, where distances are referenced in relation to the proposed development, these refer to the distance from the nearest turbine.

Baseline Conditions

Study Area Context

- 5.14 The study area covers a radius of 45 km from the proposed development as shown in Figure 5.1. It covers the south-western extents of the Scottish Highlands, extending from Glen Coe and Glen Tarbert in the north down to Knapdale in the south, and from the Isle of Mull in the west to Loch Lomond in the east. It extends out across Loch Linnhe and the Firth of Lorn to take in the mainland coast of Kingairloch, as well as the small islands of Lismore, Kerrara, Luing and Scarba, the Isle of Mull and the northern end of the Isle of Jura. From these areas, views open up south-east, east and north-east, across the water. In these views, the coastal edges and upland skylines of the mainland become an important feature. Conversely, views from the mainland coast are orientated out towards the islands, with views in towards the landward hinterland often forming less of a draw.
- 5.15 The landward area is characterised by a combination of mountains, hills, glens and lochs. The mountain ranges occur to the north and east of the study area. Loch Etive and the Pass of Brander mark the transition between the lower Craggy Uplands, where the proposed wind farm is situated and the High Tops which extend from Ben Cruachan into the southern hills of Glen Coe. These include Ben Starav and Beinn Trilleachan which sit either side of the upper reaches of Loch Etive. This area is identified as a National Scenic Area (NSA) on account of its rugged and remote character.
- 5.16 The High Tops extend round to the east of the study area, where the distinct summit of Ben Lui forms a prominent feature. To the south of this, a group of High Tops (Arrochar Alps), include Beinn Ime and The Cobbler, and enclose the iconic Rest and be Thankful pass. The hills across the remainder of the study area are typically lower and less dramatic. They are characterised by much broader extents of forestry plantation, which presents a more modified appearance to the landscape. The hills are generally more rounded in profile and collectively form low and level ridges around the lochs and glens.
- 5.17 The three most relevant lochs in the study area are Loch Awe to the immediate southeast, Loch Fyne to the distant southeast and Loch Etive to the north. Loch Awe is a largely undeveloped loch with small scale development set along the minor road. It is often enclosed by coniferous forestry or deciduous woodland which add to the insular character. Loch Fyne is a larger sea-loch and has a more developed character largely owing to the presence of the busy A83 and the larger settlements which have established along its route (although still small scale in comparison to the central belt of Scotland). Loch Etive comprises a mix of the two, with the northern part, which extends into the High Tops, appearing wild and remote with very little development evident, and the southern part influenced by the busy A85 and associated small settlements which occur along its route.

Site Context

- 5.18 The site lies approximately 9 km to the south-east of Oban and 5 km north-west of Inverinan on Loch Awe. It covers an expansive part of the Craggy Uplands which lie to the north-west of Loch Awe. The landform undulates mostly between 300 m and 450 m AOD and comprises predominantly open moorland of rough and marshy moorland grasses with coniferous forestry occurring across the north-eastern extent of the site. Sior Loch is aligned east west through the site and separates the northern section which extends to cover land to the north of Loch Nant. Smaller lochans occur intermittently across the upland areas and small burns drain run-off down to the lochs and rivers. The land is generally marshy with watery mires occurring in wetter locations.
- 5.19 The high point on the site is Beinn Dearg (484 m AOD), which forms a distinct summit in the north-east to south-west ridge. This ridgeline marks out the south-east edge of the site and its alignment is replicated by the other glens and ridges to the north-west and south-east. Musdale farmhouse sits in a low bowl where rivers converge and around which the hills form enclosure. The hills to the north-west add further enclosure to the site and depth to the overall upland area.
- 5.20 The hills form a steep and craggy ridge to enclose the south side of Sior Loch. Gentler slopes enclose the north side and behind these the elevated landform gently undulates as an upland plateau. Sior Loch and its enclosing ridgelines sit at a contrasting alignment to the predominant north-east to south-west alignment, to create an unusual configuration of landform in which the hills at the western end of the loch separate the glen around Musdale from Sior Loch.
- 5.21 There is little development on the site other than Musdale farmhouse, the minor road leading up to it and the rough track which accesses the northern shore of Sior Loch. This provides access to the small-scale hydro infrastructure around Sior Loch, which includes small dams and pipes. Carraig Gheal Wind Farm which occupies the land to the southeast and Beinn Ghlas, which occupies the land to the north, are visible from parts of the site.

Visibility Generally

- 5.22 The landform of the site has a notable influence on the extent of visibility across the wider study area. The landform comprises a series of two inter-connected upland valleys, enclosed by the ridgelines of the surrounding hills to form what appears like large scale bowls amidst the upland landscape. The valley in which Musdale Farm sits, lies to the south of the site, while the valley in which Sior Loch sits, lies to the north. They are separated by a group of low, hummocky hills. Not only does the enclosure of the landform create visual containment from within the site, but it also notably reduces the extent of visibility from the surrounding area, whereby many potential views are either fully or partially screened by the surrounding ridgelines. The Principal Visual Receptors are shown in conjunction with the ZTV on Figure 5.5. The blade tip ZTV in conjunction with the Viewpoints is shown on Figure 5.2a and 5.2b.
- 5.23 The pattern of theoretical visibility produced by the proposed development responds to the surrounding landform in the following ways. The most extensive areas of theoretical visibility occur within the immediate vicinity of the site, with some localised patches within the 10 km radius. Visibility occurs across the west facing slopes to the east of Loch Awe, and a band along the Firth of Lorn extending to the coasts of the Isle of Mull, the Isle of Lismore and Kingairloch. In these areas, the level of theoretical visibility is typically high. The hills to the immediate north of the site shield much of the northern sector from visibility. Similarly, the hills that lie between Loch Awe and Loch Fyne shield much of the south-east sector. Visibility to the south-west is patchy owing to the complex pattern of elevated hills and low-lying lochs and coastal edges, but with substantial areas either screened or gaining only low levels of visibility in terms of the number of turbines theoretically visible.
- 5.24 It is within the first 5 km of where the site is located that the visibility will be of the greatest magnitude. This concentrated patch of continuous theoretical visibility coverage rapidly gives way to considerably lower levels of visibility between 5 and 10 km. To the north, visibility does not occur because of the screening effect of the hills, while in the other directions typically lower levels of visibility occur and then only in localised patches. This occurs as the land falls away from the elevated position in which the site sits, the steepness of the slopes precluding views back in the direction of the turbines. Factoring in the screening effect of the extensive tracts of commercial forestry and loch side tree cover will further reduce the potential for visibility in these areas.

- 5.25 In the area between the 10 and 20km radii from the proposed wind farm, higher levels of theoretical visibility of a lower magnitude of change reoccur where intermediate low lying land opens up views, such as along the eastern slopes of Loch Awe and the coastal edges on the opposite side of the Firth of Lorn. Mountains such as Ben Cruachan, and further north, Benn Trilleachan and Ben Starav form concentrated areas of visibility where south facing slopes gain almost continuous visibility, albeit at more distant ranges.
- 5.26 Orientation of the landform is an important factor when considering the potential effects of visibility. The coastal edge of the islands and mainland in the north-west sector of the study area is orientated towards the south-east where the site lies. The openness of the water in the foreground may have a foreshortening effect on views and the proposed wind farm may make a notable change to the cumulative situation as seen from this direction. Conversely, the coastal edge of the majority of the mainland is out towards the north-west and is sheltered from visibility by the hills which lie between the proposed development and the coastal edge.

Baseline Studies and LVIA Production

- 5.27 The LVIA assessment is initiated through a desk study of the Site and the 45 km radius study area. This study identifies aspects of the landscape and visual resource that may need to be considered in the landscape and visual assessment, including landscape-related planning designations, landscape character typologies, wild land areas, operational and potential cumulative wind farms, and views from settlements and routes, including roads, railway lines, National Cycle Routes, long-distance walking routes, ferry routes and recreational sailing routes.
- 5.28 The desk study also utilises Geographic Information System (GIS) and Resoft Windfarm software to explore the potential visibility of the proposed development. The resultant Zone of Theoretical Visibility (ZTV) diagrams and wirelines provide an indication of which landscape and visual receptors are likely to be key in the assessment.
- 5.29 Field surveys will be carried out throughout the 45 km radius study area, although the focus will be on the areas shown on the ZTV to gain theoretical visibility of the proposed development and to assess the effects on all relevant landscape and visual receptors.
- 5.30 The written LVIA will be accompanied by a volume of figures, which can be divided into two categories; maps and visualisations. The maps will be based on the 45 km study area around the proposed development and will present data of relevance to the assessment, such as the location and extent of landscape designations and Wild Land Areas as well as ZTVs. It is proposed that the visualisations will be based on the 22 viewpoint locations which are representative of the visual amenity of visual receptors in the area surrounding the proposed development. For each viewpoint there will be a baseline photograph, and cumulative wirelines of the proposed development and the 'bare earth' landform for the same extent as shown in the photography. In accordance with SNH's visualisation guidance, all viewpoints within a 20 km radius of the proposed development will also have accompanying photomontages. These use the baseline photography and add onto this a computer-generated model of the proposed development.

Proposed Assessment Methodology and Approach

- 5.31 The LVIA will follow OPEN's methodology devised specifically for the assessment of wind farm developments and which generally accords with 'Guidelines for Landscape and Visual Impact Assessment: Third Edition' ('GLVIA3'), the key source of guidance for LVIA.
- 5.32 Other sources of guidance that will be used and referenced in the LVIA include the following:
- Visual Representation of Wind Farms Version 2.2 (SNH, February 2017);
 - Visual Representation of Development Proposals Technical Guidance Note 06/19 (Landscape Institute, 17 September 2019);
 - Assessing the Cumulative Impact of Onshore Wind Energy Proposed Developments (SNH, 2012);
 - Landscape Character Assessment Guidance for England and Scotland (SNH and TCA, 2002);

- Scottish Natural Heritage consultation on draft guidance: Assessing impacts on Wild Land Areas – technical guidance (SNH, 2017); and
 - Siting and Designing of Windfarms in the Landscape: Version 3a (SNH, August 2017).
- 5.33 In accordance with guidance, the study area for the LVIA of the proposed development will cover a radius of 45 km from the nearest turbine, as shown in Figure 5.1. This is considered to be the maximum radius within which a significant landscape and / or visual effect could occur given the height of the turbines that are being considered.
- 5.34 A review of the broad wind farm context within a 45 km radius has been undertaken by OPEN, based on the latest SNH mapping of large-scale wind farm development. Known cumulative wind farms within a 45 km study area are shown for scoping purposes in Figure 5.6.
- 5.35 It is considered that any cumulative effects that would occur, would arise as a result of the pattern of development within the 45 km study area radius, rather than as a result of changes beyond this. It is proposed that following a detailed review of the cumulative sites within the area, a plan will be produced showing the locations of wind farms within 45 km that are operational, under construction, consented or which are at application stage, and where the turbines are greater than 50 m to blade tip. This would form the basis for the cumulative assessment of the proposed development in the LVIA. The Council and SNH will be consulted over the final list of sites to be considered within the detailed cumulative assessment. Exceptionally, scoping stage sites may also be included where they are considered to be of specific relevance to the cumulative effect of the proposed development.
- 5.36 This Scoping Report has been informed by a preliminary assessment. This has been initiated through a desk study of the site and 45 km radius study area, combined with a good working knowledge of this area. This study has identified aspects of the landscape and visual resource that will need to be considered in the landscape and visual assessment, including:
- Landscape character typology;
 - Landscape-related planning designations;
 - Wild Land Areas;
 - Potential cumulative wind farms;
 - Routes (including roads, National Cycle Routes, ferry routes and long-distance walking routes); and
 - Settlements.
- 5.37 The desk study has also utilised Geographic Information System (GIS) software to explore the potential visibility of the proposed development. The resultant ZTV diagrams (Figures 5.2 to 5.5) have provided an indication of which landscape and visual receptors may be affected by the proposed development.
- 5.38 The LVIA is intended to determine the effects that the proposed development would have on the landscape and visual resource. For the purpose of assessment, the potential effects on the landscape and visual resource are grouped into five categories:
- 5.39 **Physical effects:** physical effects are restricted to the area within the site and are the direct effects on the existing fabric of the site. This category of effects is made up of landscape elements, which are the components of the landscape such as rough grassland and moorland that may be directly and physically affected by the proposed development;
- 5.40 **Effects on landscape character:** landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and the way that this pattern is perceived. Effects on landscape character arise either through the introduction of new elements that physically alter this pattern of elements or through visibility of the proposed development that may alter the way in which the pattern of elements is perceived. This category of effects is made up of landscape character receptors, which fall into two groups; landscape character areas and landscape-related designated areas;

- 5.41 **Effects on wild land:** the assessment of the effects on the wild land qualities of the Wild Land Areas through consideration of the impacts on the physical attributes and perceptual responses identified;
- 5.42 **Effects on views:** the assessment of the effects on views is an assessment of how the introduction of the proposed development would affect views throughout the study area. The assessment of effects on views is carried out in relation to representative viewpoints and principal visual receptors; and
- 5.43 **Cumulative effects:** cumulative effects arise where the study areas for two or more wind farms overlap so that both of the wind farms are experienced at a proximity where they may have a greater incremental effect, or where wind farms may combine to have a sequential effect. In accordance with guidance, the LVIA assesses the effect arising from the addition of the proposed development to the cumulative situation.
- 5.44 The objective of the LVIA is to predict the likely significant effects on the landscape and visual resource. In line with the EIA regulations, the LVIA effects are assessed to be either significant or not significant.
- 5.45 The significance of effects is assessed through a combination of two considerations: the sensitivity of the landscape or visual receptor and the magnitude of change that would result from the addition of the proposed development.
- 5.46 The geographic extent over which the landscape and visual effects would be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude but instead is used in determining the extent in which a particular magnitude of change is experienced and the extent of the significant and non-significant effects. The extent of the effects would vary depending on the specific nature of the proposed development and is principally assessed through analysis of the geographical extent of visibility of the proposed development across the landscape or principal visual receptor.
- 5.47 The duration and reversibility of effects on views are based on the period over which the proposed development is likely to exist, and the extent to which the proposed development will be removed and its effects reversed at the end of that period. Duration and reversibility are not incorporated into the overall magnitude of change and may be stated separately in relation to the assessed effects.
- 5.48 The 'nature of effects' relates to whether the effects of the proposed development are adverse, neutral or beneficial. Guidance provided in GLVIA3 states that "thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity" but does not provide an indication as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and reasoned professional opinion.
- 5.49 OPEN generally adopts a precautionary approach which assumes that significant landscape and visual effects will be weighed on the negative side of the planning balance, although positive or neutral effects may arise in certain situations.

Preliminary Landscape and Visual Appraisal

- 5.50 A preliminary landscape and visual appraisal has been undertaken to inform this Scoping Report. This has been used to define the scope of the assessment in terms of identifying those landscape and visual receptors with potential to be significantly affected and which therefore require detailed assessment in the LVIA. Should the proposed layout alter materially this preliminary appraisal will be reviewed accordingly to ascertain if any receptors require to be added back into the scope of the LVIA.

Potential Effects on Landscape Elements

- 5.51 Effects on landscape elements are the direct physical effects on the fabric of the site. In respect of the site, this will mostly comprise the removal of the rough moorland grasses in those locations where the temporary construction compound, and permanent access tracks, foundations and other

hard-standings are required. The LVIA will consider the direct effects of the proposed development on this landscape element.

Potential Effects on Landscape Character

- 5.52 SNH has recently reviewed and updated the 30 original Landscape Character Assessments (LCA), originally produced to cover the whole of Scotland during the 1990s, by creating a single data set in a digital version. This is based on the original LCAs and updated to ensure greater consistency in the approach and structure, to reduce cross boundary discrepancies and to make the mapping more accessible and readily legible. This information is contained in the SNH Landscape Character Assessment GIS dataset.
- 5.53 The guidance on the SNH web page, advises that where available, capacity studies should take precedence over SNH’s LCA, where relevant to specific types of development, such as wind farms. The Argyll & Bute Landscape Wind Energy Capacity Study (ABLWECS) (2017), is relevant to the proposed development as it covers the majority of the 45 km study area.
- 5.54 The ABLWECS and SNH’s LCAs and datasets, divide the landscape into areas of distinctive character which are generally referred to as Landscape Character Types (LCTs). The LCTs that cover the 45 km study area are shown in Figure 5.3 with the blade tip ZTV overlain. Many of these LCTs are extensive, sometimes covering several areas that are geographically separate. For the purposes of the LVIA, the different areas of each LCT are distinguished by naming them as Landscape Character Units (LCUs), which are sub-sets of the LCTs and mostly defined in the ABLWECS. The site is located within the Loch Awe NW LCU of the Craggy Uplands LCT.
- 5.55 In the preliminary appraisal, the potential effects of the proposed development are considered in respect of all LCTs and LCUs within the first 20 km radius of the proposed development. This considers the separation distance between the LCTs / LCUs and the proposed development, the extents and levels of visibility across the LCTs / LCUs and the association between the LCUs / LCTs and the site of the proposed development. A 20 km radius has been set, as significant effect on landscape character are unlikely to occur beyond this range.
- 5.56 Table 5.1 below lists the LCTs / LCUs in the 20 km radius and provides information about their distance to the preliminary turbine locations and relationship to the ZTV, as shown in Figure 5.3. Thereafter, it is assessed in the final column whether or not, in OPEN’s opinion, these LCTs / LCUs can be scoped out of the assessment, unless changes to the layout during the detailed design process materially alter the potential for significant effects. The boxes that are shaded grey will be assessed further within the LVIA. The Council’s and SNH’s agreement to this is sought through this scoping exercise in order to enable the LVIA to be focussed on key considerations.

Table 5.1: Preliminary Appraisal of Effects on Landscape Character

Landscape Character Type / Unit	Approx. distance to nearest turbine	Subject to theoretical visibility?	Needs detailed assessment within LVIA?
7 Craggy Upland LCT / NW Loch Awe LCU	0 km	Concentrated patch of high level visibility around turbines reducing to localised patches on facing slopes or larger patches of low level visibility to south.	Yes – the very close proximity owing to the proposed development being located in tis LCU, means it is a highly likely a significant effect will arise.
7 Craggy Upland LCT / SE Loch Awe LCU	7 km	Patches of high level visibility in the northern part, reducing to medium levels of visibility in central part and low levels in southern part.	Yes – the relative proximity of this LCU and its orientation north-west towards the site means there is potential for a significant effect to arise.
7a Craggy Uplands with Settled Glens LCT / Glen Lonan LCU	1 km	There will be no visibility of the proposed development across the majority of this LCU. Patches of visibility	Yes – despite the lack of visibility across the LCU as a whole, patches of close range visibility at Glen Feochan, means there is

Musdale Wind Farm

		occur across the western extent of this LCU.	potential for a significant effect to arise.
7a Craggy Uplands with Settled Glens LCT / Loch Scammadale LCU	2 km	Low levels of visibility extend along Loch Scammadale and higher levels occur in localised patches of north-west facing slopes	Yes – despite low levels and patchy extents, the proximity of this LCU to the proposed development, means there is potential for a significant effect to arise.
7b Craggy Coast and Islands LCT / Kerrara LCU	12 km	Majority of LCU unaffected with only small patches of visibility on upper east facing slopes.	No – combination of limited extent of visibility, separation distance, existing influences from Oban, and wider associations with surrounding islands, means effects will not be significant.
7b Craggy Coast and Islands LCT / Oban LCU	8 km	Majority of LCU unaffected with only small patches of visibility on upper east facing slopes.	No – combination of limited extent of visibility, separation distance, existing influences from Oban, and wider associations with surrounding islands, means effects will not be significant.
7b Craggy Coast and Islands LCT / Loch Feochan LCU	4 km	Majority of LCU unaffected with only small patches of visibility on upper east facing slopes and through Glen Feochan.	No – combination of limited extent of visibility, extent of tree cover and orientation of landform around loch, means effects will not be significant.
7b Craggy Coast and Islands LCT / Loch Melfort LCU	10 km	Majority of LCU unaffected with only small patches of low level visibility on north east facing slopes.	No - combination of limited extent of visibility, extent of tree cover and orientation of landform around loch, means effects will not be significant.
7b Craggy Coast and Islands LCT / Seil LCU	15 km	Majority of LCU unaffected with only small patches of low level visibility along central ridge.	No - combination of very limited extent of visibility, separation distance, and wider associations with surrounding islands, means effects will not be significant.
7c North Loch Awe Craggy Uplands / NW Loch Awe	6 km	Patches of medium and high visibility occurring across west facing slopes.	Yes – despite the closer association with Ben Cruachan and Loch Awe, the relative proximity and extents of visibility means there is the potential for a significant effect to arise.
7c North Loch Awe Craggy Uplands / NE Loch Awe	11 km	Extensive coverage of high level visibility across majority of this LCU.	Yes – the extent of visibility combined with the predominant orientation of this LCU westwards, increases the association with the site and means there is potential for a significant effect to arise.
2 High Tops LCT / Ben Cruachan LCU	8.5 km	Visibility is limited to a concentrated high level patch on south-west edge with majority of LCU largely unaffected.	Yes – despite limited extent of visibility, the relative proximity combined with the orientation of south-west facing slopes towards site means there is potential for a significant effect to arise.
2 High Tops LCT / Beinn Bhreac LCU	10 km	Majority of LCU unaffected with visibility occurring as small patches on upper south-facing slopes.	Yes – despite limited extent of visibility, the orientation of the landform, southwards towards the site, increases the association and means there is potential for a significant effect to arise.
18 Lowland Ridges and Mosses LCT / North Connell LCU	11 km	Low and medium levels of visibility occurring across LCU.	No – combination of low levels of visibility, separation distance and enclosure form surrounding hills,

means effects will not be significant.

20 Rocky Mosaic LCT / NW Loch Awe	6 km	Small patches of low level visibility in the northern parts.	No – limited extent and levels of visibility means effects will not be significant.
20 Rocky Mosaic LCT / NE Loch Awe	6 km	High levels of visibility in the northern part, reducing to low levels of visibility in central and southern parts, with substantial areas of tree cover.	Yes – the proximity of this LCU and its orientation north-west towards the site means there is potential for a significant effect to arise, despite the extent of tree cover.
20 Rocky Mosaic LCT / N Loch Etive LCU	10 km	Limited extent of low levels of visibility in northern and western parts.	No – limited extent and levels of visibility means effects will not be significant.
20 Rocky Mosaic LCT / S Loch Etive LCU	8 km	Very small patches of low level visibility in western part of LCU.	No – limited extent and levels of visibility means effects will not be significant.
20 Rocky Mosaic LCT / Glen Alay LCU	14 km	No visibility.	No – no visibility means no effect.
20 Rocky Mosaic LCT / Ederline LCU	16 km	Very small patches of low level visibility in eastern part of LCU.	No – limited extent and levels of visibility means effects will not be significant.
6a Loch Fyne Upland Forest Moor Mosaic LCT / NW Loch Fyne	13 km	Very small patches of low level visibility across LCU.	No – limited extent and levels of visibility means effects will not be significant.
10 Upland Parallel Ridges LCT / Kilmartin LCU	13 km	Very small patches of low level visibility on upper northern slopes of LCU.	No – limited extent and levels of visibility means effects will not be significant.
4 Mountain Glens LCT / Glen Shira LCU	18 km	No visibility.	No – no visibility means no effect.

5.57 The preliminary appraisal has shown that seven of the 23 LCTs / LCUs in the 20 km radius study area have potential to be significantly affected. The LVIA will assess the likely effects of the proposed development on these LCTs / LCUs using information presented in ABLWECS and SNH’s dataset. It is recommended that the other LCTs / LCUs be scoped out of the detailed assessment.

Potential Effects on Landscape Designations

5.58 The site itself is not subject to any local or national landscape designations intended to protect its landscape quality. A number of areas within the 45 km study area have been attributed a landscape planning designation. Figure 5.4 shows the landscape designations across the 45 km radius study area with the ZTV overlain. These include a number of nationally important NSAs, Gardens and Designed Landscapes (GDLs) and a National Park (NP). In addition, locally important Areas of Panoramic Quality (APQ) have been designated through the Local Development Plan of Argyll and Bute.

5.59 In the preliminary appraisal set out in Table 5.2 below, the potential effects of the proposed development are considered in respect of all landscape designations. This considers the separation distance between the landscape designation and the proposed development, the extents and levels of visibility across the landscape designation and the association between the landscape designated area and the site of the proposed development.

5.60 The findings of this preliminary appraisal are that one NSA and two APQs have the potential to be significantly affected by the proposed development and, therefore, require a detailed assessment. The NP, other NSAs and APQs, and all the GDLs, do not have the potential to be significantly affected owing to either no visibility, low levels of visibility and / or limited extents of visibility,

substantial separation distances and / or limited association between the designated landscape and the site of the proposed development.

- 5.61 The Lynn of Lorn NSA is the closest of the NSAs to the proposed development. The LVIA will assess the likely effects of the proposed development on the special qualities of this area, with reference to SNH Commissioned Report No. 374 'The Special Qualities of the National Scenic Areas'. It is recommended that the other NSAs be scoped out of the detailed assessment.
- 5.62 The closest APQs to the site include North West Argyll (Coast) APQ to the west, and North Argyll APQ to the east. The LVIA will assess the likely effects of the proposed development on these APQs. In the absence of specific citations for the APQs, the assessment will reference the ABLWECS and LCAs. It is recommended that the other APQs be scoped out of the detailed assessment.
- 5.63 There are a large number of nationally important Inventory Gardens and Designed Landscapes (GDLs) within the study area. Owing to no visibility or very limited extents of low level visibility occurring across any of the 13 GDLs, it is recommended that they be scoped out of the detailed assessment.
- 5.64** Table 5.2 below lists the landscape designations and provides information about their distance to the preliminary turbine locations and relationship to the ZTV, as shown in Figure 5.4. Thereafter, it is assessed in the final column whether or not, in OPEN's opinion, these landscape designations can be scoped out of the assessment, unless changes to the layout during the detailed design process materially alter the potential for significant effects. The boxes that are shaded grey will be assessed further within the LVIA. The Council's and SNH's agreement to this is sought through this scoping exercise in order to enable the LVIA to be focussed on key considerations.

Table 5.2: Preliminary Appraisal of Potential Effects on Landscape Designations

Designation	Approx. distance to nearest turbine	Subject to theoretical visibility?	Needs detailed assessment within LVIA?
Loch Lomond and The Trossachs National Park	25 km	Very localised patches of visibility on upper north-west facing slopes.	No – separation distance, limited extent of visibility and existing influence of Carraig Gheal on near-side, means effects will not be significant.
Lynn of Lorn NSA	14 km	Almost continuous visibility across south-eastern side of island.	Yes – south-west orientation of landform towards the proposed development and its closer proximity to the NSA with Carraig Gheal on far-side, means effects may be significant.
Ben Nevis and Glen Coe NSA	17 km	Localised patches of visibility on upper south facing slopes - majority of WLA unaffected.	No – separation distance, limited extent of visibility, existing influence of Carraig Gheal on near-side and stronger association with higher hills from south-west round to north-east compared with weaker association with lower hills to south-west where proposed development would be located, means effects will not be significant.
Scarba, Lunga and the Garvellachs NSA	23 km	Lower levels of visibility on eastern side of islands with localised patch of full visibility on elevated summit.	No – separation distance combined with stronger association with surrounding islands compared with weaker association with upland hinterland where proposed development would be located, means effects will not be significant.
Knapdale NSA	27 km	Lower levels of visibility on north-east facing slopes occurring across patchy extents.	No – separation distance combined with limited extents and levels of visibility, means effects will not be significant.

Musdale Wind Farm

Loch Shiel NSA	43 km	Very small patch of visibility on southern boundary.	No – separation distance combined with very limited visibility, means effects will not be significant.
Loch na Keal / Isle of Mull NSA	41 km	Single small patch of visibility on summit of Ben More.	No – separation distance combined with very limited visibility, means effects will not be significant.
Kyles of Bute NSA	37 km	No visibility.	No – there is no visibility and therefore no effect.
Loch Lomond NSA	34 km	No visibility	No – there is no visibility and therefore no effect.
North West Argyll (coast) APQ	4 km	Patches of visibility occur across east facing slopes.	Yes – the close proximity and high levels of patchy visibility means effects may be significant.
North Argyll APQ	5 km	Large patches of visibility occur especially across western parts of this APQ.	Yes – the close proximity and high levels of visibility means effects may be significant.
Knapdale / Melfort APQ	7 km		No – despite proximity of this APQ to the proposed development, the low levels and patchy extents of visibility, combined with the extent of coniferous plantation, means effects will be not significant.
Jura APQ	31 km	Localised patches of visibility on upper north facing slopes.	No - separation distance combined with stronger association with surrounding islands compared with weaker association with upland hinterland where proposed development would be located, means effects will not be significant.
West Loch Fyne (coast) APQ	18 km	No visibility	No – there is no visibility and therefore no effect.
East Loch Fyne (coast) APQ	22 km	No visibility	No – there is no visibility and therefore no effect.
Loch Long (coast)	38 km	No visibility	No – there is no visibility and therefore no effect.
Central, South and West Mull APQ	22 km	Localised patches on upper east facing slopes.	No - separation distance combined with stronger association with surrounding islands compared with weaker association with upland hinterland where proposed development would be located, means effects will not be significant.
Bute and South Cowal APQ	34 km	Small patches of low level visibility on upper north facing slopes.	No – separation distance combined with very limited visibility, means effects will not be significant.
Achnacloich GDL	9 km	No visibility	No – there is no visibility and therefore no effect.
Ardchattan Priory GDL	11 km	No visibility	No – there is no visibility and therefore no effect.
Ardanaiseig House GDL	12 km	No visibility	No – there is no visibility and therefore no effect.
Arduaine Gardens GDL	17 km	No visibility	No – there is no visibility and therefore no effect.

Musdale Wind Farm

An Cala GDL	18 km	No visibility	No – there is no visibility and therefore no effect.
Inveraray Castle GDL	16 km	No visibility	No – there is no visibility and therefore no effect.
Torosay Castle GDL	24 km	No visibility	No – there is no visibility and therefore no effect.
Crarae GDL	23 km	No visibility	No – there is no visibility and therefore no effect.
Duntrune GDL	28 km	No visibility	No – there is no visibility and therefore no effect.
Ballimore GDL	36 km	No visibility	No – there is no visibility and therefore no effect.
Benmore Botanic Garden GDL	37 km	No visibility	No – there is no visibility and therefore no effect.
Ardtonish GDL	34 km	No visibility	No – there is no visibility and therefore no effect.
Ardgour House GDL	38 km	No visibility	No – there is no visibility and therefore no effect.

Potential Effects on Wild Land

- 5.65 The site itself is not covered by any Wild Land Areas (WLAs) intended to protect wild land qualities. Figure 5.4 shows the WLAs across the 45 km radius study area with the ZTV overlain. Wild Land is recognised in Scottish Planning Policy (SPP) and planning policy as a nationally important mapped interest (not a designation), which should be afforded protection for its wildness qualities, but it is not statutorily protected in the way that National Parks and National Scenic Areas (NSAs) are for their scenic qualities.
- 5.66 The assessment of effects on WLAs follows guidance set out in SNH’s draft version of ‘Assessing Impacts on Wild Land Technical Guidance’ (2017) (‘the 2017 Draft Guidance’). SNH, on its website, states that the 2017 Draft Guidance is the appropriate guidance to be applied in the assessment of effects on WLAs in place of the original 2007 Guidance and while responses on the 2017 Draft Guidance are considered.
- 5.67 Whether a WLA assessment is required, is discussed in paragraph 5 of the 2017 Draft Guidance, with the need considered to be highly likely where the proposed development falls wholly or partly within a WLA. In contrast, where the proposed development falls outwith the WLA “...the need for an assessment will be more the exception and may only be necessary where significant effects on WLA qualities are likely.” In light of this guidance and, in respect of the fact that there are no WLAs within a 10km radius of the proposed development, it is unlikely that the perceptual responses relating to the physical attributes within any of the WLAs would be significantly affected. Furthermore, the presence of operational Carraig Gheal on the adjacent site, establishes an existing influence which would moderate any additional effects.
- 5.68 In the preliminary appraisal, the potential effects of the proposed development are considered in respect of all WLAs. This considers the separation distance between the WLA and the proposed development, the extents and levels of visibility across the WLA and the association between the WLA and the site of the proposed development. The findings of this preliminary appraisal are that none of the WLAs have the potential to be significantly affected by the proposed development and, therefore, do not require a detailed assessment.
- 5.69 Table 5.3 below lists the WLAs in the study area and provides information about their distance to the preliminary turbine locations and relationship to the ZTV, as shown in Figure 5.4. Thereafter, it is assessed in the final column whether or not, in OPEN’s opinion, these WLAs can be scoped out of the assessment, unless changes to the layout during the detailed design process materially alter the potential for significant effects. The boxes that are shaded grey will be assessed further within the LVIA. The Council’s and SNH’s agreement to this is sought through this scoping exercise in order to enable the LVIA to be focussed on key considerations.

Table 5.3: Preliminary Appraisal of Potential Effects on Wild Land

Wild Land Area	Approx. distance to nearest turbine	Subject to theoretical visibility?	Needs detailed assessment within LVIA?
09 Loch Etive Mountains WLA	10 km	Localised patches of visibility on upper south facing slopes - majority of WLA unaffected.	No – separation distance, limited extent of visibility, existing influence of Carraig Gheal on near-side and stronger association with higher hills from south-west round to north-east compared with weaker association with lower hills to south-west where proposed development would be located, means effects will not be significant.
06 Ben Lui WLA	17 km	Localised patches of visibility across west facing slopes of western and northern parts of WLA.	No – separation distance, limited extent of visibility, existing influence of Carraig Gheal on near-side and stronger association with higher hills from north round to east, compared with weaker association with lower hills to west where proposed development would be located, means effects will not be significant.
05 Jura, Scarba, Lunga and Garvellachs WLA	25 km	Localised patches of visibility on north-east facing slopes.	No – separation distance combined with stronger association with surrounding islands compared with weaker association with upland hinterland where proposed development would be located, means effects will not be significant.
08 Ben More, Mull WLA	31 km	Localised patches of visibility on east facing slopes.	No – separation distance combined with very limited visibility, means effects will not be significant.
13 Moidart – Ardgour WLA	37 km	Small patches of visibility on south facing upper slopes.	No - separation distance combined with very limited visibility, means effects will not be significant.
07 Ben More – Ben Ledi WLA	35 km	Small patches of visibility on west facing upper slopes.	No - separation distance combined with very limited visibility, means effects will not be significant.
10 Breadlabane – Schiehallion WLA	38 km	Very small patches of visibility.	No - separation distance combined with very limited visibility, means effects will not be significant.
14 Rannoch – Nevis – Malmores – Alder	37 km	Very small patches of visibility.	No - separation distance combined with very limited visibility, means effects will not be significant.

Potential Effects on Visual Receptors

- 5.70 A preliminary viewpoint list is presented in Table 5.4 below. The locations of the viewpoints are shown on Figures 5.2a and 5.2b. The preliminary list has been informed by the selection made in the 2015 LVIA for the proposed Musdale Wind Farm, which, in turn, had been partly informed by the LVIA for nearby Carraig Gheal. This continuity enables direct comparison between effects on views and cumulative effects to be considered. The viewpoint list has been further developed through consultation with SNH.
- 5.71 The viewpoints represent sensitive visual receptors in the study area, which have potential to be significantly affected. The selection of the viewpoints also considers the representation of the landscape receptors within which they are located, as well as the representation of the surrounding cumulative context, with both these considerations helping to inform the wider assessment. Collectively, the aim is to achieve a distribution of viewpoints from different directions and distances across the study area, albeit ensuring that the closer range receptors with the greatest potential to be significantly affected, are fully represented.

5.72 Comment on the proposed viewpoint locations is invited as part of this request for a Scoping Opinion. Visualisations and figures will be produced to SNH’s standards as set out in ‘Visual Representation of Wind farms: Version 2.2’ (February 2017). In line with SNH guidance, photomontages will be prepared for viewpoints within a 20 km radius of the nearest turbine.

Table 5.4: Preliminary Viewpoints

No.	Viewpoint Name	Approx. Distance	Direction from Site	Reason for Inclusion
1	Portsonachan	6.94 km	East	Minor road-users / rural residents
2	Woodland east of Portsonachan	9.15 km	East	Residents/cyclists
3	Blarghour	8.92 km	South-east	Minor road-users / rural residents
4	Musdale Path	0.26 km	West	Walkers
5	Dalmally Monument	15.54 km	East-north-east	Visitors / walkers
6	Military road above the A85	10.72 km	East-north-east	Walkers
7	Beinn Lora	13.56 km	North-west-north	Walkers
8	Druim Mor, Oban	9.70 km	North-west	Walkers
9	A816, Kilmore	6.24 km	West	Road-users / residents
10	A819 layby near Achlian	12.57 km	East	Road-users
11	Ben Cruachan	10.07 km	North-east	Walkers
12	Beinn Bhuidhe	22.15 km	East	Walkers
13	A85 east of Inverlochy	23.33 km	East-north-east	Road-users
14	Duart Castle, Isle of Mull	21.64 km	West-north-west	Visitors / walkers
15	Ferry Crossing, Oban to Craignure (close to mainland)	10.95 km	North-west	Ferry passengers
16	Ferry Crossing, Oban to Craignure	16.46 km	North-west	Ferry passengers
17	Kilcheran, Lismore	18.56 km	North-west	Minor road-users / rural residents
18	Clachan, Lismore	20.68 km	North-west	Minor road-users / rural residents
19	Loch Scammadale	5.79 km	South-west	Minor road-users / rural residents
20	Loch Scammadale, Kickshaw	7.34 km	South-west	Minor road-users / rural residents
21	Tralee Beach, Ardmucknish Bay	15.49 km	North-west-north	Visitors / walkers
22	Barranrioch	8.36 km	West	Road

5.73 In addition to representative viewpoints, the LVIA will consider the effects of the proposed development on the views of people located, at or using Principal Visual Receptors (PVRs) as shown on Figure 5.5. The limited occurrence of PVRs in the first 20 km radius of the site, combined with the limited extents of visibility, especially along the lower-lying loch sides and in the lower-lying glens where roads and settlements are typically located, means that there is only a small number of PVRs with potential to be significantly affected.

5.74 The key PVRs which will be assessed in detail in the LVIA include the A85, A819 and B840, all of which are shown on the ZTV to gain theoretical visibility from notable sections, as well as the core paths which extend across and around the Site. The ferry routes between Oban and Craignure on Mull and Achnacroish on Lismore will also be assessed in detail owing to the levels and extents of theoretical visibility shown on the ZTV.

- 5.75 Those PVRs which are suggested to be scoped out of the detailed assessment include the A816, B844, B845 and NCR78, all of which are shown on the ZTV to gain low levels and/or patchy extents of theoretical visibility. As theoretical visibility relating to settlements is shown to be either non-existent or limited, the suggestion is that all settlements be scoped out of the assessment.

Potential Effects on Residential Visual Amenity

- 5.76 A preliminary appraisal of potential effects on residential visual amenity has highlighted that there are no residential properties within a 2 km radius of the proposed turbines with the exception of those at Musdale Farm which are involved properties. As Landscape Institute Guidance specifies a maximum 2 km radius for a Residential Visual Amenity Assessment (RVAA) and there are no other properties within this radius, there is therefore, no requirement for a RVAA to be carried out.

Potential Cumulative Effects

- 5.77 The assessment of cumulative effects describes the effects arising from the addition of the proposed development to a cumulative baseline of operational, under construction, consented and application stage wind farms within a 45 km study area. This assessment will include supporting graphics such as cumulative ZTVs and cumulative wirelines.
- 5.78 In respect of the proposed development, particular attention will be paid to operational wind farms Carraig Gheal and Beinn Ghlas, both of which lie in close proximity of the proposed development, as well as application wind farm Blarghour which lies approximately 10 km to the south-east, as shown on Figure 5.6. Key consultees are asked to comment on the content of the final cumulative wind farm list and cut-off date for further updates prior to the completion of the LVIA to ensure the most up-to-date information is available but also to allow sufficient time for the LVIA to be produced.
- 5.79 As with the assessment of significance of effects of the proposed wind farm in isolation, the significance of cumulative effects is determined through a combination of the sensitivity of the landscape receptor or visual receptor and the magnitude of change upon it.

Potential Lighting Effects

- 5.80 As the turbines proposed are taller than 150m it is very likely that some visible hub-height lighting of turbines will be required for aviation safety. The proposed development lies in a relatively remote area, albeit with rural properties scattered along Loch Awe to the south-east, Glen Feochan to the west and Loch Scammadale to the south-west. It is likely that the visual effects of wind turbine lighting at night will be of considerable importance to the statutory and non-statutory consultees as well as people living and moving around in the local area, and that an assessment of turbine lighting may be required as part of the LVIA.
- 5.81 OPEN will, if required, prepare a night-time impact assessment section and visualisations illustrating turbine lighting at night, for inclusion in the LVIA. The hub height ZTV will be used to identify where there would be direct line of sight of the lights from the surrounding area. In order to inform this assessment, OPEN will take photographs from three of the readily accessible viewpoints at dusk and will prepare visualisations to represent the effects of lighting on these views in accordance with SNH guidance.
- 5.82 In terms of how lighting is captured in visualisations, there is currently quite a lot of work being done on this by SNH, in respect of turbine lighting visualisations for onshore turbines over 150m. The main change in the latest version of the SNH "Visual Representation of Wind Farms" (Version 2.2, February 2017) is in paragraphs 174-177 and relates to turbine lighting. For turbines in excess of 150m, the need to consult on new lighting visuals is now required. OPEN will produce night-time visualisations using photographs taken after the period of Civil Twilight, when in addition to the turbine aviation lights other artificial lighting (such as street lights and lights on buildings) are on, to show how the wind farm lighting will look compared to the existing baseline at night. It is important to ensure that the photographs represent the levels of darkness as seen by the naked eye at the time and the camera exposure does not make the image appear artificially brighter than it is in reality. We have not anticipated the need for hill top views in the hours of darkness.

- 5.83 The impacts are likely to be of a higher magnitude in this remote rural location where there is little baseline light. Consideration will also be given to the flashing effect that the movement of turbine blades may create depending on where the viewer is in relation to the wind farm. If the turbine blades pass in front of the light, a flashing effect as they cut across the light can occur. If the blades pass behind the light, there can be a striped effect as the light runs up the passing blades.
- 5.84 OPEN has undertaken night-time lighting assessments and visualisations for several other wind farm projects in the UK. This will inform the basis of our professional judgement about the level of effect arising from the proposed lighting.

Chapter 6: Ecology

Overview

- 5.85 An Ecological Impact Assessment (EclA) will be undertaken to assess the potential significant effects on non-avian ecology during the construction, operational and decommissioning phases of the proposed development. The ornithology assessment will be presented in a separate chapter.
- 5.86 The EclA will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

- 5.87 This section details all ecological receptors other than ornithology (see ornithology section below). The baseline information presented below has been gathered from habitat and protected species surveys of the proposed development footprint and a 300 metre buffer and a desk study of freely available information using the following sources:
 - the Multi-Agency Geographic Information Centre (MAGIC) web page (Department for Environment, Food and Rural Affairs, n.d.);
 - a data search with the Lorn Natural History Group / Argyll Biological Records Centre; and,
 - the available survey and planning documents from the adjacent Beinn Ghlas and Carraig Gheal Wind Farms.
- 5.88 Pre-scoping Consultation with SNH has been completed to inform the scope of ecological survey to ensure a robust assessment of the potential effects of the proposed development.

Desk Based Assessment

- 5.89 There are no statutory designated ecological sites within the proposed development boundary although the Loch Sior Local Nature Conservation Site (LNCS) is present (see Figure 5.11). Table 5.5 below summarises the designated sites present within 10 km of the proposed development which are relevant to ecological receptors. Sites included within the search are Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Local Nature Reserves (LNRs) and Local Nature Conservation Sites (LNCS). The locations of the identified sites are provided in Figure 5.11

Table 5.5: Designated sites identified within 10 km of the proposed development which are relevant to ecological receptors

Description	Designation	Reason for Citation	Approximate Distance to Site
Loch Etive Woods	SAC	The qualifying interests of the Loch Etive Woods SAC include the presence of alder woodland on floodplains and extensive areas of western oak woodlands, typified by relatively high levels of rainfall. Large areas of mixed woodland on base-rich soils associated with rocky slopes are also encompassed within the designated area. Otters	2.2 km north east

Lutra lutra are also a qualifying feature of this site's designation.

Inner Hebrides and the Minches	SAC	The qualifying interest of the SAC are harbour porpoise (<i>Phocoena phocoena</i>).	10 km west
Glen Nant	SSSI	Glen Nant SSSI is designated for its substantial native upland broadleaved woodland, in particular the upland oak woodland which forms a considerable portion of the habitat mosaic. The woodland provides ideal conditions for lower plant communities and has been estimated to support at least 240 species of bryophyte. Of this total 11 are nationally scarce and 35 are oceanic. The lichen community present at the site is also a qualifying feature of its designation, with many nationally and internationally scarce species present. The final notified feature of the site is the rare crane fly <i>Tipula luridorostris</i> , whose larvae live in the moss growing on trees in western oak woods where rainfall is relatively high.	2.2 km north east
Glen Nant	NNR	The Glen Nant National Nature Reserve encompasses some of the last remaining native forests in Scotland. The mixed woodlands are dominated by oak and birch, although the more fertile, sheltered areas support ash, elm and hazel. There are rich bird, mammal and insect communities supported by the diverse range of higher and lower plant species.	4.4 km north east
Airds Park and Coille Nathais	SSSI	The site's notified feature of upland oak woodland forms one of the most extensive areas of birch and oak dominated semi-natural woodland in Argyll. The woodland structure is well developed and, from the south shore of Loch Etive, woodland communities extend inland over a series of hills to an altitude of 100 metres. The second qualifying feature of the site is the presence of the marsh fritillary butterfly, with the SSSI and surrounding area supporting one of the largest and most important meta-populations of this species in the Lorn area.	5.7 km north
Clais Dhearg	SSSI	Clais Dhearg SSSI is composed of a complex mosaic of oak woods and birch woods with clearings and open ground with fen and swamp fringing the base-poor ground around the Black Lochs. The Black Lochs, Loch Lagain, watercourses and mires around the site support a rich assemblage of dragonfly and damselfly species. The site is notified for the oligotrophic lochs, open water transition fens, upland oak woodland and the dragonfly assemblages and marsh fritillary butterfly the habitats support.	5.8 km north
Dalavich Oakwood	SSSI	The Dalavich Oakwood SSSI is one of the few remaining examples of upland oak woodland along the slopes of Loch Awe. The presence of wet woodland areas across the site gives it an increased significance and value in terms of the conservation of important habitats.	6.9 km south
Coille Leitire	SSSI	This site was notified for containing some of the most extensive upland oak woodlands in the Lorn and North Argyll area. Most species representative of upland oak woodland can be found on the site, with fewer ash, elm, hawthorn, holly and rowan.	9.0 km north east
Kennacraig and Esragen Burn	SSSI	The SSSI is notified for the upland oak woodland which are present in two compartments. Within the	9.2 km north

two woodland compartments oak and birch are the dominant canopy species with mature, even aged sessile oak occurring on the lower slopes and downy birch dominating the upper woodland margins. Along the river valleys mature ash and alder also occur in the canopy with rowan, hazel and holly present in the shrub layer. The SSSI also supports rich assemblages of oceanic mosses, liverworts and lichens although these are not notifying features.

Bonawe and Cadderlie	SSSI	The SSSI is notified for the upland oak woodland which is present in fragmented blocks interspersed with open areas of upland wet heath and acidic grassland. Much of the mature woodland is established on heavy block scree, extending into small ravines and along the larger Cadderlie Burn. The woodland ground flora is varied in composition and supports wood-sorrel, herb robert and dog's mercury. Several species of fern are also present including lemon-scented fern, lady-fern, oak fern, beech fern and scaly male-fern. Characteristic western oak woodland bryophytes occur on the boulder-strewn slopes and the trees support an abundance of epiphytic lichens.	7.7 km north
Barren Dubh	SSSI	The site is one of the remaining fragments of ancient semi-natural upland oak woodland around Loch Etive. It lies on mainly acidic soils on a steep north-west facing slope, extending from sea level on the shore of Loch Etive to a height of 311 metres. The northerly aspect of Barran Dubh results in damp shaded conditions which are ideal for lower plants and the site supports a rich assemblage of bryophytes (mosses and liverworts) including four nationally scarce species and a large number of oceanic species. The sites notifying features are upland oak woodland and bryophyte assemblages.	7.6km north east
Abbot's Isle, Loch Etive	LNCS	Annex I habitats that are a primary reason for selection of this site: <ul style="list-style-type: none"> - Tilio-Acerion forests of slopes, screes and ravines (Ash and Hazel); and - Old sessile oak woods with Ilex and Blechnum. Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: <ul style="list-style-type: none"> - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>). Annex II species present as a qualifying feature, but not a primary reason for site selection: <ul style="list-style-type: none"> - Otter <i>Lutra lutra</i>. 	9.6 km north
Death Choimhead	LNCS	Information not available	3.0 km north
Black Islands, Loch Awe	LNCS	Loch Awe is the largest freshwater loch in Scotland, measuring 25 miles from end to end. The wildlife is varied and exceedingly rich, including red squirrel and golden eagle (Forestry and Land Scotland, n.d.).	9.2 km east
Sior Loch	LNCS	Information not available	Within the main site boundary
Eilean An Ruisg, Loch Feochan	LNCS	Information not available	8 km west

5.90 The initial desk study from the Beinn Ghlas and Carraig Gheal Wind Farms (north and south of the proposed development respectively) identified records of the following protected species:

Table 5.6: Protected species identified in proximity to the proposed development from the Beinn Ghlas and Carraig Gheal Wind Farms

Identified Within Wind Farm Planning Application as Present on Site		
Species	Beinn Ghlas	Carraig Gheal
Otter	No otter resting sites were located. Desk study results indicate that this species is present in the wider landscape.	Sprainting found surrounding within the site during surveys for the Environmental Statement on an unnamed waterbody.
Water vole	No evidence of water vole was discovered during the survey. The desk study found no records of water vole in the immediate area or in the wider landscape.	No evidence of water vole presence was identified during surveys completed for the development's planning application.
Badger	No evidence of badger was discovered during the survey. The desk study found no records of badger in the immediate area.	No evidence of badger was identified during surveys for the development's planning application and habitat was assessed as of low suitability of the species.
Bat species	No bat roosts were located during the field survey. The desk study indicates that bats are present in the wider landscape but have not been recorded in the survey area.	No bat roosts were identified within the site and habitats were deemed sub-optimal for bat species; consequently, no activity surveys were completed for the development.
Pine marten	A single pine marten scatt and potential pine marten den were recorded	No dens or evidence of the species was identified however suitable habitat was present across the site of use by the species.
Wildcat	No information regarding the species recorded	No signs of the species were identified during field surveys for the development.
Red squirrel	Evidence of red squirrel was discovered during the field survey. Desk study results indicate this species is present in the surrounding landscape.	No surveys were completed for this species.
Freshwater pearl mussel	No FWPM were found. The majority of watercourses within the site boundary were considered unsuitable for this species.	No information available on the Argyll and Bute Planning portal for surveys for this species associated with the development.
Fish species of conservation concern	No surveys for fish species were conducted	No information available on the Argyll and Bute Planning portal for surveys for this species associated with the development.

5.91 A data request was made in November 2019 to the Lorn Natural History Group / Argyll Biological Records Centre for information on the location and presence of protected or notable fauna and flora, and designated sites within a 10 km radius of the proposed development from the last 15 years. A summary of this information is provided in Table 5.7 below.

Table 5.7: Summary of records of protected species received from the Argyll Biological Records centre within a 10 km radius of the proposed development

Species	Number of Records Received	Date Range
Daubenton's bat	1	2015
Badger	1	2011
Otter	14	2009 – 2017
Red squirrel	51	2008 – 2017
Noctule bat	2	2015
Pine marten	7	2009 – 2017
Pipistrelle spp. bat	2	2015
Soprano pipistrelle	2	2008 - 2017

Field Surveys

5.92 In consideration of the above desk-based findings the following surveys for ecological receptors have been completed. Figures 5.12 and 5.13 show the survey areas used for the ecological receptors assessed on site.

Table 5.8: Ecological receptor surveys completed for the proposed development

Ecological Receptors	Date of Survey	Survey Area	Guidance Followed
Otters	November 2019	All watercourse within the developable area and an additional 200m up and down stream	Bang, P & Dahlstrøm, P (2001) ¹ .
Water Voles	November 2019	All suitable habitat identified by the Phase 1 habitat survey within 200m of the proposed development's infrastructure	Dean <i>et al.</i> (2016) ²
Badgers	November 2019	All suitable habitat identified by the Phase 1 habitat survey within 200m of the proposed development's infrastructure	Andrews (2010) ³
Pine Marten	November 2019	All suitable habitat identified by the Phase 1 habitat survey within 200m of the proposed development's infrastructure	Kitchener <i>et al.</i> (2008) ⁴
Wildcat	November 2019	All suitable habitat identified by the Phase 1 habitat survey within 200m of the proposed development's infrastructure	Kitchener <i>et al.</i> (2008) ⁴

1 Bang, P & Dahlstrøm, P (2001). Animal Tracks and Signs. Oxford University Press, Oxford.

2 Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

3 Andrews (2010) The Classification of Badger *Meles meles* Setts in the UK: A Review and Guidance for Surveyors

4 Kitchener, AC and Daniels MJ (2008); Harris, S and Yalden, DW (Eds.) Mammals of the British Isles: Handbook, 4th Edition. The Mammal Society, Southampton.

Red squirrel	November 2019	All suitable habitat identified by the Phase 1 habitat survey within 200m of the proposed development's infrastructure	Gurnell <i>et al.</i> (2009) ⁶
Phase 1 Habitat	September to October 2019	The footprint of the proposed development and a 300m buffer of turbine and 200m buffer of tracks	Joint Nature Conservation Committee (2016) ⁷
Ground Water Dependent Terrestrial Ecosystem	September to October 2019	The footprint of the proposed development and a 300m buffer of turbine and 200m buffer of tracks	Scottish Environment Protection Agency (2017) ⁸
National Vegetation Classification	September to October 2019	The footprint of the proposed development and a 300m buffer of turbine and 200m buffer of tracks	Rodwell (2006) ⁹
Bats	Static Detector Surveys:	The proposed developable area of 2019. SNH (2019) ¹⁰ 16 Anabat swifts were deployed to cover the proposed 27 turbine development	
	<ul style="list-style-type: none"> 15/05/19 to 04/06/19; 08/07/19 to 15/08/19; 20/08/19 to 27/09/19. 		

5.93 The area of conifer plantation to the north of Loch Nant where five turbines would be located was not assessed in the 2019 surveys. Surveys of this area were completed in August 2020 for the receptors detailed above in compliance with the relevant guidance listed.

5.94 In addition to the above, an assessment of peat depths across the developable area of the proposed development were completed in July 2020. Figure 5.14 details the survey strategy which was used to complete the surveys in compliance with SNH guidance (SNH, 2017).

5 Forestry Commission Scotland (2009) FCS Guidance Note 35d: Forest operations and wildcats in Scotland

6 Gurnell, J., Lurz, P., McDonald, R. and Pepper H. (2009) Forestry Commission: Practical techniques for surveying and monitoring squirrels.

7 Joint Nature Conservation Committee (2016) Phase 1 Habitat Survey: A technique for environmental audit.

8 Scottish Environment Protection Agency (2017) Land Use Planning System Guidance SPEA Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystem

9 Rodwell, J.S. (2006) NVC Users' Handbook, JNCC, Peterborough, ISBN 978 1 86107 574 1.

10 SNH (2019) Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation

- 5.95 Two access routes are currently proposed, one from the north utilising the Beinn Ghlas Wind Farm infrastructure, or from the south using the West Loch Awe Timber Haulage Route (WLATHR) and the Carraig Gheal Wind Farm. Both routes are provided in Figures 5.19a and b of this Scoping Report. As detailed in paragraph 5.90 and Table 5.6, a substantial amount of information is available for these areas from surveys completed for the respective developments' relevant planning submissions. A review of this information would be completed once the proposed access route is finalised, and where necessary additional field surveys completed for protected species and habitats to ensure a robust baseline is available.
- 5.96 Given the continued use of the WLATHR by timber haulage wagons and the likely habituation of protected species to heavy traffic, it is not envisaged that additional surveys would be necessary for this proposed access route. For the northern access route, where this passes through the Fearnoch Forest which was not used for the Beinn Ghlas Wind Farm, appropriate survey effort would be undertaken to be able to assess the potential effects of the proposed development to ecological receptors in this area. Further detailed reviews of these routes and the currently available information would be completed to determine this approach is robust.

Proposed Assessment Methodology and Scope

Relevant Policy, Legislation and Guidance

- 5.97 All surveys and assessments will be completed in cognisance of the relevant policy, legislation and guidance. Guidance relating to field surveys is provided in Table 5.8, in addition to these the following legislation will be considered during the assessment.

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)

- 5.98 European protected habitats and species are defined under the European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (otherwise known as the Habitats Directive). Protected habitats include heaths, flushes and mires, and protected species include otters (*Lutra lutra*), great crested newt (*Triturus cristatus*) and bats (all species) (*Chiroptera* spp.). The Habitats Directive is transposed into Scottish law through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) ('The Habitats Regulation') and aims to maintain or restore European protected habitats and species listed in the relevant Annexes in a favourable conservation status.

Habitats

- 5.99 The Habitats Regulations makes provision for a network of Natura sites; Special Areas of Conservation (SACs) for animals and habitats and Special Protection Areas (SPAs) for birds.
- 5.100 Under the regulations all competent authorities must consider whether any plan or project will have a "likely significant effect" on a Natura site. If there is likely to be an impact then there is the requirement for a Habitats Regulations Appraisal (HRA).
- 5.101 In addition to the above Wetlands of International Importance (Ramsar sites) should be treated as Natura sites (Scottish Government, 2014).

European Protected Species

- 5.102 The above legislation makes it an offence to deliberately or recklessly kill, injure or disturb European Protected Species. Their places of shelter are fully protected, and it is an offence to damage, destroy or obstruct access to or otherwise deny the animal use of a breeding site or resting site, whether deliberately or not. It is also an offence to disturb in a manner that is, or in circumstances which are likely to significantly affect the local distribution or abundance of the species, disturb in a manner or circumstances which are likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young. Any activity which is likely to affect such a species requires prior consultation with the relevant statutory nature conservation organisation. In Scotland, this means that SNH should be consulted.

The Wildlife and Countryside Act 1981 (as amended)

- 5.103 The Wildlife and Countryside Act 1981 provides protection to a range of species and habitats. The Wildlife and Countryside Act is amended in Scotland through the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2011.
- 5.104 Section 9 of the Act provides protection to certain animal species. Enhanced protection is provided for species listed in Schedule 5 which includes water voles and red squirrels. It is an offence to intentionally or recklessly kill, injure or take animals listed in Schedule 5, with the exception of water voles, which are protected in respect of Section 9(4) only, meaning that water vole habitat is protected, although the animals themselves are not. It is also an offence to recklessly damage, destroy or obstruct access to any place used for shelter or breeding by species listed under Schedule 5. Any works which may potentially cause disturbance to such a species requires prior consultation with SNH.
- 5.105 The Wildlife and Countryside Act also protects against the spread of invasive non-native plant and animal species (INNS). Specifically, in relation to plants, it is an offence under this legislation to plant or otherwise cause a plant to grow in the wild at a place outwith its native range and includes species such as Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*) and Himalayan balsam (*Impatiens glandulifera*).

The Protection of Badgers Act 1992

- 5.106 Badgers (*Meles meles*) are protected under the Protection of Badgers Act 1992. In Scotland, this legislation was updated by the Nature Conservation (Scotland) Act 2004, which makes it an offence to recklessly take, injure or kill a badger, or destroy, disturb or interfere with its sett. In addition, badgers are afforded protection from cruel ill-treatment. This has been defined to include preventing a badger access to its sett, as well as causing the loss of significant foraging resources within a badger territory.

Baseline Studies

- 5.107 The Ecology Chapter will set out the findings of the following:
- the results of the desk study completed with relevant recording bodies;
 - the results of all field surveys completed to assess the developable area for ecological receptors as detailed in Table 5.8 above.

Assessment of Effects

- 5.108 The assessment of ecological effects associated with the proposed development will be undertaken in accordance with the Ecological Impact Assessment (EclA) guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019).
- 5.109 In accordance with the CIEEM guidance, the purpose of the ecological assessment will be to focus on those features that are most likely to be affected. These are termed Important Ecological Features (IEFs) and are either protected or are of sufficient value to merit consideration in the EIA process, rather than to consider effects upon every feature that may be present, many of which will be common, widespread and robust.
- 5.110 The likely impacts of the proposed development will be identified, including likely positive and negative impacts on the IEFs present. Such impacts may include direct habitat loss, changes in habitat quality or disturbance.
- 5.111 The likely magnitude of the impacts will be assessed during the construction and operational stages. Both the magnitude of the predicted impact and the value of the feature will be taken into consideration in determining the significance of the effect. The assessment will consider any measures that form part of the proposed development and to which the applicant is committed.
- 5.112 Embedded mitigation may be devised to avoid any significant impacts associated with the construction and operation of the proposed development on IEFs. All mitigation proposed will follow the mitigation hierarchy: avoidance, mitigation, compensation, enhancement. Following any

mitigation or enhancement measures considered appropriate, the impacts remaining once they are taken into account will be identified (the 'residual impact').

Zone of Influence

- 5.113 The following Zones of Influence will be used for the relevant receptors identified as IEFs following completion of baseline surveys:
- all IEFs within the land directly impacted and 200 metre buffer (except where set out below);
 - construction impacts to hydrologically sensitive habitats:
 - Groundwater Dependant Terrestrial Ecosystems (GWDTEs) – 250 metres out with the footprint of the development;
 - bog habitats – 10 metres out with the footprint of the development;
 - 20 km for records of bat species;
 - 2 km for records of otters;
 - obstruction of migration, commuting and foraging of mobile species.
- 5.114 This list may be expanded depending on records received or information gained from survey.

Issues Proposed to be Scoped Out

- 5.115 Based on the initial desk study and field work undertaken to date, it is proposed to scope out the following species from specific or group surveys and further assessment in the EIA Report.
- Reptiles: given the localised impacts of the proposed works within this large-scale site it is predicted that there would not be significant habitat loss for any reptile species present. Should low to moderate populations be identified through surveys the likely mitigation would be to carefully clear the areas before site works. It is proposed that in areas of high potential for reptiles these clearance techniques will be implemented as good practice. A detailed Species Protection Plan / Method of Working would be provided in the Construction Environment Management Plan (CEMP) to be produced for the development post consent. As such, further surveys for these species are not required.
 - Fish: Surveys for fish species were scoped out of the of the 2013 submission for the Musdale Wind Farm as watercourses on site were deemed unsuitable for fish passage. Consequently, an assessment of the effects of the proposed development to these ecological receptors will not be included in the 2020 submission.
 - Freshwater pearl mussel – the 2013 submission for the Musdale Wind Farm found the majority of the proposed development area's watercourses to be dry or of low suitability for freshwater pearl mussels. Coupled to this the lack of access for migratory fish species which freshwater pearl mussels are reliant on makes the proposed development area unsuitable for the species. As such, no surveys will be completed for the species and they will be scoped out of the 2020 assessment.
- 5.116 In addition to the above, should any of the species surveys confirm likely absence of a species or group of species, they will not be included in the EIA.

Chapter 7: Ornithology

Overview

- 5.117 The ornithology chapter will assess the potential significant effects of the proposed development on ornithology during the construction, operational and decommissioning phases.
- 5.118 The ornithology assessment will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

- 5.119 The Baseline information presented below has been gathered from surveys of the proposed development footprint and a 6 km buffer and a desk study of freely available information.
- 5.120 Searches were conducted using the following sources:
 - SNH Sitelink database website¹¹;
 - Natural England’s MAGIC Map application¹²; and
 - Joint Nature Conservation Committee (JNCC) website¹³.
- 5.121 Pre-scoping Consultation with Scottish Natural Heritage has been completed to inform the scope of ornithological survey to ensure a robust assessment of the potential effects of the proposed development.

Initial Desk Study

- 5.122 There are no statutory designated ornithology sites within the proposed development boundary. Table 1 below summarises the designated sites present within 20 km of the proposed development which are relevant to ornithological receptors.
- 5.123 Sites included within the search are Special Areas of Conservation (SPAs), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Local Nature Reserves (LNRs) and Local Nature Conservation Sites (LNCS). The locations of the identified sites are provided in Figure 5.11.

Table 5.9: Designated sites identified within 10 km of the proposed development which are relevant to ecological receptors

Description	Designation	Reason for Citation	Approximate Distance to Site
Glen Etive and Glen Fyne	SPA	Glen Etive and Glen Fyne SPA qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex 1 species golden eagle <i>Aquila chrysaetos</i> (19 active territories in 2003, more than 4.2% of the GB population).	
Cnuic Angus Cladach Mhuile	SAC	Cnuic agus Cladach Mhuile SPA qualifies under Article 4.1 by regularly supporting a breeding population of European importance of the Annex I species golden eagle <i>Aquila chrysaetos</i> . The site supports 14 pairs, representing approximately 3.3 % of the GB population. This population has a high breeding productivity for the west coast of Scotland [0.65 fledglings per pair per year between 1981 and 1999] and is one of the highest density populations in Britain.	2.2 km north east

- 5.124 Data searches will be completed in liaison with the Argyll Raptor Study Group and RSPB Scotland to identify relevant bird records up to 6 km from the site boundary to inform the baseline conditions of the receiving environment.

¹¹ SNH Sitelink database website (<https://sitelink.nature.scot/home>).

¹² Natural England MAGIC Map application website (<https://magic.defra.gov.uk/>).

¹³ JNCC website (<http://jncc.defra.gov.uk/>).

5.125 Results from surveys between 2012 - 2014 for a previous planning application will be used were relevant to provide contextual information only in relation to the trends in population, site usage and nest occupancy.

Field Surveys

5.126 In consideration of the above desk-based findings the following surveys for ornithological receptors have been completed. Table 5.10 presents the surveys undertaken and the methodology, while Figure 5.8 shows the survey areas used for the ornithological receptors assessed on site.

Table 5.10: Ornithological surveys completed for the proposed development

Type of Survey	Date of Survey	Survey Area	Guidance Followed
Vantage Point Surveys	April 2017 – March 2018	1. 100° NM 93586 21586 2. 120° NM 94555 23266 3. 180° NM 94724 25107 4. 315° NM 97984 23100 5. 315° NM 96396 21218	SNH (2017) ¹⁴
Vantage Point Surveys	April 2018 – March 2019	1. 100° NM 93586 21586 2. 120° NM 94555 23266 3. 180° NM 94724 25107 4. 315° NM 97984 23100 5. 315° NM 96396 21218 6. 295° NM 93180 21440	SNH (2017) ¹⁴
Breeding Raptor Surveys	April 2018 – August 2018 April 2019 – August 2019	The footprint of the proposed development plus a 6 km buffer for golden eagles, and a 2 km buffer for all other raptor species.	Hardey et al. (2009) ¹⁵ and Gilbert et al. (1998) ¹⁶
Moorland Breeding Bird Surveys	April 2018 – August 2018 April 2019 – August 2019	The footprint of the proposed development plus a 0.5 km buffer	Adapted Brown and Shepherd (1993) ¹⁷ method with recommendations set out by Calladine et al. (2009) ¹⁸ as recommended by SNH (2017)
Breeding Diver Surveys	April 2018 – August 2018 April 2019 – August 2019	The footprint of the proposed development plus a 2 km buffer	Gilbert et al. (1998) ¹⁶

¹⁴ SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms.

¹⁵ Hardey, J., Crick, H.Q.P., Wernham, C., Riley, H., Etheridge, B., Thompson, D. (2013). Scottish Natural Heritage Raptors a field guide for surveys and monitoring (3rd Edition). The Stationery Office Edinburgh.

¹⁶ Gilbert, G, Gibbons, D.W and Evans, J (1998). Bird Monitoring Methods. RSPB, Sandy.

¹⁷ Brown, A.F. & Shepherd, K.B. (1993) A method for censusing upland breeding waders. Bird Study 40: 189-195.

¹⁸ Calladine, J., Garner, G., Wernham, C. and Thiel, A. (2009). The influence of survey frequency on population estimates of moorland breeding birds, Bird Study, 56:3, 381-388.

Black Grouse	May 2018 / 2019	The footprint of the proposed development plus a 1.5 km buffer	Etheridge and Baines (1995) ¹⁹ and Gilbert et al. (1998) ¹⁶
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5.127 In the assessment of the potential effects of the development to ornithological receptors, the Collision Risk Modelling (CRM) methodology will follow that described by Band et al. (2007) which is recommended by SNH. Vantage point survey data collected in 2017 - 2019 will be inputted into the model following the avoidance rates recommended by SNH (2018).

5.128 As provided in Figures 5.19a & b, two proposed access routes are provided; from the north from the A85 via Fearnoch Forestry Plantation and the Beinn Ghlas Wind Farm infrastructure, or from the south using the WLATHR and Carraig Gheal Wind Farm infrastructure. No ornithological surveys are proposed of these routes. Both routes pass through active forestry plantations and wind farms, consequently the current level of disturbance to avian species is substantial. Any increase from construction traffic associated with the use of either of these routes will be proportionally small and is likely to have a negligible effect on the bird species present.

Proposed Assessment Methodology and Scope

Relevant Policy, Legislation and Guidance

5.129 All surveys and assessments will be completed in cognisance of the relevant policy, legislation and guidance. Guidance relating to field surveys is provided in Table 5.10, in addition to these the following legislation will be considered during the assessment

5.130 Legislation

- Directive 2009/147/EC on the Conservation of Wild Birds (the Birds Directive);
- Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the Habitats Directive);
- The Conservation (Natural Habitats &c.) Amendment (Scotland) Regulations 2012, relating to reserved matters in Scotland;
- Wildlife and Countryside Act 1981 (as amended);
- The Nature Conservation Act (Scotland) Act 2004;
- The Wildlife and Natural Environment (Scotland) Act (2011);
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017; and
- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011, which transpose the EIA Directive into the Scottish planning system.

5.131 National Policy Guidance

- Planning advice Note (PAN) 1/2013 – Environmental Impact Assessment (Scottish Government 2013);
- PAN 51: Planning Environmental Protection and Regulation (revised 2006);
- PAN 60: Planning for Natural Heritage (Scottish Government 2000);
- Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended (June 2000); and

¹⁹ Etheridge, B. and Baines, D. (1995). Instructions for the Black Grouse Survey 1995/6: a Joint RSPB/GCT/JNCC/SNH Project. Unpublished.

- Planning Circular 3 2011: The Town and Country Planning (Environmental Impact Assessment (Scotland) Regulations 2011).

5.132 Scottish Planning Policy Guidance.

- Relevant guidance for ornithological baseline and impact assessment
- The list below indicates the key documents used to guide the ornithological assessment for the proposed development. In addition, some key references used to inform the interpretation of baseline data are listed. Additional references can be found at the end of the chapter
- Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018);
- Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH 2014, SNH 2017a)^{20, 21};
- Developing field and analytical methods to assess avian collision risk at wind farms (Band et al. 2007)²²;
- Assessing significance of impacts from onshore wind farms on birds outwith designated areas. Version 2 (SNH 2018)²³;
- Monitoring the impacts of onshore wind farms on birds (SNH 2009a)²⁴;
- Guidance on methods for monitoring bird populations at onshore wind farms (SNH 2009b)²⁵;
- Use of avoidance rates in the SNH wind farm collision risk model (SNH 2010)²⁶;
- Avoidance rates for the onshore SNH collision risk model (SNH 2017b)²⁷;
- Avoidance rates for wintering species of geese in Scotland at onshore wind farms (SNH 2013)²⁸;
- Assessing the cumulative impact of onshore wind energy developments (SNH 2012)²⁹;
- Assessing connectivity with Special Protection Areas (SPAs) (SNH 2016)³⁰;

²⁰ SNH (2014). 'Recommended bird survey methods to inform impact assessment of onshore wind farms'. Scottish Natural Heritage, Battleby.

²¹ SNH (2017a). 'Recommended bird survey methods to inform impact assessment of onshore wind farms'. Scottish Natural Heritage, Battleby.

²² Band et al. (2007). Band, W., Madders, M., & Whitfield, D.P. (2007). 'Developing Field and Analytical Methods to Assess Avian Collision Risk at Wind Farms'. pp 259-275 In: Birds and Wind Farms: Risk assessment and Mitigation. de Lucas, M., Guyonne, F.E., Ferrer, J and M. (Eds) Quercus, Madrid.

²³ SNH (2018). 'Assessing significance of impacts from onshore wind farms on birds outwith designated areas'. Version 2. Scottish Natural Heritage, Battleby.

²⁴ SNH (2009a). 'Monitoring the impacts of onshore wind farms on birds'. Guidance Note, Scottish Natural Heritage, Battleby.

²⁵ SNH (2009b). 'Guidance on methods for monitoring bird populations at onshore wind farms'. Guidance Note, Scottish Natural Heritage, Battleby.

²⁶ SNH (2010). 'Use of Avoidance Rates in the SNH Wind Farm Collision Risk Model' Guidance Note. Scottish Natural Heritage, Battleby.

²⁷ SNH (2017b). Avoidance rates for the onshore SNH Wind Farm Collision Risk Model. Guidance Note, Scottish Natural Heritage, Battleby

²⁸ SNH (2013b). 'Avoidance rates wintering species of geese in Scotland at onshore wind farms'. Scottish Natural Heritage, Battleby.

²⁹ SNH (2012). 'Assessing the cumulative impact of onshore wind energy developments'. Scottish Natural Heritage, Battleby.

³⁰ SNH (2016). 'Assessing connectivity with Special Protection Areas (SPAs)'. Scottish Natural Heritage, Battleby.

- Natural Heritage Zone (NHZ) bird population estimates, Scottish Wind Farms Bird Steering Group (SWBSG) commissioned report no. 1504 (Wilson et al. 2015)³¹;
- Birds of Conservation Concern (BoCC) 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man (Eaton et al. 2015)³²;
- Scottish Biodiversity List; and
- Argyll and Bute Local Biodiversity Action Plan (LBAP).

Baseline Studies

- 5.133 The Ornithology Chapter will set out the findings of the following:
- The results of the desk study;
 - The results of all field surveys completed to assess the developable area for ecological receptors as detailed in Table above.

Assessment of Effects

- 5.134 The assessment of effects associated with the proposed development will be undertaken in accordance with the Ecological Impact Assessment (EclA) guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019) .
- 5.135 In accordance with the CIEEM guidance, the purpose of the assessment will be to focus on those features that are most likely to be affected. These are termed Important Ornithological Features (IOFs) and are either protected or are of sufficient value to merit consideration in the EIA process, rather than to consider effects upon every feature that may be present, many of which will be common, widespread and robust.
- 5.136 The likely impacts of the proposed development will be identified, including likely positive and negative impacts on the IOFs present. Such impacts may include direct habitat loss, changes in habitat quality or disturbance.
- 5.137 The likely magnitude of the impacts will be assessed during the construction and operational stages. Both the magnitude of the predicted impact and the value of the feature will be taken into consideration in determining the significance of the effect. The assessment will consider any measures that form part of the proposed development and to which the applicant is committed.
- 5.138 Embedded mitigation may be devised to avoid any significant impacts associated with the construction and operation of the proposed development on IEFs. All mitigation proposed will follow the mitigation hierarchy: Avoidance, Mitigation, Compensation, Enhancement. Following any mitigation or enhancement measures considered appropriate, the impacts remaining once they are taken into account will be identified (the 'residual impact').

Zone of Influence

- 5.139 The following Zones of Influence will be used for the relevant receptors:
- 20 km for European Protected Sites (SPAs and Ramsar);

³¹ Wilson et al. (2015). Wilson, M.W., Austin, G.E., and Wernham, C.V. 'Natural Heritage Zone (NHZ) bird population estimates, Scottish Wind Farms Bird Steering Group (SWBSG) commissioned report no. 1504' (pp72).

³² Eaton et al. (2015). Eaton, M.A., Brown, A.F., Noble, D.G., Musgrove, A.J., Hearn, R.D., Aebischer, N.J., Gibbons, D.W., Evans, A., and Gregory, R.D. 'Birds of Conservation Concern (BoCC) 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man'. British Birds, 108: 708-746.

- All ornithological features within the land directly impacted and representative buffer distance of surveys for each species group detailed in Table 5.10;

5.140 This list may be expanded depending on records received or information gained from survey.

Issues Proposed to be Scoped Out

5.141 Based on the initial desk study and field work undertaken to date, it is proposed to scope out the following species from specific or group surveys and further assessment in the EIA Report:

- Green listed Birds of Conservation Concern (BoCC)³³ and other passerines. Populations of green listed BoCC are stable within the UK and the potential impact of the proposed development will be at a local level and therefore will not jeopardise the long-term survival of these species. Furthermore, passerines have been shown to tolerate disturbance caused by wind farms with fewer effects of turbine proximity³⁴ and therefore the proposed development will not have a significant effect on stable populations of passerines.

5.142 In addition to the above, should any of the species surveys confirm likely absence of a species or group of species, they will not be included in the EIA.

Chapter 8: Hydrology, Hydrogeology, Geology and Peat

Overview

5.143 This chapter will assess the potential hydrological, hydrogeological and geological effects associated with the proposed development., including impacts on peat. The chapter will be accompanied by the following technical appendices:

- Outline Peat Management Plan
- Peat Stability Risk Assessment
- Flood Risk Assessment

5.144 The assessment will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

5.145 The site is crossed by a large network of interlinking Burns, Sikes and Gills which flow in a general easterly direction from elevations of c.310 mAOD to c.230 mAOD at Sior Loch which flows into Abhainn Cam Linne and then into Loch Nant (see Figure 5.15). The watercourses converge to form a number of larger channels identified below;

- Eas nan Seileachan
- Allt an Loin Mhoir
- Garbh Allt
- Eas Coire Seilich
- Eas na Feola

³³ Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015) Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* 108, 708–746.

³⁴ Pearce-Higgins, J. W., Stephen, L., Langston, R. H W., Bainbridge, I. P., and Bullman R. (2009) The distribution of breeding birds around upland wind farms. *Journal of Applied Ecology*, 2009, 46, 1323-1331.

- Eas an Fhithich
 - Allt Coire Odhair
 - Loch a' Bharrain
- 5.146 Review of SEPA Flood Mapping identifies that the majority of the site is located not at risk of flooding. Some areas associated with the banks and flood envelopes of Loch a' Bharrain, Allt Coire Odhair and Eas an Fhithich are shown to be at:
- High likelihood: A flood event is likely to occur in the defined area on average once in every ten years (1:10). Or a 10% chance of happening in any one year.
 - Medium likelihood: A flood event is likely to occur in the defined on average once in every two hundred years (1:200). Or a 0.5% chance of happening in any one year.
 - Low likelihood: A flood event is likely to occur in the defined area on average once in every thousand years (1:1000). Or a 0.1% chance of happening in any one year.
- 5.147 There are also localised low lying areas vulnerable to surface flooding in the valley floors throughout the site, although these are not extensive. These include areas of High, Medium and Low likelihood areas.
- 5.148 The site is not at risk of flooding from reservoirs.
- 5.149 The SEPA water classification hub defines three of the watercourses with the site boundary. River Nant/Abhainn Cam Linne is classified as high, Allt a Choromaig is classified as moderate, and finally Loch Nant is classified as good.
- 5.150 Scottish's soils (https://map.environment.gov.scot/Soil_maps/?layer=1) identifies that the site is located on Peaty gleys with dystrophic blanket peat with peaty gleyed podzols

Proposed Assessment Methodology and Scope

- 5.151 The assessment methodology is based on guidance provided within the Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment (2017) and the Design Manual for Roads and Bridges (DMRB), LA104 Revision 1 (July 2019). Whilst the DMRB is not specific to the assessment of hydrology and flood risk, it provides an accepted approach to the assessment of development impacts.
- 5.152 The assessment of impacts on water resources will be based on a source-pathway-receptor model and a risk-based assessment. This is based on combining assessments of both the likelihood and consequence of any potential impact in line with IEMA guidance. This approach embraces the principles of the WFD.
- 5.153 The evaluation of the significance of potential effects on the water environment will be in accordance with the EIA methodology. Criteria such as SEPA's water quality ratings and ecological designations will be drawn upon in order to define the sensitivity of the water environment.
- 5.154 A Flood Risk Assessment will be prepared in line with Scottish Policies and SEPA Guidance, as well as local planning policy presented below.
- 5.155 The assessment has included a desk study of maps and published information, consultation with the EA and local water authorities, and a walkover survey.

Relevant Policy, Legislation and Guidance

- 5.156 All assessment work and surveys will be completed in cognisance of the relevant policy, legislation and guidance. The following legislation will be considered during the assessment.
- The Scottish Government (2011) Flood Risk Management (Scotland) Act 2009: Delivering Sustainable Flood Risk Management
 - The Scottish Government (2013) Flood Risk Management (Scotland) Act 2009: Surface Water Management Planning Guidance

- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) A Practical Guide.
- SEPA (2017) Development Management Guidance: Flood Risk
- SEPA (2017) Land Use Planning System SEPA Guidance Note 4 Planning guidance on on-shore windfarm developments
- SEPA (2015) Natural Flood Management Handbook
- SEPA (2012) SEPA Guidance Note 8 standing advice for planning authorities and developers on development management consultations
- SEPA (2010) Regulatory Position Statement – Developments on Peat
- Scottish Renewables (2015) Good Practice during Wind Farm Construction
- National Committee United Kingdom Peatland Programme, Peatland Restoration; An Introduction
- Scottish Natural Heritage (2010) Floating Roads on Peat
- Scottish Renewables (2012) Developments on Peatland; Guidance on the Assessment of Peat Volumes, reuse of excavated peat and the minimisation of waste.
- Scottish Natural Heritage (2013) Constructed tracks in the Scottish Uplands, 2nd Edition
- Scottish Natural Heritage Scotland’s National Peatland Plan Working for our future

5.157 The PPP will adhere to the relevant regulatory and industry best practice guidance, including but not limited to;

- Pollution Prevention Guidelines: PPG1. Pollution Prevention Guidelines
- Above ground oil storage tanks: PPG 2. Pollution Prevention Guidelines
- Works and maintenance in or near water: GPP 5 Guidance for Pollution Prevention.
- Working at Construction and Demolition Sites: PPG 6 Pollution Prevention Guidelines.
- Safe storage and disposal of used oils: GPP 8. Guidance for Pollution Prevention
- Dewatering of underground Ducts and Chambers: GPP 20. Guidance for Pollution Prevention
- Pollution incident response planning: GPP 21. Guidance for Pollution Prevention
- Dealing with spills: GPP 22. Guidance for Pollution Prevention

Baseline Studies

5.158 The baseline setting will be established via a desk-based data review utilising publicly available data as well as targeted site surveys to inform the assessment of the potential environmental effects of the Development. This provides an insight into the hydrological, hydrogeological, geological and Peat setting within the immediate vicinity of the Development.

5.159 The main sources of information to be used in the assessment would include:

- OS maps;
- SEPA flood mapping and related data; and
- Scotland’s environment mapping.

5.160 Data would be sought from key statutory and non-statutory organisations and consultees, including the following:

- Argyll and Bute Council;
- SEPA; and
- Scottish Water.

Assessment of Effects

- 5.161 An assessment of the risk to the development from relevant flooding sources (i.e. fluvial, surface water, groundwater and artificial sources) and would be included in the EIA Report. The assessment would include changes to the hydrological regime including changes to the to surface water runoff and impediments to flow as a result of the proposed development, e.g. at water crossings. The resultant impacts to flood risk would be assessed and appropriate mitigation measures identified.
- 5.162 As well as assessing the potential impacts of the proposed development on flood risk (and identifying appropriate mitigation measures), the EIA Report chapter would consider potential impacts of the development on local hydrology, including impacts on water quality arising from runoff from the site during construction. Mitigation measures would be proposed, where necessary.
- 5.163 The surface water receptors and receptors potentially affected by flooding would be identified, together with the likely impacts on them. Taking into account the sensitivity of these receptors and the predicted magnitude of the impact, the significance of effects would be set out. Key potential impacts during the construction and operation phase of development are outlined below.

Scope of Assessment

Construction

- 5.164 The construction phase of the proposed development has the potential to generate the following effects as a consequence of; land movements, use of machinery and creation of areas of low permeable surfacing.
- Temporary changes to surface water flows as a consequence of additional low permeable surfacing associated with construction compounds and access tracks;
 - Increase in flood risk from increasing the impermeable surfacing at the site;
 - Pollution of surface watercourses (Glen Nant SSSI and Loch Etive Woods SPAC) within or near the development area due to spillages or polluted surface water run-off entering the watercourse (if an appropriate Construction Environmental Management Plan (CEMP) is not adhered to);
 - Restriction in channel flow as a consequence of watercourse crossings; and
 - Interruption or disturbance of public or private water supplies through foundation construction and diversion via new drainage system.
- 5.165 The EIA Report chapter will assess the potential for flood risk and will incorporate, where appropriate, sustainable drainage principles with a view to minimising the potential risk of flooding at the site and preventing the development itself from causing flooding, groundwater or watercourse pollution.

Operation

- 5.166 Following construction, the operational impacts are associated with the onward maintenance of the facility and potential uncontrolled management of surface water runoff, whereby potentially contaminating substances (for example oils and greases) could be mobilised into the local water network. In this regard, the assessment will consider the following potential operational impacts:
- Increase in flood risk from increasing the impermeable surfacing at the site;
 - Pollution of surface watercourses within or near the development area due to potential spillages or polluted surface water run-off entering the watercourse (if an appropriate Environmental Management Plan is not adhered to); and
 - Deterioration of water quality of nearby watercourses / water bodies and WFD objectives.

Issues Proposed to be Scoped Out

- 5.167 Given the location of the site it is proposed to scope out coastal flood risk.
- 5.168 In addition, it proposed to scope out effects related to contaminated runoff during operation and as the majority of the site would be returned to agricultural uses.

Chapter 9: Historic Environment

Overview

- 5.169 This chapter will consider the direct and indirect effects of the proposed development on the historic environment of the area, comprising buried archaeological sites, historic buildings and historic landscapes (including gardens and designed landscapes). It aims to identify all effects on these 'heritage assets' – in terms of the potential for direct physical disturbance and indirect visual effects on the settings of heritage assets – and to assess the overall effect and significance of these predicted effects. The potential cumulative effects that may arise from the addition of the proposed development to other wind farms are also considered.
- 5.170 The assessment will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

- 5.171 There is one designated heritage asset within the proposal site. This is a Scheduled Monument comprising a cairn c. 320 m east of the farmstead known as Musdale in the western part of the proposal site (Figure 5.16). The cairn (SM4197) is undated and may represent a burial site or a marker of some sort or could possibly be the result of stone clearance within this area. The proposal site boundary has been drafted such that a buffer zone has been established around this monument.
- 5.172 A number of other designated heritage assets have been identified within a defined study area extending 10 km from the proposal site boundary. These include three Gardens and Designed Landscapes (at Achnacloch, Ardchattan Priory and Ardnaseig House).
- 5.173 Listed Buildings present within the defined study area included Category A, Category B and Category C structures, with concentrations located in the historic settlements of Oban and Brochroy. To the east of the proposal site are two Category A listed buildings located fairly close to each other. One is a viaduct structure on the Falls of Cruachan Railway: it was built in around 1830 and was the first railway viaduct in Britain to feature arches made in mass concrete. The other is the turbine hall at the Ben Cruachan hydroelectric power scheme; constructed in 1959-65 as a monumental underground barrel-vaulted chamber. The Ben Cruachan dam just to the north is a Category B listed structure but forms an A-group with the turbine hall.
- 5.174 Category A and B listed buildings in Brochroy include workers' housing associated with the Bonawe Ironworks; much of the area of the former ironworks is now a Scheduled Monument, whilst a larger area here is also a Conservation Area. Many of the other Scheduled Monuments within the defined study area are cairns and duns of probable prehistoric date.
- 5.175 Undesignated heritage assets within the proposal site include the remains of the former township of Altachoromaig, also smaller shielings and a probable hut circle.

Proposed Assessment Methodology and Scope

- 5.176 It is considered that the defined study area indicated on Figure 5.17 (i.e. an area extending 10 km from the proposal site boundary) will be adequate in order to assess likely significant effects on designated heritage assets. However, any particularly 'iconic' heritage assets located at a greater distance from the proposal site boundary may be assessed if the development team is notified by consultees.
- 5.177 Further information on the designated heritage assets within the defined study area will be collated through examination of Pastmap - the website of the Scottish Historic Environment Record Forum.

The West of Scotland Archaeology Service (WoSAS) will be approached to provide up-to-date information regarding non-designated heritage assets recorded on the Historic Environment Record.

- 5.178 Historic maps will be examined in order to review the potential for previously unrecorded historic and archaeological sites to be identified, and a site walkover will be undertaken for the same purpose, and also to examine the current state of the known historic and archaeological sites. Historic land use will be appraised through the HLAMap website maintained by Historic Environment Scotland (HES).
- 5.179 Site visits will be undertaken to selected designated assets in order to review their current settings and the potential for impact on these settings resulting from the construction and operation of the proposed development. The identification of designated heritage assets requiring detailed assessment will initially be based on examination of the Zone of Theoretical Visibility (ZTV) and then further refined through discussions with relevant consultees.
- 5.180 The assessment of impacts resulting from change within the settings of designated heritage assets will include consideration of the potential for cumulative impacts. This will be in line with the approach proposed within this report.

Relevant Policy, Legislation and Guidance

- 5.181 Relevant legislative protection for heritage assets considered within the assessment comprises the *Ancient Monuments and Archaeological Areas Act 1979* and the *Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997*, both as amended by the *Historic Environment Scotland Act 2014*. Other relevant legislation which will be considered includes the *Environmental Assessment (Scotland) Act 2005* (as amended by the *Historic Environment Scotland Act 2014*).
- 5.182 Policy considerations will be addressed through examination of *Scottish Planning Policy (2014)* along with the *Historic Environment Policy for Scotland (April 2019)*. Relevant local plan policies will also be reviewed.
- 5.183 HES has published a number of guidance documents as part of a suite entitled *Managing Change in the Historic Environment*. The documents relevant to the assessment will be examined, including *Managing Change in the Historic Environment: Setting (2016)*.
- 5.184 Specific guidance on undertaking Cultural Heritage Impact Assessment within the context of Environmental Impact Assessment is provided within Appendix 1 of the *Environmental Impact Assessment Handbook (Version 5, 2018)* published by SNH and HES.

Assessment of Effects

- 5.185 The likely effects of the development on all aspects of the historic environment, including the character of the historic landscape, will be undertaken using a matrix-based approach underpinned by a detailed descriptive narrative. Identified heritage assets will be ascribed a level of importance (value) and this will be examined along the magnitude of impact (of the proposed development) within the matrix in order to reach an understanding of the level (or significance) of effect.
- 5.186 For designated heritage assets, the ascription of importance (or value) will primarily (but not exclusively) derive from the type and level of designation.
- 5.187 The assessment will consider separately the effects likely to occur during construction and those likely to occur during operation, as well as decommissioning. Impacts and effects will be reviewed in terms of duration and reversibility.
- 5.188 Where it is appropriate, assessment will include the use of visualisations in order to understand how the proposed development would appear from specific locations. The selection of such locations will be agreed in advance with consultees, including HES.

Scope of Assessment

- 5.189 The assessment will cover all relevant aspects of the historic environment, including the historic landscape. Potential impacts will include direct physical impacts on known and unknown heritage

assets (usually during construction) as well as non-physical impacts resulting from the proposed changes within the settings of heritage assets (setting impacts).

Issues Proposed to be Scoped Out

- 5.190 There are no World Heritage Sites, Inventory Battlefields or Historic Marine Protected Areas within the defined study area, therefore no assessment will be undertaken with regard to these types of heritage asset.

Chapter 10: Noise and Vibration

Overview

- 5.191 This chapter will provide an assessment of the potential noise effects of the proposed development on nearby noise sensitive receptors (NSRs) during the construction, operation and decommissioning phases. The assessment will be carried out in consultation with the Environmental Health Department of Argyll and Bute Council.
- 5.192 The assessment will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

- 5.193 The proposed development is in a rural area with few receptors within the vicinity. The property Musdale is within the development area and has a financial involvement with the project. In addition to this, we have identified one further NSR within a 2 km radius of the wind farm, which is Kilbride, located around 2 km to the north-west of the site.
- 5.194 The locations of these NSRs are shown in Figure 5.18.
- 5.195 As the area is fairly rural, the baseline noise levels are expected to be low; existing sources of noise include:
- road traffic on the A816 to the west of the site;
 - road traffic on the B840 to the south-east of the site;
 - turbine noise from currently operational wind farms in the vicinity;
 - wind induced noise through the surrounding trees and vegetation; and
 - livestock and bird song.

Proposed Assessment Methodology and Approach

Policy Context and Relevant Guidance

- 5.196 The chapter will consider the potential construction and operational noise and vibration effects of the proposed wind farm at NSRs identified as being potentially affected by the development. The assessment will identify where significant effects may occur, what mitigation measures may be necessary, what residual effects there may be and what post commissioning monitoring will be undertaken in accordance with the Town and County Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.
- 5.197 The noise and vibration assessment will be undertaken with reference to the following documents:
- Control of Pollution Act 1974 (CoPA);
 - PAN 01/2011 Planning and Noise and associated Technical Advice Note (Scottish Government, 2011);
 - ETSU-R-97 The Assessment and Rating of Noise from Wind Farms (The Working Group on Noise from Wind Turbines, 1996);

- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (Institute of Acoustics (IoA), 2013) (IoA GPG); and
- BS 5228:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise and Part 2: Vibration (British Standards Institution, 2014).

Baseline Studies

- 5.198 Baseline noise monitoring will be undertaken at residential NSRs where predicted noise levels from the proposed wind farm exceed the lower end of the range for the quiet daytime noise limit of 35 dB LA90,10min from ETSU-R-97 for any operational wind speed. Where there are several NSRs within close proximity of each other that are subject to a similar baseline noise environment, noise monitoring will be undertaken at one representative location. Locations will be agreed prior to monitoring with the nominated Environmental Health Officer (EHO) from Argyll and Bute Council.
- 5.199 Baseline noise monitoring will be carried out following the guidance in ETSU-R-97 and subsequent guidance provided within the Institute of Acoustics' 'A Good Practice Guide to the Application of ETSU-R-97' (IoA GPG). Measurements will be taken of the LAF90 in consecutive 10-minute periods using class-one logging sound level meters over a period of three to four weeks. Concurrent measurements will be made of the wind speed from the meteorological mast installed on the application site and rainfall at one of the noise monitoring locations.
- 5.200 The baseline noise data from the surveys will be analysed and used to provide plots of the wind varying background noise levels for the quiet daytime and night-time periods specified within ETSU-R-97. Suitable noise limits for the wind farm will be then derived from the results of this regression analysis following the requirements of ETSU-R-97.

Assessment of Effects

Construction

- 5.201 The construction of the proposed development may result in noise and vibration impacts to NSRs in the vicinity of the proposed development. An assessment of construction noise effects would be undertaken in accordance with the guidance contained within BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Part 1: Noise (BS 5228-1).
- 5.202 It is anticipated that vibration effects during the construction phase would be low and would therefore be scoped out of the assessment.
- 5.203 The available detail on anticipated construction working areas, phases, methods and anticipated plant will be summarised in relation to noise and a qualitative assessment of likely compliance with the derived assessment criteria will be undertaken. Where the exact construction details are not known at the time of preparing the EIA Chapter, assumptions will be made based on professional judgement and experience of similar developments.
- 5.204 An assessment of potential impacts arising from any changes in traffic flows as a result of the proposed development will also be undertaken as part of the construction noise assessment.
- 5.205 Where necessary, appropriate levels of mitigation would be identified, in accordance with best practice, to ensure that noise levels are acceptable during the construction phase.

Operation

- 5.206 An assessment of operational noise effects will be undertaken using ETSU-R-97 and subsequent guidance in the IoA GPG (2013).
- 5.207 ETSU-R-97 recommends that noise limits should be set relative to existing background noise levels at the nearest receptors and that these limits should reflect the variation in background noise with wind speed. Separate noise limits apply for daytime and for night-time periods. Daytime limits are chosen to protect a property's external amenity, and night-time limits are chosen to prevent sleep disturbance indoors, with windows open.

Musdale Wind Farm

- 5.208 Based on the adopted quiet daytime and night-time wind varying background noise levels for each identified NSR, noise immission limits will be derived in accordance with the methodology set out in ETSU-R-97.
- 5.209 A representative wind turbine will be nominated for the assessment from the wind turbines available that meet the design requirements for the development. A computer model will be constructed and used to predict noise levels resulting from the operation of the proposed wind farm, based on the methodology detailed in ISO 9613-2:1996, with the specific modelling procedure defined in the IoA GPG.
- 5.210 The significance of the predicted scheme noise immission levels will then be determined against the defined noise limits. The magnitude of impact for the operational noise assessment will be defined as follows:
- predicted noise levels that comply with the ETSU-R-97 limits and do not exceed the background noise levels by more than 5 dB at all wind speeds will be considered a negligible impact;
 - predicted noise levels that comply with the ETSU-R-97 35 dB limits but which exceed background noise levels at some wind speeds by more than 5 dB, $L_{A90,10min}$ will be considered a low impact;
 - predicted noise levels that exceed the ETSU-R-97 limits by less than 5 dB will be considered a medium impact; and
 - predicted noise levels that exceed the ETSU-R-97 limits by more than 5 dB will be considered a high impact.
- 5.211 Impacts that are medium and high would be considered to result in a significant effect and would be material to the assessment. Mitigation to the scheme design will be highlighted in the event that significant effects are predicted. The residual significance of effects and outline proposals for post-completion monitoring will be reported.

Cumulative

- 5.212 It is understood that there are two wind farms in the vicinity of the proposed development that may need to be considered within the cumulative effects assessment which are as follows: Carraig Gheal Wind Farm and Beinn Ghlass Wind Farm.
- 5.213 RPS would liaise with the EHO at Argyll and Bute Council, to discuss and agree whether a numerical assessment of cumulative effects from these wind farms would be required, and if there are any related planning conditions or other matters that would need to be taken into consideration within the assessment.

Issues to be Scoped Out

- 5.214 Vibration effects during both construction and operation of the proposed wind farm are not expected to be significant and the intention will be to scope these effects out of the assessment. This is based upon likely levels and the distances to vibration sensitive receptors.
- 5.215 Noise associated with the operation of the substation and routine maintenance visits and operational traffic is likely to be negligible, and therefore would be scoped out of the assessment.
- 5.216 Due to advance in turbines design, low frequency noise and vibration from turbines has been reduced. Notwithstanding this, in November 2006, the UK Government released a definitive statement concerning Low Frequency Noise:
- “...there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines”*
- 5.217 In addition, low frequency noise (generally described as 10 Hz to 200 Hz) is less perceptible than other frequencies immitted from the operational turbines (Bolin et al., 2011). Therefore, it is proposed to scope out the assessment of low frequency noise effects.

- 5.218 The assessment of blade swish is accounted for in most instances in the methodology defined by the ETSU-R-97 report. Therefore, a separate assessment is not proposed.

Chapter 11: Access, Traffic and Transport

Overview

- 5.219 This assessment will cover the effects in relation to traffic and transport and will provide details on the access arrangements. The assessment will be undertaken in line with European and national legislation, policy and guidance.

Baseline Conditions

- 5.220 The Access, Traffic and Transport chapter of the ES will consider the effects of construction and operational vehicle movements on the surrounding local and trunk road network during the lifespan of the proposed wind farm development. As is normally the case with this type of development, the construction period is where the greatest potential for impact lies as there are very limited vehicle movements required during the operational phase of a wind farm.
- 5.221 Vehicle movements associated with the site will comprise Abnormal Indivisible Loads (AILs), Heavy Goods Vehicles (HGVs), Light Goods Vehicles (LGVs) and cars associated with general construction site traffic.
- 5.222 Options for access for wind turbine components include:
- The West Loch Awe Timber Haul Route (WLATHR) – turbine components delivered to Campbelltown Harbour would travel north on the A83 to Lochgilphead, north on the A816 to the junction with the West Loch Awe Timber Haul Route (WLATHR) which lies approximately 6km north of Kilmartin, and then finally northeast on the WLATHR to the proposed site access over a distance of approximately 20km. The route is indicated on Figure 5.19a.
 - The A85 via Fearnoch Forest – turbine components delivered to a port on the River Clyde, such as Inchgreen would travel north on the A82 and then west on the A85 to a junction approx. 4.5 km west of Taynuilt. The route is indicated on Figure 5.19b.
- 5.223 The suitability of the WLATHR route for AIL (e.g. Blades, Nacelles, Hub and Tower Section) access has already been partially confirmed through the transport of turbine components associated with the existing Carraig Gheal windfarm. Whilst this provides some sanction that the environmental effects of the development on the surrounding road network can be satisfactorily mitigated, this element will be reviewed in connection with the specific parameters of this project.
- 5.224 The suitability of the route via Fearnoch Forest requires further study, and should this route remain a viable option at the time of undertaking the EIA, it will be included for AIL assessment, including the identification of any requirement for swept path analysis and mitigation measures.
- 5.225 All other light vehicles requiring access to the site will make use of either option whichever is the most convenient from their point of origin.

Proposed Assessment Methodology and Scope

Relevant Policy, Legislation and Guidance

- 5.226 In undertaking an assessment of the potential traffic and transport impacts associated with the windfarm development, all relevant local and national policy and guidance will be taken into account, with specific reference to the following documents:
- Scottish Planning Policy (SPP)

- Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993) (the IEMA Guidelines);
- Transport Assessment Guidance (Transport Scotland, 2012)
- Design Manual for Roads and Bridges (DMRB)

Baseline Studies

- 5.227 In order to inform an assessment of baseline conditions on the road network surrounding the development site, as well as along the proposed AIL access route, existing traffic flow data will be sourced from Transport Scotland and Argyll & Bute Council. This can be supplemented with data from historic planning proposals as required, and traffic growth factors will be agreed in order to approximate traffic flows during the development construction period.
- 5.228 Reference will also be made to supporting transport information for the neighbouring Carraig Gheal windfarm, as this will contain useful information regarding the Abnormal Vehicle Route Assessment (AVRA), and potential 'pinch points' which have been previously identified.
- 5.229 The traffic flow information gathered during the Baseline assessment will be used to identify appropriate AADT (Annual Average Daily Traffic) flows on the relevant routes, including presentation of baseline HGV percentages.

Assessment of Effects

- 5.230 The following environmental impacts will be considered within the Access, Traffic and Transport ES Chapter:
- Severance;
 - Driver delay;
 - Pedestrian delay and amenity; and
 - Accidents and Safety.
- 5.231 Where relevant, consideration of noise effects of traffic would be included within the Noise and Vibration ES Chapter.
- 5.232 In addition to the list of impacts identified above, the overall carrying capacity of the identified access route(s) will be considered, although it is not anticipated that road capacity will be a significant issue.

Scope of Assessment

- 5.233 The main transport constraints relating to the proposed development relate to the transportation of abnormal loads and the impact of general construction traffic on any sensitive receptors. An assessment of the abnormal load access route (AVRA) will be undertaken to identify any pinch points on the road network which require measures to ensure the safe passage of AILs.
- 5.234 Overall traffic volumes will be profiled for the development throughout the anticipated construction period, which will allow a consideration of daily changes in traffic flow against the previously established baseline. In order to quantify the significance of any changes in traffic flows, the following criteria will be used to establish a screening process (from IEMA Guidelines):
- *"Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and;*
 - *"Include any other specifically sensitive areas where traffic flows will increase by 10% or more."*

- 5.235 Where existing traffic levels are exceptionally low (e.g., on some unclassified roads), any increase in traffic flow is likely to result in a predicted increase in traffic levels which could in normal circumstances be considered a major impact. Where this situation is identified it is important to consider any increase both in terms of its relative increase in respect of existing traffic flows, as well as the overall total flow in respect of the available capacity of the section of road being considered.
- 5.236 Following identification of road links where there is a potential for a significant impact, this will be reviewed against the impact on sensitive receptors such as schools, hospitals, etc. This will be formally presented in the ES Chapter alongside any mitigation measures required to reduce the severity of identified impacts.
- 5.237 Any potential environmental impacts including accidents and safety, driver delay, pedestrian amenity, pedestrian delay and severance are considered on a case by case basis using professional judgement and reasoned argument. The significance of any impacts assessed on the basis of the magnitude of the impact and the likelihood of the impact occurring.

Issues Proposed to be Scoped Out

- 5.238 There are no existing pedestrian facilities in the vicinity of the site, and no likelihood of pedestrian movements that would therefore be impacted by the proposed development. The effects on 'pedestrian delay and amenity' can therefore be scoped out of the assessment.
- 5.239 No core paths pass through the site and so no closures of core paths will be required during construction or operation. Therefore, effects on the core path network during the construction and operational phases are proposed to be scoped out of the EIA process in respect of Traffic and Transport.
- 5.240 Operational traffic movements as a result of the proposed development is anticipated to be low, and windfarm operations only require occasional visits for monitoring and maintenance. Therefore, operational traffic is proposed to be scoped out of the EIA process in respect of Traffic and Transport.
- 5.241 At the end of the operational period, the windfarm will be decommissioned, and the site will be reinstated. Traffic associated with decommissioning would include HGVs, LGVs, ALVs and cars. It is anticipated that the number of number of vehicles associated with decommissioning would be significantly less than that associated with construction. At this early stage of the process, it is not yet possible to quantify the volume of traffic that will be associated with decommissioning as the precedent for commissioning has not yet been fully established. It is also not possible to forecast the effect of decommissioning traffic as over time the baseline will change. Therefore, effects associated with decommissioning are proposed to be scoped out of the EIA process in respect of Traffic and Transport but may be covered in a subsequent planning application.

Chapter 12: Forestry

Baseline Conditions

- 5.242 The current forestry management plan for Barguillean Forest has been obtained from the Client and was produced by Tilhill Forestry. This has formed this initial assessment of baseline information and contains some assumptions based on the mapping information, aerial photography and OS mapping. No site walkover has currently been undertaken to ground proof the information contained within the Forest Management Plan - 2017 to 2036.
- 5.243 The forestry areas located within the proposed development site are as shown in Figure 5.20 – Musdale Wind Farm, Forest cover. The forest area is formed by a commercial tree planting almost exclusively conifer planting (broadleaved 1.8% of land area). The area affected by the current turbine positions covers the western section of the forest (Compartments 8 to 13). An area of open land is formed to the central section of the forested area and takes in the summit of Creag Ruadh.

- 5.244 The main area of turbine locations will be established to the west and away from the forest and will not be considered within the Forest scoping as they will have little if any effects on tree cover within the forest. The Forest Chapter will deal with turbines 22 to 26.
- 5.245 It can be seen from the information provided within the Management Plan that the conifer plantings seem to have fared differently with a wide range of yield classes being recorded (YC 4 to 14). Low yield classes indicate poor tree growth. Aerial imagery indicates the lower yield class areas to be more open and this would confirm the poor tree growth expected in these areas.
- 5.246 The forest is of relatively recent origin and was planted within two years (1985 and 1986). It has now sections of trees that have reached their terminal height. These have been identified within the Forest Management Plan and are due to be felled under the plan. These felled sections were due to be replanted, exclusively with Sitka spruce. Some additional areas of mixed broadleaved planting have been noted. It will be part of the walkover to establish which areas. Long term retention of other sections has been noted, these areas are where low yield classes have been achieved.
- 5.247 The management plan identifies 'The windthrow hazard assessment indicates that the conifer crop is not suited to low impact silvicultural techniques and therefore planned clear felling and restocking is likely to be the long-term management strategy for the commercial conifer areas' This will clearly have an influence on the treatment of any areas of forest within any revised Forest Design Plan.
- 5.248 The felling programme is planned to start in 2022, so it assumed that the forest remains as described in the 2017 Management Plan.
- 5.249 Forest access and particularly timber extraction will need particular attention as the internal road is currently a low specification forest road approximately 3.8 Km in length and externally the C32 link through Glen Lonan to the A85 is severely restricted for timber haulage. The Management Plan describes proposed internal forest road changes necessary for the proposed harvesting and these will need to be considered under the revised Forest Design Plan.

Proposed Assessment Methodology and Scope

Relevant Policy, Legislation and Guidance

- 5.250 The EIA process will have regard to the policy on the Control of Woodland Removal (Forestry Commission, 2009) relating to woodland removal required for the development.
- 5.251 It will consider current industry best practice and guidance including, but not limited to:
- Forestry Commission (2011). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh.
 - Forestry Commission (2011): The UK Forestry Standard Guidelines. Edinburgh.
 - SEPA (2013): SEPA Guidance Notes WST-G-027 "Management of Forestry Waste".
 - SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land.
 - UKWAS (2012). The UK Woodland Assurance Standard Third Edition, UKWAS, Edinburgh.

Baseline Studies

- 5.252 The forestry chapter will set out the findings of the following:
- An updated desk study including:
 - Results from the Government's MAGIC website for freely available statutory information including information on statutory designations; and woodland inventory;
 - Scotland's environment mapping service. - Ancient Woodland Inventory;
 - Current Forestry Management Plans review following site walkover.

- Survey work included:
 - Walkover survey of the main turbine sites within the forest to ground proof current information along with species composition, estimates of current tree size and condition. Recording changes and progress as set out in the current Forest Management/Design Plan
- Information to be confirmed as part of the scoping works will include (beyond that identified above):
 - Turbine size;
 - Required upper canopy height of trees as per turbine;
 - Required clearance distance from the turbine;
 - Access road clearance width;
 - Positions of substation; and
 - Position of temporary storage area/compound.

Assessment of Effects

- 5.253 The assessment of forestry impacts associated with the proposed development site will be undertaken to establish the current forest condition, the likely required removals of sections of forest to achieve the wind farm. The operations required to achieve the clearances required, the uses of the harvested material, along with the treatment of forestry residues from these operations. A Forestry Residue Management Plan will be appended to the forestry chapter.
- 5.254 The current forest management plan will remain for the unaffected forest, and a new management plan produced that will indicate where/if tree retentions are proposed and how future planting can improve the structure of the forest and its biodiversity. This will include the Wind Farm Felling Plan and Restocking Plan.
- 5.255 The assessment will identify the compensatory planting area that will be required, along with how this planting is to be achieved. Issues relating to compensatory planting will be considered as part of Chapter 6 Ecology and Chapter 7 Ornithology (including impacts to black grouse and white tailed eagle).

Issues Proposed to be Scoped Out

- 5.256 The current Forest Management Plan scoped out forestry issues with various bodies with regards the forest management impacts and it is unlikely that these issues, directly regarding forest management will have changed greatly. Therefore, no issues are proposed to be scoped out at this stage.

6 RESPONDING TO THIS SCOPING REPORT

Consultee responses to this report should be directed to the Energy Consents Unit which will form a Scoping Opinion. The Applicant will welcome such response to inform the scope of EIA to be undertaken for the proposed development and further consultation to be undertaken with each consultee as the EIA progresses.

Members of the public making representations in are encouraged to do so electronically rather than in paper form.

All representations may be submitted electronically either through the online portal at www.energyconsents.scot, or by emailing representations@gov.scot.

Otherwise, representations in paper form should be sent

to:

Energy Consents Unit

5 Atlantic Quay

150 Broomielaw

Glasgow

G2 8LU

7 REFERENCES

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FIGURES



APPENDICES