Car Duibh Wind Farm Ltd

Car Duibh Wind Farm
EIA Scoping Report

Final report
Prepared by LUC
March 2021

Statkraft

Car Duibh Wind Farm Ltd

Car Duibh Wind Farm
EIA Scoping Report

Version	Status	Prepared	Checked	Approved	Date
1.	Template for issue to Statkraft/team	L. Meldrum	J. Cottin	J. Wright	15.10.2020
2.	First draft for issue to Statkraft	L. Meldrum	J. Cottin	J. Wright	18.1.2021
3.	Updated following Statkraft review	L. Meldrum	J. Cottin	J. Wright	19.2.2021
4.	Final draft	J. Cottin	J. Cottin	J. Wright	10.3.2021
5.	Final for issue	J. Cottin	J. Cottin	J. Wright	25.2.2021

Bristol
Edinburgh
Glasgow
London
Manchester

landuse.co.uk

Land Use Consultants Ltd
Registered in England
Registered number 2549296
Registered office:
250 Waterloo Road
London SE1 8RD

100% recycled paper

Contents

Contents

Chapter 1
Introduction

Project Background

1.1 Car Duibh Wind Farm Ltd (a company wholly owned by Statkraft UK Limited, hereinafter referred to as 'the applicant'), is proposing to develop the Car Duibh Wind Farm (hereinafter referred to as 'the Proposed Development'). The Proposed Development is located within the Argyll and Bute Council administrative area. The location of the Proposed Development is shown on **Figure 1.1**. It should be noted that whilst the site boundary is located less than 1km west of Inveraray and 2.5km east of Dalavich, the nearest turbine in the Scoping layout is approximately 6km to the north-west of Inveraray and 4.5km to the east of Dalavich. Whilst the turbine layout is yet to be finalised, it is unlikely that the extent of turbines across the site will vary greatly from that which is presented within this Scoping Report. Further details on the site and a description of the Proposed Development are provided in Chapter 3 below.

1.2 A substantial part of the Proposed Development site ('the Site'[1]) was the subject of the 15 turbine Ardchonnel Wind Farm application by RWE Innogy UK in 2012 which was subsequently refused under the Town and Country Planning (Scotland) Act 1997 (as amended) regime. Where relevant, the findings of the previous application and subsequent Public Inquiry have been, and will continue to be, taken in account as the Proposed Development is progressed. Reference to the previous application is included below where relevant.[2]. The Proposed Development is a new proposal being brought forward by Statkraft and will be assessed on its own merit.

Application for Section 36 Consent

1.3 The Proposed Development currently comprises up to 26 wind turbines, each up to 200m to turbine blade tip. The applicant therefore intends to apply to the Scottish Government Energy Consents Unit (ECU) for Section 36 (S36) consent for the Proposed Development under the Electricity Act 1989 ('the Act'). The application will be made to the ECU as the Proposed Development will have a generation capacity in excess of 50 megawatts (MW). In addition, a direction will be sought for deemed planning permission under

[1] References to 'the Site' within this report refer to land within the Site boundary as illustrated on **Figure 1.1**.

[2] The Ardchonnel Wind Farm Environmental Statement is available online on the Argyll and Bute Council planning portal https://publicaccess.argyll-bute.gov.uk/online-applications/, reference 13/02835/PP, appeal reference PPA-130-2045.

Section 57 of the Town and Country Planning (Scotland) Act 1997, as amended.

1.4 It is acknowledged that the Proposed Development should be subject to an Environmental Impact Assessment (EIA) under The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ('the EIA Regulations'), and the application for S36 consent will be accompanied by an EIA Report. Further details on the approach to the EIA are provided in **Chapter 2**.

1.5 The EIA Regulations provide for obtaining a Scoping Opinion from Scottish Ministers as to the environmental effects to be considered in the EIA (Regulation 12). This document accompanies the applicant's written request to the Scottish Government for a 'Scoping Opinion' as to which environmental effects are to be considered in the EIA. It provides details of the Proposed Development, the Site and surrounding area, and the environmental desk-based and field survey work undertaken to date. Likely significant effects as a result of the Proposed Development are identified and the proposed approach to assessing these is outlined.

The Applicant

1.6 The application will be made by Car Duibh Wind Farm Ltd (a wholly owned subsidiary of Statkraft UK Ltd). Statkraft is a leading company in hydropower internationally and Europe's largest generator of renewable energy. The Group produces hydropower, wind power, solar power, gas-fired power and supplies district heating. Statkraft is a global company in energy market operations. Statkraft has 4500 employees in 17 countries.

1.7 Statkraft has operated in the United Kingdom since 2006, developing, owning and operating renewable production facilities including wind farms in Wales and Scotland. Statkraft currently operates three onshore wind farms in Scotland, with a combined capacity of 155.5 MW, and has consent for another two onshore wind farms which are currently under construction.

1.8 Since 2006, Statkraft has invested £1.4 billion in the UK's renewable energy infrastructure and facilitated over 6 GW of new-build renewable energy generation through Power Purchase Agreements (PPAs).

1.9 As a state-owned utility, Statkraft is a solid, dependable partner, committed to playing a leading role in the UK energy market.

Document Structure

1.10 The remainder of this report is structured as follows:

- **Chapter 2** provides information on the EIA process and assessment methodology;
- **Chapter 3** provides a brief description of the Site and the nature and purpose of the Proposed Development;
- **Chapter 4** describes the planning and energy policy and legislation relevant to the Proposed Development; and
- **Chapters 5 to 13** outline the topic areas to be considered in the EIA.

1.11 **Appendix A** details the consultees that will be approached by the ECU to inform the scope of the EIA, as well as those that will be approached for information to inform the EIA, whilst **Appendix B** provides a consolidated list of the questions put forward to the consultees to focus the response to the Scoping Report and which are also included at the end of each chapter.

Chapter 2
The EIA Process and Assessment Methodology

What is EIA?

2.1 EIA is the process of systematically compiling, evaluating and presenting all the likely significant environmental effects, both positive and negative, of a proposed development, to assist the determining authority in considering the application. It enables the significance of these effects, and the scope for reducing negative, or enhancing positive, effects to be clearly understood. The information compiled during the EIA is presented within an EIA Report to accompany the application for consent. Early detection of potentially adverse environmental effects informs iterations to the design of the Proposed Development to avoid or reduce effects.

2.2 EIA is an iterative process and runs in tandem with project design. As potential effects are identified, the design of the Proposed Development will be adjusted to reduce or avoid adverse effects where possible, and mitigation measures will be proposed as appropriate.

2.3 The EIA will be conducted in accordance with current Scottish Government regulations, policy and guidance, including:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
- Scottish Government Web Based Guidance on wind turbines (May 2014);
- Scottish Planning Policy (SPP) (June 2014);
- Planning Advice Note (PAN) 3/2010 Community Engagement (2010);
- Planning Circular 3/2013 Development Management Procedures;
- Scottish Natural Heritage (SNH[3]) (2018) (Version 5), A Handbook on Environmental Impact Assessment;
- Institute of Environmental Management and Assessment (2004) Guidelines for Environmental Impact Assessment; and

[3] SNH was renamed NatureScot in August 2020 however references to guidance documents published prior to this are still referenced as SNH publications within this report and both terms are used throughout.

- PAN 1/2013 Environmental Impact Assessment (updated June 2017).

The EIA Process

2.4 The EIA process usually follows the following stages:

- Screening may be the first stage of the EIA process where the relevant authorities need to decide whether EIA is required.
- Once it has been agreed that EIA is required, scoping is undertaken to define what should be assessed as part of the EIA and reported in the EIA Report.
- With the scope set, relevant information on the environmental baseline conditions is collected. This information is then used initially to understand the likely environmental effects and to inform the design of the development to minimise the potential for significant adverse effects.
- The formal assessment process is undertaken on the final design to identify the likely significant effects of the development.
- Where significant adverse effects cannot be minimised through alterations to the design, mitigation measures are considered.
- Monitoring to measure the actual significance of the effect during and post-construction is proposed, to allow management of mitigation where appropriate.

2.5 Once the EIA is completed, the EIA Report is submitted to the determining authority for consideration with the application for consent.

Screening

2.6 Development projects that are described within Schedule 1 of the EIA Regulations will always require EIA and are referred to as 'Schedule 1 Developments'. Development projects listed in Schedule 2 that are located in a 'sensitive area', or which exceed one of the relevant criteria or thresholds given in Schedule 2 are referred to as 'Schedule 2 Developments'. Not all Schedule 2 Developments require EIA as only a development project that is likely to have significant environmental effects by virtue of its size, location or nature will require assessment. A development project that requires EIA is referred to as 'EIA development'.

2.7 In this case, the Proposed Development (as described further in **Chapter 3**) is of a type described within Schedule 2 as an *"installation for the harnessing of wind power for energy production (wind farms)"*. It is not located within a 'sensitive area' as defined by the EIA Regulations; however, the project would exceed both of the applicable thresholds as it involves more than two wind turbines with hub heights of more than fifteen metres. The requirement for EIA is therefore determined on the basis of whether the project would be likely to give rise to significant effects on the environment by virtue of its size, nature or location.

2.8 The scale, nature and location of the Proposed Development are such that, to allow the environmental effects of the project to be appropriately considered, the applicant has taken the decision to prepare an EIA. As such, no Screening Opinion has been sought from the ECU.

Scoping

2.9 The purpose of scoping is to focus the EIA on the likely and relevant significant environmental effects associated with the Proposed Development. On the basis of the expert judgement of the assessment team, experience from similar projects, as well as additional policy, guidance and standards of relevance, each topic chapter within this report will outline both:

- Potential likely significant effects associated with the construction and/or operation of the Proposed Development, identified for detailed consideration within the EIA Report.
- Effects which are considered unlikely to be significant and requiring no further assessment. Whilst these topics fall outside of the scope of assessment, they will be referred to in turn within the EIA Report.

Baseline Conditions

2.10 The EIA Regulations require that aspects of the environment which are likely to be significantly affected by the Proposed Development are clearly defined within the EIA Report. To achieve this, it is necessary to gather environmental information on the current and existing status of each topic proposed for consideration as part of the EIA, i.e. 'baseline conditions'.

2.11 Baseline conditions are not static, and it is often necessary to update them with further baseline surveys to ensure that the data upon which the EIA is based is up to date and accurately reflects the current situation of the receiving environment. For the purposes of the assessment, the baseline is considered to be the existing Site which is currently undeveloped. Details on the existing conditions of the Site, and the surveys which have been undertaken for each topic are detailed in **Chapters 5 to 13** below.

2.12 In accordance with the 2017 EIA Regulations, climate change will also be considered in the context of understanding how baseline conditions for each topic area could change during the lifetime of the Proposed Development.

Assessment of Effects

2.13 For each topic that is identified as requiring further study, a detailed technical assessment will be carried out in line with the scope and methodology agreed upon with relevant consultees. Individual technical assessment will be undertaken by a competent and appropriately qualified consultant in which technical standards and relevant guidance will be adhered to. A range of relevant and appropriate methodologies will be employed to assess the potential effects associated with the Proposed Development. These assessments will take both the construction and operational phases of the Proposed Development into account and will be carried out in relation to the Site and surrounding area.

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

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

(3) The factors are —

(a) population and human health;

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

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

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

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

2.15 The EIA is being coordinated by LUC, and the following topics have been identified for detailed assessment for the Proposed Development. The organisations undertaking the specialist assessments are also noted below:

- Landscape and Visual Amenity (LUC);
- Hydrology, Hydrogeology and Peat (Kaya Consulting and East Point Geo);
- Ecology (LUC);
- Ornithology (Avian Ecology);
- Cultural Heritage (LUC);
- Noise (Hoare Lea);
- Traffic, Transport, Civil Engineering and Principal Design Lead (Pell Frischmann);
- Socio-Economics (LUC);
- Aviation (Wind Power Aviation Consultants (WPAC)); and
- Other Issues (including human health, climate change, major accidents and disasters and telecommunications) (LUC).

2.16 The EIA Regulations (Regulations 5(2)) further specify that:

"(2) An EIA report is a report prepared in accordance with this regulation by the developer which includes (at least)

(a) a description of the development comprising information on the site, design, size and other relevant features of the development;

(b) a description of the likely significant effects of the development on the environment;

(c) a description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;

(e) a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and

(f) any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected."

Assessing Significance

2.17 The EIA Regulations do not define significance and it is, therefore, necessary to define this for the Proposed Development. The methods for predicting the nature and magnitude of any potential effects vary according to the topic assessed. Quantitative methods of assessment can predict values that can be compared against published thresholds and indicative criteria in Government guidance and standards.

However, it is not always possible to ascribe values to environmental assessments and thus qualitative assessments are also used. Such assessments rely on previous experience and professional judgement. The methodologies used for assessing each topic area will be described within the individual chapters of the EIA Report.

2.18 The following criteria will be used to evaluate the significance of potential effects of the Proposed Development.

- sensitivity, importance or value of the resource of receptor;
- extent and magnitude of the effect;
- duration of the effect;
- nature of the effect;
- performance against environmental quality standards; and
- compatibility with environmental policies.

Cumulative Assessment

2.19 An assessment will be made of the likely significant cumulative effects of the Proposed Development in combination with other wind farms and large-scale developments where relevant. These will include:

- schemes which have been submitted to the relevant authorities but not yet determined;
- schemes which are consented; and
- schemes which are under construction.

2.20 The scope and methodology for the cumulative assessment will be agreed with the relevant statutory consultees, including the Argyll and Bute Council and NatureScot. Study Areas will be defined separately for each topic assessed in the EIA to reflect the likely extent of potential effects.

Approach to Mitigation

2.21 Part 7 of Schedule 4 of the EIA Regulations notes that the EIA Report should include:

> *"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".*

2.22 In many cases, mitigation measures are embedded within the Proposed Development (either through design, good practice during construction, or operation), whereby likely significant adverse effects are avoided. However, where necessary, additional mitigation measures are required to reduce the significance of effects.

Uncertainty

2.23 The EIA process is designed to enable good decision-making based on the best possible information about the environmental effects of a Proposed Development. There will, however, always be an element of uncertainty as to the exact scale and nature of the effects. These may arise through shortcomings in available information or due to the limitations of the professional judgement process. As required in Schedule 4, Part 6 of the EIA Regulations, it is important that such uncertainty is explicitly recognised, and that the EIA Report includes:

> *"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".*

EIA Report Structure

2.24 The EIA Report will be structured as follows, subject to any changes to the scope identified through the consultation process:

- description of the Proposed Development;
- an outline of the main alternatives studied and an indication of the main reasons for choosing the preferred option;
- details of the planning and renewable energy policy context that is relevant to the Proposed Development; and
- individual environmental assessment topic chapters, including a description of the mitigation measures required to prevent, reduce and, where possible, offset any significant adverse effects on the environment; enhancement measures where possible will also be included.

2.25 Each chapter of the EIA Report, where practicable, will adopt a consistent format. This will ensure compliance with

the EIA Regulations regarding completeness and accuracy. Each chapter will comprise an opening introduction to the topic followed by:

- Methodology, Consultation and Legislation/Policy/ Guidance;
- Environmental Baseline (derived from desk studies and surveys undertaken);
- Impact Assessment (identification of the impacts and their significance);
- Mitigation (and monitoring as appropriate);
- Residual Effects (assessment of impact significance once mitigation has been incorporated); and
- Summary.

2.26 The EIA Report will also include a Non-Technical Summary (NTS) and supporting technical appendices including tables, figures and reports.

2.27 The EIA Report will be accompanied by a Pre-Application Consultation (PAC) Report, a Planning Statement, and a Design and Access Statement.

Chapter 3
Project and Site Description

The Site and Surroundings

3.1 The Site is located on the plateau between Loch Awe to the north-west and Loch Fyne to the south-east and rises to a height of 526m Above Ordnance Datum (AOD) at Ben Bhreac adjacent to the southern boundary in the centre of the Site. The area where turbines are currently proposed to be sited comprises undulating moorland plateau with rocky outcrops, orientated north-east to south-west, with frequent lochans in lower lying areas. The ground cover is mainly moorland heath and heather, with exposure limiting tree cover.

3.2 Large areas of forestry are found adjacent to the Site, extending down the lower slopes to the east, south and west, with forested areas also located within the eastern extent of the Site boundary to the west of Inveraray.

3.3 Settlements nearby are generally located within the glens and shores of adjacent lochs, with the closest settlements to the nearest turbines comprising Inveraray (approximately 6km to the south-east), Dalavich (4.5km to the west) and Inverinan (approximately 5km to the north), whilst Stachur, Newton and Furnace are each located over 10km to the south. A number of small clusters of residential properties are found scattered along the shores of Loch Awe.

The Proposed Development

3.4 The applicant is investigating the potential for a wind farm development consisting of the erection, 35-40 year operation, and subsequent decommissioning of up to 26 turbines, each up to 200m in height to blade tip. The principal elements of the Proposed Development are described in further detail below. The layout of the Proposed Development which is currently being considered is shown on **Figure 3.1**, however this is subject to change as the EIA progresses.

3.5 The key elements of the Proposed Development are summarised as follows:

- up to 26 wind turbines, each up to a maximum tip height of up to 200m;
- foundations supporting each wind turbine;
- associated crane hardstandings at each turbine location;
- a network of onsite access tracks and associated watercourse crossings;

- a network of underground cables to connect the turbines to the onsite substation;
- a control building and substation;
- a permanent anemometer mast or LiDAR compound for wind monitoring, including associated foundations and hardstandings;
- temporary construction compound(s), laydown area(s) and a car park;
- temporary borrow pits; and
- energy storage systems which are designed to complement renewable energy generation.

Access

3.6 It is anticipated that turbine components will be delivered to the port of Campbeltown and then transported to Site via the A83 road. From the A83, there are several access options to the Site currently being considered at this stage.

Grid Connection

3.7 The applicant is reviewing potential options for a transmission connection to the electricity network. An application will be made to the National Grid to determine the final connection point.

3.8 The grid connection will be subject to a separate application for consent by Scottish and Southern Energy Networks, under Section 37 of the Electricity Act 1989. As a result, potential environmental effects as a result of offsite grid connection will not be considered in the EIA Report.

Construction Works

3.9 It is estimated that it would take approximately up to 18 months to construct the Proposed Development. Construction works would include the following main activities:

- working of borrow pits;
- tree felling (if required);
- construction of the temporary construction compound;
- construction of site access tracks, passing places and any watercourse crossings;
- construction of culverts under tracks to facilitate drainage and maintain existing hydrology;
- construction of turbine foundations and transformer plinths;
- construction of an onsite substation and energy storage system;
- excavation of trenches and cable laying adjacent to site tracks;
- movement onto site and delivery and erection of wind turbines;
- commissioning of the wind farm; and
- restoration of temporary construction areas.

3.10 Where possible, construction activities will be carried out concurrently to reduce the overall length of the construction programme. Phasing of the construction process may result in civil engineering works progressing in some areas of the Site whilst turbines are being erected elsewhere. To minimise disruption to land use, site restoration would be undertaken as early as possible.

3.11 A detailed programme of works would be produced by the construction contractors prior to the commencement of works onsite. Should consent for the Proposed Development be granted, it is likely that construction hours would be restricted by means of a consent condition.

3.12 It is anticipated that stone will be sourced from onsite borrow pits; however, it may be necessary to import some stone to the Site. Stone and other construction material would typically be transported by road from source or seaport. Large loads such as wind turbine components (rotor blades, tower sections and nacelles) would be transported to the Site by specialised abnormal load vehicles using the designated routes referred to above.

Forestry

3.13 Whilst no tree felling will be required to accommodate the turbine locations, depending on the final location of the onsite access tracks, some tree felling may be required. Details of the location of felling and trees affected will be included in the EIA Report. Any felling required will be taken into account in calculating the carbon balance of the Proposed Development, and consideration will be given to any required replanting under the Scottish Government's Policy on Control of Woodland Removal.

Wind Farm Life and Decommissioning

3.14 The expected operational life of the Proposed Development is 35-40 years from the date of commissioning. Towards the end of this period, a decision would be made as to whether to refurbish, remove, or replace the turbines. If refurbishment or replacement were to be chosen, relevant applications for consent would be made.

3.15 The EIA Report will include high level information on the likely process that will be undertaken to decommission the Proposed Development at the end of its lifespan. However, it is not proposed to undertake a detailed assessment of the

decommissioning effects associated with the Proposed Development as the future baseline conditions (environmental and other developments) cannot be predicted accurately at this stage and the proposals for refurbishment/ decommissioning are not currently known.

Questions for Consultees

Q3.1: The EIA Project team is aware from previous experience that peat depth varies considerably across the Site. As such, SEPA is requested to advise on upper limiting depths for borrow pit restoration.

Q3.2: Confirmation is requested on the proposed approach to the assessment of decommissioning.

Chapter 4
Planning and Energy Policy Framework

Introduction

4.1 The approach that will be taken to consideration of planning and energy policy relevant to the Proposed Development is set out below, and includes consideration of the following:

- the renewable energy policy context;
- national planning policy and guidance;
- the statutory Development Plan; and
- supplementary guidance.

4.2 It should be noted that the Electricity Works (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 allow the suspension of the need for physical in person public events in pre-application consultation and the provision of hard copies of EIA documents in physical places.

Renewable Energy Policy

4.3 The EIA Report will describe, in summary, the renewable energy policy framework and associated need case for renewables, identified as a matter of both law and policy, at international and domestic levels.

4.4 The Proposed Development relates to the generation of electricity from renewable energy sources and comes as a direct response to national planning and energy policy objectives. The clear objectives of the UK and Scottish Governments will be summarised in the EIA Report in relation to encouraging increased deployment and application of renewable energy technologies, consistent with sustainable development policy principles and national and international obligations on climate change.

4.5 The Proposed Development would clearly make a contribution to the attainment of renewable energy and electricity targets at both the Scottish and UK levels and the quantification of this contribution will be described in the EIA Report. The description of the renewable energy policy framework will also include reference to the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, Scottish Energy Strategy: The future of energy in Scotland (2017) and Onshore Wind Policy Statement (2017), Securing a green recovery on a path to net zero: climate change plan 2018–

2032 – update (2020), as well as other relevant policy documents.

National Planning Policy and Guidance

4.6 Reference will be made to national planning policy and guidance documents, including:

- National Planning Framework 3 (NPF3) (2014) and associated updates regarding the preparation of NPF4[4];
- Scottish Planning Policy (SPP)[5];
- Relevant Planning Advice Notes (PAN);
- Scottish Government web-based Renewables Guidance; and
- Scottish Government policy and good practice guidance on community benefit funding and community shared ownership.

The Statutory Development Plan

4.7 Relevant planning policies applicable to the Proposed Development will be taken into account in the iterative EIA design process. The relevant planning policy framework will also be described in the EIA Report.

4.8 The statutory Development Plan for the Proposed Development comprises:

- The Argyll and Bute Local Development Plan ('the LDP') (adopted April 2015); and
- The LDP Supplementary Guidance (SG) (including the Spatial Framework for Onshore Wind Energy) (Adopted March 2016).

4.9 It should be noted that the next LDP (LDP2) is currently being prepared and was open to consultation between November 2019 and January 2020. As such, this may be adopted by the time the application for consent for the Proposed Development is submitted.

4.10 In LDP2, the Site is located in a 'Remote Countryside Area' and 'Policy 02 – Outwith Settlement Areas' states that, within these areas, only specific categories of development are considered appropriate, including renewable energy related development.

4.11 Policy 30 of LDP2 'The Sustainable Growth of Renewables' is also of note, outlining where wind farms will and will not be acceptable, and noting the criteria against which the suitability of a wind farm development will be considered.

4.12 The Spatial Framework for Onshore Wind Energy (2016) identifies the Site as being located within an area of significant protection (Group 2) due to the presence of carbon rich soils, deep peat and priority peatland habitat. Where possible, the design of the Proposed Development will seek to avoid deeper peat and priority peatland habitats as detailed further in Chapter 6 below.

4.13 It should be noted that a Planning Statement will be provided in support of the application which will contain an assessment of the accordance of the Proposed Development with relevant policy as referred to above.

[4] The Scottish Government is currently preparing NPF4, which will guide spatial development, set out national policies, designate national developments and reflect regional spatial priorities to 2050. The Government published its Interim Position Statement in November 2020 and the draft of NPF4 is due to go before parliament in autumn 2021 and is currently anticipated to be adopted in spring/summer 2022.

[5] As a result of the adoption of the Planning (Scotland) Act 2019, the next NPF will incorporate SPP and will have enhanced status as part of the statutory development plan.

Chapter 5
Landscape and Visual Amenity

Introduction

5.1 This chapter sets out the proposed approach to assessing the potential effects of the Proposed Development on landscape character and visual amenity through a Landscape and Visual Impact Assessment (LVIA). The primary guidance for LVIA is the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)[6]. In addition, Scottish Natural Heritage (SNH) (now NatureScot) has published several documents that have been adopted as industry standard good practice for landscape and visual assessments of wind farm proposals.

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

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

Guidance

5.4 The following guidance will be referred to where appropriate:

- Landscape Institute and the Institute of Environmental Management and Assessment (2013), Guidelines for

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

Landscape and Visual Impact Assessment. Third Edition. (GLVIA3);

- Countryside Agency and SNH (2002), Landscape Character Assessment: Guidance for England and Scotland;
- SNH (2012), Assessing the Cumulative Impacts of Onshore Wind Energy Developments;
- SNH (2017), Siting and Designing Wind Farms in the Landscape. Version 3a;
- Countryside Agency and SNH (2004), Topic Paper 6. Techniques and Criteria for Judging Capacity and Sensitivity;
- Landscape Institute (2019) Visual Representation of Development Proposals – Technical Guidance Note 06/19;
- Landscape Institute (2019), Residential Visual Amenity Assessment (RVAA) – Technical Guidance Note 02/19;
- SNH (2020), Assessing impacts on Wild Land Areas - technical guidance;
- SNH (2017), Visual Representation of Wind Farms Guidance. Version 2.2;
- SNH (2015), Spatial Planning for Onshore Wind Farms: Natural Heritage Considerations; and,
- Carol Anderson Landscape Associates for Argyll and Bute Council and SNH (2017) Argyll and Bute Landscape Wind Energy Capacity Study.

Study Area

5.5 It is proposed that the Study Area for the LVIA will cover a radius of 45km from the outermost turbines of the Proposed Development in all directions, as shown in **Figure 5.1**, in accordance with current NatureScot guidance in relation to turbines of 150m or higher, measured to the top of the blade tip[7].

5.6 A Zone of Theoretical Visibility (ZTV) plan will be used to assist in identifying which landscape and visual receptors require consideration in the assessment, and which can be scoped out because they are unlikely to be significantly affected. While the design of the Proposed Development is subject to change, the following figures are provided to illustrate the theoretical visibility of the indicative 26 turbine layout:

- **Figure 5.2**: Blade Tip Height (200m) ZTV and Visual Receptors;
- **Figure 5.3**: Hub Height (132m[8]) ZTV and Visual Receptors;
- **Figure 5.4**: Blade Tip Height ZTV (200m) and Landscape Character Types (LCTs); and
- **Figure 5.5**: Blade Tip Height ZTV (200m), Designated Landscapes and Wild Land.

5.7 The LVIA will be undertaken by experienced Chartered Landscape Architects (Chartered Members of the Landscape Institute (CMLI)), and in accordance with relevant best practice documents. LUC's team of Chartered Landscape Architects has extensive experience in the siting, design and assessment of onshore wind energy developments, and brings particular experience in avoiding or reducing landscape and visual effects through landscape-led embedded design mitigation.

Existing Conditions

5.8 The Site is located on the plateau between Loch Awe to the north-west and Loch Fyne to the south-east, and rises to a height of 526m AOD at Beinn Bhreac in the centre of the Site. The Site comprises undulating moorland plateau with rocky outcrops, orientated north-east to south-west, with frequent lochans in lower lying areas. The ground cover is mainly moorland heath and heather. Large tracts of forestry are found adjacent to the Site, extending down the lower slopes to the east, south and west, and extending into the east of the Site boundary just to the west of Inveraray as can be seen on **Figure 3.1**.

5.9 Locations along the western banks of Loch Awe are afforded open views towards the Site and the operational An Suidhe Wind Farm.

5.10 Settlement within the Study Area is generally located within the glens and adjacent to lochs, with the closest settlements to the nearest turbine in the scoping layout comprising Inveraray (<1km to the east), Dalavich (4.5 km to the west) and Inverinan (approximately 5km to the north). A number of small clusters of residential properties are found scattered along the shores of Loch Awe, with the closest properties to the Site located at Ardchonnel and Blarghour, just over 3km and 2km from the closets turbines of the scoping layout respectively.

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

[8] The hub height ZTV assumes a rotor diameter of 136m, which would result in a likely maximum case scenario of hub visibility at 132m.

Landscape Character

5.11 In 2019, SNH made available online an updated national Landscape Character Assessment for Scotland[9].

5.12 The Site is located within the Craggy Upland – Argyll Landscape Character Type (LCT 40) and the Plateau Moor and Forest – Argyll (LCT 39). Key characteristics for LCT 40 include:

- Upland moor with irregular, rather amorphous landform;
- Rounded knolls, rock outcrops and numerous lochs in low-lying hollows and glens;
- Open moorland predominates, but extensive conifer plantations camouflage the landscape pattern in some areas;
- Oak-birch woodland on lower slopes;
- Stone walls enclose an irregular patchwork of pastures within glens on margins of moorland;
- Isolated farmsteads and small villages in sheltered sites within glens;
- Numerous archaeological remains, often concentrated on rounded knolls on lower slopes; and,
- Historic intricate, irregular landscape pattern in glens.

5.13 Key characteristics for LCT 39 include:

- Upland plateau with rounded ridges, craggy outcrops and an irregular slope profile;
- Upland lochs;
- Winding narrow glens and wider glens with rivers;
- Extensive, large-scale mosaic of open moorland and forestry;
- No field boundaries;
- Very few buildings; occasional isolated dwellings on edges of moor;
- Small enclosed pastures and occasional farms and houses on lower hill slopes at the transition with adjacent character types and within the narrow glens which dissect these uplands; and
- Little access; roads follow shorelines.

5.14 The LVIA will consider the potential for direct effects on LCTs 39 and 40 as well as indirect effects upon LCTs in the Study Area within a c.15km radius of the Proposed Development, and from which potential visibility is indicated by ZTV mapping. LCTs within the Study Area are shown on **Figure 5.4** and listed in **Table 5.1** below.

Table 5.1: LCTs within 15km

LCT	Approximate distance to nearest turbine at closest point (km)	Scoped in/out of assessment
40 – Craggy Upland - Argyll	<1km	**Host LCT, considered within the assessment.**
39 – Plateau Moor and Forest - Argyll	<1km	**Host LCT, considered within the assessment.**
53 – Rocky Coastland – Argyll	1.7km	Theoretical visibility indicated within 1.7-15km, particularly from site-facing slopes, **considered within the assessment.**
37 – Upland Glens – Argyll	6.6km	Very limited theoretical visibility. Not considered further.
34 – Steep Ridges and Mountains	8.2km	Extensive theoretical visibility from site-facing slopes, at distances of 7-17km. **Considered within the assessment.**
250 – Steep Ridges and Hills	12.0km	Some theoretical visibility from site-facing slopes, at distances of 10-20km. **Considered within the assessment.**

[9] SNH (2019) Scottish Landscape Character Types Map and Descriptions. Available online: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

LCT	Approximate distance to nearest turbine at closest point (km)	Scoped in/out of assessment
253 – Straths and Glens	12.3km	Theoretical visibility from across most of this small LCT unit, at distances of 12-17km. **Considered in the assessment.**
35 – Rugged Mountains	14.0km	Theoretical visibility from site-facing slopes and mountain summits, at distances of greater than 14km. **Considered in the assessment.**
43 – Upland Parallel Ridges - Argyll	14.7km	Limited theoretical visibility from distances of over 15km. Not considered within the assessment.

Designated Landscapes

5.15 The eastern extents of the Site boundary are located within the West Loch Fyne Coast Area of Panoramic Quality (APQ) and also within the Inveraray Castle Garden and Designed Landscape (GDL), however the wind turbines of the Proposed Development would not be located in this part of the Site. There are a number of other designated landscapes within the Study Area, including the Loch Lomond and the Trossachs National Park, National Scenic Areas (NSAs), Areas of Panoramic Quality (APQs), Special Landscape Areas (SLAs), and Gardens and Designed Landscapes (GDLs), within 15km of the Site boundary (designated landscapes beyond 15km of the Site boundary are unlikely to be significantly affected by the Proposed Development). Given the relatively close proximity of some of these designated landscapes, and the extent of theoretical visibility of the proposal from within them, an assessment of potential effects on specific relevant special qualities of the national and locally designated landscapes will be included in the LVIA. Potential effects on GDLs will be considered in the cultural heritage assessment, as set out in **Chapter 9**: **Cultural Heritage**.

5.16 As for LCTs, theoretical inter-visibility with the Proposed Development will be described in the LVIA and used as a means of identifying which designated landscapes require further consideration and assessment in respect of their defined special qualities and characteristics. However, as distance from the Site increases, significant effects on these designated areas are considered less likely to occur.

5.17 Nationally and locally designated landscapes within the Study Area are listed in **Table 5.2** below and shown on **Figure 5.5**.

Table 5.2: Designated Landscapes within the Study Area

Designated Landscape	Approximate distance to nearest turbine at closest point (km)	Scoped in/out of assessment[10]
National Park		
Loch Lomond and the Trossachs	11.9km	Theoretical visibility indicated from elevated landform in the western extents of the National Park. **Considered in the assessment.**
National Scenic Areas		
Knapdale	23.4km	Limited theoretical visibility from distances of over 27km. Not considered in the assessment.
Loch Lomond	25.1km	Very limited theoretical visibility from distances of over 32km. Not considered in the assessment.

[10] No theoretical visibility is indicated from the closest areas of landscape designations when the distance of theoretical visibility is greater than the distance to the closest turbine.

Designated Landscape	Approximate distance to nearest turbine at closest point (km)	Scoped in/out of assessment[10]
Ben Nevis and Glen Coe	25.7km	Very limited theoretical visibility from distances of over 36km. Not considered in the assessment.
Kyles of Bute	27.5km	No theoretical visibility. Not considered in the assessment.
Lynn of Lorn	27.5km	Very limited theoretical visibility from distances of over 32km. Not considered in the assessment.
Scarba Lunga and the Garvellachs	29.1km	Theoretical visibility from distances of over 29km. Not considered in the assessment.
The Trossachs	41.7km	No theoretical visibility. Not considered in the assessment.
Areas of Panoramic Quality		
West Loch Fyne Coast	4.8km	Very limited theoretical visibility at distances between 5-17km. Not considered within the assessment.
North Argyll	5.5km	Theoretical visibility indicated throughout APQ, including at hill summits and elevated site-facing slopes, at a distance of 7-40km. **Considered within the assessment.**
East Loch Fyne Coast	8.1km	Widespread theoretical visibility at distances between 8-29km. **Considered within the assessment.**
Knapdale/Melfort	14.3km	Limited theoretical visibility at distances between 16-23km. Not considered in the assessment.
North West Argyll	17.4km	Very limited theoretical visibility at distances over 22km. Not considered in the assessment.
Bute & South Cowal	23.7km	Very limited theoretical visibility at distances of over 24km. Not considered in the assessment.
Loch Long Coast	25.2km	No theoretical visibility. Not considered in the assessment.
Loch Lomond	27.7km	Limited theoretical visibility at distances of over 27km. Not considered in the assessment.
Central, South & West Mull	32.7 km	Theoretical visibility from site-facing slopes at distances of over 32km. Not considered further.
Jura	33.0 km	Theoretical visibility from site-facing slopes at distances of over 33km. Not considered further.
Special Landscape Areas		
Inninmore Bay and Garbh Shlios	35.9 km	Limited theoretical visibility from distances of over 38km. Not considered in the assessment.
Ardgour	41.4 km	Limited theoretical visibility from distances of over 42km. Not considered in the assessment.

Wild Land Areas

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

5.19 There are no WLAs within the Site boundary. The closest is WLA 06: Ben Lui which is located approximately 12.9km to the north-east of the nearest turbine of the

Proposed Development at its closest point. Key attributes and qualities include:

- *"Contrast between the more massive and remote hills in the south-west and the arresting, more visible and popular hills to the north-east;*
- *Rugged and highly natural mountains, penetrated by steep-sided glens that contain well-used routes and provide arresting views;*
- *A landscape that generally well-defined by surrounding human elements in views from higher slopes;*
- *Few human artefacts within much of the upland area, in contrast to some of the glens where hydro development is a recurring feature.*[11]*"*

5.20 The ZTV on **Figure 5.5** indicates theoretical visibility of the Proposed Development from summits within the eastern extents of WLA 06: Ben Lui.

5.21 WLAs within the Study Area are listed in **Table 5.3** below and shown on **Figure 5.5**.

Table 5.3: Wild Land Areas within the Study Area

Wild Land Area (WLA)	Approximate distance to nearest turbine at closest point (km)	Scoped in/out of assessment [12]
Ben Lui (WLA 06)	12.9km	Some theoretical visibility indicated across western extents of WLA and elevated summits within the interior, at a distance of between 13-30km. **Considered within the assessment.**
Loch Etive Mountains (WLA 09)	16.9km	Some theoretical visibility indicated across southern extents of WLA, at a distance of over 17km. Not considered within the assessment.
Ben More – Ben Ledi (WLA 07)	28.8km	Very limited theoretical visibility indicated at a distance of over 30km, not considered within the assessment.
Jura Scarba Lunga and Garvellachs (WLA 05)	29.9km	Limited theoretical visibility indicated at a distance of over 29km, not considered within the assessment.
Breadalbane – Schiehallion (WLA 10)	35.3km	Very limited theoretical visibility indicated at a distance of over 35km, not considered within the assessment.
Ben More Mull (WLA 08)	43.1km	Very limited theoretical visibility indicated at a distance of over 40km, not considered within the assessment.

Visual Receptors

5.22 The LVIA will consider potential effects upon visual receptors within the Study Area, i.e. the people who may be affected by changes in views resulting from the Proposed Development. Visual receptors to be considered will include:

- local residents, in respect of settlements, scattered communities and individual residential properties (where relevant);
- people travelling on roads and railways;
- people using walking routes and cycle routes, including minor roads; and,
- people visiting areas of interest such as visitor attractions, scenic viewpoints and hill summits.

5.23 Key transportation routes include the B840 running alongside the eastern shore of Loch Awe, approximately 2.3km to the west of the nearest turbine, and the minor road (and National Cycle Network (NCN) 78 cycle route) following the western shore of Loch Awe, approximately 4.7km to the west of the nearest turbine. The A83 runs alongside the western shore of Loch Fyne approximately 6km to the south-east and, the A819 runs through Glen Array, approximately 4km to the east of the nearest turbines.

5.24 The closest settlements are Dalavich, which is 4.5km to the west of the nearest turbine and Inverinan, approximately

[11] SNH (2017) Descriptions of Wild Land Areas – Ben Lui

[12] No theoretical visibility is indicated from the closest areas of WLAs when the distance of theoretical visibility is greater than the distance to the closest turbine.

5km to the north of the nearest turbine. Additionally, the small settlement of Eredine, is located over 5km to the south-west of the nearest turbine and Inveraray approximately 6m to the south-east of the nearest turbine. There is a cluster of small settlements to the north of the Proposed Development, including Kilchrenan, Annat, Portsonachan, Ardbrecknish and Cladich. These properties are approximately 8-11km to the north of the nearest turbine and are generally located along the banks of Loch Awe. Additionally, a number of small settlements are located along the banks of Loch Fyne in the east and south, including Inveraray, Strachur, Newton, and Furnace. Inveraray is closest, to the south-east, whilst Stachur, Newton and Furnace are over 10km to the south. Individual and small clusters of residential properties are found scattered along glens and the banks of lochs.

5.25 The Cowal Way is a long-distance path, which runs for 90km along the length of the Cowal peninsula in Argyll and Bute. At its closest, the walking path is 11.4km to the south-east of the nearest turbine, near Strachur. The West Highland Way passes through the east of the Study Area, along the banks of Loch Lomond from near Balmaha, before turning off along Glen Falloch and Strath Fillan and cutting through the Black Mount mountain range towards Glen Coe. At its closest, the walking route is 29km to the nearest turbine.

5.26 Additionally, the Three Lochs Way and West Island Way routes are also within the Study Area, to the south-east and south of the Proposed Development, respectively. At its closest, the Three Lochs Way passes along the eastern banks of Loch Long 25.5km to the south-east, and the West Island Way 37.1km to the south, near the Kyles of Bute.

5.27 NCN Route 78: the Caledonia Way runs from Campbeltown to Inverness and passes to the west of Loch Awe approximately 4.6km east of the nearest turbine. There is one other NCN route, and several Regional Cycle Network (RCN) routes within the south of the Study Area including, NCN 75, RCN 42 and RCN 94.

5.28 A number of Argyll and Bute Core Paths are located within the Study Area, primarily found around the communities and settlements, and along the shores of lochs.

5.29 There are many hills, including numerous Munro Hill summits, which are popular with hill walkers and other recreational users (e.g. mountain bikers) within the Study Area, notably in the north and north-east. This includes the closer Munro hill summits of Ben Lomond, Ben Ime, and Beinn Bhuidhe in the north-east of the Study Area, and other hill summits located near the Site and in the National Park.

5.30 The assessment of the visual effects of the Proposed Development will be based on analysis of ZTVs, field studies and assessment of representative viewpoints. **Figure 5.2** illustrates a turbine blade tip height (200m) ZTV of the proposed turbine layout with proposed assessment viewpoint locations. **Figure 5.3** illustrates a hub height (132m) ZTV of the proposed turbine layout with proposed assessment viewpoint locations. A list of proposed representative viewpoints for the assessment is set out in **Table 5.4**, selected to provide a representative range of viewing distances and viewing experiences, including views from settlements, points of interest and sequential views from routes. The viewpoints will be subject to further refinement in the field, subsequent to the scoping process and discussions with consultees.

Table 5.4: Proposed Assessment Viewpoints

VP	Viewpoint Name	Grid Reference	Distance[13]	Reason for selection
1	Dalavich Jetty	197069, 712739	4.4km	The viewpoint represents views of recreational users on the western shore of the loch and residents in Dalavich. It also represents views experienced by water-based recreational users of the loch.
2	Loch Avich Road, north of Dalavich	196663, 714141	5.1km	Represents views from an elevated part of the minor road, overlooking Loch Awe.
3	B840, north of Balliemeanoch	200762, 717206	4.6km	This viewpoint represents views available to people travelling along the B840 and recreational users of the loch.
4	Inverinan	200008, 717748	5.3km	This viewpoint represents views from a popular cycling area, as well as static and sequential views from the road, National Cycle Network Route 78, and residential properties in Inverinan.
5	Beinn Dearg	202377, 705246	5.3km	Represents elevated views from hills to the south.

[13] Approximate distance to nearest turbine in the Proposed Development scoping layout.

VP	Viewpoint Name	Grid Reference	Distance[13]	Reason for selection
6	Kilmaha Viewpoint	194067, 708453	8.0km	Represents views from road users on the minor road and cyclists on National Cycle Route 78 at a scenic viewpoint above Loch Awe.
7	Loch Avich, east of Loch Avich House	194699, 715361	7.4km	This viewpoint represents views experienced by hillwalkers, stalkers and farmers using the hills between Loch Awe and Loch Fyne.
8	Dùn Còrr-Bhile (322m)	210318, 710595	6.0km	Represents elevated views from a hill fort to the east and views experienced by hillwalkers. Represents views from the West Loch Fyne APQ.
9	A886 at Strachur	208862, 701343	10.5km	This viewpoint represents views available to people travelling along the A886, residential receptors at Strachur and recreational users of the loch.
10	B840, East of Ford	187870, 703828	15.6km	Represents long views along Loch Awe from the B840.
11	Ben Cruachan (1126m)	206947, 730450	18.3km	Viewpoint represents recreational receptors experiencing elevated views from approximately 18km to the north. Represents views from the North Argyll APQ and the Loch Etive Mountains WLA.
12	Beinn an Lochain hilltop (901m) (LLTNP)	221830, 707965	17.8km	Represents elevated views experienced from the summit of Beinn an Lochain and other nearby hills within the National Park.
13	Beinn Mhor (Cowal Peninsula and LLTNP)	210848, 690892	20.9km	Represents views from a hill summit within the Cowal Peninsular and Loch Lomond and the Trossachs National Park.
15	Ben Lui hilltop (1130m) (LLTNP)	226605, 726299	26.5km	Elevated, distant views from mountain summit within Loch Lomond and the Trossachs National Park. Represents views from the North Argyll APQ and the Ben Lui WLA.
16	Cruach Scarba	169069, 704495	33.3km	Wireframe only. Represents distant views from within the Scarba NSA.

Other Wind Farm Developments

5.31 The pattern of existing wind farm development in the Study Area comprises clusters of development in the remote and elevated plateau landscapes, generally found in the centre of the Study Area around the Site, and to the south-west of the Site. Other distinctly individual schemes are also located throughout the Study Area, including to the north, east and south. Generally, wind farms within the Study Area are located away from the settled glens, further back within the upland interior.

5.32 The Proposed Development is located immediately to the north-east of the operational An Suidhe Wind Farm (80m tip height), and immediately south of the Blarghour Wind Farm (136.5m tip height), which at the time of writing is at appeal.

5.33 The operational cluster of A'Churach and A'Churach Extension Wind Farms is located on elevated ground between Loch Awe and Loch Fyne, approximately 14-17km to the south-west of the Proposed Development.

5.34 There are several isolated operational wind farms within the Study Area, notably Carraig Gheal, and Beinn Ghlas, approximately 8.5km and 13.2km to the north-west, respectively, Clachan Flat approximately 12.8km to the east, and Cruach Mhor approximately 22.2km to the south.

5.35 Wind farm developments within 45km of the Site are shown on **Figure 5.6** and listed in **Table 5.5** below.

Table 5.5: Other Wind Farm Developments

Wind Farm	No. of turbines	Grid Reference		Tip Height (m)	Status	Approximate distance to nearest turbine (km)
Blarghour	17	203394	714425	136.5	Appeal/Public Inquiry	<1km

Wind Farm	No. of turbines	Grid Reference		Tip Height (m)	Status	Approximate distance to nearest turbine (km)
An Suidhe	23	200734	708075	80	Operational	2km
Carraig Gheal	20	197228	720687	125	Operational	8.5km
Musdale	26	195042	721918	200	Scoping	11.2km
Creag Dhubh	9	213397	704215	144.4	Application Submitted	11.5km
Beinn Ghlas	14	197844	725784	57	Operational	13.2km
Clachan Flats	9	217469	714266	93	Operational	12.8km
A'Chruach Extension	2	194285	697350	135	Operational	13.9km
A'Chruach	21	192645	698272	126.5	Operational	15.5km
Barran Caltunn	2	189177	731130	54	Consented	22.3km
Cruach Mhor	35	203745	687605	72	Operational	21.6km
Srondoire	3	182777	676708	110	Operational	39.2km
Allt Dearg	12	182255	676452	81	Operational	39.4km

Design Considerations

5.36 The design of the Proposed Development will aim to achieve a coherent and balanced turbine layout, in line with guidance provided by NatureScot[14]. The EIA Report will present the rationale behind the final design strategy and document the iterative design process in response to the technical and environmental constraints identified through the EIA process. The objective in designing the wind farm will be to develop a layout that responds to its setting in terms of landform and pattern, and which presents a simple visual image, avoiding the clustering of turbines and the isolation of outlying turbines in views from key locations and views from sequential routes seen by a range of different receptors (people) of varying sensitivity. It is also recognised that the final layout will need to balance a wide range of technical and environmental considerations.

5.37 The design of the Proposed Development will also consider its interaction in both landscape and visual terms with other existing and proposed wind farms, including the adjacent operational wind farm An Suidhe located within LCT 40 - Craggy Upland – Argyll, and other operational and consented wind farms within the vicinity of the Site. The design of the turbine layout will seek to achieve compatibility in scale and composition with adjacent wind energy developments as far as practical, including Blarghour which is currently at appeal.

5.38 All elements of the proposed wind farm infrastructure will be considered in terms of locational and design choice, and the LVIA will set out how the design of ancillary elements has evolved to minimise visual effects, especially from nearby and sensitive visual receptors.

Assessment of Effects

Landscape Effects

5.39 Predicted changes to both the physical landscape of the Site and landscape character within the 45km Study Area will be identified. However, it is anticipated that potential significant direct and indirect effects will be limited to a more focussed area extending to c.15km from the Site.

5.40 The assessment of landscape effects will take account of the sensitivity of the landscape, acknowledging any value placed on the landscape through formal designation at either a national or local level.

5.41 Landscape effects will be determined in relation to the magnitude and type of change to the landscape, and in accordance with the Supplementary Guidance on Landscape

[14] SNH (August 2017) Siting and Designing Wind Farms in the Landscape. Version 3a.

and Design in the Argyll and Bute Local Development Plan, with consideration of the landscape characteristics and special qualities identified in the relevant, recently refreshed and published (2019) SNH Landscape Character Type descriptions.

Visual Effects

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

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

Cumulative Effects

5.44 The cumulative landscape and visual assessment (CLVIA) will be carried out in accordance with the principles outlined in GLVIA3 and SNH Assessing the Cumulative Impact of Onshore Wind Energy Developments (March 2012) guidance.

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

5.46 A review of the existing pattern(s) of wind energy development will be undertaken, considering operational, consented and proposed wind farms which are the subject of a valid application, up to a 60km radius from the Site, in accordance with current NatureScot guidance.

5.47 The CLVIA will focus on those wind energy developments considered to have potential to give rise to significant cumulative effects in conjunction with the Proposed Development. This is likely to primarily be those wind farms located in the more immediate landscape context of the Site, and in this instance, those located within an approximate 15km radius. Turbines of less than 50m to blade tip and single turbines beyond 5km from the Site will not be included in the detailed assessment. **Figure 5.6** illustrates the locations of operational, consented and proposed wind farms (including those at scoping) within 45km of the Site.

Residential Visual Amenity

5.48 Effects upon residential visual amenity becomes a matter of public rather than private interest when properties or groups of properties become widely regarded as unattractive places to live. Given the nearest residential properties are located approximately 2.1km from the nearest turbine, a Residential Visual Amenity Assessment (RVAA) to accompany the LVIA, is not deemed to be necessary and has been scoped out.

Field Survey

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

Visualisations

5.50 Wirelines and photomontage visualisations will be used to consider and illustrate changes to views. Photomontages will involve overlaying computer-generated perspectives of the Proposed Development over the photographs of the existing situation to illustrate how the views will change against the current baseline. Other (cumulative) wind farm developments visible from each of the viewpoints will be shown on the wirelines. Visualisations will be prepared in accordance with SNH (2017) visualisation guidance.

5.51 Ancillary elements such as permanent anemometer masts, access tracks and the onsite substation, and any proposal for battery storage systems should these be considered, will be shown in photomontages for viewpoints within 5km when they would be visible. Beyond 5km, it is considered unlikely that these ancillary elements would form more than a minor element of the entire development when compared to the turbines, and they will not be shown.

Assessment of Visible Aviation Lighting

5.52 In the interests of aviation safety, structures, including wind turbines, of ≥ 150m require visible aviation lighting[15]. Potential visual effects arising from the necessity for this visible lighting (typically consisting of 2000 candela red lights mounted on the wind turbine nacelle and intermediate 32 candela lights mounted on the wind turbine tower) will be a key consideration. Informed by current SNH (2017) visualisation guidance and scoping advice[16] the assessment of visual effects will consider the effects of aviation lighting.

5.53 The assessment will be carried out as part of the LVIA and included within the assessment or as a Technical Appendix to the EIA Report, and will be informed by a hub height ZTV as a starting point to illustrate the areas from which nacelle lighting may be visible. Visibility of turbine lighting from each LVIA assessment viewpoint will be considered, however the night-time assessment will focus on viewpoints from which significant effects may be anticipated.

5.54 Dusk or night-time photomontage visualisations will be prepared in accordance with emerging NatureScot guidance from the following final LVIA assessment viewpoints, informed by the hub height ZTV shown on **Figure 5.3**:

- Viewpoint 1: Dalavich Jetty; and,
- Viewpoint 4: Inverinan.

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

Potential Effects

5.56 The selection of receptors to include in the assessment is based on the requirement for EIA to consider the likely significant effects. Effects that are not likely to be significant do not require assessment under the EIA Regulations.

5.57 The assessment will identify landscape and visual effects separately, as detailed in the approach to the assessment set out above and will set out any implications of these effects on designated landscapes. The assessment will focus on the identification and, wherever appropriate, the mitigation of potential significant landscape and visual effects.

5.58 The primary form of mitigation for landscape and visual effects arising from large scale wind farm development is through iterative design of the layout of the turbines and associated infrastructure, with reference to key views, viewpoints and receptors. Design evolution will be set out in detail in the design strategy that will form part of the EIA Report, and will demonstrate how the design of the Proposed Development has sought to avoid, reduce or minimise landscape and visual effects wherever feasible.

5.59 Further mitigation will be considered where relevant and appropriate, and the residual effects taking account of the implementation of this mitigation will be presented in the assessment.

Potential Effects Scoped into Assessment

5.60 Based on the baseline conditions, it is proposed that the following receptors are scoped into the assessment:

- LCT40 – Craggy Upland – Argyll and LCT39 – Plateau Moor and Forest – Argyll, and other LCTs within a 15km radius where there may be potential for significant effects;
- Loch Lomond and the Trossachs National Park, located within 12km of the nearest turbine;
- North Argyll APQ located within 5.5km to the north-east and East Loch Fyne Coast APQ, located within 8.1km south-east of the Proposed Development;
- Ben Lui WLA 06 located 12.9km to the north-east of the nearest turbine;
- Transient views experienced by road users travelling through the Study Area;
- Views experienced by residential receptors living nearby and travelling in the nearby locality of the Site; and
- Views experienced by recreational receptors, including those at hill tops and on recognised walking and cycling routes including the NCN Route 78: the Caledonia Way.

Potential Effects Scoped out of Detailed Assessment

5.61 Based on the baseline conditions recorded and distance from the Site, it is proposed that the following are scoped out:

- Effects on Landscape Character Types (LCTs) beyond a 15km radius of the Site with no intervisibility;
- Effects on all NSAs within the Study Area;
- Effects on all APQs within the Study Area with the exception of the North Argyll APQ and East Loch Fyne Coast APQ;

[15] Civil Aviation Authority (2016) CAA Policy and Guidelines on Wind Turbines CAP 764

[16] SNH (2017), Siting and Designing Wind Farms in the Landscape. Version 3a.

- Effects on all WLAs within the Study Area with the exception of the Ben Lui WLA; and
- Effects upon residential visual amenity, in the form of a detailed RVAA.

5.62 Potential cumulative landscape and visual effects arising through combined, successive, and/or sequential interactions with other existing and proposed wind farms will be considered, including most notably with An Suidhe Wind Farm and the proposed Blarghour Wind Farm (at appeal), situated in close proximity to the Site, as well as other existing and proposed wind farms situated within the vicinity of the Study Area.

Approach to Mitigation

5.63 The primary form of mitigation for landscape and visual effects, including cumulative effects, is through iterative design of the layout of the turbines and associated infrastructure, as seen from key viewpoints. Design development will be set out in detail in the design strategy that will form part of the EIA Report.

Questions

5.64 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- Argyll and Bute Council; and
- NatureScot.

Questions for Consultees

Q5.1: Can consultees confirm that GLVIA3 is an appropriate methodological starting point for the LVIA assessment? Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?

Q5.2: Are there other sources of information which should inform the baseline and assessment of potential effects on landscape character and designated landscapes?

Q5.3: Are there any comments on the landscape character types scoped in and scoped out of the assessment, as listed in **Table 5.1**?

Q5.4: Are there any comments on the designated landscapes scoped in and scoped out of the assessment, as listed in **Table 5.2**?

Q5.5: Are there any comments on the Wild Land Areas scoped in and scoped out of the assessment, as listed in **Table 5.3**?

Q5.6: Are there any comments on the proposed list of assessment viewpoint locations listed in **Table 5.4**?

Q5.7: Are there any further wind farms, in addition to those shown on **Figure 5.6**, to consider as part of the cumulative assessment?

Q5.8: Are there any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?

Q5.9: Can consultees confirm that an RVAA will not be required?

Chapter 6
Hydrology, Hydrogeology and Peat

Introduction

6.1 This chapter sets out the proposed approach to the assessment of potential effects on hydrology, hydrogeology and peat during construction and operation of the Proposed Development. The assessment will be carried out in line with relevant legislation and standards.

Existing Conditions

6.2 A desk based review of 1:10,000 and 1:25,000 scale Ordnance Survey maps, 1:50,000 scale British Geological Survey (BGS) Geology maps, 1:250,000 scale Soils maps of Scotland and 1:250,000 SNH Carbon and Peatland 2016 Map has been undertaken to identify watercourses and ground conditions within the vicinity of the Proposed Development (see **Figure 6.1)**.

6.3 The geology of the Site comprises metamorphic bedrock (Crinan Grit Formation, Tayvalich Slate and Limestone Formation and Dalradian Supergroup).

6.4 The majority of the Site has no recorded superficial geology on the BGS Geology map. Within the southern part of the development, there are marked areas of glacial till.

6.5 The SNH Carbon and Peatland mapping indicates the majority of the Proposed Development lies in Class 2 carbon-rich soils (i.e. peat soils with occasional peaty soil and peatland habitats). There is an area of Class 5 (peat soil, no peatland vegetation) in the eastern part of the Site. The Site is an upland area, where local topography will affect the peat distribution. Higher linear ridges are separated by low lying depressions, where watercourses, lochs and areas of deeper peat are more likely to be present. A prior survey[17] across the northern part of the Site found that the peat depths showed significant variation across short distances. The peat depths were predominantly (~70% of surveyed points) between 0-1m with 13% of the surveyed points having a depth of >2m.

6.6 The Site is located within the Allt Blarghour, Kames River, Ardchonel Burn, Erallich Water, Douglas Water, Allt Riabhachan and Crom Allt catchments. The Allt Blarghour, Kames River and Ardchonel Burn all flow into Loch Awe, the Douglas Water and Crom Allt flow into Loch Fyne and the

[17] RWE npower renewables (2013) Archonnel Wind Farm Environmental Statement

Erallich Water and Allt Riabhachan join the River Array prior to flowing into Loch Fyne.

6.7 Within the Site are several smaller tributaries such as Allt a'Ghilinne, Allt na h-Airigh Maldain, Allt an Sgadain, Allt Lon nan Laogh, Allt Sron na h-Airighe Duibhe, Allt Bail' a' Ghobhainn, Quakers Burn, Beatach an Fhuarain, Allt Eas a Chosain and Alltan Airigh Mhic Choinnich.

6.8 Additionally, within the Site there are several lochs/lochans such as Lochan Long, Lochan Uaine, Lochan Eisge Mhoir, Lochan Dubh Mhuilinn, Lochan Allt an Sgadain. Loch Sionnaich, Loch an Eilein Duibh, Loch nan Car, Steallaire Ban Loch, Loch Erallich and Lon Chlachan Dubha.

6.9 A review of the SEPA Flood Map indicates that there are some areas identified to be at risk of flooding in a 1 in 200-year event within the Site (e.g. the Allt Blarghour, Allt Riabhachan and Kames River). Flood risk areas will be identified within in the baseline of the EIA Report.

6.10 SEPA has characterised surface water quality status under the terms of the Water Framework Directive. Classification by SEPA considers water quality, hydromorphology, biological elements including fish, plant life and invertebrates, and specific pollutants known to be problematic. The classification grades through High, Good, Moderate, Poor, and Bad status. This provides a holistic assessment of ecological health. Within the Study Area, four watercourses are large enough to be classified:

- Kames River (Waterbody ID 10273) was classified as 'Moderate'.
- Allt Blarghour (Waterbody ID 10274) was classified as 'Moderate'.
- Erallich Water (Waterbody ID 10225) was classified as 'Good'. The River Array (Waterbody ID 10224) which the Erallich Water joins was classified as 'Good'.
- Douglas Water (Waterbody ID 10226) was classified as 'Poor'.

Design Considerations

6.11 Where possible, a 50m buffer will be applied to all watercourses to minimise the risk of potential impacts due to changes in runoff, sedimentation, or water quality. Due to the number of smaller watercourses and waterbodies within the Site, the application of a 50m buffer might not be always possible. The buffer excludes watercourse crossings for the access track.

6.12 All components of the Proposed Development will be kept outwith the estimated 1 in 200-year fluvial flood extent. Watercourse crossings will be designed to accommodate the 1 in 200-year flow.

6.13 Where possible, the infrastructure and access tracks will avoid areas of peat and particularly deeper (> 1m) peat. This reduces the volume of peat required to be excavated and also has benefits for ecological interests and for the overall carbon balance of the Proposed Development, as well as reducing the potential to interrupt localised shallow subsurface flow-paths. Access tracks that cannot avoid areas of deeper peat (>1m) will be designed as floating tracks to minimise impacts on the peatlands.

6.14 Where possible all excavations <1m will be over 100m away from any groundwater abstractions, private water supplies (PWS) or Ground Water Dependent Terrestrial Ecosystems (GWDTEs) as per SEPA guidance[18]. Where possible, excavations >1m will be over 250m away.

Proposed Surveys and Assessment Methodologies

6.15 In addition to the desk-based research undertaken to date, consultation with Argyll & Bute Council, Scottish Water, SEPA and NatureScot will be undertaken to obtain relevant flood, water supply and peat information, including abstractions and PWS. Relevant flow and water quality data will also be obtained from SEPA.

6.16 A walkover hydrological survey of the Site will be carried out to supplement the desk-based work and data collection to identify the existing baseline conditions, including identifying and documenting watercourse crossings (proposed and existing), identification of other water features such as wetlands and springs, undertaking an overview assessment of areas identified as floodplain within the SEPA Flood Maps and providing a general overview of landscape and land cover of importance to hydrology and peat. PWS visits will also be undertaken following consultation with the PWS owners to verify the source location. GWDTEs will be identified based on habitat mapping and ecology surveys and reviewed by hydrologists in the field (see **Chapter 7: Ecology**).

6.17 Peat depth surveys are proposed within the Site where peat deposits are shown on the geological, soil and SNH carbon and peatland mapping to delineate the spatial coverage and depth of peat within the area where infrastructure is proposed to be located.

[18] SEPA (2017) Land Use Planning System SEPA Guidance Note 31 Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, LUPS-GU31

6.18 The infrastructure components will be designed to avoid deeper peat and priority peatland habitats where possible.

6.19 Peat probing will be undertaken systematically where peat is anticipated (the entire site based on the review of British Geological Survey Superficial Geology maps, Soils Scotland Mapping and SNH Carbon and Peatland Mapping). Peat depth data has already been collected for part of the Site for a previous wind farm application (Ardchonnel Wind Farm) and this will be reviewed to guide the extent of probing. Where probing locates peat, more extensive probing will be undertaken.

6.20 The proposed frequency for probing and coring will follow relevant guidance[19], adapted for the Site:

- The 100m x 100m regular grid survey will be refined to reflect topographic controls on peat distribution, as described in paragraph 6.5**.**
- Targeted high frequency probing will be undertaken along all tracks, at all turbines/hardstandings, turning points and passing places, site compounds, substation, borrow pits and met mast locations.
- Probes will then be taken at 50m spacing both along the centre line of any access tracks and at 10m offsets.
- Detailed probing survey on a 10m by 10m grid basis will be undertaken around the centre of each proposed turbine base and additional proposed infrastructure.
- Cores will be undertaken at representative locations to verify the actual peat depth, the thickness of the acrotelm, determine the mineral soil characteristics and allow for Von Post tests to be undertaken.

6.21 The data obtained from the site investigations will be used to produce maps of peat depths within the site and around proposed infrastructure. A shaded contour interval of 0-0.5m, >0.5m-1m, >1m-1.5m, >1.5m-2m, >2m-2.5m, etc. will be used to demonstrate the occurrence of peat across the Site and the avoidance of peat in the area of proposed infrastructure, on the EIA Report figures.

6.22 The findings of the survey work and baseline assessment will contribute to environmental constraints mapping and will provide input and feedback into design iterations and subsequent environmental assessment.

6.23 The peat survey results will also be used to inform the preparation of a peat management plan and peat landslide hazard and risk assessment.

6.24 The peat management plan will follow relevant guidance[20] and identify potential excavation volumes of peat. Early calculations will be used to optimise infrastructure locations with respect to peat depth (in balance with other constraints). Detailed calculations of excavation and reuse of acrotelmic and catotelmic peat will be undertaken using the design-freeze layout and opportunities to reuse peat will be explored based on infrastructure and site conditions. This may include integration of peat reuse measures with habitat management proposals to improve site conditions where there is benefit in so doing.

6.25 The peat landslide hazard and risk assessment will be undertaken according to Scottish Government guidance[21] and will assess the likelihood of peat instability in association with wind farm construction. Early calculations will be used to minimise overlap with areas of higher natural likelihood. Assessment of the design-freeze layout will consider all relevant receptors and provide mitigation measures and good practice recommendations to minimise risks associated with peat landslides.

Potential Significant Effects

6.26 Potential effects on hydrology, hydrogeology and peat will be assessed as part of the EIA process. This will include the identification of both generic effects of construction (e.g. sediment release, pollution, fuel spills etc.) and effects on specific locations, such as sensitive habitats (i.e. GWDTEs, PWS, peatland habitats or watercourse crossings, which are sensitive to pollution risk and/or disturbance from required engineering works.

6.27 Potentially significant effects are considered more likely to occur during the construction phase. The applicant is committed to implementing good practice construction methods and has extensive working knowledge of construction methods due to constructing a number of similar projects throughout Scotland.

6.28 Taking account of the findings of the work undertaken to date, and professional experience, whilst still adopting a precautionary approach at this preliminary stage, potential effects associated with the construction and/or operation of the Proposed Development include:

[19] Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland
[20] Scottish Renewables and Scottish Environment Protection Agency (2012) Developments on Peatland: Guidance on the assessment of peat volumes, reuse of excavated peat and the minimisation of waste. Version 1, January 2012. SR and SEPA Joint Publication, 23p
[21] Scottish Government (2017) Peat Landslide Hazard and Risk Assessments, Best Practice Guide for Proposed Electricity Generation Developments (Second Edition). Scottish Government, 84p

- Pollution of surface water, including public/private drinking water supplies caused by releases of sediment to watercourses from excavated/stockpiled material during construction, or as a result of stream crossings or works near streams.
- Pollution of surface water and groundwater, including drinking water supplies, through operation of machinery (e.g. spillage of fuels, oils etc.) during site preparation and construction.
- Modifications to natural drainage patterns, changes to runoff rates and volumes and consequent increase in flood risk during construction and operation.
- Effects on peat (including potential peat instability).

Approach to Mitigation

6.29 In addition to the careful siting of infrastructure components and given the applicant's commitment to, and prior experience of, implementing accepted good practice during construction and operation, and the current regulatory context, many potential effects on the water environment can be avoided or reduced. With respect to the current regulatory context, since the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) (CAR) came into force, CAR authorisation will be required in relation to a number of activities e.g. engineering works in inland waters and wetlands. A Construction Site Licence (CSL) will also be required for the works under the CAR Regulations. Consultation with SEPA throughout the EIA process will be undertaken in relation to those activities for which a licence or registration is required.

6.30 A number of good practice pollution prevention and control measures will be put in place during construction. These will be embedded into the project design and will reflect best practice guidance and recognised industry standards (e.g. SEPA guidance, including their Guidance for Pollution Prevention (GPPs), CIRIA SUDS Manual[22] and control of water pollution from construction sites guidance[23] and the joint publication Good Practice during Windfarm Construction[24] amongst others),

6.31 As a consequence, a number of measures are not considered to be mitigation as such, but rather an integral part of the design/construction process as part of good practice; and it is proposed that these will be taken into account prior to assessing the likely effects of the Proposed Development. However, where appropriate, more tailored mitigation measures will be identified prior to determining the likely significance of residual effects.

Questions

Questions for Consultees

Q6.1: Are there any additional sources of baseline information which should be referred to, to inform the appraisal of effects on hydrology, hydrogeology, and peat?

Q6.2: Is the proposed methodology appropriate, particularly in relation to refinement of the standard 100m x 100m grid for initial peat surveys?

Q6.3: Are the proposed list of effects which are scoped in appropriate?

Q6.4: Is the proposed approach to mitigation appropriate?

[22] CIRIA: The SUDS Manual (C753) 2015
[23] CIRIA: Control of water pollution from construction sites: Guidance for consultants and contractors (C532) 2001
[24] Good Practice during Windfarm Construction (Scottish Renewables, SNH, SEPA & Forestry Commission Scotland, 4th Edition 2019)

Chapter 7
Ecology

Introduction

7.1 This chapter sets out the proposed approach to the assessment of potential effects on ecology during the construction and operation of the Proposed Development.

7.2 Ecological features scoped into the assessment have been informed by key legislative and policy drivers, as they relate to nature conservation in Scotland, and include:

- Sites designated for their nature conservation value via:
  - the Conservation (Natural Habitats, &c) Regulations (1994);
  - the Wildlife and Countryside Act (1991);
  - National/local planning policy; and
  - National/local nature conservation policy (including the Ancient Woodland Inventory (AWI)).
- Species and habitats offered legislative or policy protection via:
  - the Conservation (Natural Habitats, &c) Regulations (1994);
  - the Wildlife and Countryside Act (1991); and
  - National/local planning policy.

7.3 The assessment will follow the Chartered Institute of Ecology and Environmental Management Guidelines (CIEEM) for Ecological Impact Assessment in the UK (2018)[25].

Existing Conditions

7.4 This section outlines the preliminary ecology baseline of the Site. Ecology baseline surveys are scheduled for later in 2021 and no surveys have been undertaken at the time of writing.

7.5 However, as noted above, a substantial part of the Site was the subject of the Ardchonnel wind farm application for which extensive ecology surveys were undertaken in 2012. Whilst these surveys are eight years old, it is unlikely that the ecological conditions of the area will have changed substantially, and the findings of these surveys are considered

[25] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland

to be a reliable ecological baseline for the purposes of Scoping.

7.6 It should be noted that whilst the Ardchonnel Wind Farm site partially overlaps with the Car Duibh Site, a substantial area of the Car Duibh Site (extending east of the proposed turbine area) has not previously been surveyed. This includes an area of plantation forestry in the far east of the Site for which no baseline data exists.

7.7 **Figure 1.1** shows the scoping Site boundary. At present, the ecology survey area (in which updated baseline ecology surveys will be undertaken) mirrors this boundary, however it is anticipated this will be reduced in size by the time the surveys commence, once a defined 'turbine area' has been identified, due to the iterative design process. At this stage it is considered unlikely that the 'turbine area' will extend greatly beyond the extent of the scoping layout.

Designated Sites

7.8 No statutory designated sites are present within the Site boundary. Several areas of woodland listed on the Ancient Woodland Inventory (AWI) are present in the far east of the Site. Most of these areas are unnamed. **Table 7.1** below, and **Figure 7.1** present those statutory and non-statutory sites, designated for their ecological interest, which lie within the Site and within 10km of the Site boundary.

Table 7.1: Statutory and non-statutory ecological designated sites within 10km of the Site

Name	Designation	Qualifying Features	Distance at closest point and orientation from Site Boundary
Statutory sites			
Dalavich Oakwood	Site of Special Scientific Interest (SSSI)	Upland oak woodland, wet woodland	2.6km west
Ardchyline Wood	SSSI	Upland oak woodland	3.0km south-east
Glen Shira	Special Area of Conservation (SAC)	Western acidic oak woodland	7.4km north-east
Beinn an Lochain	SSSI	Siliceous scree (includes boulder fields), tall herb ledge, upland assemblage	8.5km east
Non-statutory sites			
Coille Bhraghad and other unnamed areas of woodland	Ancient Woodland Inventory (AWI)	Woodland	Within the Site boundary (in the east)
Numerous other areas of unnamed woodland	AWI	Woodland	Widespread within the 10km search area

Habitats and Vegetation

7.9 The undulating upland topography of the Site and climatic conditions give rise to a complex habitat assemblage and as result of this, extensive areas were recorded as mosaics of habitats of conservation concern[26] in the surveys undertaken for Ardchonnel Wind Farm.

7.10 Rainwater fed blanket bog habitat was widespread across the Site, particularly on relatively level 'plateau' areas. Wet heath habitat was abundant and commonly recorded at the margins of the blanket bog habitat. Areas of dry heath and acid grassland were recorded on well drained slopes and ridges within the blanket bog and wet heath habitat.

[26] Habitats included on Annex 1 of the Nature Conservation (Habitats, &c.) Regulations (1994), the Scottish Biodiversity List and/or the Local Biodiversity Action Plan.

Additionally, flushes, and sedge and rush mires, were widespread throughout the Site.

7.11 In the western half of the Site, the landscape is pitted with lochs and lochans and drained by numerous watercourses.

7.12 The Ardchonnel assessment identified the adverse impact of grazing on dry heath habitat resulting in the conversion to grassland in some areas.

7.13 Aerial imagery shows that a substantial area of plantation forestry is present in the east of the Site. This area was not included in the Ardchonnel baseline surveys and therefore no baseline data exists.

Protected Species

7.14 The majority of the Site constitutes an open expanse of undulating blanket bog and wet heath habitat. This habitat is considered largely unsuitable for protected species, with the exception of water vole.

7.15 The key findings from the Ardchonnel Wind Farm protected species surveys are presented below:

Water vole

7.16 Site habitats were optimal for this species due to the presence of slowly flowing watercourses and the availability of a plentiful food supply and peat substrate for burrow excavation. The surveys recorded a viable water vole population estimated at 39 individuals.

Otter

7.17 The numerous lochs, lochans and watercourses provide suitable habitat for otter; however, the surveys found that foraging resources and refuge opportunities were limited.

Badger

7.18 Wet blanket bog habitat is unsuitable for badger as this species generally prefers dry, well-drained substrates in which to excavate setts. No setts were recorded although some snuffle holes and paths were recorded in the woodland along the proposed Ardchonnel Site access track.

Red Squirrel

7.19 Woodland was absent from the majority of the Ardchonnel site therefore opportunities for red squirrel were very limited. Some suitable woodland was present along the site access track, however no dreys, and only a limited number of feeding cones, were recorded.

Pine Marten

7.20 The surveys noted that the Ardchonnel site was generally unsuitable for pine marten dens due to a lack of suitable woodland habitat and a lack of rocky habitats with limited cavities. No evidence of pine marten was recorded.

Wildcat

7.21 The surveys noted that the Ardchonnel site was generally unsuitable for wildcat dens due to a lack of rocky habitats with limited cavities. Additionally, the exposed nature of the site and the wet ground conditions are unsuitable for wildcat. No evidence of wildcat was recorded.

Bats

7.22 Bat activity surveys recorded low activity levels across the Ardchonnel site. This was attributed to the site being dominated by open moorland which is a sub-optimal habitat for bats due to its exposure, and lack of navigable features and favourable foraging resources.

7.23 Three species of bat were recorded: soprano pipistrelle; common pipistrelle and Daubenton's bat. Soprano pipistrelle accounted for approximately half the activity recorded.

7.24 No roost sites were recorded.

Fisheries and Freshwater Pearl Mussel

7.25 The surveys recorded that fish spawning habitats were scarce and impassable sections were present in many of the watercourses. Three species of fish were recorded: brown trout; minnow; and three-spined stickleback. The landowner advised that the lochs had been stocked with brown trout.

7.26 Watercourses were generally unsuitable for freshwater pearl mussel due to a lack of suitable substrate. No evidence of this species was recorded.

7.27 Despite the limited evidence of protected species recorded by the Ardchonnel surveys, and the lack of optimal habitat suitability for most protected species (excluding water vole), the Car Duibh Site still has the potential to support a range of protected species, particularly given that a substantial portion of the Site has not been surveyed before, including a large area of plantation forestry.

Design Considerations

7.28 Design considerations relevant to ecological features include:

- where possible, maintaining a minimum 50m buffer between turbine locations and watercourses/bodies shown on 1:50,000 scale Ordnance Survey mapping;
- minimisation of water-crossings;

- the design of mammal-passable water-crossings;
- avoidance of the most ecologically important habitats;
- avoidance of deep peat deposits and the use of floating track construction methods where deep peat deposits cannot be avoided; and
- avoidance of protected species resting sites (including buffers where appropriate).

Proposed Surveys and Assessment Methodologies

7.29 Prior to the commencement of field work, a desk study will be undertaken to identify records of extant protected species populations within 5km of the Site (records from 2000 onwards.

7.30 Given that an extensive ecological baseline for a large portion of the Site already exists, the intention is to undertake a suite of surveys that would update this baseline, 'ground-truthing' established data, rather than recreating it. For those areas for which no baseline data exists, full surveys will be undertaken.

7.31 All field surveys will be carried out in accordance with best practice methods described and endorsed by CIEEM and NatureScot.

7.32 All field surveys will be completed by competent, professionally qualified ecologists, within accepted ecological survey windows, and will include:

- Phase 1 habitat, and National Vegetation Classification (NVC)[27] survey of habitats of conservation concern (including GWDTE).
- Protected Species walkover[28] including:
  - otter – detailed survey including upstream and downstream of features within 200m of the turbines and infrastructure;
  - water vole – detailed survey, including upstream and downstream of features within 50m of the turbines and infrastructure;
  - badger – detailed survey of the turbines and infrastructure area and a 100m buffer (activity likely to be limited to forested areas);
  - red squirrel – habitat suitability/field sign survey within the forested areas in the east of the Site.
  - pine marten – habitat suitability/field sign survey within the forested areas in the east of the Site.
  - fisheries and freshwater pearl mussel – habitat suitability surveys only.
- Bat activity surveys in compliance with current good practice methods[29], to include the deployment of up to 16 static full-spectrum bat detectors for a minimum of ten nights in each spring, summer and autumn 2021.

7.33 It is proposed that detailed surveys for wildcat, fisheries and freshwater pear mussel are scoped out of the assessment on the basis of the existing baseline data and good practice design considerations, subject to the findings of habitat suitability surveys and discussion and agreement with consultees (e.g. NatureScot).

7.34 All data collected through field surveys will be analysed and interpreted in compliance with good practice methods[30].

Potential Significant Effects

7.35 The Ecology Chapter of the EIA Report will include a detailed assessment of potential effects, following current best practice, as defined by CIEEM.

7.36 The assessment will consider the potential effects associated with construction and operation of the Proposed Development as detailed below.

Potential Effects Scoped into the Assessment

7.37 The assessment will consider the following potential effects:

- potential effects on designated sites structurally or functionally connected to the Site, during construction;
- potential effects on habitats of conservation concern[26], during construction;
- potential effects on protected species recorded within the Site, during construction; and
- potential effects on bats, during operation.

Potential Effects Scoped out of Detailed Assessment

7.38 The assessment will not consider the following:

[27] Rodwell *et al.* National Vegetation Classification (vols 1 – 5). 1991 – 2002.
[28] Species-specific survey methods to comply with best practice, as defined by CIEEM and described on www.cieem.net, including appropriate buffers ranging from 50m – 200m.
[29] SNH (2019). Bats and onshore wind turbines – survey, assessment and mitigation.
[30] Kitchener A. C. (2012). *UK BAP mammals. Interim guidance for survey methodologies, impact assessment and mitigation.* Cresswell W. J., Birks J. D. S., Dean M., Pacheco M., Trewhella W. J., Wells D. & Wray S. (Eds). The Mammal Society, Southampton.

- effects on ecological features during operation (excluding bats);
- effects on wildcat;
- effects on freshwater pearl mussel and fisheries, subject to habitat suitability surveys.

Cumulative Assessment

7.39 The effects of the Proposed Development will be assessed in isolation and in combination with predicted effects of other consented wind farm developments and relevant large-scale developments within 10km of the Proposed Development.

Approach to Mitigation

7.40 Ecological baseline data will be used to inform the emerging design process.

7.41 Where effects are assessed as being significant, within the context of the EIA regulations, mitigation measures will be identified and agreed. All mitigation measures will be developed on the basis of robust science, drawing on current and emerging good practice, and its likely efficacy and success will be considered.

7.42 Mitigation measures may include:

- design iteration to avoid or reduce impacts on ecological features (embedded mitigation);
- onsite construction support to advise on, and monitor, impact reduction on ecological features; and
- post construction monitoring to ensure mitigation remains successful and proportionate.

Questions

Questions for Consultees

Q7.1: Do consultees agree that the Ardchonnel Wind Farm EIA survey data is a reliable baseline upon which to base the surveys and scope of the assessment?

Q7.2: Do consultees agree with the survey scope set out above?

Q7.3: Do consultees agree with the assessment method (including scoped in/scoped out features)?

Q7.4: Do consultees hold any existing ecological data relating to the Site that may further inform the ecological baseline?

Q7.5: Are consultees aware of any local nature conservation organisation with whom further consultation should be undertaken?

Chapter 8
Ornithology

Introduction

8.1 This chapter sets out the proposed approach to the assessment of potential effects on ornithology during construction and operation of the Proposed Development.

The receptors that will be the focus of the assessment will comprise:

- relevant statutory designated sites, and their cited qualifying interests, such as Sites of Special Scientific Interest (SSSIs) and Special Protection Areas (SPAs); and,
- populations of avian species listed on Annex IV of the EC Habitats Directive or Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) or scarce or a priority for conservation under the UK Biodiversity Action Plan (BAP).

Existing Conditions

8.2 This section outlines the preliminary ornithological baseline of the Site.

8.3 Baseline ornithological conditions to inform the design and assessment of the Proposed Development will be established through further desk study and also field surveys. Full details will be presented within the EIA Report. A brief summary of findings from desk studies and a documentation review for a previous wind farm application within the Site is provided below.

Consultation

8.4 Prior to scoping, preliminary consultation with NatureScot was undertaken in May 2019 to discuss the scope for ornithology surveys. The NatureScot Operations Officer for Argyll provided a response by email in June 2019, raising some queries in relation to known golden eagle *Aquila chrysaetos* activity within the Site and nearby.

8.5 A (virtual) meeting was held with NatureScot on 2nd April 2020 to discuss the Proposed Development. The main outcomes of this meeting were that golden eagle satellite tag data should be requested from Natural Research and Golden Eagle Territory (GET) modelling should be carried out to inform the assessment for the Proposed Development. Furthermore, the importance of assessing cumulative effects

in combination with other wind farm developments on the Natural Heritage Zone (NHZ) scale for golden eagle was noted. All of these considerations are on-going and will form the basis of the assessment.

Initial Desk Study

8.6 An initial desk study was undertaken in 2019 to inform the proposed approach to baseline information gathering, including the scope for baseline ornithological surveys. The following key sources were consulted:

- Sitelink;
- Aerial imagery;
- NatureScot guidance 'General pre-application/scoping advice to developers of onshore wind farms' (NatureScot, 2020[31]);
- NatureScot guidance (SNH, 2017) on bird survey methods at onshore wind farms[32];
- NatureScot guidance (SNH, 2018) assessing significance of impacts from onshore wind farms outwith designated areas[33];
- An information request to the Argyll Raptor Study Group (ARSG);
- An information request to the Royal Society for the Protection of Birds (RSPB); and,
- Documentation which supported the previous Ardchonnel Wind Farm application.

8.7 In addition, the ornithological field team, with considerable experience in the survey of comparable sites in Argyll and across Scotland, was also able to advise on the known presence or potential presence for sensitive ecological interests within the Site and wider surrounding area.

Statutory Designated Sites for Nature Conservation

8.8 International statutory designated sites located within 10km of the Site (extended to 20km for any internationally designated sites with migratory waterfowl interests) with qualifying ornithological interest include:

- Glen Etive and Glen Fyne SPA (6.5km, NE) and with breeding golden eagle *Aquila chrysaetos* as qualifying feature (see **Figure 8.1**).

Previous Baseline Surveys

8.9 Ornithological surveys were undertaken to inform the design and assessment of the previously submitted Ardchonnel Wind Farm between 2010-13, providing a two year dataset comprising the following:

- Moorland Breeding Bird Surveys (2011 and 2012);
- Targeted breeding raptor, black grouse *Tetrao tetrix* and diver surveys (2011 and 2012); and,
- Vantage Point (VP) Surveys (November 2010 – February 2013).

8.10 Below is a summary of the results of these surveys:

- Sparse moorland breeding bird assemblage consisting of two pairs of curlew *Numenius arquata*.
- Two pairs of red-throated divers *Gavia stellata* and a pair of osprey *Pandion haliaetus*, with osprey breeding successfully in both survey years and the diver pair on-Site failing early at the incubation stage during both survey years. No black grouse leks were recorded in either survey year.
- The highest flight activity during the VP Surveys was golden eagle (180 flights, 194 birds), and then osprey (14 flights, 14 birds) and white-tailed eagle *Haliaeetus albicilla* (13 flights, 14 birds). The majority of golden eagle flights were concentrated along a ridge to the east of the (then) turbine area, and 28 golden eagle flights were recorded at collision risk height within 500m of a turbine.

8.11 Consultation with SNH (now NatureScot) for the submitted Ardchonnel Wind Farm application (dated 17th March 2014) confirmed the following target species for consideration on-Site: golden eagle, red-throated diver, white-tailed eagle, osprey, merlin *Falco columbarius* and peregrine falcon *Falco peregrinus*. SNH confirmed that Ardchonnel Wind Farm would not have a significant impact on these species at the NHZ14 population level, although it was noted that a pair of golden eagles were appearing to be attempting to establish in the area of the Site. SNH stated that displacement of a pair of golden eagles would not impact on the NHZ14 scale.

Design Considerations

8.12 Suitable buffers will be included around breeding locations for protected or notable species, including black grouse (lekking sites), red-throated divers and scarce raptors.

[31] Available at: https://www.nature.scot/general-pre-application-and-scoping-advice-onshore-wind-farms [Accessed 28/10/2020].
[32] SNH (2017) Recommended bird survey methods to inform impact assessment of onshore wind farms. March 2017, Version 2.
[33] SNH (2018) Assessing significance of impacts from onshore wind farm outwith designated areas. Guidance. Version 2- February 2018.

8.13 The turbine layout will also be informed by the results of the GET model for golden eagle.

Proposed Surveys and Assessment Methodologies

8.14 In accordance with NatureScot guidance (SNH, 2017), two years of ornithological surveys have been completed. Given the main ornithological sensitivity of the Site (breeding species) and following early consultation with NatureScot, the following field surveys have been undertaken:

- VP Flight Activity Surveys:
  - Comprising four VPs between February 2019 and January 2020.
  - Comprising five VPs between February 2020 and January 2021.
- Moorland Breeding Bird Survey (MBBS) comprising four visits of Site plus 500m buffer:
  - April to July 2019.
  - April to July 2020.
- Annex 1 Breeding Raptor and Owl Searches within a 2km buffer (extended to 6km for eagles):
  - February to August 2019.
  - February to August 2020.
- Breeding Black Grouse Survey in suitable habitats within 1.5km of the Site:
  - March to May 2019.
  - March to May 2020.
- Breeding Diver Searches of suitable waterbodies within 2km of the Site[34]:
  - June and July 2019.
  - June and July 2020.
- Breeding Diver Focal Local Watches in the event that breeding divers were identified in waterbodies during breeding diver searches. No divers successfully breed near the Site in 2019, but a pair did breed successfully in 2020 so Diver Focal Local Watches were undertaken:
  - July and August[35].

8.15 All ornithology surveys were undertaken in accordance with NatureScot guidance (SNH 2017, 2018) and species-specific methodologies referenced therein, which were Calladine *et al.* (2009[36]) (for MBBS), Hardey *et al.* (2013[37]) (for breeding raptor and owl searches) and Gilbert *et al.* (1998[38]) (for black grouse surveys and breeding diver searches).

Target Species

8.16 Following the review of existing ornithological information, target species are considered to comprise the following in accordance with NatureScot guidance (SNH, 2017 and 2018):

- Golden eagle;
- Peregrine falcon;
- Merlin *Falco columbarius*;
- Hen harrier *Circus cyaneus*;
- Osprey *Pandion haliaetus*;
- Goshawk *Accipiter gentilis*;
- Short-eared owl *Asio flammeus*;
- All divers;
- Black grouse;
- Breeding Schedule 1 and Annex 1 waders; and
- All waders and waterfowl (excl. feral species).

8.17 Secondary species are considered to comprise all non-Schedule 1 and non-Annex 1 raptors (buzzard *Buteo buteo*, kestrel *Falco tinnunculus*, and sparrowhawk *Accipiter nisus*), all gulls (with exception of common gull) and any notable passerines e.g. Red-listed Birds of Conservation Concern (Eaton *et al.*, 2015[39]), and those listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

VP Flight Activity Surveys

8.18 Four VPs were used in year 1, between February 2019 and January 2020 (minimum of 84hrs completed per VP). At the end of the year 1, a fifth VP was added to ensure the

[34] NatureScot in the guidance (SNH, 2017) states buffer of 1km, but 2km adopted following the surveys in the previous Ardchonnel Wind Farm application.
[35] VP locations (VPB) used in the VP Flight Activity Surveys were suitability located so that the breeding diver loch was sufficiently covered to record diver flights.
[36] Calladine, J., Garner, G., Wernham, C. & Thiel, A. (2009) The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study* 56: 3, 381-388.
[37] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: a field guide to survey and monitoring.* Third Edition. The Stationary Office, Edinburgh.
[38] Gilbert, G., Gibbons, D.W. & Evans, J. (1998) *Bird monitoring methods.* A manual of techniques for key UK species. RSPB, Sandy, Bedfordshire.
[39] Eaton, M. *et al.* (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. *British Birds* 108: 708-746.

western extreme of the Site was sufficiently covered (with 93hrs per VP scheduled), and five VPs were used in year 2.

8.19 VP locations used are noted below and the VPs and viewsheds are illustrated on **Figure 8.2**:

- VPA: NN 00794 11307;
- VPB: NN 02770 10143;
- VPC: NN 02754 10424;
- VPD: NN 03423 12908; and
- VPE: NN 01234 11957.

Ornithology Survey Results Summary 2019-2020

8.20 Total VP flight activity across both survey periods was highest for golden eagle and white-tailed eagle, with lower (but notable) flight activity of hen harrier and red-throated diver.

8.21 Collision Risk Modelling (CRM) will be undertaken on those target species with sufficient flight activity data from VP Flight Activity Surveys to provide a robust assessment.

8.22 Wetland species found to be breeding within the Study Area were common snipe *Gallinago gallinago*, curlew, common sandpiper *Actitis hypoleucos*, lapwing *Vanellus vanellus*, teal *Anas crecca* and mallard *Anas platyrhynchos*, with the number of breeding territories typically low (<2 territories).

8.23 No Annex 1 and Schedule 1 raptor or owl nest sites were recorded within the Site.

8.24 Two osprey nests were identified at Loch Awe (approximately 2km west from the Site). A white-tailed eagle roost site was identified west of the Site.

8.25 Black grouse were recorded within the Study Area, with up to two lek sites identified, the nearest lek approximately 800m south from the Site.

8.26 A diver pair successfully bred in a loch to the south-east of the Site in 2020 (not successful in 2019). No notable numbers of flights were recorded by the breeding diver pair throughout the Site during focal watches.

Approach to Assessment

8.27 Impact assessment presented within the EIA report will be undertaken in accordance with NatureScot guidance (SNH, 2018) and based on CIEEM guidance (2019[40]).

8.28 The approach to assessment will take account of existing guidance and published scientific literature in relation to birds and wind farms, together with professional judgement and experience of wind farm EIA.

8.29 The EIA report will provide a detailed description of the existing baseline ornithological features of the Study Area, along with the assessment of the potential impacts of the wind farm proposal on the identified important ornithological features, taking account of mitigating measures to avoid and reduce significant impact where appropriate.

Determining Importance

8.30 The assessment within the EIA report will only assess in detail impacts upon important ornithological features i.e. those that are considered important and potentially significantly affected by the Proposed Development. A detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts will not be undertaken and justification for 'scoping out' these features will be provided.

8.31 Relevant international, national and local legislation policy and guidance will be referenced to determine the importance (or 'sensitivity') of ornithological features. In addition, importance will also be determined using professional judgement, specialist consultation advice and the results of baseline surveys and the importance of features within the context of the geographical area.

8.32 Importance will not necessarily relate solely to the level of legal protection that a feature receives and ornithological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

8.33 The importance of ecological features will be defined in a geographical context from 'Local' to 'International'.

Identification and Characterisation of Impacts

8.34 The identification and characterisation of impacts on important ornithological feature will be undertaken in accordance with the CIEEM guidelines with reference made to magnitude (e.g. area or number of individuals to be impacted), extent, duration and reversibility as appropriate.

8.35 Impacts will be considered during the construction and operational phases and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

[40] https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.1.pdf Accessed [29/10/2020]

Significant Effects

8.36 For the purposes of assessment, the significance of effects will primarily be expressed within the EIA report with reference to the regional, national or international scale (as relevant) in line with NatureScot's interests of bird species status at wider spatial levels, adopting a precautionary approach on the basis of uncertainty. The significance of effects at a local scale may also be assessed where sufficient information allows a meaningful assessment.

Cumulative Impacts

8.37 Cumulative impacts will be assessed with reference to NatureScot guidance (SNH, 2012[41] and 2018b[42]) for all ornithological features subject to a detailed assessment. The potential for significant cumulative effects due to habitat loss, disturbance/displacement and collision risk mortality will be assessed. The assessment will be based on the consideration of residual effects i.e. assuming that proposed mitigation and compensation measures (where relevant) are implemented. The cumulative assessment will include consideration of:

- existing wind farm developments, either built or under construction;
- approved wind farm developments, awaiting implementation; and,
- wind farm proposals awaiting determination within the planning process with design information in the public domain.

8.38 With regard to the spatial extent of the cumulative assessment, NatureScot guidance (SNH, 2012 and 2018) stipulates that cumulative effects should typically be assessed at the relevant Regional NHZ scale, unless there is a reasonable alternative. The Proposed Development is located within the Argyll West & Island NHZ14 (Wilson *et al*., 2015[43]). It is therefore proposed that where the availability of relevant information is sufficient enough to allow for a meaningful cumulative assessment at the NHZ14 scale to be undertaken, this will be done.

8.39 NatureScot guidance (SNH, 2012) recognises that access to relevant data for other developments may be limited and therefore a meaningful assessment of cumulative effects of such developments is not always possible. As such an alternative approach is primarily proposed, whereby the core foraging range for each species included will be used to determine the spatial extent of the cumulative assessment, adopting a precautionary approach as necessary.

8.40 Core foraging ranges will be primarily taken from NatureScot guidance on 'Assessing Connectivity with Special Protection Areas (SPAs)' (SNH, 2016[44]).

Habitat Regulations Appraisal

8.41 The Site is located 6.5km from the Glen Etive and Glen Fyne SPA which has breeding golden eagle as its sole qualifying feature. The golden eagle core foraging range is 6km based on NatureScot guidance (SNH, 2016).

8.42 The golden eagle satellite tag data requested will be used to further understand golden eagle interactions between the Site and the SPA and therefore to determine the potential for functional linkage.

8.43 The EIA Report will therefore provide sufficient information to allow the competent authority to undertake a Habitats Regulations Appraisal of the Proposed Development in relation to the Glen Etive and Glen Fyne SPA.

8.44 The Site is not located within the core foraging range for the qualifying interests of any other SPA (as per SNH guidance, 2016) and as such, the potential for connectivity between the Site and any other such designation has been scoped out.

Presentation of Sensitive Information

8.45 Information pertaining to the locations of sensitive breeding species will be included in a confidential appendix to the EIA Report which will not be made publicly available but will be issued to NatureScot and the local planning authority.

Potential Significant Effects

8.46 The operation of turbines and maintenance activities has the potential to cause disturbance and displacement of birds throughout the Proposed Development's operational lifetime. The extent of displacement is, however, highly variable between species and species-group and therefore a species-specific assessment will take place on the basis of baseline studies.

8.47 The risk of avian mortality resulting from the collision of birds with the turbine blades (or additional wind farm infrastructure) is also acknowledged to be higher for some species due to their biometrics and flight behaviour. The

[41] SNH (2012) Assessing the cumulative impacts of onshore wind energy developments. Guidance. March 2012.
[42] SNH (2018) Assessing the cumulative impacts of onshore wind farms on birds. Guidance. August 2018.
[43] Wilson, M. W., Austin, G. E., Gillings, S. and Wernham, C. V. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504pp 72.
[44] SNH (2016) Assessing connectivity with Special Protection Areas (SPAs). Guidance. Version 3 – June 2016.

likelihood of collision is also likely to be influenced by the type of habitats within the Site and the surrounding area.

8.48 Where flight activity data is sufficiently recorded, CRM following the Band Model in accordance with NatureScot guidance (Band *et al*., 2007; SNH, 2000b[45]) will be undertaken to quantify the likelihood of mortality for target species. This will include golden eagle flights and CRM to determine likely impacts upon the NHZ14 population and potentially the breeding population which use the Glen Etive and Glen Fyne SPA.

Approach to Mitigation

8.49 The adoption of embedded mitigation measures to avoid or minimise adverse impacts upon ornithological features resulting from the Proposed Development will be part of the iterative design process of the Proposed Development.

8.50 Full details of the scheme design evolution and embedded mitigation measures in relation to ornithology will be detailed within the EIA report. This will include the specification of any species specific buffers as necessary.

8.51 A breeding bird protection plan will be prepared to ensure legislative in accordance with current good practice guidance following the completion of baseline studies outlined.

8.52 Where significant residual effects still remain, after the adoption of mitigation measures, compensation will be provided. This could include replacement habitat, or habitat improvements which would offset the significant residual effects.

Enhancement

8.53 Suitable principles for biodiversity enhancement to be delivered as part of the Proposed Development will be outlined within the EIA Report. The appropriateness and feasibility of principles will be confirmed with NatureScot and relevant consultees over the course of the EIA, with view to prescriptive enhancement measures being detailed post-consent within a Habitat Management Plan (HMP).

Questions

Questions for Consultees

Q8.1: Do consultees agree that the range of desk study and ornithological surveys undertaken is sufficient and proportionate to inform the design and assessment of the Proposed Development?

Q8.2: Do consultees agree that the full range of likely effects to be assessed with regards to ornithology within the EIA Report has been adequately identified and is proportionate to the nature of the Proposed Development?

Q8.3: Are there any other relevant consultees who should be contacted with respect to the ornithology assessment and scope of baseline information gathering?

Q8.4: Do consultees agree with the assessment and evaluation methodology proposed?

Q8.5: With the exception of Glen Etive and Glen Fyne SPA, do consultees agree that effects on all designated sites with qualifying ornithological features from the Proposed Development can be scoped out by virtue of considerable spatial segregation?

[45] SNH (2000b) Windfarms and birds: calculating a theoretical collision risk assuming no avoiding action. Guidance.

Chapter 9
Cultural Heritage

Introduction

9.1 This chapter sets out the proposed approach to the assessment of potentially significant effects on cultural heritage assets as a result of the Proposed Development, including physical effects and, setting change, both for the Proposed Development in isolation and cumulatively with other developments.

9.2 In this context, cultural heritage is held to be *"the physical evidence for human activity that connects people with place, linked with the associations we can see, feel and understand"* (Historic Environment Scotland (HES) 2014; 2019). It comprises tangible, physical assets including: historic buildings and structures; archaeological assets; the remains of past environments shaped by human action; gardens and designed landscapes; historic landscapes and townscapes; and, other sites, features or places in the landscape that have the potential to provide information on past human activity. It also incorporates fewer tangible associations of place with events, such as historical battlefields or with historical figures and folklore.

9.3 Direct physical impacts occur when the fabric of an asset is removed or damaged as a result of development. Direct physical impacts are permanent and generally occur during the construction phase. There is greater risk to the disturbance of undiscovered assets including buried remains of archaeological interest which could be partially or totally removed.

9.4 Indirect physical effects of the loss or preservation of fabric can also occur at any stage of development to assets which lie removed from the Proposed Development. For instance, impacts can include such as increased/decreased erosion or damage to walls from vibration of piling which is likely to be permanent.

9.5 Setting impacts are usually direct and result from a development causing change within the setting of a heritage asset which can affect its significance, for example via the ability for it to be understood, appreciated and experienced. This is often related to visual effects resulting from the appearance of the proposal in the surroundings of the asset, but can also relate to disruptions of historical, functional or symbolic relationships (including intervisibility between assets or historic patterns of land use) or sensory factors such as noise, odour or emissions. Indirect impacts on setting can also

occur away from the proposal, such as changes in traffic around an asset. This type of impact can occur at any stage of development and may be permanent, reversible or temporary.

Legislation and Policy

9.6 There is a range of national and local legislation and policies relevant to examining the potential effects of the Proposed Development on cultural heritage:

- Scottish Planning Policy (2014);
- Town and Country Planning (Listed Buildings and Conservation Areas) (Scotland) Act (1997), as amended;
- National Planning Framework (2014);
- Ancient Monuments and Archaeological Areas Act (1979), as amended;
- HES, Historic Environment Policy for Scotland (2019);
- Argyll and Bute Council, Local Development Plan (2015);
- Argyll and Bute Council, Supplementary Guidance (2016), including SG LDP 15-20, dealing with development impact on heritage assets.

Existing Conditions

9.7 This section outlines the preliminary cultural heritage baseline of the Site.

Site Context

9.8 The landscape within which the Site is located is characterised by good sea connections with sheltered bays on the mainland coast feeding into rivers inland. Settlement and agriculture was concentrated on low-lying loch-side locations, and the abundance of natural resources and maritime connections led to industry in the area from the 18th century onwards.

9.9 The Site itself is characterised by craggy ridges oriented north-east by south-west, varying from a level of 150m Above Ordnance Datum (AOD) to 520m AOD. Much of the land is unimproved moorland and blanket bog, with areas of deep peat in the northern portion of the Site. Given the ground conditions and altitude, the Site was not likely suitable for permanent settlement for much of its history. It has been used for seasonal summer grazing, as evidenced by the presence of post-medieval shielings.

9.10 As detailed above, the Site has been subject to a previous planning application for a wind farm development of 15 wind turbines up to 111m in height to blade tip and associated infrastructure. Planning permission was refused on appeal in 2014 (PPA-130-2045). In the appeal decision notice, the impact on the setting of Ardchonnel Castle was raised as a concern but "*does not amount to an unacceptable significant adverse effect*".

9.11 A 10km radius Study Area has been applied to the site boundary to identify the potential for significant effects to designated heritage assets, as significant effects due to setting change are generally less likely at greater distance. A preliminary sift of assets out to 15km radius was undertaken to identify any assets at greater distances likely to be susceptible to change arising from the Proposed Development. This will be refined to a final Study Area around the turbines once the layout is finalised. This returned no identified assets likely to experience significant effects. A Study Area of 1km radius is proposed for assessing impact to non-designated heritage assets alongside assessing potential direct effects within the area where the turbines are proposed to be located.

9.12 A Zone of Theoretical Visibility (ZTV) has been produced to indicative turbine tip height (200m) to illustrate the theoretical visibility of the proposed turbine layout (**Figure 9.1**). This has been used to identify which cultural heritage assets will have theoretical visibility of the Proposed Development, and sensitivity to setting change, and will therefore require detailed assessment, and which can be scoped out because they are unlikely to be affected.

9.13 A key factor in assessing the potential for setting impacts to heritage assets is other wind farm developments in the vicinity of the Proposed Development. Situated to the immediate south is the operational An Suidhe Wind Farm. In addition, immediately to the north of the Proposed Development, there is Blarghour Wind Farm which is currently awaiting determination following an appeal and public inquiry.

Designated Heritage Assets

9.14 Designation is the legal and or/policy recognition of some of Scotland's most important historic sites and places. It aims to ensure that the cultural, social, environmental and economic value of sites and places are recognised by law through the planning system and other regulatory processes.

9.15 There is one designated asset partially within the Site boundary but not within the Proposed Development area to the south-east: Inveraray Castle Garden and Designated Landscape. There are a number of designated heritage assets within the 10km Study Area, as shown in **Figure 9.1**. In the baseline, only designated assets within the Site or with theoretical visibility of the Proposed Development scenario (based on the ZTV) are included. The assets listed below are identified for further assessment as there is potential for operational effects on setting, including cumulatively with other wind farms. This will be reviewed and refined to focus on the Study Area around the turbines of the final layout.

Gardens and Designed Landscapes

- **Inveraray Castle (GDL00223):** The present Inveraray Castle designed landscape and its associated buildings are largely the product of four main phases of landscape intervention from 1650 through to 1880. The designated landscape mainly derives its significance from its artistic, historical and architectural interest as it is associated with the Earls and Dukes of Argyll and was influential on other designed landscapes. The planned town of Inveraray became a model for other towns founded by the British Fishery Society across Scotland after 1800 such as Oban and Ullapool. Inveraray Castle provides the setting for over 100 listed buildings.

Scheduled Monuments

- **Ardchonnell long cairn (SM4173):** The Neolithic chambered cairn is located in a clearing within a forestry plantation, to the west of Loch Awe and 1km north-west of the Site. It rises to a maximum height of 4.3m. Its broader end contains the remains of a burial chamber entered through a pair of portal stones. The scheduled monument mainly derives its significance from its archaeological interest as evidence of Neolithic funerary activity in the area. It is a prominent feature in the landscape.
- **Ardchonnell Castle (SM291**): The castle is located on a small, rocky island in Loch Awe. The existing building was subject to several different periods of development from the 13th to the 15th century. The castle has historical interest as it was the chief stronghold of the Campbells until the late 15th century. It has been in a ruined state since at least the early 19th century. The castle is located 1.5km west of the Site boundary. The ZTV suggests that there would be some, limited intervisibility with the Proposed Development.
- **Barr Mor dun (SM4159):** the prehistoric fort is located 1.9km west of the Site. These remains would be primarily of archaeological interest, although setting is likely to make an important contribution to its significance as an asset with a strong relationship to the landscape and topography, being located in a naturally defensible and commanding position. **Kilmun enclosures (SM4189 and SM4190):** two prehistoric enclosures are located on the western side of Loch Awe, 3.6km west of the Site. These remains would be primarily of archaeological interest as evidence of prehistoric in the area.
- **Innis Chonnel Crannog (SM4146), Innis Erich Crannog (SM4185), Carn Mhic Chealair Crannog(SM4141), and Carn Dubh Crannog (SM4175)**: The remains of crannogs, prehistoric domestic and defensive structures constructed on artificial islets or on wooden pile structures are clustered along Loch Awe to the west of the Site. These remains would be primarily of archaeological interest.
- **Innis Erich Chapel and Burial Ground (SM4214):** The remains of the chapel are situated on a small island in Loch Awe. It is dated to the 15th or 16th century and lies within an enclosure defined by an earthen bank and stone wall. The earliest monument in it is a table-tomb to William McAllum dating to 1732. The chapel is located 2.3km west of the Site and according to the ZTV the Proposed Development would have some, limited visibility from the castle.
- **Kilmun Chapel and burial ground (SM4140):** the chapel is located west of Loch Awe and 3.5km west of the Site, 120m above sea level on a flat shelf, now partly in woodland. The monument has considerable archaeological and historical importance as it contributes to the understanding of the medieval ecclesiastical activity around Loch Awe connected with Clan Campbell and the occupation of Innis Chonnel Castle.
- **Ballimeanoch chapel & burial ground (SM4227):** the chapel is located 3.5km north of the Site on the eastern side of Loch Awe. Like Kilmun, this asset has archaeological and historical importance with regard to medieval ecclesiastical activity in the area, although this asset is rather less well understood.

Listed Buildings

- **Dalavich Kirk (LB11891):** the ecclesiastical building dates to circa 1770 and is still in use. It is located within the village of Dalavich on the western side of Loch Awe, 2.5km west of the site. There is potential for operational effects on setting, although the building is set within dense, mature broadleaved woodland that is likely to provide a measure of screening.
- **Watch Tower, Dun Na Cuaiche (LB11543):** the watch tower was designed by Roger Morris and is dated to 1748. As well as its architectural and associative interest, the tower was designed to be prominent in the Inveraray Castle designed landscape, and this prominence could be challenged by the Proposed Development.

Non-designated Heritage Assets

9.16 National planning policy promotes the care and protection of the historic environment. Non-designated heritage assets are a material consideration in the planning process. Canmore records identify one non-designated asset, Allt Na h-Airigh Maldain shieling hut, within the Site boundary.

A walkover survey was conducted in 2012[46] which identified additional non-designated assets which are detailed below. These represent a range of monument types and periods, from prehistoric cairns to post medieval shielings. While the majority of these assets are of no more than local significance and would potentially be unlikely to represent a significant constraint to development, there is potential for assets to experience physical impacts as a result of Proposed Development[47].

9.17 **Figure 9.2** demonstrates the location of non-designated heritage assets within and immediately surrounding the Site boundary. Assets within the Site boundary are the most likely to be susceptible to change. However, it is anticipated that physical effects can largely be avoided by design and location of infrastructure. The assets listed below have been identified for further assessment:

- **Allt Na h-Airigh Maldain (155601):** shielings are temporary huts, usually located in uplands that are used whilst grazing livestock on summer pasture. Up to three unroofed shieling-huts are depicted on the 1st edition OS map of 1874, with six on the map of 1974. The shielings are located 1.7km from the closest turbine of the Scoping layout and will require further investigation into their significance within the landscape.
- **Additional Shielings:** The walkover survey recorded five additional shieling sites across the Site that have potential to be affected by the Proposed Development.
- **Cairns:** The walkover survey records three prehistoric marker cairns within the Site. All of these are within 500m of proposed turbine locations so they have potential to be affected by the Proposed Development.
- **Enclosures:** The walkover survey records an undated stone enclosure at the north of the Site, and a potential enclosure at the north-west of the Site which are both within 500m of the proposed turbines so may be affected by the Proposed Development.

9.18 A shieling was excavated ahead of the Douglas Water Hydro scheme (WoSAS 44790) to the south-west of An Suidhe wind farm, at least 3km south-west of the Site. It was found that this post-medieval building overlay a structure dating to the Bronze Age. This indicates that there could be potential for the shielings within the Site to overlay earlier structures.

9.19 The extensive peat deposits within the Site have potential for paleaoenvironmental remains. The findings of the peat surveys undertaken as part of the EIA will provide greater certainty in terms of distribution and depth of deposits to inform any necessary investigations or input to mitigation strategies.

Design Considerations

9.20 The design will avoid siting turbines and related infrastructure on or near non-designated assets within the Site where possible and will limit changing the setting of designated assets, including as a cumulative setting change in combination with other schemes, as far as possible.

Proposed Surveys and Assessment Methodologies

Data Gathering

9.21 A desk-based assessment (DBA) will be undertaken to gather baseline data to inform the scope of the assessment of potential effects to cultural heritage assets. Various sources will be consulted for the collation of data, including but not limited to:

- HES designated asset data;
- West of Scotland Archaeology Service (WoSAS) Historic Environment Record data;[48]
- Conservation Area Appraisals;
- Canmore (National Record of the Historic Environment database);
- Historic Land-use Assessment (HLA) data;
- Ordnance Survey maps (principally 1st and 2nd Editions) and other published historic mapping held in the Map Library of the National Library of Scotland;
- Aerial Photographs – HES National Collection of Aerial Photography (NCAP) holdings (oblique, vertical) and Google Earth™;
- Available reports from other recent archaeological work undertaken in the area ('grey literature');

[46] CgMs Consulting. 2012. *Ardchonnel Wind Farm, Argyll & Bute Cultural Heritage Baseline*

[47] It should be noted that the survey for Ardchonnel Wind Farm did not cover the whole of the Car Duibh Site Boundary as the eastern portion of the current Site was not part of the Ardchonnel Wind Farm proposal.

[48] Although data requests have been lodged, no data had been provided by the time of writing. This was due to Covid-related restrictions on WoSAS staff access to offices and the database. Data will be obtained when restrictions are lifted / WoSAS working arrangements change.

- Archive material held by WoSAS[49] Historic Environment Record, HES, NLS, Registers of Scotland etc.; and
- Where available, publicly-available LiDAR data.

9.22 A walkover field survey targeting the construction footprint of the Proposed Development will be conducted within the Site boundary, in line with the Chartered Institute for Archaeologists' Standard and Guidance for Historic Environment Desk-based Assessment. This will allow for the identification of all known cultural heritage assets, confirming their interpretation, location and likely sensitivity to change, and the potential effects on those assets to inform consideration of the mitigation measures. Informed by baseline data and judgements on archaeological potential, the walkover will also seek to identify any previously unrecognised assets on Site, using a transect-based approach. Any such assets will be recorded to Historic Environmental Scotland/RCAHMS Level 1.

9.23 Selected assets in the vicinity of the Site will also be visited to gather baseline data regarding their setting. Selection will be informed by the ZTVs of the Proposed Development and judgements on the likely sensitivity to setting change of assets with theoretical visibility.

9.24 Visualisations, through wireframes, will be provided to support the assessment of effects. The need for photomontage visualisations, and appropriate viewpoints, will be agreed with relevant consultees. A list of proposed viewpoints for the assessment is set out in **Table 9.1**.

Table 9.1: Proposed Assessment Viewpoints

VP	Viewpoint Name / asset	Grid Reference	Distance[50]	Commentary
CH01	Ardchonnel long cairn [SM4173]	199330, 712763	2.2km	Wireframe only, screened by forest.
CH02	Ardchonnel Castle [SM291]	197700, 711946	3.7km	Photomontage from castle/island.
CH03	In-combination view of Ardchonnel Castle / Innis Chonnel from west side of Loch Awe	196702, 712050 (approx. – access permitting, and to be refined following site visits)	4.7km	Wireframe initially; requirement for photomontage confirmed following site visits. Rationale is to understand whether presence of turbines would affect perception of scale / monumentality of the castle remains.
CH04	Barr Mor dun [SM4159]	197790, 710556	3.8km	Wireframe initially; requirement for photomontage confirmed following site visits as visibility marginal on bare-ground model and may be entirely screened by topography/forest.
CH05	In-combination view of Innis Errich chapel and burial ground [SM4214]	Approx. 196680, 7180823	4.9km	Wireframe initially; requirement for photomontage confirmed following site visit, based on perceptibility of remains from the west side of Loch Awe (no theoretical intervisibility from asset itself).
CH06	Dalavich Kirk [LB11891]	196821, 712400	4.6km	Wireframe due to level of screening by vegetation.
CH07	Kilmun chapel and burial ground [SM4104]	197122, 714519	4.8km	Wireframe due to level of screening by vegetation.
CH08	Kilmun enclosure [SM4190]	196579, 714235	5.2km	Wireframe due to level of screening by vegetation.
CH09	Kilmun enclosure	197404, 714570	4.6km	Wireframe due to potential level of screening.
CH10	Balliemeanoch chapel and burial ground	201427, 716722	3.9km	Wireframe due to potential level of screening.

[49] At the time of writing, WoSAS data/records were not available due to working restrictions imposed by Covid-19 mitigation measures in place at Glasgow City Council – which hosts WoSAS.

[50] Approximate distance to nearest turbine in the Proposed Development scoping layout.

VP	Viewpoint Name / asset	Grid Reference	Distance[50]	Commentary
CH11	Tower, Dun Na Cuaiche, Inverary Castle Estate [LB11543] Inveraray Castle IGDL [GDL00223]	210034, 710124	5.8km	Wireframe initially; requirement for photomontage confirmed following site visits.
CH12	Allt Na h-Airigh Maldain [155601]	200279, 710416	1.6km	Wireframe due to potential level of screening.
CH13	Allt a'Ghlinne shielings	200880, 712370	0.6km	Wireframe due to potential level of screening.
CH14	Eas an Amair enclosure	201100, 712695	0.5km	Wireframe due to potential level of screening.
CH15	Eas an Amair marker cairn	202560, 711940	0.07km	Wireframe due to potential level of screening.
CH16	Loch Sionnaich shielings and enclosures	202560, 711940	0.3km	Wireframe due to potential level of screening.
CH17	Allt an Sgadain shielings	200500, 710050	1.7km	Wireframe due to potential level of screening.
CH18	Lochan Dubh Mhuilin shielings	202060, 711400	0.2km	Wireframe due to potential level of screening.
CH19	Bealach Glas marker cairn	202612, 711125	0.1km	Wireframe due to potential level of screening.
CH20	Bealach Glas marker cairn	202735, 711166	0.1km	Wireframe due to potential level of screening.
CH21	Lochan Long shielings	202735, 711166	0.4km	Wireframe due to potential level of screening.
CH22	Loch an Eilein Duibh enclosures	202800, 712220	0.07km	Wireframe due to potential level of screening.

Assessment of Potential Effects

9.25 The process for the assessment of potential effects to cultural heritage assets will begin by appropriately identifying the heritage assets that may be affected, based on the baseline data indicated above.

9.26 These will be examined to provide a description of the cultural significance for each asset before identifying the likely effects the Proposed Development could have on that significance. Cultural significance will be ascribed under the following criteria:

- **High:** assets of national importance, comprising designated heritage assets and non-designated assets of demonstrable value.
- **Medium:** assets of regional importance, for example those identified by regional research priorities, in HER data or via engagement with relevant consultees.
- **Low:** assets of local importance.

9.27 A full assessment of the significance of effects will be undertaken alongside identifying opportunities to mitigate the effects. All effects will be assessed to reflect the way in which the Proposed Development has the potential, either through physical effects or setting change, to affect the cultural significance of the asset. In articulating effects, a judgement will be made on the level of harm or benefit a historic asset will experience as a result of the Proposed Development, supported by an appropriate narrative explaining how the cultural significance of the asset will be changed.

9.28 Scottish Planning Policy (2014) defines the setting of heritage assets as being: *"…more than the immediate surroundings of a site or building, and may be related to the function or use of a place, or how it was intended to fit into the landscape of townscape, the view from it or how it is seen from areas round about, or areas that are important to the protection of the place, site or building"*. 'Setting' is the way the surroundings of an asset or place contribute to how it is understood, appreciated and experienced in the present landscape. All assets have a setting, but the contribution that this makes to their cultural significance varies in line with the location, form, function and preservation of the asset and its surroundings. Setting can be integral to the cultural significance of an asset, therefore a change in an important element of an asset's setting represents a direct impact to its significance.

9.29 The criteria for the assessment for determining the significance of effect will be informed by guidance published in Appendix 1 of SNH and Historic Environment Scotland (HES) 'EIA Handbook' and HES's 'Managing Change in the Historic Environment: Setting' guidance note.[51]

Technical Guidance

9.30 The following guidance documents will be consulted during the assessment:

- HES (2019) Designation Policy and Selection Guidance;
- HES (2016) 'Managing Change in the Historic Environment Guidance Notes - Setting';
- Planning Advice Note 2/2011: Planning and Archaeology;
- SNH & HES (2018) EIA Handbook;
- The Chartered Institute for Archaeologists (2014) 'Code of Conduct'; and
- The Chartered Institute for Archaeologists (2017) 'Standard and guidance for historic environment desk-based assessment'.

Potential Significant Effects

9.31 The assessment will consider the effects upon designated and non-designated cultural heritage assets within the 10km Study Area. This will include potential effects of construction upon the physical fabric of known assets within the Site boundary alongside disturbance of previously unrecorded sites. Effects of the operational phase upon the setting of assets, including cumulative effects with existing or consented wind farm schemes, will be assessed.

Effects Scoped In

9.32 Based on preliminary work and professional judgment, it is proposed that the following receptors are scoped into the assessment:

- Designated assets with theoretical visibility within the 10km Study Area or with identified sensitivity to setting change at greater distances.
- Non-designated assets with theoretical visibility within the 5km Study Area identified as being of high sensitivity to setting change.
- Designated and non-designated assets within the Site boundary.

Effects Scoped Out

9.33 Based on baseline conditions, theoretical visibility and distance from the Site, it is proposed that the following are scoped out:

- Direct physical effects to assets outside the Proposed Development footprint.
- Effects upon designated heritage assets over 10km from the final turbine layout of the Proposed Development, except where specifically identified.
- Effects upon non-designated assets over 5km from the final turbine layout of the Proposed Development.

9.34 It is anticipated that the vast majority of the listed buildings within the Study Area will be scoped out. The bare-ground ZTV model applied at this stage takes no account of the screening effect of intervening development and vegetation. As the majority of these assets lie within Inveraray itself, the potential for significant effects is low.

Approach to Mitigation

9.35 Due to the cultural heritage assets being primarily affected by operational effects as a consequence of setting change, the main opportunities for mitigation relate to layout refinement.

9.36 Where adverse effects to assets within the Site are identified, measures to avoid, reduce and/or offset these effects will be proposed. Where necessary, to prevent accidental damage or potential destruction of assets, appropriate measures will be put in place through a construction management plan.

Questions

Questions for Consultees

Q9.1: Are there any additional sources of baseline information which should be referred to, to inform the appraisal of effects on cultural heritage?

Q9.2: Are the proposals to scope out certain elements of cultural heritage from detailed assessment appropriate?

Q9.3: Is the proposed methodology clear and appropriate?

Q9.4: Are there further specific heritage assets that should be considered in the impact assessment?

[51] The methodology proposed in the EIA handbook will be augmented to provide additional subtlety on the sensitivity of assets to setting change (as the handbook conflates value and sensitivity in a potentially unhelpful manner).

Q9.5: Is the list of visualisation locations considered to be appropriate?

Chapter 10
Noise and Vibration

Introduction

10.1 During their operation, wind farms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise would be caused by the interaction of the turbine blades with the air. Mechanically generated noise would be caused by the operation of internal components, such as, the gearbox and generator, which are housed within the nacelle of the turbine. However, the level of mechanical noise radiated from current technology wind turbines is generally engineered to a low level.

10.2 During construction, noise and vibration could arise from both onsite activities, such as the construction of onsite access tracks, turbine foundations, the control building (substation) etc. and also from the movement of construction related traffic both onsite and travelling on public roads to and from the Site.

10.3 This chapter sets out the proposed approach to the assessment of potential effects of noise and vibration on nearby noise-sensitive receptors.

Existing Conditions

10.4 The Proposed Development Site is located in an area of low population density, with individual noise-sensitive dwellings mainly located west of the Site along the B840, along Loch Awe.

10.5 The background noise environment at these dwellings is likely to be largely characterised by natural noise sources such as wind-disturbed vegetation and birdsong, as well as occasional coastal water movements to the west of the Site, and water flow noise from local burns in some cases.

10.6 Baseline noise levels were previously measured at some of these properties in surveys undertaken to support the assessment of the Ardchonnel Wind Farm and the Blarghour Wind Farm.

Design Considerations

10.7 The wind turbine layout will be designed such that operational noise levels, including cumulative contributions from neighbouring sites, comply with the relevant noise limits at neighbouring noise-sensitive locations based on a representative turbine model.

10.8 The ancillary infrastructure will also be reviewed in relation to the risk of significant effects associated with either construction noise or vibration.

Proposed Surveys and Assessment Methodologies

Guidance

10.9 Scottish Planning Policy requires consideration of potential noise impacts for developments such as this but provides no specific advice on noise. Planning Advice Note PAN1/2011 provides general advice on preventing and limiting the adverse effects of noise without prejudicing economic development. It makes reference to noise associated with both construction activities and operational wind farms.

10.10 The web-based planning advice note on 'Onshore wind turbines' provides further advice on noise, and confirms that the recommendations of ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms'[52], *"should be followed by applicants and consultees, and used by planning authorities to asses and rate noise from wind energy developments"*.

10.11 Good practice in the application of the ETSU-R-97 methodology will be referenced, as set out in Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97[53]. This includes guidance on the assessment of cumulative operational noise impacts from wind farms, and on this point, further guidance set out in an article in the Institute of Acoustics Noise Bulletin[54] will also be considered.

10.12 PAN1/2011 and the Technical Advice Note accompanying PAN1/2011 provide further advice on construction noise and make reference in particular to British Standard BS 5228. Furthermore, the Control of Pollution Act 1974 provides different means for local authorities of controlling construction noise and vibration.

Proposed Study Area

10.13 The assessment will consider noise sensitive residential locations in the vicinity of the Proposed Development. Specifically, ETSU-R-97 states that noise levels will be considered acceptable, even in the absence of measured baseline data, if predicted noise levels (including cumulative contributions from all wind farms) do not exceed 35 dB L_{A90}. Therefore, the Study Area will encompass dwellings where predicted levels approach or are likely to approach this threshold.

10.14 This will tend to include most dwellings potentially affected by noise or vibration effects from the construction of the Proposed Development infrastructure. In addition, dwellings located along the site access track or route will also be considered.

Desk and Field Survey Method

10.15 ETSU-R-97 requires the baseline environment within the Study Area to be characterised by measuring background noise levels as a function of site wind speed at the nearest neighbours (or, at a representative sample of the nearest neighbours). ETSU-R-97 also requires that any such measurements are not significantly influenced by existing operational turbines, to prevent unreasonable cumulative increases.

10.16 In this instance, reference can be made to the results of baseline noise surveys previously undertaken to support the assessment of the Ardchonnel and the Blarghour Wind Farm, specifically at Ardchonnel House and Upper Blarghour. This previous monitoring was undertaken in 2013 and 2017 respectively, in consultation with the Environmental Protection department of Argyll and Bute Council. It is considered unlikely that the background noise environment would have substantially changed since then, given its dominance by natural sources of noise.

10.17 The potential implication of wind shear effects due to the potential heights of the turbines considered for the Proposed Development, and how this would differ from those previously considered, would be taken into account in line with best practice, through the application of correction factors to this historical data (if necessary).

10.18 Although the previous surveys are considered at this stage likely to be sufficient to characterise the noise environment for noise-sensitive receptors in the Study Area, this would be reviewed through initial noise modelling and consultation. If considered necessary, supplementary noise monitoring would be undertaken in accordance with ETSU-R-97 and current good practice.

10.19 The use of previous noise data or any proposed supplementary baseline measurement locations will be discussed in consultation with the Environmental Health Department of Argyll and Bute Council. The assessment methodology, in particular with regards to cumulative impacts, will also be discussed with the Council.

[52] The Working Group on Noise from Wind Turbines, (1996). ETSU-R-97, the Assessment and Rating of Noise from Windfarms, Final Report for the Department of Trade & Industry.

[53] M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics.

[54] Wind farms cumulative impact assessment, Bowdler et al., Institute of Acoustics Noise Bulletin Vol. 41 No. 1, Jan/Feb 2016.

Assessment Method

10.20 The methodology for the assessment of operational noise from wind farms in Scotland recommended in planning guidance is that documented in ETSU-R-97. In summary, the assessment shall:

- Identify the nearest noise sensitive receptors.
- Determine the quiet day-time and night-time noise limits from the measured background noise levels at the nearest neighbours (see below).
- Specify the type and noise emission characteristics of the wind turbines proposed for the Site.
- Calculate noise emission levels which would be due to the operation of the wind turbines as a function of site wind speed at the nearest neighbours, including the cumulative effect of all turbines.
- Compare the calculated wind farm noise emission levels with the derived noise limits.

10.21 The good practice guidance referenced above (IOA GPG) will be taken into account, including advice on baseline survey, wind shear assessment and noise prediction methodology.

10.22 When considering neighbouring cumulative wind farm noise, the potential noise emissions from the adjacent wind farm sites will be considered by examining the potential level of noise emission allowed under the respective consent for each of the sites, in line with current best practice (see guidance referenced above).

10.23 The calculated wind farm noise emission levels will be compared with the noise limits derived in accordance with ETSU-R-97. The noise limits derived according to ETSU-R-97 guidance, for each noise-sensitive receptor, apply to the total noise produced by all wind farms. Therefore, potential cumulative operational noise levels, including existing, consented and application wind turbines in the area, must be assessed relative to these limits.

10.24 In assessing the impact of noise and vibration from the construction activities, it is usual to accept that the associated works are of a temporary nature. The assessment of potential impacts due to noise emissions during construction will be undertaken in accordance with the BS 5228 British Standard guidance 'Code of practice for noise and vibration control on construction and open sites'. Predictions of construction noise will be made referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 Part 1[55]. This standard is referenced in Technical Advice Note to PAN 1/2011: Planning and Noise. This standard can be used to predict noise levels associated with the different construction activities used throughout the construction programme. Part 2 of the BS 5228 standard[56] considers construction vibration and this will also be referenced.

10.25 Any blasting if used for rock extraction at borrow pits may also create vibration and air overpressure which may require attention.

10.26 Consideration will also be given to the potential impact of construction traffic on sensitive receptors in the area. Depending upon the outcome of the assessment of traffic (See **Chapter 11: Traffic and Transport**), the impact of traffic along the Site access route will be assessed on the basis of the methodology within BS 5228-1, and the 'Calculation of Road Traffic Noise'[57] publication, where appropriate.

10.27 The assessment of the temporary effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment.

10.28 The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the rural character of the area. For construction traffic, the criteria set out in the Design Manual for Roads and Bridges[58] are also likely to be referenced. Construction noise management procedures will also be determined.

Potential Significant Effects

10.29 The following impacts will specifically be assessed:

- noise during operation of the Proposed Development;
- cumulative noise impacts during operation with other nearby wind farms; and
- noise and vibration associated with the construction activities and associated traffic (including cumulative with other nearby wind farms) and blasting activities.

[55] BS 5228-1:2009 (amended 2014) 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise'
[56] BS 5228-2:2009 (amended 2014) 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'
[57] Calculation of Road Traffic Noise, HMSO Department of Transport, 1988.
[58] Design Manual for Roads and Bridges (LA 111: 2019), Highways England, Transport Scotland, etc., Nov 2019

Effects Scoped Out

10.30 It is recognised that vibration resulting from the operation of wind farms is imperceptible at typical separation distances. It is therefore proposed to scope out the assessment of vibration produced during the operation of the Proposed Development.

10.31 With regard to infrasound and low frequency noise, the above-referenced online planning advice note, Onshore wind turbines, refers to a report for the UK Government which concluded that "*there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested*". The current recommendation is that ETSU-R-97 should continue to be used for the assessment and rating of operational noise from wind farms.

10.32 It is therefore not proposed to undertake specific assessments of infrasound and low frequency noise, but the noise chapter will consider the latest supporting information on these subjects and the topic of wind turbine blade swish or Amplitude Modulation (or AM).

Approach to Mitigation

10.33 Mitigation of operational noise will be achieved through the design of the Proposed Development, such that the relevant ETSU-R-97 noise limits can be achieved at the surrounding properties with commercially available wind turbines, taking into account the noise emissions from other wind farms in the area.

10.34 Regarding construction noise, relevant working practices, traffic routes, management procedures and proposed working hours will be set out within a Construction and Environmental Management Plan (CEMP).

Questions

Questions for Consultees

Q10.1: Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?

Q10.2: Does the Council agree that previously measured baseline data can be referenced in this assessment?

Chapter 11
Traffic and Transport

Introduction

11.1 This chapter sets out the proposed approach to the assessment of potential effects of the Proposed Development on access, traffic and transport during construction and operation.

Existing Conditions

11.2 As noted above, it is anticipated that turbine components will be delivered to the port of Campbeltown and then transported to site via the A83. From the A83 there are several access options to the Site and a detailed access review is being undertaken to identify the most suitable access junction option. Further consultation with Transport Scotland will be held once the final access solution has been determined.

11.3 The access junction will provide the sole access to the site for abnormal loads associated with the turbine equipment as well as access for construction materials and the ongoing site operation traffic. A detailed site access review will be provided to support the application. This will detail the finalised access option in detail and will outline the reasoning for the selected access option.

Proposed Surveys and Assessment Methodologies

11.4 The following policy and guidance documents will be used to inform the Transport & Access Chapter:

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

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

- Potential impacts (of changes in traffic flows) on local roads and the users of those roads; and

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

11.6 The main transport impacts will be associated with the movement of general HGV traffic travelling to and from the Site during the construction phase of the Proposed Development.

11.7 Each turbine is likely to require between 11 and 13 abnormal loads to deliver the components to the Site. The components will be delivered on extendable trailers which will then be retracted to the size of a standard HGV for the return journey.

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

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

- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
- Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

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

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

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

11.13 It is not anticipated that a formal Transport Assessment (TA) will be required as these are not generally considered necessary for temporary construction works.

11.14 It is proposed that traffic survey data for use in the assessment would be obtained from historic data sources that will include the UK Department of Transport (DfT) traffic survey database, Traffic Scotland database and other public datasets that are available. Data for the following links would be obtained:

- A83 near the proposed Site access junction;
- A83 to the northeast of Inveraray;
- A83 in Lochgilphead; and
- A83 at Ardrishaig.

11.15 Further traffic data would be obtained from Crashmap UK for the A83 within the vicinity of the Site access junction to inform the accident review for the immediate road Study Area.

Potential Significant Effects

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

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

Potential Effects Scoped Out

11.17 Once operational, it is envisaged that the level of traffic associated with the Proposed Development would be minimal. Regular monthly or weekly visits would be made for maintenance checks. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for an HGV to access the wind farm for specific maintenance and/or repairs. It is considered that the effects of operational traffic would be negligible and therefore no detailed assessment of the operational phase of the development is proposed.

Approach to Mitigation

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

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

Questions

Questions for Consultees

Q11.1: Is the proposed methodology acceptable?

Q11.2: Are the proposed traffic survey data locations and use of historic data acceptable?

Q11.3: Is the use of Low National Road Traffic Forecasts (NRTF) acceptable?

Q11.4: What developments should be included as committed developments within the baseline traffic flows in the assessment, noting that these should have planning consent at the time of scoping?

Q11.5: Are there details of any upgrades or network changes that may be undertaken to the Study Area network within the next five years?

Chapter 12
Socio-Economics

Introduction

12.1 This chapter sets out the proposed approach to the assessment of potential socio-economic effects during construction and operation of the Proposed Development. The assessment will consider the likely impacts of the proposal on the socio-economic profile of the area, including short term job opportunities that may arise during construction. This will involve the identification of the existing socio-economic, tourism and recreation baseline conditions for the Site and surrounding area, and consideration of potential direct and indirect effects on employment and economic benefits (including community benefit), recreation and tourism activity, through both quantitative and qualitative assessment.

Existing Conditions

12.2 The Study Area used for the identification and evaluation of baseline conditions and potential impacts with regard to socio-economic factors is defined at the Argyll and Bute local authority area and other features of interest for recreation and access where outwith this, including for example, Munros within the Loch Lomond and Trossachs National Park.

12.3 The Site is currently used recreationally for shooting at various points throughout the year.

12.4 Visitor attractions nearby include the settlement of Inveraray which includes Inveraray Castle and Inveraray Jail. There are also many hills nearby in the north and north-east, including numerous Munro hill summits, which are popular with hill walkers and other recreational users (e.g. mountain bikers). These include the closer Munro hill summits of Ben Lomond, Ben Ime and Beinn Bhuidhe to the north-east of the Site and other hill summits located near the Site and in the Loch Lomond and the Trossachs National Park.

12.5 There are also a number of walking and recreational routes nearby including The West Highland Way, The West Island Way, The Cowal Way and the Three Lochs Way, as well as a number of core paths and regional cycle routes that are primarily clustered around the communities and settlements and along the shores of the lochs. National Cycle Network (NCN) Route 78: the Caledonian Way, also passes within 5km of the Site. There are no paths or promoted walking routes located within the Site itself.

Design Considerations

12.6 Consideration will be given to the potential effects on viewpoints and designated routes that are considered important for recreation and tourism through the LVIA.

Proposed Surveys and Assessment Methodologies

12.7 There is no established guidance for conducting a socio-economic assessment as part of the EIA process. It is therefore proposed that the assessment uses desk-based information sources to assess the likely scale of effects, supplemented by consultation with local stakeholders, informed by professional judgement.

12.8 Cross-reference would be made to other technical assessments to consider potential effects on recreational assets and other leisure and tourism attractions in the vicinity, for example due to visual impact, traffic, and noise.

Potential Significant Effects

12.9 Socio-economic impacts associated with wind farm developments primarily relate to job creation, use of local services and income spent in the locality of a project. These impacts can have both short and long term, direct beneficial effects for surrounding local communities.

Potential Effects Scoped into the Assessment

12.10 The EIA will consider the effects of the Proposed Development on employment and the economy. This will include the employment opportunities for local suppliers with relevant construction and maintenance experience during the construction and operational phases of the Proposed Development. The EIA Report will focus on short and long-term employment opportunities and input from the Proposed Development into the local economy (expenditure in shops / local services etc.).

12.11 Potential effects upon tourism and recreation would be considered as would potential effects on land management practices, including shooting which takes place on the Site.

Potential Effects Scoped Out of the Assessment

12.12 It is not currently proposed to scope out any potential effects from detailed assessment at this stage.

Approach to Mitigation

12.13 The applicant is committed to implementing accepted good practice measures during construction and operation, thereby ensuring that many potential adverse social and economic effects can be avoided or reduced.

12.14 Possible mitigation measures may include the following:

- The programming of the transportation of abnormal loads wherever practicable to avoid peak visitor, or other busy periods to mitigate the effect of the Proposed Development on particularly sensitive locations, tourist/visitor viewpoints, and road corridors.
- Local sourcing of construction materials where possible to reduce the import and export of materials to and from the Site, limiting traffic movements on the surrounding road network and hence minimising related adverse effects upon visitors and locals.

12.15 It is considered that there are opportunities to enhance positive effects resulting from the Proposed Development, including:

- Local promotion of contract and supply chain opportunities during construction and operation to maximise the use of local business and labour.
- Skills development and training programmes to increase local take up of training, apprenticeship and employment opportunities associated with the Proposed Development.
- Establishing effective linkages with local job centres, employability programmes and partners.
- Promotion of the wider area and its opportunities as part of the marketing of the Proposed Development.

Consultation Proposals

12.16 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- Argyll and Bute Council (Access Team);
- Visit Scotland (as national tourism lead body);
- The Scottish Rights of Way and Access Society (ScotWays);
- Mountaineering Scotland;
- The John Muir Trust; and
- Any local recreation and tourism groups.

Questions for Consultees

Q12.1: Are there any other relevant consultees who should be consulted with respect to the assessment of effects on socio-economics?

Chapter 13
Other Issues

Introduction

13.1 It is proposed that a single EIA Report chapter will be prepared to draw together the assessments of the Proposed Development on other topics that are not dealt with within the other technical chapters of the EIA Report, or alternatively, to explain why these topics have been scoped out .

13.2 It is anticipated that this chapter would include discussion of the following issues:

- Aviation;
- Communications and Telecommunications;
- Shadow Flicker;
- Climate Change including Carbon Balance;
- Population and Human Health (including dust); and
- Major Accidents and Disasters.

13.3 Predicted effects for these topics will be determined through a standard method of assessment based on professional judgement. Where a 'significant effect' is identified, this will be considered as significant in the context of the EIA regulations.

Aviation

13.4 Wind turbines have the potential to affect civil and military aviation. This section covers the methodology used to undertake the aviation safeguarding assessment, lists the aviation references used and describes the aviation baseline condition, consultation requirements and mitigation to be applied if required.

13.5 The Proposed Development is located in an area relatively remote from significant aviation features. It is 63km north-west of Glasgow International Airport and 26km south-east of the small airport (non-radar aerodrome) at Oban/Connel. Initial radar modelling indicates that none of the turbines will be visible to the radar at Glasgow Airport.

13.6 The Site is located to the north of regulated airspace designated L602 and is under unregulated airspace up to 19,500 ft.

13.7 No Ministry of Defence airfields, radar or low flying areas will be affected by the Proposed Development.

13.8 An initial assessment has been conducted to determine any effect of the Proposed Development on NERL communications, navigation and surveillance infrastructure. The closest radars in the system are at Lowther Hill and Tiree. Radar modelling shows that neither will be affected by the Proposed Development.

13.9 The assessment of effects of the turbines will be based upon the guidance in the CAA Publication CAP 764 and Guidelines on Wind Turbines Version 6 dated February 2016.

13.10 Consultation with aviation stakeholders is a routine part of wind farm development and in accordance with CAP 764, and whilst no effects are predicted on their assets, it is proposed that the following stakeholders will be consulted in relation to the assessment:

- MOD;
- NERL; and
- the Civil Aviation Authority.

13.11 On the basis of the work undertaken to date, the professional judgement of the assessment team and experience from other similar projects, consultation with the Met Office will not be required on the basis that the closest Met Office Radar is at Holehead, over 66km to the south-east.

Communications and Telecommunications

13.12 Wind turbines can cause electromagnetic interference through physical and electrical interference. Physical interference can cut across electromagnetic signals resulting in a 'ghosting' effect which largely affects television signals and radar. Electrical interference arises as a result of the operation of the generator within the nacelle of the turbine and can also affect communication equipment in proximity to the turbines. Where possible, any potential effects on radio-communication links and television will be mitigated at the turbine layout design stage by the use of exclusion zones around any link paths.

13.13 The Office of Communications (Ofcom) is responsible for the licensing of two-way radio transmitters and holds a register of most microwave links. However, because not all microwave links are published, system operators will be individually consulted on the Proposed Development's potential to cause electromagnetic interference. The outcome of this consultation process, including any mitigation actions taken, will be detailed in the EIA Report.

Shadow Flicker

13.14 Shadow flicker is a phenomenon where, under certain combinations of geographical position and time of day, the sun may pass behind the rotors of a wind turbine and cast a shadow over neighbouring properties. When the blades rotate, the shadow flicks on and off. It only occurs inside buildings where the flicker appears through a narrow window opening.

13.15 A shadow flicker assessment is generally required if any properties lie within 10x rotor diameter of the wind farm. This is in line with Scottish Government online renewables planning advice on 'onshore wind turbines' which states 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.*".

13.16 On the basis that the nearest property (Blarghour) is over 2km from the nearest turbine in the scoping layout, it is proposed that potential effects from shadow flicker are scoped out of the assessment. This will, however, be kept under review as the EIA progresses and the layout evolves.

Climate Change, including Carbon Balance

13.17 By its very nature, the Proposed Development will reduce demand for fossil fuel electricity generation and therefore contribute to the Scottish Government's carbon reduction targets.

13.18 A carbon balance assessment for the Proposed Development will be undertaken using Scottish Government guidance produced by Aberdeen University and the Macaulay Land Use Research Institute and the latest version of the carbon calculator spreadsheet produced by the Scottish Government (currently version 1.4.0).

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

13.20 With respect to climate adaptation, consideration will be given to the resilience of the wind farm to projected climate change and to the likely consequences of climate change for the baseline conditions/assessment findings reported elsewhere in the EIA Report, and the resilience of proposed mitigation measures to any projected changes. The latest climate change projections (UKCP18) will be used, which allow climate change to be projected at the regional level; in this case, Western Scotland.

Population and Human Health, including Dust

13.21 The assessment of potential health effects will be undertaken in the context of noise, socio-economics and shadow flicker where scoped into the EIA.

13.22 The assessment will also consider the health effects of dust emissions of construction activities on nearby receptors. The Design Manual for Roads and Bridges (DMRB), Volume 11 Environmental Assessment Techniques, Part 1, Air Quality states that dust generated during construction should be mitigated and that the locations of 'sensitive receptors' within 200m of construction activities should be identified and mitigation measures to reduce dust effects be applied. As such, all receptors within 200m of potential dust sources will be considered as potential receptors. Particular attention will be paid to any vulnerable populations or individuals who could be susceptible to potential health effects. Where no significant effects are likely in relation to the aforementioned topics, these will be scoped out of the health assessment.

Major Accidents and Disasters

13.23 The Proposed Development is not located in an area with a history of natural disasters such as extreme weather events, whilst peat slide risk will be covered fully in Chapter 6: Hydrology, Hydrogeology and Peat. The construction and operation of the Proposed Development would also be managed within the requirements of a number of health and safety related Regulations, including the Construction (Design and Management) Regulations 2015 and the Health and Safety at Work etc. Act 1974.

13.24 As the development is not considered vulnerable to any major accidents or disasters that could result in likely significant environmental effects, it is proposed that this topic is scoped out from further assessment within the EIA Report.

Consultation Proposals

13.25 It is proposed that the following stakeholders will be consulted in relation to the assessment:

- Defence Infrastructure Organisation (DIO);
- NERL; and
- Civil Aviation Authority for lighting.

Questions for Consultees

Q13.1: Is the approach to the assessment of the topics above considered to be appropriate, including the proposal to scope out some topics?

Q13.2: Are there any other relevant consultees who should be consulted on the assessments?

Appendix A

Consultee List

A.1 The Consultees listed below are proposed to be consulted as part of the EIA process:

- Argyll and Bute Council
- NatureScot;
- SEPA;
- HES;
- Glenorchy & Innishail Community Council;
- Inveraray Community Council;
- Avich & Kilchrenan Community Council;
- Dunadd Community Council;
- Furnace Community Council;
- Strachur Community Council;
- Scottish Forestry;
- Transport Scotland;
- Scottish Water;
- Fisheries Management Scotland;
- District Salmon Fisheries Board (Argyll);
- Fisheries Trust (Argyll);
- RSPB;
- Scottish Wildlife Trust;
- The Scottish Rights of Way and Access Society (ScotWays);
- British Horse Society;
- Mountaineering Scotland;
- Scottish Wild Land Group;
- The John Muir Trust;
- Crown Estate Scotland;
- NATS Safeguarding;
- Glasgow Prestwick Airport;
- Highlands and Islands Airport;
- BAA Glasgow Airport;
- BAA Aerodrome Safeguarding (Edinburgh);
- BT;
- Civil Aviation Authority (CAA);
- Defence Infrastructure Organisation (DIO); and
- JRC.

Appendix B

Questions for Consultees

B.1 Comments from consultees are invited in relation to the following questions as detailed within the EIA Scoping Report.

Scoping Report Chapter	Questions
3: Project Site Description	Q3.1: The EIA Project team is aware from previous experience that peat depth varies considerably across the Site. As such, SEPA is requested to advise on upper limiting depths for borrow pit restoration.
	Q3.2: Confirmation is requested on the proposed approach to the assessment of decommissioning.
5: Landscape and Visual Amenity	Q5.1: Can consultees confirm that GLVIA3 is an appropriate methodological starting point for the LVIA assessment? Are there any comments on the overall methodology proposed to assess effects on landscape and visual receptors, including cumulative effects?
	Q5.2: Are there other sources of information which should inform the baseline and assessment of potential effects on landscape character and designated landscapes?
	Q5.3: Are there any comments on the landscape character types scoped in and scoped out of the assessment, as listed in **Table 5.1**?
	Q5.4: Are there any comments on the designated landscapes scoped in and scoped out of the assessment, as listed in **Table 5.2**?
	Q5.5: Are there any comments on the Wild Land Areas scoped in and scoped out of the assessment, as listed in **Table 5.3**?
	Q5.6: Are there any comments on the proposed list of assessment viewpoint locations listed in **Table 5.4**?
	Q5.7: Are there any further wind farms, in addition to those shown on **Figure 5.6**, to consider as part of the cumulative assessment?
	Q5.8: Are there any further landscape or visual receptors to be considered within the assessment (i.e. where it is expected that significant effects may occur)?
	Q5.9: Can consultees confirm that an RVAA will not be required?
6: Hydrology, Hydrogeology and Peat	Q6.1: Are there any additional sources of baseline information which should be referred to, to inform the appraisal of effects on hydrology, hydrogeology, and peat?
	Q6.2: Is the proposed methodology appropriate, particularly in relation to refinement of the standard 100m x 100m grid for initial peat surveys?
	Q6.3: Are the proposed list of effects which are scoped in appropriate?
	Q6.4: Is the proposed approach to mitigation appropriate
7: Ecology	Q7.1: Do consultees agree that the Ardchonnel Wind Farm EIA survey data is a reliable baseline upon which to base the surveys and scope of the assessment?
	Q7.2: Do consultees agree with the survey scope set out above?
	Q7.3: Do consultees agree with the assessment method (including scoped in/scoped out features)?
	Q7.4: Do consultees hold any existing ecological data relating to the Site that may further inform the ecological baseline?

Scoping Report Chapter	Questions
	Q7.5: Are consultees aware of any local nature conservation organisation with whom further consultation should be undertaken?
8: Ornithology	Q8.1: Do consultees agree that the range of desk study and ornithological surveys undertaken is sufficient and proportionate to inform the design and assessment of the Proposed Development?
	Q8.2: Do consultees agree that the full range of likely effects to be assessed with regards to ornithology within the EIA Report has been adequately identified and is proportionate to the nature of the Proposed Development?
	Q8.3: Are there any other relevant consultees who should be contacted with respect to the ornithology assessment and scope of baseline information gathering?
	Q8.4: Do consultees agree with the assessment and evaluation methodology proposed?
	Q8.5: With the exception of Glen Etive and Glen Fyne SPA, do consultees agree that effects on all designated sites with qualifying ornithological features from the Proposed Development can be scoped out by virtue of considerable spatial segregation?
9: Cultural Heritage	Q9.1: Are there any additional sources of baseline information which should be referred to, to inform the appraisal of effects on cultural heritage?
	Q9.2: Are the proposals to scope out certain elements of cultural heritage from detailed assessment appropriate?
	Q9.3: Is the proposed methodology clear and appropriate?
	Q9.4: Are there further specific heritage assets that should be considered in the impact assessment?
	Q9.5: Is the list of visualisation locations considered to be appropriate?
10: Noise and Vibration	Q10.1: Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?
	Q10.2: Does the Council agree that previously measured baseline data can be referenced in this assessment
11: Traffic and Transport	Q11.1: Is the proposed methodology acceptable?
	Q11.2: Are the proposed traffic survey data locations and use of historic data acceptable?
	Q11.3: Is the use of Low National Road Traffic Forecasts (NRTF) acceptable?
	Q11.4: What developments should be included as committed developments within the baseline traffic flows in the assessment, noting that these should have planning consent at the time of scoping?
	Q11.5: Are there details of any upgrades or network changes that may be undertaken to the Study Area network within the next five years?
12: Socio-economics	Q12.1: Are there any other relevant consultees who should be consulted with respect to the assessment of effects on socio-economics?
13: Other Issues	Q13.1: Is the approach of the assessment of the topics above considered to be appropriate, including the proposal to scope out some topics?
	Q13.2: Are there any other relevant consultees who should be consulted the assessments?