voltalia

CRUACH CLENAMACRIE WIND FARM

APPENDIX 1.1 SCOPING REPORT

voltalia

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SCOPING REPORT

June 23, 2023

RESPONSIBILITIES

	DATE	NAME	FUNCTION
Elaboration	12/06/2023	Corey Simpson	Author (Agent)
Validation	20/06/2023	Isabel Dickinson	Reviewer (Applicant)
Approval	23/06/2023	Alexander Hamilton	Approver (Applicant)

REVISION HISTORY

VERSION	DATE	AUTHOR	COMMENTS
1.0	22/06/2023	GCR	Collated issue for review
2.0	23/05/2023	GCR	Updated Issue for review
3.0	23/06/2023	GCR	Final

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1 INTRODUCTION

1.1 Overview

Voltalia UK Ltd (hereafter referred to as 'the Applicant'), is proposing to submit an application to the Scottish Ministers under section 36 of the Electricity Act 1989[1] to construct and operate the Cruach Clenamacrie Wind Farm (hereafter referred to as 'the Proposed Development'). The location of the Proposed Development is approximately 7km east of Oban, in Argyll and Bute, approximately 3km south of the A85 shown in **Figure 1.1 Site Location**, and further described in **Section 2.2**.

The Proposed Development is anticipated to comprise up to eight Vestas wind turbines with a tip height of up to 200m. Subject to final wind turbine selection, the wind turbines could have a potential generating capacity of up to 7.2 Megawatts (MW) each, resulting in a total capacity of up to 57.6MW. There will also be a battery energy storage system (BESS) of up to 20MW included as part of the Proposed Development for an overall capacity up to 77.6MW. Given the Proposed Development will have a capacity greater than 50MW, the application will be made under section 36 of the Electricity Act 1989.

1.2 The Applicant

Founded in 2005, Voltalia UK Ltd is an experienced global renewable energy developer and Independent Power Producer (IPP) that specialises in solar, wind, hydro, biomass and storage. Operating in the UK since 2012, Voltalia has been responsible for the installation of 23 UK solar farms with a total capacity of over 246MW and is due to complete a further 196MW across four solar farm sites in the coming year. As an experienced and established global company, Voltalia is focused on providing renewable energy schemes to help decarbonise the UK's electricity generation and combat the climate crisis by supplying an affordable and renewable source of clean electricity.

1.3 The Agent

Green Cat Renewables (GCR) is an environmental and engineering consultancy focused on all aspects of development support, based in Scotland. With a team of 80 staff spread across three offices, the company's multi-disciplinary resource base spans all stages of project delivery from feasibility and concept development through to planning, engineering, project management and operational asset management.

1.4 Need for EIA

The Proposed Development falls within Schedule 2 of the Environmental Impact Assessment (EIA) Regulations[2] and as such requires an EIA to be undertaken given the scale and nature of wind farm developments and the potential to have significant environmental impact.

1.5 Purpose of the Scoping Report

The Applicant is seeking confirmation, from the Scottish Ministers and key consultees, of the scope of the methodology for the assessments to be included in the EIA by requesting a Scoping Opinion under Regulation 12 of the EIA Regulations. The Scoping Report provides the following information to inform the Scoping Opinion, as stated in the EIA Regulations:

[1] HM Government (1989). The Electricity Act. Available at: http://www.legislation.gov.uk/ukpga/1989/29/contents
[2] HM Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: http://www.legislation.gov.uk/ssi/2017/101/contents/made

- A description of the location of the Proposed Development, including a plan sufficient to identify the land (**Figure 1.1**);
- A brief description of the nature and purpose of the Proposed Development (**Section 2.2**) and of any likely significant effects on the environment (**Chapters 5-13**); and
- Such other information or representations as the Applicant may wish to provide or make as per the information set out in this report.

This Scoping Report has been produced in line with these requirements.

The EIA process must identify, describe and assess, in an appropriate manner and in light of the circumstances relating to the Proposed Development, the potential direct and indirect significant effects (positive and negative) of the Proposed Development on several factors and the interaction between these factors (Regulation 4(2) and (3)). These factors under the EIA Regulations are:

- Population and human health;
- Biodiversity, and in particular species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;
- Land, soil, water, air and climate; and
- Material assets, cultural heritage, and the landscape.

The purpose of the Scoping Report is to:

- Identify the key areas to be considered as part of the EIA;
- Identify areas which can be 'Scoped out' of the EIA or which do not require to be addressed in greater detail; and
- Review activities which may give rise to potentially significant environmental impacts during the lifecycle of the Proposed Development.

This Scoping Report outlines and focuses on the proposed approach to the assessment of environmental impacts and the proposed EIA Report content, for approval with the Scottish Government and other Statutory Consultees. It also establishes the source and availability of baseline environmental data, defines and agrees a survey framework from which a comprehensive overall assessment can be produced and invites consultees to comment on the proposed methodology for assessment as well as identify any concerns they have with the Proposed Development.

The Applicant has appointed an EIA project team to provide relevant assessment, advice and reporting to support the delivery of the EIA. As per Regulation 5(5) of the EIA Regulations, the appointed team have the necessary experience and qualifications to carry out the assessments and are considered 'competent experts'.

1.6 Assumptions and Limitations

This Scoping Report is based on environmental and design information available at the point of authorship, including third party data.

It should be noted that this Scoping Report has been completed before the receipt of any feedback from external organisations. As such, the ecological baseline surveys required may change based on consultee responses, field data collected or changes to the Proposed Development design which may result in additional ecological features being scoped in or out of the EIA.

Any assumptions of limitations that remain as the EIA concludes will be stated in the EIA Report.

2 PROPOSED DEVELOPMENT

2.1 Site Description

The Application Site, hereafter referred to as 'the Site' is located approximately 7km east of Oban within the Argyll and Bute Council area. The Site is bordered by Fearnoch Forest to the east, south and west. The Lusragan Burn and Black Loch's tributaries run through the Site.

The landscape within the Site is characterised as craggy upland with oak-birch woodland, rounded knolls, rocky outcrops and numerous lochs in low-lying hollows and glens. The terrain is hilly with an average elevation of 300m above ordnance datum (AOD). Deadh Choimhead Hill is situated south of the Site.

There are no Scheduled Monuments within the Site. Glenamachrie Cairn and An Dun, dun and Glenamachrie Standing Stone are the closest Scheduled Monuments located approximately 0.8km south-west of the Site.

The A85 lies approximately 3km north of the Site and is a key transportation route within the immediate area, due to its connection with the central belt of Glasgow – Stirling - Edinburgh. The A85 joins the A82, A816 and A8.

The carbon and peatland map 2016[3] indicates that most of the Site is underlain with Class 2 peat with pockets of Class 5 peat dispersed across the Site. The largest section of Class 5 peat is found towards the south-west of the Site.

Approximately 0.4km to the north of the Site lies Loch Etive Woods Special Areas of Conservation (SAC) which is located within the Clais Dhearg Site of Special Scientific Interest (SSSI). In addition, there are areas of ancient woodland in the forestry surrounding the Site.

The nearest settlement is Fearnoch located approximately 2km north-east of the Site. Camerons Farm in Glenamachrie is the nearest residential property at approximately 0.8km south-west of the Site.

2.2 Proposed Development

The Proposed Development is anticipated to comprise up to eight wind turbines with a blade tip height of approximately 200m, rotor diameter of approximately 165m and a hub height of approximately 117m. The Site Boundary (**Figure 1.1**) defines the extent of the area relating to the Application. There is also the potential for a battery energy storage system (BESS) of up to 20MW to be included as part of the Proposed Development for an overall total capacity of approximately 77.6MW.

An initial design process, taking account of key technical, environmental and economic constraints, has been undertaken and will continue throughout the EIA process as required. Design constraints are mapped in **Figure 2.1**. The result of this initial design process is the preliminary layout shown in **Figure 2.2**. At this time, two access options for the Site are being considered which are shown in **Figure 2.2**. Ordnance Survey (OS) grid coordinates for each wind turbine within the preliminary layout are listed in **Table 2.1** below:

[3] Scottish Government. Scotland's Soils - soil maps (environment.gov.scot) (Last Accessed 18/05/2023)

TABLE 2.1 – TURBINE COORDINATES

TURBINE NUMBER	EASTING	NORTHING
1	193375	729908
2	193759	729524
3	194897	730186
4	194897	729802
5	194713	730436
6	194356	729746
7	195317	730440
8	193225	729222

The Proposed Development is anticipated to include the following ancillary components and associated infrastructure:

- Wind turbines;
- Crane hardstandings and laydown area adjacent to each wind turbine;
- Wind turbine foundations;
- Power cables, linking the wind turbines, laid in trenches underground, including cable markers;
- A control building including a substation, parking, and a small storage compound;
- The BESS facility, located adjacent to the substation compound;
- Permanent and temporary power performance assessment (PPA) anemometry mast and/or LiDAR;
- Health and safety and other directional signage;
- New and upgraded access tracks, passing places and turning heads;
- Drainage works;
- Borrow pits;
- Temporary construction compound; and
- Aviation warning lights to comply with Article 222 of the UK Air Navigation Order (ANO) 2016[4].

2.3 Embedded Mitigation

Embedded mitigation relates to measures inherent in the design of the Proposed Development. Throughout the iterative design process, environmental constraints will be one of the key factors which shape the design of the Proposed Development. As baseline information is collected and potential impacts identified, these will be factored into the design via a workshop, in parallel with other engineering and technical constraints. Therefore, mitigation in the form of design to avoid or reduce environmental impacts will be inherent from the outset. This will be set out and considered in the Scoping Report where appropriate.

[4] HM Government (2016). The Air Navigation Order 2016. Available at: https://www.legislation.gov.uk/uksi/2016/765/article/222/made

2.4 Construction

The construction period for the Proposed Development is expected to have a duration of approximately 12 months. Construction activities will include:

- Enabling works such as essential forestry felling and the development of borrow pits;
- Construction/upgrading of site access tracks, passing places and any watercourse crossings;
- Construction of culverts under tracks to facilitate drainage and maintain existing hydrology;
- Construction of secure site compound including welfare facilities;
- Construction of crane hardstandings;
- Construction of wind turbine foundations;
- Wind turbine delivery and erection;
- Installation of cabling, communication and earthing arrays;
- Construction of substation;
- Construction of BESS facility;
- Commissioning of development; and
- Reinstatement and site restoration works, as required.

The construction works would broadly follow the order as outlined above, however, to reduce the construction time, a number of these activities may be carried out concurrently.

2.5 Operation and Maintenance

The Applicant is seeking consent to operate for ~50 years. Therefore, the assessment of potential effects on all environmental aspects considers the operational phase of the Proposed Development to be 50 years.

Following the commissioning of the Proposed Development, the temporary construction elements, such as cranes and other plant equipment will be removed from the Site. Reinstatement works will be undertaken where appropriate and in line with planning conditions.

During operation, the Site will be visited at regular intervals by approved technicians to undertake maintenance and to ensure safe operation throughout the lifetime of the Proposed Development. These visits will be undertaken using standard road vehicles. There will be no requirement for the specialist vehicles used during the construction phase to visit the Site under normal circumstances.

2.6 Decommissioning Phase

It is proposed that a Decommissioning Plan will be agreed upon with the Argyll and Bute Council and relevant consultees in line with planning conditions. The decommissioning of the Site will broadly involve similar works as the construction phase and include reinstatement of the Site as agreed with the Argyll and Bute Council.

2.7 Environmental Management

Through the identification of potential impacts, the EIA Report will set out measures to avoid, prevent, reduce or where necessary offset significant adverse effects. Where appropriate, these measures will also be accompanied by monitoring commitments intended to monitor their effectiveness. The EIA Report will be accompanied by a draft Construction Environmental Management Plan (CEMP), which will include specific measures that would be implemented during construction to protect the environment.

3 EIA APPROACH

3.1 General Approach

The EIA and reporting will be undertaken in line with the EIA Regulations and current good practice guidance including:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
- Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment Guides to Delivering Quality Development (2016)[5], Shaping Quality Development (2015)[6] , and Delivering Proportionate EIA (2017)[7]; and
- Scottish Natural Heritage (SNH)[8] Environmental Impact Assessment Handbook[9].

The results of the EIA will be presented in an EIA Report, which will contain the information specified in Regulations 4, 5 and Schedule 4 of the EIA Regulations. It will be undertaken by 'competent experts' with evidence of the competence of those responsible for the preparation of the EIA set out in the EIA Report.

A detailed overview of the guidance and methodology adopted for each technical assessment is provided within the respective technical chapters of this Scoping Report (**Chapters 5-13**).

3.2 Consultation Strategy

Stakeholder consultation is an important part of the EIA process. To inform the EIA Report, consultation will be undertaken with statutory and non-statutory consultees to identify relevant baseline information and key issues or concerns that these consultees may wish to raise. Stakeholder consultation will continue throughout the EIA process to discuss proposed mitigation and/or environmental enhancement measures as appropriate. Relevant stakeholders will be consulted for each technical topic.

Public consultation is also an important element of the EIA and planning process. An integrated public relations and public affairs approach will seek to engage key stakeholders within the local community through a range of consultation mechanisms. The Applicant sees public participation as an integral part of the development process and seeks to engage with local communities in an open and receptive way. Local residents, community groups and representatives will be consulted in the pre-application stage. It is also the intention of the Applicant to establish a community liaison group (CLG) which will be made up of representatives from the local community.

The guidance provided by the Energy Consents Unit (ECU) identifies the expectation that Applicants undertake public exhibitions. The Applicant will hold at least two public consultation events at locations that are yet to be confirmed.

Feedback provided through public consultation will be considered at all stages of the design and EIA process. How community consultation influences the design of the Proposed Development will be summarised in a pre-application consultation (PAC) Report and included as part of the application submission.

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[5] Institute of Environmental Assessment and Management (IEMA) (2016). Delivering Quality Development. Available at: https://www.iema.net/download-document/7014
[6] IEMA (2015). Environmental Impact Assessment Guide to Shaping Quality Development. Available at: https://www.iema.net/policy-and-practice/practice-reports
[7] IEMA (2017). Delivering Proportionate EIA. Available at: https://www.iema.net/policy-and-practice/practice-reports
[8] Scottish Natural Heritage now known as NatureScot
[9] SNH (2018). Environmental Impact Assessment Handbook. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf

A Pre-Application meeting between the Applicant and the Scottish Government's ECU took place on 22 May 2023 and the Applicant intends to engage with Argyll and Bute Council further through their formal Pre-application process following receipt of the Scoping Opinion.

3.3 Baseline Conditions

Environmental effects as a result of the Proposed Development will be described in the EIA Report as they relate to the extent of proposed changes to the existing baseline environment. The baseline conditions are the existing environmental characteristics and conditions. This information will be obtained via a combination of desktop studies and site surveys.

3.4 Assessment of Effects

The Applicant has appointed a competent team of EIA specialists who will undertake the required impact assessments using available data, survey information (where applicable), and professional judgement.

The proposed assessment methodologies for each topic are described in each technical chapter (**Chapters 5-13**) of this Scoping Report and are based on the requirements of the EIA Regulations, relevant current industry guidance and professional judgment and experience. However, each assessment will generally comprise the following steps:

- Determine the sensitive receptors to be considered and establish their level of sensitivity;
- Identify the potential effects of the Proposed Development and determine the magnitude of change;
- Consider whether the potential effects could be avoided, reduced, mitigated, offset or compensated for; and
- Assess the significance of residual effects following consideration of any mitigation, based upon the sensitivity of the receptor and the magnitude of change. A matrix approach will be defined in the EIA Report and will be used to assign a level of significance to a potential effect.

3.5 Mitigation

Further to embedded mitigation described in **Section 2.3** where the EIA identifies potential significant adverse environmental impacts, mitigation measures will be proposed where practicable to avoid, reduce, offset or compensate the associated effects. Such measures would be implemented during the construction and/or operation of the Proposed Development. Each technical chapter will detail the measures proposed to mitigate identified significant effects. A schedule of all the mitigation commitments documented in the EIA Report will be provided for each reference, including monitoring where relevant.

A CEMP will be produced to detail good practice measures concerning all construction activities. The CEMP will establish the project management structure and identify the roles and responsibilities in the management and reporting on the construction phase environmental aspects. The CEMP will be used to ensure that all relevant planning conditions, mitigation, and good practice construction procedures identified within the EIA Report to protect the environment are implemented through agreed procedures and working methods.

The CEMP will contain the following documents:

- Habitat Management Plans (including Species Protection Plans as required);
- Pollution Protection Plan;
- Construction Method Statements;
- Peat Management Plan;
- Waste Management Plan;

- Noise Management Plan;
- Construction Traffic Management Plan; and
- Restoration Plan.

This list is not exhaustive and consultees are invited to comment on further documents that they wish to see included.

3.6 Cumulative Effects

The EIA Report will include an assessment of the cumulative effects in line with the EIA Regulations. The cumulative assessment will consider in-combination effects which are the combined effects of the Proposed Development and other reasonably foreseeable developments on a common receptor.

The requirements and study areas will differ between technical assessments and may include existing, as well as proposed wind farm developments. For other forms of development, it is proposed that they are limited to developments which are classified as EIA development and which have planning applications submitted, approved or are under construction, and are located within a 10km radius of the Site.

3.7 Consideration of Alternatives

The EIA Report will present the main alternatives considered relevant to the Proposed Development including aspects such as the location, nature, scale and design principles/parameters.

Consideration of potential alternatives will be undertaken through the iterative design process, with early consideration ensuring that risks and challenges at a later stage are minimised and potential environmental effects avoided where possible.

4 PLANNING POLICY

4.1 Introduction

The application will be submitted to the ECU under the Electricity Act 1989 ('the 1989 Act'). For such applications, Section 25 of the Town and Country Planning (Scotland) Act 1997, as amended, is not engaged.

The application is to be considered under section 36 of the 1989 Act. The only statutory provision which is relevant to the determination of section 36 applications is Schedule 9 of the 1989 Act. Paragraph 3(2) of Schedule 9 requires the Scottish Ministers, when considering such applications, to have regard to *"the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest".*

The application for the Proposed Development will be accompanied by a Planning and Renewable Energy Statement which will not form part of the EIA Report.

The Climate Change policy framework in which the application for the Proposed Development is brought forward will be set out in the early chapters. The technical chapters of the EIA Report will set out the relevant planning policy in respect of specific topics.

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
- Other relevant guidance.

4.2 Project Need and the Renewable Energy Policy Framework

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.

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 and emissions reduction law. The clear objectives of the UK and Scottish Governments will be summarised, 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.

Scotland's overarching statutory target is to achieve a 100% reduction in greenhouse gas emissions to net zero by 2045, with interim targets of 75% by 2030 and 90% by 2040, which is contained in the Climate Change (Scotland) Act 2009 as amended by the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019 ('2009 Act') which came into force in March 2020. This sets clear targets (annual and interim) relating to climate change emissions reductions, in law, which are required for Scotland to reach net zero.

The Proposed Development would clearly make a contribution to the attainment of renewable energy and net zero targets at both the Scottish and UK levels and the quantification of this contribution will be described in the EIA Report. The EIA Report will set out a high-level review of the renewable energy policy framework which will include reference to the following key documents:

- Climate Change (Emissions Reduction Targets) (Scotland) Act 2019;
- Scottish Energy Strategy: The future of energy in Scotland (2017); and

- Onshore Wind Policy Statement (2022).

4.3 National Planning Policy and Guidance

Reference will be made in the technical chapters, in so far as they are relevant, to national planning policy and guidance documents, including:

- Relevant Planning Advice Notes (PANs);
- Scottish government web-based Renewables Guidance; and
- Scottish Government policy and good practice Guidance on community benefit funding and shared ownership.

4.4 The Statutory Development Plan

The Statutory Development Plan comprises:

- National Planning Policy Framework 4 (NPF4) (2023);
- The Argyll and Bute Local Development Plan (ABLDP) (2015); and
- Argyll and Bute Local Development Plan – Supplementary Guidance 2 (SG) (2016 and associated Windfarm Maps).

It is understood that Argyll and Bute Council are progressing with a new Local Development Plan (ABLDP2). It is expected that the examination report in respect of the ABLDP2 will be published in summer 2023. It is expected that by the time the application for the Proposed Development is submitted, the ABLDP2 will be adopted and replace the ABLDP.

The Development Plan policies, applicable to the Proposed Development, will be taken into account during the iterative EIA design process.

The key policy in NPF4 for the Proposed Development is Policy 11: Energy. The Policy is generally supportive of wind farm development subject to the consideration of a set of criteria. The key policy of the ABLDP2 as currently drafted is Policy 30: The Sustainable Growth of Renewables. Other policies are also considered to be relevant. The technical chapters of the EIA Report will reference Development Plan policies in so far as they are relevant.

4.5 Conclusion

The EIA Report will not contain any assessment of the Proposed Development against planning and renewable energy policy. Assessment of the Proposed Development, against the planning and renewable energy policy, will be provided in a Planning and Renewable Energy Statement which will be submitted with the application for the Proposed Development.

5 LANDSCAPE AND VISUAL

The Proposed Development has the potential to have a direct impact on the physical characteristics of the landscape as well as indirect impacts on the character of the landscape and visual receptors in the area. The Proposed Development also has the potential to have cumulative landscape and visual impacts when seen in addition to other similar developments.

5.1 Legislation, Policy and Guidance

The Landscape and Visual Impact Assessment (LVIA) will be undertaken in accordance with the Guidelines for Landscape and Visual Impact Assessment (GLVIA3), Third Edition (Landscape Institute and IEMA, 2013).

5.1.1 Policy

National and local policy relevant to this assessment includes:

- National Planning Framework 4 (NPF4), Scottish Government, Feb. 2023 – in particular policies 4 and 11;
- Onshore Wind Policy Statement (OWPS), Scottish Government, Dec. 2022; and
- Argyll and Bute Local Development Plan, Argyll and Bute Council (March 2015),in particular policy LDP 3, Supporting the Protection, Conservation and Enhancement of our Environment which is further supported by detailed Supplementary Guidance policies listed below.

5.1.2 Guidance

- SG LDP ENV 12 – Development Impact on National Scenic Areas (NSA);
- SG LDP ENV 13 – Development Impact on Areas of Panoramic Quality (APQ), and
- SG LDP ENV 14 – Landscape.

5.1.3 Baseline Studies

The following baseline studies will be used to inform the LVIA:

- Argyll and Bute Landscape Wind Energy Capacity Study (ABLEWCS), Carol Anderson Landscape Associates, August 2017;
- National Landscape Character Assessment, NatureScot, 2019;
- Special Qualities of the National Scenic Areas, Scottish Natural Heritage, 2010; and
- Assessment of Highland Special Landscape Areas, The Highland Council, 2011

Character areas identified in the ABLWECS will be assessed as the receptors in the consideration of effects on landscape character within Argyll and Bute. The national character areas will be assessed as the receptors within The Highland Council administrative area. The documents relating to national and local designations will be used to inform the assessment of effects on the relevant designated areas.

5.2 Consultation

NatureScot and Argyll and Bute Council will be consulted with regards to the scope of the LVIA as proposed within this chapter.

5.3 Methodology

5.3.1 Guidance

In addition to GLVIA3, the approach to the assessment will be informed by the following key documents (in addition to other relevant guidance):

- General pre-application and scoping advice for onshore wind farms, NatureScot, August 2022;
- Siting and Designing Wind Farms in the Landscape[10], NatureScot, Version 3a, August 2017;
- Visual Representation of Wind Farms[11], NatureScot, February 2017;
- Assessing the Cumulative Impacts of Onshore Wind Energy Developments[12], Scottish Natural Heritage, 2021; and
- TGN 02/19 Residential Visual Amenity Assessment (RVAA)[13], Landscape Institute, 2019.

5.3.2 Study Area

An initial study area of 45km radius has been used to prepare a bare ground, tip height (200m) Zone of Theoretical Visibility (ZTV) study (See **Figure 5.1**) based on NatureScot guidance. In addition, two further ZTV studies have been prepared as shown in **Figure 5.2** and **Figure 5.3**. **Figure 5.2** is based on the wind turbine tip heights and shows a 25km study area with modelling of screening by woodland and buildings. **Figure 5.3** is based on nacelle heights (119m) as a guide to the potential visibility of aviation lighting.

Based on the theoretical visibility indicated by these ZTV studies, which is very limited beyond 25km, landscape and visual receptors within 25km will be considered in the LVIA. Those receptors beyond 25km will be scoped out.

5.3.3 Assessing Landscape Effects

Effects will be assessed on landscape character areas and types identified by the baseline studies listed in **Section 5.1.3** above, which are within 25km and would have theoretical visibility as set out in **Section 5.3.2** above.

Effects on designated landscapes (except Gardens and Designed Landscapes) will be assessed based on the purposes of designation identified by policy (for the Areas of Panoramic Quality within Argyll and Bute); and on the documented special qualities set out in the baseline studies listed in **Section 5.1.3** above for National Scenic Areas and Special Landscape Areas within The Highland Council.

Effects on the historic significance of Gardens and Designed Landscapes will be considered within the heritage assessment. For LVIA purposes they will be considered as indicators of landscape value, and as visual receptors if they are accessible to the public.

5.3.4 Assessing Visual Effects

[10] NatureScot (2017). Siting and Designing Wind Farm in the Landscape. Available at: https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a

[11] NatureScot (2017). Visual Representation of Wind Farms. Available at: https://www.nature.scot/doc/visual-representation-wind-farms-guidance

[12] SNH (2021). Assessing the Cumulative Impacts of Onshore Wind Energy Developments. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments

[13] Landscape Institute (2019). TGN 02/19 Residential Visual Amenity Assessment (RVAA). Available at: https://www.landscapeinstitute.org/technical-resource/rvaa/

The assessment of visual effects will focus on public amenity and will consider the effects on the views people see when in settlements; using roads and recreational routes; at tourist and recreational destinations and from near, but not within, their private homes and gardens. As noted in **Section 5.3.2** above, all visual receptors with theoretical visibility of the Proposed Development within 25km will be considered within the LVIA.

5.3.5 Viewpoints

Viewpoint analysis is used to inform the LVIA from selected viewpoints within the study area. The purpose of this is to assess both the scale of visual impact for receptors and to help guide the assessment of the overall effect on visual amenity and landscape character. The viewpoints have been selected to represent views from a range of distances, directions and receptor types (landscape character, visual receptors, specific viewpoints known for their valued views, and designated landscapes) in the proposed 25km detailed study area. Proposed viewpoint locations are set out in **Table 5.1**.

As the wind turbines are over 150m in height they will require 2000 candela aviation lighting affixed to the nacelle and 32 candela tower lighting halfway up the towers of all or some of the turbines (subject to agreement of a suitable lighting scheme with the Civil Aviation Authority (CAA)). In line with NatureScot's General Pre-application and Scoping Advice for Onshore Wind Farms (2022), it is anticipated that three photomontages would be sufficient to illustrate the impact of this proposed aviation lighting, given that the position of the aviation lights on the wind turbines will also be indicated on wirelines. Three locations are proposed (see **Table 5.1**) based on the nacelle height ZTV study (**Figure 5.3**). However, visibility from these locations will be checked based on the final aviation lighting design (which may not require lighting of all turbines) and alternative viewpoints proposed if required.

5.3.6 Cumulative Landscape Visual Assessment

Cumulative assessment will be undertaken to identify impacts arising from the Proposed Development when considered together with other wind development in the area, based on NatureScot's Assessing the Cumulative Impact of Onshore Wind Energy Developments, March (2021). Wind farms within the proposed 25km detailed study area will be considered within the cumulative assessment, as it is not considered likely that significant cumulative effects would arise with other wind farms beyond this area given the limited visibility of the Proposed Development beyond 25km.

Single turbines and clusters of under 50m in height will not be considered, or modelled in visualisations, unless within 5km of the Proposed Development.

Operational and consented wind farms will be included in the assessment baseline and future baseline, and wind farms in planning will be considered in the assessment of potential cumulative effects. Wind farms at the pre-application stage will not be considered unless there is a particular reason to do so and sufficient information publicly available to inform an assessment.

5.3.7 Residential Properties

A Residential Visual Amenity Assessment (RVAA) for all dwellings within 2km of the proposed wind turbine locations will be carried out. The assessment will be accompanied by illustrative material such as ZTV studies, wirelines and/or photomontages where appropriate. The Residential Visual Amenity Assessment, Landscape Institute, 2019 will be used when conducting this part of the assessment.

5.4 Baseline

5.4.1 Landscape Character

The Site is located within the Craggy Upland Landscape Character Type (LCT) (Settled Glens sub-type), which forms a backdrop to Loch Etive, Loch Linnhe and the Oban area. Nearby character types are identified in **Section 5.5.1** below.

5.4.2 Landscape Designations

The Site is not designated either nationally or locally. The nearest designated landscapes are the locally designated North Argyll Area of Panoramic Quality (APQ) located 5.5km to the north-west and the Lynn of Lorn National Scenic Area (NSA) located 8.8km to the north-west.

5.4.3 Visual Baseline

The proximity to the coast has a strong influence over the visual character of views in the area, with lochs, sea lochs, inlets, and islands often featuring in views. The mountains, moorlands and forestry in the inland landscapes provide backdrops and skylines to these coastal locations. The Site lies within an open upland area which is surrounded by Fearnoch forest to the south and east and smaller areas of woodland to the north and west. Transport routes typically follow valleys and are often vegetated with limited visibility of the adjacent uplands; but where they follow shorelines, open views across the water permit longer views to upland skylines across the water.

5.4.4 Cumulative Baseline

Beinn Ghlas wind farm is located 4.3km to the south-east of the Site, and Carraig Gheal 8.5km to the south. Musdale wind farm is at the scoping stage and proposed to be located just over 4km to the south of the Site and there is a cluster of operational, consented, and proposed wind farms to the east of Loch Awe beyond 16km to the south of the Site.

5.5 Potential Significant Effects

5.5.1 Landscape Effects

Significant effects are most likely to arise within this host character type and/or other landscape character types within 10km of the Proposed Development, which include:

- Craggy Upland (includes Site);
- Rocky Mosaic (1.9km, north).
- Mountain Glens (3.9km, east);
- Lowland Ridges and Moss (4.8km, north);
- Craggy Coasts and Islands (5km, west);
- High Tops (6.1km, north-east);
- North Loch Awe Craggy Uplands (8.2km, south-east), and
- Lynn of Lorn (8.8km, north-west).

The list above is provided for information at this scoping stage only, and the potential for significant effects will be considered within the detailed study area as set out at **Section 5.3.3** above.

Designated landscapes which are most likely to be significantly affected include national designations within 25km and local designations within 10km as listed below:

- Lynn of Lorn NSA (8.8km, north-west);
- Ben Nevis and Glen Coe NSA (14.5km, north-east);
- North Argyll APQ (5.5km, north-east),

- North West Argyll (Coast) APQ (6.4km, south-west), and
- Knapdale / Melfort APQ (8.6km, west).

The list above is provided for information at this scoping stage only, and the potential for significant effects will be considered within the detailed study area as set out at **Section 5.3.3** above.

5.5.2 Visual Effects

Visual receptors within 10km are most likely to be significantly affected and include the following settlements, recreational visual receptors, and key routes.

Settlement:

- Dispersed settlement along local roads around Fearnoch Forest (0.9km, south);
- Dispersed settlement along the south coast of Loch Etive (3km, north);
- Taynuilt (4.4km, east);
- Connel Bridge (4.5km, north);
- Dispersed settlement along the north coast of Loch Etive (4.7km, north);
- Black Crofts (4.9km, north);
- North Connel (5.3km, north-west);
- Dispersed settlement to the south of Oban (6km, south-west);
- Dunbeg (6.3km, north-west);
- Oban (6.6km, west);
- Bridge of Awe (7.5km, east), and
- Benderloch (8.5km, north).

Recreational receptors:

- Core path network around Oban and Connel Bridge (2.2km, west);
- Achnacloich Gardens and Designed Landscapes (GDL) (3km, north);
- Corepaths around Taynuilt (4.3km, east);
- Ardchattan Priory (4.7km, north-east);
- Core path network around Benderloch and North Connel (5.6km, north-west);
- Inverawe Country Park (6.1km, east);
- Dunstaffnage Castle and Priory (6.8km, north-west);
- Dunollie Castle (8.2km, west);
- Core path network on Kererra (8.9km, west); and just beyond 10km,
- Ben Cruachan (11.1km).

Core paths to the south and south-east of the Site either coincide with key routes listed below or would have no visibility of the Proposed Development. Other visitor destinations are close to settlement receptors and will be considered with the settlement. Achnacloich GDL and Ardchattan Priory GDL are private properties which are sometimes open to the public but are not considered key visual receptors for LVIA purposes.

Key routes:

- National Cycle Route 78 / Caledonian Way (0.9km, south)
- A85 (2.4km, north);
- Glasgow-Oban rail route (2.9km, north);
- A828 (5km, north-west);
- B845 (5.1km, east);
- A816 (6.7km, south-west), and

- Ferry routes to/from Oban (7.7km, west).

The list above is provided for information at this scoping stage only, and the potential for significant effects will be considered within the detailed study area as set out at **Section 5.3.4** above.

Table 5.1 below identifies the proposed viewpoint locations. Viewpoint locations are also shown on **Figures 5.1– 5.3.**

TABLE 5.1 - PROPOSED VIEWPOINTS

VP	LOCATION	X, Y	DISTANCE/ DIRECTION	RATIONALE FOR INCLUSION
1	Barguillean	198398, 728901	3.4km, SE	Dispersed settlement, minor road/NCN users
2	Glen Lonan	194752, 727458	2.3km, S	Dispersed settlement, minor road/NCN users
3	Strontollier	189701, 729423	3.5km, W	Dispersed settlement, minor road/NCN users
4	Ardchonnel	190463, 732085	3.6km, NW	Dispersed settlement, minor road users
5	A828, Connel Bridge	191097, 734651	5.3km, NW	Main road users, settlement
6	Achnacree Bay	193991, 736083	5.7km, N	Settlement, minor road users, recreational users of Loch Etive
7	B845, Inveresragan	199044, 735451	6.2km, NE	Dispersed settlement, local road users, North Argyll APQ
8	Taynuilt	200479, 731021	5.2km, E	Settlement
9	Barran an Fhraoich Viewpoint	188363, 730305	5.0km, W	Promoted viewpoint (marked on OS mapping)
10	Loch Nell	188185, 726597	5.7km, SW	Dispersed settlement, minor road users, recreational users of Loch Nell
11	Knipoch Viewpoint	185607, 723118	9.8km, SW	Promoted viewpoint (marked on OS mapping), North West Argyll (Coast) APQ
12	Balliemore, Kerrera	182229, 728854	11.0km, W	Dispersed settlement, recreational visitors, Knapdale / Melfort APQ
13	Dunstaffnage Castle	188257, 734461	6.8km, NW	Recreational visitors
14	Achnacroish, Lismore	185194, 740888	13.7km, NW	Settlement, recreational visitors, ferry users, Lynne of Lorn NSA
15	A828, Strath of Appin	196054, 744922	14.5km, N	Settlement, main road users, North Argyll APQ

VP	LOCATION	X, Y	DISTANCE/ DIRECTION	RATIONALE FOR INCLUSION
16	Ben Cruachan	206952, 730482	11.6km, E	Recreational visitors, North Argyll APQ
17	Duart Castle, Mull	174977, 735187	19.1km, W	Recreational visitors, ferry users
18	Rubha nan Sailthean (Wireline only)	172188, 726965	21.2km, W	Recreational visitors, Central, South & West Mull APQ
19	Inninmore Bay and Garbh Shlios SLA (wireline only)	178358, 744602	21.0km, NW	Recreational visitors, Inninmore Bay and Garbh Shlios SLA

5.6 Mitigation

Mitigation will be through design, including the number, positioning and scale of the turbines and aviation lights and the positioning and scale of other supporting infrastructure such as substation and tracks.

5.7 Questions for Consultees

- **Q5/1:** Do the Council and consultees agree with the proposed scope of assessment?
- **Q5/2:** Do the Council and consultees agree with the proposed viewpoints, identified **Table 5.1**?
- **Q5/3:** Do the Council and consultees agree with the scope of the cumulative assessment?
- **Q5/4:** Are the Council and consultees aware of any pre-application stage wind farms that they judge warrant inclusion within the cumulative assessment based on their proximity and/or similar application timescales?
- **Q5/5:** Do the Council and consultees agree with the proposed scope of assessment for Residential Visual Amenity?

6 CULTURAL HERITAGE AND ARCHAEOLOGY

This section outlines the baseline archaeological and cultural heritage conditions within the Site and study areas and outlines the methodology that will be utilised for the identification and assessment of direct and settings effects on heritage assets within the EIA Report. This section also considers the potential for significant effects on heritage assets arising from the Proposed Development and highlights instances where mitigation measures may be required.

This section of the EIA Scoping Report has been produced by AOC Archaeology Group, a Registered Organisation of the Chartered Institute for Archaeologists (CIfA).

6.1 Legislation, Policy and Guidance

6.1.1 Legislation and Policy

The following legislation and policy will be relevant to the cultural heritage and archaeology assessment and will inform the scope and method of the assessment.

- Ancient Monuments and Archaeological Areas Act 1979 (as amended) (UK Government 1979);
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 (as amended)[14];
- Planning etc. (Scotland) Act 2006[15];
- Historic Environment (Amendment) (Scotland) Act 2011[16];
- Historic Environment (Scotland) Act 2014[17];
- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended)[18];
- National Planning Framework 4 (NPF4)[19];
- Historic Environment Policy for Scotland[20], including Designation Policy and Selection Guidance[21]; and
- Argyll and Bute Local Development Plan (LDP)[22]
  - Policy LDP3; and
- Emerging Argyll and Bute LDP2[23]
  - Policies 15, 16, 19, 20 and 21.

[14] *Ancient Monuments and Archaeological Areas Act, 1979 (c46).* [Online]. London. The Stationery Office. Available at: http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf
[15] *Planning (Listed Buildings and Conservation Areas (Scotland) Act 1997, (c9).* [Online]. London. The Stationery Office. Available at: https://www.legislation.gov.uk/ukpga/1997/9/pdfs/ukpga_19970009_en.pdf
[16] *Historic Environment (Amendment) (Scotland) Act, 2011* (Full) [Online]. London. The Stationery Office. Available at: http://www.legislation.gov.uk/asp/2011/3/pdfs/asp_20110003_en.pdf
[17] *Historic Environment Scotland Act, 2014* (Full) [Online]. London. The Stationery Office. Available at: https://www.legislation.gov.uk/asp/2014/19/contents/enacted
[18] *Town and Country Planning (Scotland) Act 1997, (c8).* [Online]. London. The Stationery Office. Available at: https://www.legislation.gov.uk/ukpga/1997/8/pdfs/ukpga_19970008_en.pdf
[19] Scottish Government 2023 National Planning Framework 4 (NPF4). Available at: https://www.gov.scot/publications/national-planning-framework-4/
[20] Historic Environment Scotland (HES). 2019a. Historic Environment Policy for Scotland. Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/
[21] HES. 2020. Designation Policy and Selection Guidance. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b
[22] Argyll and Bute Council. 2015. Argyll and Bute Local Development Plan Written Statement Adopted March 2015. Available at: https://www.argyll-bute.gov.uk/ldp
[23] Argyll and Bute Council. 2019. Argyll and Bute Proposed Local Development Plan 2- Written Statement November 2019. Available at: https://www.argyll-bute.gov.uk/ldp2

6.1.2 Technical Guidance

The following guidance documents will be consulted during the assessment to assist in the determination of potential effects on heritage assets:

- Planning Advice Note 2/2011: Planning and archaeology[24];
- Managing Change in the Historic Environment: Setting[25];
- NatureScot and HES's published guidance contained within 'Environmental Impact Assessment Handbook v5'[26];
- Argyll and Bute Local Development Plan Supplementary Guidance[27];
- The Chartered Institute for Archaeologists (CIfA) Code of Conduct: professional ethics in archaeology[28];
- CIfA Regulations for professional conduct[29];
- CIfA Standard and guidance for historic environment desk-based assessment[30]; and
- CIfA Standard and guidance for commissioning work or providing advice on archaeology and the historic environment[31].

6.2 Consultation

Key consultees are Historic Environment Scotland (HES) and the West of Scotland Archaeology Service (WoSAS). WoSAS will initially be consulted as part of the process of ordering the Historic Environment Record (HER) which will inform the baseline of this Scoping Report and the EIA Report.

Following receipt of the Scoping Responses, further consultation with key consultees will take place to agree on the number and locations of visualisations. Consultation will also be undertaken in regard to potential direct and settings impacts mitigation strategies, if required.

6.3 Methodology

The EIA Report will be prepared in accordance with relevant national and local legislation, policy, and guidance on the historic environment as detailed in **Section 6.1**.

6.3.1 Study Areas

In order to assess the potential for effects on cultural heritage assets resulting from the Proposed Development, the following study areas have been identified:

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[24] Scottish Government 2011 PAN2/2011 Planning and Archaeology. Available at: https://www.gov.scot/publications/pan-2-2011-planning-archaeology/

[25] HES. 2020. Managing Change in the Historic Environment. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549

[26] Scottish Natural Heritage (SNH) & Historic Environment Scotland (2018). Environmental Impact Assessment Handbook v5. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf

[27] Argyll and Bute Council. 2016. Argyll and Bute Local Development Plan Supplementary Guidance Adopted March 2016. Available at: https://www.argyll-bute.gov.uk/ldp

[28] Chartered Institute for Archaeologists' (CIfA). 2022. Code of Conduct: Professional Ethics in Archaeology. Available at: https://www.archaeologists.net/codes/cifa

[29] CIfA. 2021. Regulations for professional conduct. Available at: https://www.archaeologists.net/codes/cifa

[30] CIfA. 2020. Standard and guidance for historic environment desk-based assessment. Available at: https://www.archaeologists.net/codes/cifa

[31] CIfA. 2014 (Updated 2020). Standard and guidance for Commissioning Work or Providing Consultancy Advice on the Historic Environment. Available at: https://www.archaeologists.net/codes/cifa

- A core study area (the Site), which includes all land within the Site Boundary, will be subject to assessment for potential direct effects. This study area will be subject to a detailed walkover survey and cultural heritage assets which may be directly impacted by the Proposed Development will be identified.
- A 1km study area for the identification of all known heritage assets and known previous archaeological interventions in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the Site and thus be impacted by the Proposed Development.
- A 5km study area for the assessment of potential effects on the settings of all designated heritage assets including Scheduled Monuments, all Listed Buildings, Inventoried Gardens and Designed Landscapes and Battlefields, Conservation Areas, and assets deemed to be of National Significance in the Historic Environment Record (HER) (Non-Statutory Record (NSR) Codes C and V).
- A 10km study area for the assessment of potential effects on the setting of all nationally important designated heritage assets including Scheduled Monuments, Category A Listed Buildings, Inventoried Gardens and Designed Landscapes, Inventoried Battlefields and assets deemed to be of National Significance in the Historic Environment Record (HER) (Non-Statutory Record (NSR) Codes C and V).

6.3.2 Assessment Methodology

The assessment will establish the historic baseline for the Site. Baseline data will be collated from the following sources:

- The National Record for the Historic Environment (NRHE) as held by HES;
- The HER as supplied by the WoSAS archaeological advisors to Argyll and Bute Council;
- National Library of Scotland for published historic and Ordnance Survey maps;
- National Collection of Aerial Photography (NCAP) as held by HES for vertical and oblique aerial photographs;
- Published archival sources;
- Scottish Palaeoecological Archive Database (SPAD) for information regarding the palaeoecological and paleoenvironmental potential of the Site and surrounding landscape;
- Historic Land-Use Assessment Data for Scotland (HLAMap);
- Available client supplied data about the Site, including peat survey data;
- A walkover survey of the Site; and
- Setting assessment visits to designated assets within the ZTV with the potential for their setting to be impacted by the Proposed Development.

No LiDAR data or imagery is currently held by the Scottish Remote Sensing Portal.

6.3.3 Impact Assessment

The EIA Report will fully describe the baseline historic environment conditions and will assess the potential for direct impacts upon known heritage assets within the Site as well as outlining the potential for hitherto unknown buried remains to survive on Site, and thus potentially be impacted upon.

The assessment will also consider the identified heritage assets in the outlined study areas which could be subject to potential impacts upon setting, including the potential for cumulative impacts. The EIA Report will be supported by a detailed ZTV which will be used to identify assets intervisible with the Proposed Development. It is envisaged that visualisations (either wireframes or photomontages) will be produced for some assets to aid in assessment of settings impacts. The viewpoints required will be agreed in consultation with HES, WoSAS, and the Landscape and Visual consultants. A preliminary review of a bare earth ZTV,

produced for this Scoping Report, and designated heritage assets has been undertaken. Based on this it is anticipated that wireframes or photomontages will be provided for the following assets:

- Glenamachrie, cairns 850m ESE of (Asset 5);
- Glenamachrie, standing stone 100m E of (Asset 30);
- Clachadow, cairn 960m NW of (Asset 31);
- Tiroran, cairn 130m SE of (Asset 46);
- An Dun, dun 500m ESE of Glenamadrie (Asset 57);
- Carn Ban, chambered cairn, Moss of Achnacree (Asset 62);
- Glenamachrie, cairns 65m & 300m WNW of (Asset 86);
- Ardchattan Priory Inventory Garden and Designed Landscape (centred Asset 102); and
- Achnacloich Inventory Garden and Designed Landscape (centred Asset 103).

Given the proximity of Assets 5, 30, 57 and 86 to one another, following the site visits, two representative visualisations, showing the worst-case scenario may be suggested. The locations of the visualisations would be agreed with consultees as required.

The assessment will distinguish between the term 'impact' and 'effect'. An impact is defined as a physical change to a heritage asset or its setting, whereas an effect refers to the significance of this impact. The first stage of the assessment will involve establishing the importance of the heritage asset and assessing the sensitivity of the asset to change (impact). An assessment of the impact magnitude will be made and a judgement regarding the level and significance of effect will be arrived at.

The setting assessment will be undertaken with reference to HES' Managing Change Guidance on setting and will aim to establish the current setting of the identified heritage assets, how that setting contributes to the understanding, appreciation and experience of those assets and how the Proposed Development could impact upon this.

Cumulative effects will also be considered. The assessment of cumulative effects on heritage assets will be based upon consideration of the effects of the Proposed Development on the settings of heritage assets, in addition to the likely effects of other operational/under construction, consented and proposed (at the application stage) wind farm schemes. Cumulative effects will be considered for designated assets as identified in the 5km and 10km study areas.

The assessment will take into account the relative scale (i.e. size and number of turbines) of the identified developments, their distance from the affected assets, and the potential degree of visibility of the various developments from the assets. Cumulative wirelines from those assets most likely to experience significant cumulative impacts on their settings will be provided, if appropriate.

The schemes to be included in the cumulative impact assessment will be those agreed with the planning authority via consultation and will be undertaken according to the guidance in NatureScot's Assessing the Cumulative Impact of Onshore Wind Energy Developments[32] and Historic Environment Scotland's Environmental Impact Assessment Handbook[33].

NPF4 indicates that development proposals affecting Scheduled Monuments will only be supported where '*significant adverse impacts on the integrity of setting of a scheduled monument are avoided'*[34]. Significant adverse impacts on integrity of setting are judged here to relate to whether a change would adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance to the extent

[32] Scottish Natural Heritage 2012. Assessing the Cumulative Impact of Onshore Wind Energy Developments. Available at: https://www.nature.scot/sites/default/files/2017-09/Guidance%20note%20%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf
[33] Scottish Natural Heritage (SNH) & Historic Environment Scotland (2018). Environmental Impact Assessment Handbook v5. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf
[34] Scottish Government. 2023. NPF4 7h(ii):46.

that the setting of the asset can no longer be understood or appreciated. It is considered that a significant impact upon the integrity of the setting of an asset will only occur where the degree of change that will be represented by the Proposed Development would adversely alter those factors of the monument's setting that contribute to cultural significance such that the understanding, appreciation and experience of an asset are not adequately retained.

In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as 'significant' in EIA terms will have the potential to significantly adversely impact upon integrity of setting. Where no EIA significant effect is found it is considered that there would be no significant impact upon the integrity of an asset's setting. This is because for many assets, setting may make a limited contribution to their significance and as such changes would not significantly impact the integrity of their settings.

Where EIA significant effects are found, a detailed assessment of adverse impacts upon integrity of setting is made. Whilst non-significant effects are unlikely to significantly impact integrity of setting, the reverse is not always true. That is, the assessment of an effect as being 'significant' in EIA terms does not necessarily mean that the adverse effect to the asset's setting will significantly impact its integrity. The assessment of adverse impact upon the integrity of an asset's setting, where required, is a qualitative one, and largely depends upon whether the impact predicted would result in a major impediment to the ability to understand or appreciate the heritage asset.

6.4 Baseline

The following scoping baseline has been informed by:

- The National Record for the Historic Environment (NRHE) as held by HES and available via Canmore;
- HER data as available online via Pastmap;
- The British Geological Survey (BGS);
- National Library of Scotland for published historic and Ordnance Survey maps;
- Statistical Accounts of Scotland; and
- Data from the Phase 1 Peat Survey.

Each asset within the Site has been assigned an 'Asset No.' unique to this report, and the gazetteer (**Appendix 6.1**) includes information regarding the type, period, grid reference, NRHE number, protective designation, and other descriptive information, as derived from the consulted sources. These assets are also depicted on **Figure 6.1** and **Figure 6.2.**

6.4.1 Geological Evidence

The BGS[35] identifies one main bedrock underlying the Site: Lorn Plateau Volcanic Formation composed of andesite and basalt, an igneous bedrock formed between 423.6 and 393.3 million years ago during the Silurian and Devonian periods. There are bands of two other igneous bedrocks formed in the same periods recorded as underlying the Site. These are:

- North Britain Siluro-devonian Calc-alkaline Dyke Suite composed of microdiorite and appinitic dioritic-rock; and
- Lorn Plateau Volcanic Formation composed of tuff and agglomerate.

Mapping of the extent of superficial geological deposits by the BGS is not always accurate due to the discontinuity in distribution of these deposits and difficulties in accessing below ground data. The BGS does not record the superficial deposits on the Site for the majority of the Site. A small area of peat is recorded

[35] British Geological Survey (BGS). 2023. Geology of Britain Viewer. Available at: https://geologyviewer.bgs.ac.uk/

at the north-eastern corner of the Site. Peat is a sedimentary, organic deposit formed in the Quaternary period.

A Phase 1 peat survey was undertaken on the Site in 2022. The survey indicated that peat is not present across the majority of the Site, though deep areas of peat (>3m deep) were identified in discrete locations across the Site. The survey indicates that where peat has been identified, the peat appears to be undisturbed[36].

Paleoenvironmental and archaeological remains are also known to survive buried in peat deposits. Historic and modern research in Scotland suggests that paleoenvironmental remains can survive beneath accumulations of peat and that this can help to better our understanding of vegetational and landscape development and thus anthropogenic activity in the region. As such, there is the potential for archaeological and paleoenvironmental remains to survive in the identified peat deposits on the Site.

6.4.2 Archaeological and Historic Evidence

There are no heritage assets recorded on the Site (see **Figure 6.**1).

Within 1km of the Site (see **Figure 6.1**), this assessment has identified:

- Five prehistoric Scheduled Monuments (Three cairns (Assets 5, 31 & 86); a standing stone (Asset 30) and a dun (Asset 57) to the south-west of the Site; and
- Six non-designated heritage assets; one of which, a building depicted on an historic map (Asset 107), is located to the north; and five of which, including ecclesiastical, agricultural, burial, funerary, and settlement assets, are located to the south-west of the Site.

Pre-Ordnance Survey maps of the Site tend to be schematic and lack detail. These maps do not record the Site in detail. Roy's Military Map of Scotland- Highlands[37] (1747-52) depicts the Site within an upland area to the south of Connel. Settlement in the period is depicted to the south around the River Lonan and to the west by "*Loch Kilrigh"*, now The Black Lochs, suggesting that this is where the fertile land was located.

The Site is located within the parish of Kilmore and Kilbride. The Old Statistical Account (OSA[38]) noted that the hills within the parish were covered with heath and that the land within valleys was generally in arable use in the late 18th century. It was stated that few hills in the parish were occupied by grazing sheep, however the OSA also suggests that sheep husbandry was a new addition to the agricultural of parish in the late 18th century. The New Statistical Account (NSA[39]) published in 1845 suggests that whilst there was some improvement within the arable environment, there was little change in the upland landscape in the early 19th century.

The Ordnance Survey (OS) map published in 1874[40] depicts the Site in an upland landscape, with rock outcrops depicted around localised summits. A lochan is depicted within the north-eastern area of the Site. No previously unrecorded heritage assets are visible on this OS map. Settlement is depicted as on earlier maps to the south of the Site around the River Lonan River valley. Woodland is depicted around the Site in

[36] Wrc & RSC. 2022. Cruach Clenamacrie: Phase 1 Peat Depth & Condition Survey. Unpublished report.
[37] Roy, W. 1747-52. Military Map of Scotland- Highlands. Available at: https://maps.nls.uk/roy/index.html
[38] McDonald, P. Rev. 1794. Kilmore and Kilbride, County of Argyle, Old Statistical Account (OSA), Volume XI. Available at: https://stataccscot.edina.ac.uk/static/statacc/dist/viewer/osa-vol11-Parish_record_for_Kilmore_and_Kilbride_in_the_county_of_Argyle_in_volume_11_of_account_1/
[39] Campbell, D.N. Rev. 1845. Kilmore and Kilbride, County of Argyle, New Statistical Account (NSA), Volume VII. Available at: https://stataccscot.edina.ac.uk/static/statacc/dist/viewer/nsa-vol7-Parish_record_for_Kilmore_and_Kilbride_in_the_county_of_Argyle_in_volume_7_of_account_2/
[40] Ordnance Survey. 1874. Argyllshire, Sheet XCIX Survey date: 1871, Publication date: 1874. Available at: https://maps.nls.uk/

the late 19th century. Subsequent OS maps, to 1975-6[41] do not record any changes to the Site. Commercial plantation forestry visible to the south of the Site likely post-dates the mid-1970s.

Between 1km and 5km from the Site, this assessment has identified 34 designated heritage assets (see **Figure 6.2**). These include:

- Two Inventory Gardens and Designed Landscapes (GDL);
  - Ardchattan Priory (centred Asset 102) which is a Property In Care. Within the GDL there is one Scheduled Monument, Ardchattan Priory, priory, burial ground and carved stones (Asset 82) and one Category B Listed Building, Ardchattan Priory (Asset 96)
  - Achnacloich (centred Asset 103) which encompasses the Scheduled Dun Creagach, dun 145m NW of Auchnacloich (Asset 24) and Category B Listed Achnacloich (Asset 95).
- A further 23 Scheduled Monuments (Assets 4, 6, 13, 22-24, 32-36, 45, 48, 53-55, 58, 60, 61, 80, 82, 85 & 87) which can be characterised as prehistoric ritual, funerary and burial, prehistoric defensive and settlement; and Early Medieval/Medieval settlement, ecclesiastical and burial assets.
- Another six Category B Listed Buildings (Assets 93, 94, 98-101) which date the post-medieval and modern era.
- One Category C Listed Building, the 18th century Ardchattan Manse (Asset 97).

Between 5km and 10km from the Site (see **Figure 6.2**), this assessment has identified:

- 59 Scheduled Monuments (Assets 1-3, 7-12, 14-21, 25-29, 37-44, 46, 47, 49-52, 56, 59, 62-79, 81, 83 & 84). These Scheduled Monuments broadly fall into the following categories:
  - Prehistoric funerary, ritual and burial assets;
  - Prehistoric settlement and defensive assets;
  - Early Medieval and Medieval burial and ecclesiastical assets;
  - Medieval defensive assets; and
  - Post-medieval industrial assets.
- Five Category A Listed Buildings (Assets 88-92) to the west, north and east of the Site. These Category A Listed Buildings can be characterised as post-medieval and modern residential and ecclesiastical buildings.

6.5 Potential Significant Effects

6.5.1 Matters Scoped Out

Direct impacts on cultural heritage assets outwith the Site will be scoped out of the assessment.

Impacts on the settings of non-designated cultural heritage assets and features, with the exception of those considered to potentially be of national importance, will be scoped out of the assessment as these assets are generally considered less sensitive to changes in their settings and are judged to be unlikely to be subject to significant settings effects. This will be confirmed with consultees.

An initial review of assets outwith the ZTV has been undertaken to identify designated assets with key views towards them which may feature the Proposed Development. No such assets have been identified within this review. Therefore, designated assets falling outwith the ZTV will be scoped out of further assessment.

Impacts on the settings of heritage assets beyond 10km of the Site will be scoped out, as most assets beyond that distance are located outwith the ZTV and will also be too distant to have their settings significantly adversely affected by the Proposed Development. This will be confirmed with consultees.

[41] Ordnance Survey.1975-1976. OS Plan 1:10000. Available at: https://maps.nls.uk/

6.5.2 Direct Impacts

No heritage assets have been identified within the Site and historic mapping indicates that the Site has not been intensively used since at least the mid-1750s.

There is the potential for hitherto unknown archaeological and paleoenvironmental deposits and remains to survive on the Site. As such the Proposed Development may have the potential to directly impact hitherto unknown archaeological remains.

The archaeological baseline for the Site within the EIA Report will be informed by aerial photography assessment and a walkover survey. Any identified heritage assets would be preserved in situ, wherever possible, and thus direct impacts would be avoided by design. If heritage assets cannot be avoided by design, a robust programme of mitigation would be required.

The Proposed Development design will largely avoid identified peat deposits on the Site. The current proposed location for Turbines 2 and 6 (T2 and T6) are located in areas where peat has been identified up to 2.5m and 2m deep respectively. There is potential for construction works to disturb archaeological and paleoenvironmental remains within these peat deposits, although mitigation measures are being considered in conjunction with consultees.

6.5.3 Settings Impacts

The Proposed Development has the potential to impact upon the settings of heritage assets with which it is intervisible or where it can be seen in key views towards assets across the landscape. There is also a potential for cumulative impacts on the settings of heritage assets.

Based on a preliminary review, the Scheduled Monuments within 1km of the Site are located within the River Lonan valley to the south-west of the Site. The Scheduled dun (Asset 57) appears to be related to control over the fertile valley. Whilst cairns and standing stones are known to have been constructed on high ground in order to be seen in landscapes, these assets are also well known within riverine settings, where it is considered that there was an association between the dead and waterways[42]. As such the primary settings of the Scheduled Monuments within 1km of the Site appears to be the River Lonan valley, based on the topography the Proposed Development would be constructed on the northern extent of that valley. A full assessment of the impact of the Proposed Development on their setting will be informed by detailed Site visits, visualisations, as appropriate, and the magnitude of impact and level of effect will be dependent upon the final design.

Designated heritage assets within 10km of the Site appear to be located within river valleys, or around bodies of water, including the west of Scotland coastline, indicating that their settings largely relates to surrounding fertile land and waterways. The bare earth ZTV, produced for this Scoping Report, indicates that the majority of designated heritage assets within 10km to the north, east and west of the Site will be intervisible with the Proposed Development. Fearnoch Forest will screen at least any intervisibility of the lower portions of the turbines in views from the south and east, limiting intervisibility at present to turbine hubs and blades. However, whilst the Proposed Development may be visible as a modern addition to the wider landscape, a preliminary review of the assets has not identified any assets where the Proposed Development would be located in a significant view or where the area in which the Proposed Development is located forms a key viewpoint in the setting of designated heritage assets.

There are a group of Scheduled cairns (Assets 25-27; 44-46; 49-52 & 62) around the Moss of Achnacree between 5km and 10km from the Site. The Moss of Achnacree has been drained and was once wet ground or a lochan and based on the locations of the Scheduled cairns it appears as though the cairns were constructed on the higher land around the waterbody. As such their setting is likely primarily related to the former waterbody. It is acknowledged that, based on the ZTV, the Proposed Development is likely to

[42] Cummings, V. Fowler, C. (2015) The Neolithic of the Irish Sea. Oxbow Books

backdrop south facing views from these cairns and thus be located in wider landscape views which include the cairns. The façade of Carn Ban, chambered cairn (Asset 62) is recorded as facing south-east towards the Proposed Development. Based on current evidence and given the distance between the assets and the Proposed Development and characteristics of setting outlined above, the Proposed Development is not anticipated to have a significant effect on the setting of these Scheduled Monuments. However, a full assessment of the impact of the Proposed Development on their setting will be informed by detailed site visits, visualisations and the magnitude of impact and level of effect will be dependent upon the final design.

The Proposed Development may be visible backdropping southward looking views of Achnacloich GDL (centred Asset 103) from the northern shores of Loch Etive. It is noted that there are long views from the GDL of Ardchattan Priory (centred Asset 102) across Loch Etvie towards Fearnoch Forest, near the Proposed Development. However, the Proposed Development would be a singular addition, in one direction, in the wider setting of each of these designated heritage assets. On this basis, the Proposed Development is not anticipated to have a significant effect on the setting of the GDLs within 10km of the Site. However, a full assessment of the impact of the Proposed Development on their setting will be informed by detailed site visits, visualisations and the magnitude of impact and level of effect will be dependent upon the final design.

6.6 Mitigation

The assessment undertaken to inform this Scoping Report has identified the potential for hitherto unknown archaeological and paleoenvironmental remains to survive on the Site.

Archaeological mitigation on the Site may be required. Based on the scoping baseline and current Proposed Development design, mitigation *may* include archaeological peat probing and/or watching briefs prior to and/or during construction works. A phased programme of archaeological works, prior to construction may also be appropriate to better understand the potential on the Site. The scope of any such mitigation would, be dependent upon the predicted impacts and archaeological potential identified in the EIA Report and will be set out in a Written Scheme of Investigation (WSI), agreed with the WoSAS, Argyll and Bute Council and the Applicant prior to being implemented.

6.7 Questions for Consultees

- **Q6/1:** Is the proposed assessment methodology, including proposed study areas, accepted?
- **Q6/2:** Are the receptors and impacts scoped out of the assessment accepted?
- **Q6/3:** Are there any assets beyond the proposed study areas that consultees would like to see scoped into the assessment?
- **Q6/4:** Are there any assets located outwith the ZTV that consultees would like to see scoped into the assessment?
- **Q6/5:** Do the consultees agree that the proposed visualisations will be sufficient to support or inform the assessment?
- **Q6/6:** Are there any additional assets that consultees would like visualisations to be considered for?

7 NOISE

7.1 Consultation

No consultation pertaining to Noise has been undertaken to date. Argyll and Bute Environmental Health will be consulted to provide opinion on the scope and method of assessment proposed for the Noise Impact Assessment.

7.2 Baseline

The Proposed Development would consist of eight wind turbines with a tip height of up to 200m. The candidate wind turbine for the purposes of this scoping chapter was the Vestas V162 with a hub height of 119m and a rated power output of 7.2MW. Noise impacts could potentially arise during the construction, operation and decommissioning phases of the Proposed Development.

The Site is located approximately 7km east of Oban, Argyll and Bute. The surrounding area predominately consists of forestry with scattered residential properties.

The initial wind turbine layout for the Proposed Development is provided in **Figure 10.1**. Also shown is a red contour line that encloses an area predicted to receive maximum turbine immission levels of 35dB(A) L90.

7.3 Sensitive Receptors

The nearest properties, to be confirmed as residential dwellings, are shown in **Figure 7.1.**

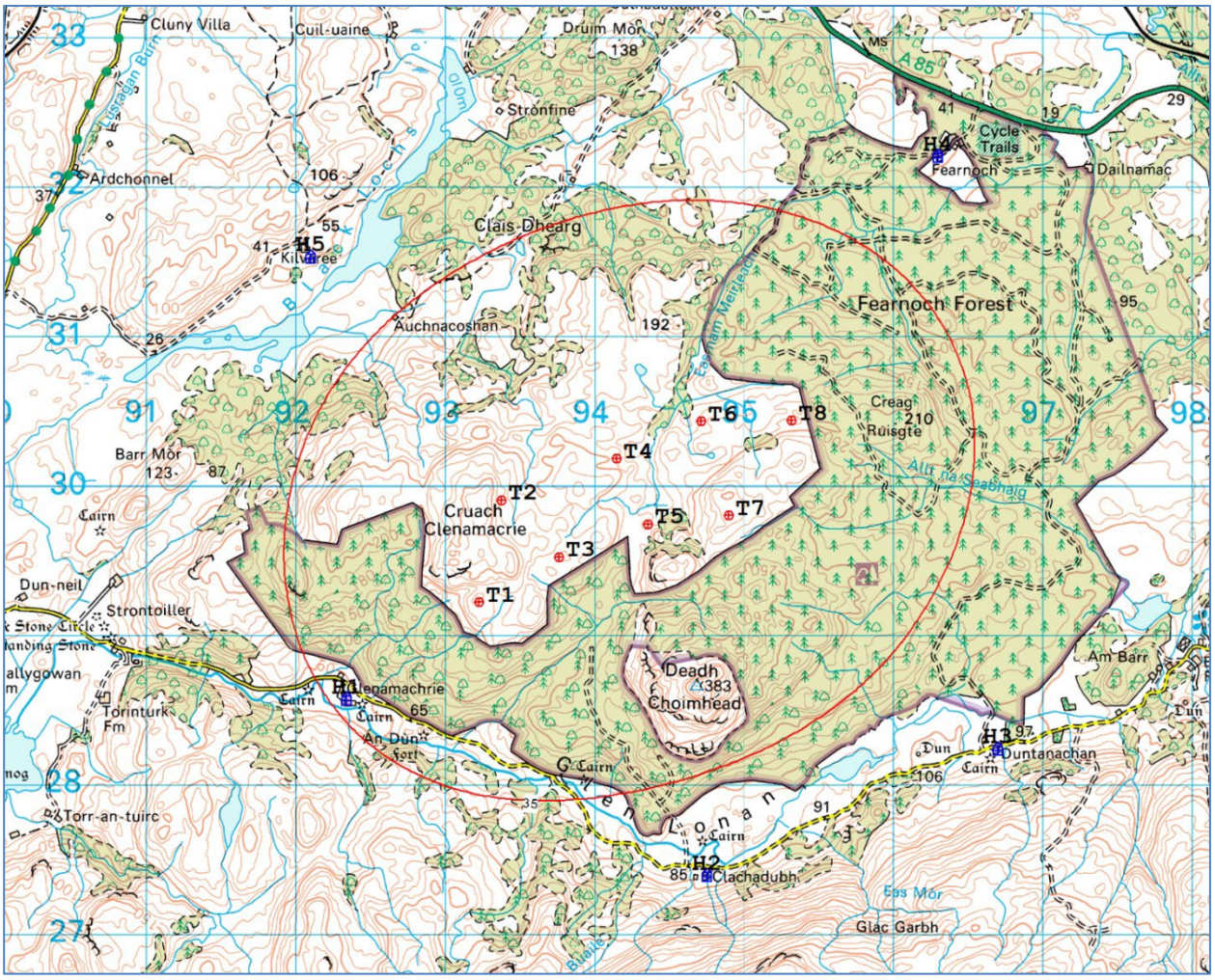

FIGURE 7.1 - STUDY AREA

Table 7.1 lists the names, GPS coordinates of the five closest receptors and the minimum distance to the proposed wind turbines for each location.

TABLE 7.1 - DETAILS OF NEAREST SENSITIVE RECEPTORS

LOCATION	NAME	X	Y	APPROXIMATE DISTANCE TO NEAREST TURBINE (M)	LOCATION
H1	Glenamachrie Stone Row	192342	728562	1102	H1
H2	Clachadubh	194753	727382	2361	H2
H3	Duntanachan	196698	728230	2390	H3
H4	Sealladh Mhor Fearmoch	196300	732196	2012	H4

7.3.1 Construction Phase

There are no particular features of the Site that indicate that construction noise could not be kept to recommended noise limits, as controlled by a suitable planning condition.

7.3.2 Operational Phase

An initial wind turbine layout has been provided to determine an appropriate study area for the Proposed Development.

The assessment of operational immission levels should be based on sound power data provided by the proposed wind turbine manufacturer inclusive of an appropriate allowance for measurement uncertainty.

Predicted noise levels (LA90) may currently exceed the ETSU-R-97 lower fixed limit of 35dB(A) at one property. It is therefore proposed that a background noise survey be conducted to determine the appropriate ETSU-R-97 noise limits for both daytime and night-time periods.

7.4 Methodology

7.4.1 Legislation, Policy and Guidance

The following sources provide guidance on the assessment of wind turbine noise:

- Scottish Government - Onshore wind turbines: Planning Advice[43]; and
- Planning Advice Note 1/2011 (PAN1/2011): Planning and Noise[44].

For the assessment of operational wind turbine noise Planning advice, and Argyll and Bute Council, endorses the use of ETSU-R-97 and the Institute of Acoustics 'Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'.

7.4.1.1 Guidance – Construction phase noise

Guidance for assessing construction phase noise is given in:

- BS 5228-1:2009+A1:2014 - Code of practice for noise and vibration control on construction and open sites.

The standard provides calculation methodology and indicative sound power data for a wide range of construction plant. Assessment of the significance of impacts can be made through comparison of predicted immission levels with criteria that the standard defines.

7.4.1.2 Guidance – Operational phase noise

Guidance for assessing operational noise from wind farms is given in the Institute of Acoustics Good Practice Guide (GPG)[45]. This guidance was developed to standardise the approach to noise assessment of wind farms in the UK. The guidance also provides advice on the form of planning conditions that should be adopted for wind farm projects. The GPG does not address the question of what noise limits should be applied as this has been determined by the government.

[43] Scottish Government (2014), 'Onshore wind turbines: Planning Advice'.
[44] Scottish Government (2011), 'Planning Advice Note 1/2011'.
[45] Institute of Acoustics (2013), 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'.

The basis for operational wind farm noise limits that have been adopted in the UK is given in: 'ETSU-R-97: The Assessment and Rating of Noise from Wind Farms (1997)'; the Department of Trade and Industry (usually referred to as the Noise Working Group Recommendations). National planning guidance is clear that the Institute of Acoustics (IoA) Good Practice Guide (GPG) and ETSU-R-97 should be followed in the assessment of operational noise from wind farms.

Supplementary Planning Guidance Note Ref: SPG.12 NLLP Policy EDI.3(A)2, refers to consideration of PAN 1/2011 - Planning and Noise. PAN 1/2011 includes an endorsement of ETSU-R-97 as the overarching assessment framework for wind turbine noise.

The International Standard ISO 9613, 'Acoustics – Attenuation of Sound During Propagation Outdoors - Part 2', noise propagation model has been used for the wind turbine immission calculations.

IEC/TS 61400-14:2005 – Declaration of apparent sound power level and tonality values is a standard providing a method to derive appropriate sound power level values from several independent sources to improve robustness.

7.4.1.3 Low Frequency Noise

The current planning guidance[46] states that there are no grounds to suppose that infrasound or low frequency noise (LFN) is an issue at receptor distances from a wind farm and refers to the 2006 study[47] carried out by Hayes McKenzie on behalf of the Department of Trade and Industry (DTI). The report investigates the potential impact of infrasound or low frequency noise arising from wind turbines. The study concluded that infrasound or low frequency noise arising from the operation of wind turbines did not result in adverse health impacts.

A further research study in 2016[48] stated the level of infrasound due to wind turbines is low in comparison to other technical and natural sources. The findings concluded "that adverse effects relating to infrasound from wind turbines cannot be expected on the basis of the evidence at hand."

7.4.1.4 Amplitude Modulation

Amplitude Modulation (AM) as an element of wind turbine noise has been the subject of considerable research in recent years. The University of Salford conducted a study[49] on behalf of the Department for Business, Enterprise and Regulatory Reform to investigate whether noise complaints arising from wind farms were due to the presence of AM. The report found that complaints were highly likely to be caused by AM in 4 out of the 27 wind farms included in the study. However, it concluded, 'that the causes of AM are not fully understood, and that AM cannot be fully predicted at current state of the art.' The findings of the investigation were reconfirmed in 2013 in an updated research report by Renewable UK[50].

In 2016[51] the IoA produced 'A Method for Rating Amplitude Modulation in Wind Turbine Noise', in which amplitude modulation is defined as the following:

[46] Scottish Government (2014), 'Onshore wind turbines: Planning Advice'.
[47] Hayes McKenzie (2006), 'The measurement of low frequency noise at three UK wind farms'.
[48] Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (2016), 'Low-frequency noise incl. infrasound from wind turbines and other sources'.
[49] University of Salford, The Department for Business, Enterprise and Regulatory Reform, URN 07/1235, (2007), 'Research into aerodynamic modulation of wind turbine noise'.
[50] Renewable UK (2013), 'Wind Turbine Amplitude Modulation: Research to improve understanding as to its Cause and effects'.
[51] Institute of Acoustics (2016), 'A Method for Rating Amplitude Modulation in Wind Turbine Noise'.

"Wind turbine amplitude modulation is defined as periodic fluctuations in the level of audible noise from a wind turbine (or wind turbines), the frequency of the fluctuations being related to the blade passing frequency of the turbine rotor(s)."

The report acknowledges that certain levels and/or characteristics of amplitude modulation may lead to disturbance and noise complaints. The guidance does not aim to quantify the level at which AM could pose an issue but outlines a proposed methodology to assess and rate AM arising from operational wind farms.

Currently, there is no agreed method of assessment for amplitude modulation, pre-construction. As such, any assessment can only be conducted after the wind farm is operational.

7.4.1.5 Vibration

In 2005, the Applied and Environmental Geophysics Research Group at Keele University conducted an extensive study titled 'Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Windfarms'[52]. The study was requested by the Ministry of Defence (MoD), the DTI and the British Wind Energy Association with the aim of establishing an acceptable limit that would not interfere with the detection capabilities of the seismic monitoring site located in Eskdalemuir, Scotland. The results of the investigation found that low levels of vibration and infrasound could be detected, with measurement apparatus, at large distances from the wind turbines included in the survey. The report concluded that a 10km buffer zone could be adopted at Eskdalemuir to protect the site from the interference due to wind turbines.

The outcome of this study has since been misinterpreted as the potential for adverse effects at residential receptors. The authors of the paper have clarified that[53]:

- "The levels of vibration from wind turbines are so small that only the most sophisticated instrumentation and data processing can reveal their presence, and they are almost impossible to detect."

They also confirmed that the level of vibration measured was not unique to wind turbines:

- "Vibrations at this level and in this frequency range will be available from all kinds of sources such as traffic and background noise - they are not confined to wind turbines."

A more recent study on the human perception of vibration from wind turbines was published in 2020[54]. The paper presents vibration measurements from inside properties at varying distances from a wind farm. The study compares the results against criteria given in AS 2670-1 (1990)[55] and BS 6472-1 (2008)[56] and suggests there is a low probability of adverse impact.

Therefore, as current research continues to conclude that vibration due to wind farms is very unlikely to disturb residential amenity, an assessment of vibration would not be within the scope of the NIA.

7.4.2 Construction Phase Noise

The assessment of noise impacts from construction activities includes the installation of ancillary infrastructure as well as the turbines themselves.

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[52] Styles P, Stimpson I, Toon S, et al. (2005), 'Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Windfarms'. Available at: https://docs.wind-watch.org/AEG-Eskdalemuir.pdf

[53] Renewable UK (2010), 'Low Frequency Noise and Wind Turbines'. Available at: https://archive.is/d3WB#selection-241.0-241.175

[54] Nguyen D, Hansen K, Branko Z (2020), 'Human Perception of Wind Farm Vibration'. DOI: https://doi.org/10.1177/1461348419837115

[55] Australian Standards (1990), 'AS 2670-1:1990 Evaluation of human exposure to whole-body vibration'.

[56] British Standards (2008), 'BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings'.

The factors influencing the impact of plant noise are:

- the number and character of noise sources;
- the duration of activity and hours of work;
- the separation distance between source and receptor; and
- reduction of noise by absorption or screening.

Although BS 5228-1 does not specify absolute noise limits relating to construction activities, it does provide detailed guidance on the steps that can be taken to minimise potential noise effects.

During the construction phase of the Proposed Development, it is expected that noise levels in the area will be greater due to the operation and movement of plant equipment. In BS 5228-1, the ABC method outlined in E3[57] sets out the following for classifying the significance of the construction noise:

"Noise levels generated by construction activities are deemed to be significant if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB LAeq, from construction noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant impact."

Works and operation of the Proposed Development on this Site are expected to be limited to the daytime periods: Monday to Friday (07.00−19.00) and Saturdays (07.00−13.00). As a result, the cut off value for significant construction noise impact is deemed to be 65dB(A) LAeq,T. It is possible that, due to weather constraints (e.g., the impact of weather on the crane operation), the erection of the wind turbines could occur outside of the working hours defined above. For this or any other activity that extends beyond daytime periods, the lower cut-off limits of 55dB(A) and 45dB(A) would apply dependent on time of day.

The methodology for determining the levels of the construction noise involves calculating the total sound pressure level at the nearest sensitive receptor for a construction task, LAeq(12hr), [equation 1], by summing the total potential sound power level for a given construction phase [equation 2] and subtracting a correction for its distance from the nearest property, KS [equation 3]. These three equations are shown below:

[1] $L_{Aeq,T} = L_{WA} - K_S$

[2] $L_{WA} = 10\log\{10^{(Lactivity1/10)} + 10^{(Lactivity2/10)}\ldots\}$

[3] $K_S = 25\log(R)+1$ [for R > 25m]

The calculations assume by default that each activity lasts for the full daytime period at 100% intensity.

7.4.3 Operational Phase Noise

The assessment of operational noise impacts will take the form of an ETSU-R-97 assessment following the IoA GPG.

7.4.3.1 Noise Limits

The ETSU guidelines recommend that wind turbine noise should be limited to an absolute lower limit between 35 and 40dB(A) [LA90,10min] for quiet daytime periods and 43dB(A) for night-time periods (defined below), or 5dB(A) above the background noise levels, whichever the greater. For locations where the resident has a demonstrable financial involvement in a project, a lower fixed limit of 45dB(A) is applicable, or 5dB(A) above the background noise levels, whichever is the greater.

[57] BS 5228-1 'Code of practice for noise and vibration control on construction and open sites', p119

TABLE 7.2 - ETSU ASSESSMENT PERIODS

THE QUIET DAYTIME PERIODS (AMENITY HOURS) ARE:	
18:00 - 23:00	Monday to Friday
13:00 - 23:00	Saturdays
07:00 - 23:00	Sundays
Night-time periods are: 23:00 – 07:00 every day	

Where noise levels of the Proposed Development exceed 35dB(A), the ETSU-R-97 noise assessment should be undertaken with reference to noise limits derived from measured background noise levels.

Based on the study area identified above, it is expected that a background noise survey will be required. It is suggested that monitoring be conducted at three locations, which would be representative of the closest identified noise sensitive receptors within the study area. The survey would be conducted in consultation with Argyll and Bute Environmental Health team and would typically involve logging $L_{A90,10min}$ noise levels for a period such that a representative sample of prevailing conditions has been recorded. This usually takes 2 to 3 weeks.

Concurrent wind speed measurements would log speed and direction averaged over consecutive 10-minute periods. This data would be collected and analysed in line with the IoA GPG recommendations. The resulting trends, showing variation of background noise level with wind speed, would inform the ETSU-R-97 noise limit criteria. The predicted wind turbine immission levels would subsequently be tested against these criteria.

7.4.4 Noise Sensitive Receptors

The study area adopted for the identification of noise sensitive receptors (NSRs) that could potentially be impacted by the Proposed Development sound levels will be those that lie within a 35dB(A) noise contour as calculated from the proposed wind turbines. To allow for layout iterations, properties just beyond the 35dB(A) noise contour have also been identified at this stage of the Proposed Development.

Noise Assessment Locations (NALs) will be positioned at NSRs, 15m from a dwelling façade in the direction of the wind turbine or as far in that direction as the curtilage will allow. Where NSRs are located adjacent to each other or readily form a grouping, a single NAL will be selected representing the closest of the adjacent receptors to the proposed wind turbines.

This approach follows the ETSU-R-97 principle of assessing nearest receptors; focusing on the highest impacts allows for a more concise assessment.

7.4.5 Propagation Model

The International Standard ISO 9613[58], 'Acoustics – Attenuation of Sound During Propagation Outdoors - Part 2', sound propagation model will be used for the wind turbine sound immission calculations. L_{Aeq} sound propagation will be modelled using WindFarm v5.0.1.2 by ReSoft. Predicted wind turbine sound levels will be calculated, inclusive of appropriate allowance for measurement uncertainties.

[58] https://www.iso.org/standard/20649.html

L_{A90} levels should be derived by subtracting two decibels from the L_{Aeq} values as per the ETSU-R-97 guidance and subsequent IOA GPG. The input parameters shown in **Table 7.3** will be used and are consistent with the IoA GPG.

TABLE 7.3 - PROPAGATION INPUT PARAMETERS

ATMOSPHERIC ATTENUATION ASSUMPTIONS	
Temperature (°C)	10
Humidity (%)	70
Ground Attenuation Assumptions	
Attenuation factor, G (all regions)	0.5 (semi-soft ground)
Receptor height (m)	4.0

The attenuation of sound as it travels through the air varies with frequency. The atmospheric attenuation coefficients to be used in the assessment, corresponding to the assumptions in **Table 7.3,** are tabulated in **Table 7.4.**

TABLE 7.4 - ATTENUATION COEFFICIENTS USED FOR THE NOISE PROPAGATION MODEL

Octave Band (Hz)	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
Attenuation Coefficient (dB/km)	0.12	0.41	1.04	1.93	3.66	9.66	32.77	116.88

7.4.6 Noise Impact Assessment

Predicted wind turbine sound levels at the nearest receptors resulting from the propagation model will be compared to the applicable noise limits to determine whether those limits would be met. If it is shown that the limits would be met, then the noise impact would be considered acceptable. Should the assessment show exceedance of noise limits, a scheme of mitigation would be proposed that would allow the Proposed Development to operate in compliance with the noise limits, thereby reducing potential impacts to acceptable levels.

7.5 Mitigation

Noise arising during the construction phase will be for a limited duration and can be suitably controlled by a planning condition specifying standard noise limits.

In the case of operational noise, ETSU-R-97 guidelines provide threshold criteria for acceptability, balancing residential amenity with the benefits of wind energy. Provided such limits can be met, it can be concluded that the Proposed Development would be acceptable in noise terms. Therefore, an unacceptable impact would be noise levels exceeding these threshold limits.

As is now standard for most commercial wind turbines of large size, the selected wind turbine model will be sufficiently flexible to allow operation in alternative ‘modes’ should noise mitigation be required.

7.6 Issues Scoped Out

The planning portal for Argyll and Bute Council was reviewed for cumulative wind turbine developments within 3km of the Proposed Development. Presently, no cumulative wind farms have been identified and it is not anticipated that a cumulative impact assessment will be required. Should the baseline scenario change at the time of conducting the NIA, (such that a wind turbine/farm was proposed within 3km of those included in this proposal), a cumulative noise assessment would be carried out in accordance with ETSU-R-97.

7.7 Questions for Consultees

- **Q7/1:** Do the consultees agree that construction noise can be constrained to recommended limits via a suitable planning condition and, therefore, no construction phase noise assessment is required?
- **Q7/2:** Do the consultees agree with the proposed methodology to derive and to determine compliance with the ETSU-R-97 limits?

8 GEOLOGY, HYDROGEOLOGY, HYDROLOGY AND SOILS

This chapter considers the potential effects of the Proposed Development on the geology, hydrogeology, hydrology and soils of the Site and study area. It includes a baseline description of the existing conditions, followed by the proposed assessment method for determining the potential effects to be addressed in the EIA Report.

This chapter has been completed by competent and suitably qualified WRc specialists who are members of the Geological Society, Chartered Institute for Water and Environmental Management (CIWEM) and Institute for Environmental Management and Assessment (IEMA).

8.1 Legislation, Policy and Guidance

8.1.1 Legislation

- Water Environment and Water Services (Scotland) Act 2003;
- Water Environment (Controlled Activities) (Scotland) Regulations 2011, as amended;
- Water Environment (Miscellaneous) (Scotland) Regulations 2017, with particular reference to the amendments to the Water Environment (Controlled Activities) (Scotland) Regulations 2011;
- Environmental Protection Act 1990, as amended;
- Pollution Prevention and Control (Scotland) Regulations 2012; and
- Flood Risk Management (Scotland) Act 2009.

8.1.2 Policy

- Scottish Government (2014) Scottish Planning Policy;
- Scottish Government (2023) Fourth National Planning Framework (NPF4); and
- Scottish Government (2006) Planning Advice Note 51: planning, environmental protection and regulation.

8.1.3 Guidance

- Guidance on Developments on Peatland – Site Surveys (The Scottish Government, 2017);
- Engineering in the Water Environment: Good Practice Guide, River Crossings (SEPA, 2010);
- Good Practice during Wind Farm Construction (Scottish Renewables, SNH, SEPA, Forestry Commission Scotland & HES, 2019);
- Argyll and Bute Local Development Plan: Supplementary Guidance 2015;
- SEPA (2014) Position Statement WAT-PS-10-01: Assigning Groundwater Assessment Criteria for Pollutant Inputs;
- SEPA Guidance for Pollution Prevention with particular reference to:
    - GPP 1 (2020): Understanding your environmental responsibilities – good environmental practice;
    - GPP 5 (2018): Works and maintenance in or near water; and
    - PPG 6 (2012): Working at construction and demolition sites.

8.2 Consultation

Consultations will be carried out with the following organisations and stakeholders:

- Scottish Environment Protection Agency (SEPA);
- The Scottish Government (notably the Energy Consents Unit);

- Scottish Water;
- Argyll and Bute Council;
- NatureScot; and
- Local landowners.

8.3 Methodology

The assessment will be undertaken on a phased basis. The first phase of work will involve the collation of baseline information concerning the existing geological, hydrogeological, hydrological and soil conditions for the Site. Data will be collated from the following sources:

- Geological maps, including both bedrock and superficial geology;
- Hydrogeological maps, including productivity and groundwater vulnerability;
- Soil Survey of Scotland maps;
- High-resolution aerial or satellite imagery of the Site and its immediate surroundings;
- SEPA water quality records for the project area;
- Vegetation mapping and the Functional Wetland Typology for Scotland;
- Borehole records, where available. These will be sourced from records held by the British Geological Survey (BGS) and other sources as available;
- Local authority private water supply records;
- Any available utilities and Scottish Water investigations and details of public water supplies and assets;
- Previous assessments carried out in relation to neighbouring wind farm projects and previous studies undertaken within the development area; and
- Data gathered from site visits, including peat depth and vegetation surveys and any material arising from future surveys that may be relevant.

A Phase 1 peat survey has been undertaken previously for the Site; this information will be reviewed as part of the baseline desk study.

A constraints map will be produced to identify areas of higher sensitivity that should be avoided during the design process. This will include areas of deeper peat, sensitive wetlands, steeper slopes and other relevant constraints to development that are identified during the desk study.

Following the baseline desk study, a detailed site visit and walkover survey will be undertaken to:

- Verify the information collected during the baseline desk study;
- Undertake a visual assessment of the main surface waterbodies;
- Identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- Visit any identified potential groundwater-dependent terrestrial ecosystems (GWDTE) (in consultation with the project ecology team);
- Prepare a schedule of potential watercourse crossings and existing crossings that may require upgrading;
- Inspect rock exposures that may be suitable for borrow pits and establish by probing an estimate of overburden thickness and confirmation of likely substrate; and
- Allow appreciation of the Site including awareness of gradients, possible borrow pit sites, access route options and prevailing ground conditions, and to assess the relative location of all the components of the Proposed Development.

Once a design is available, a Phase 2 peat probing survey will be undertaken to visit all the areas proposed for infrastructure. This will include peat probing at 50m centres and offsets along all proposed new access tracks and 25m crosshair probing at turbine locations. Additional probing will be undertaken as required in

areas where existing tracks require widening or modification at corners or junctions, and at all other infrastructure locations. Data from the peat probing surveys will be used to inform an outline peat management plan (PMP) and peat slide risk assessment (PSRA) should these be required for the Proposed Development.

The PMP will provide estimated volumes of peat to be excavated, and options for reuse of peat within the Proposed Development. Reuse options will include consideration of peat for reinstatement and restoration purposes, as well as habitat enhancement opportunities where these may be suitable. The PMP will also provide outline methods for peat and soil handling and storage.

The PSRA will provide a formal assessment of the risk of natural or induced peat failure within and adjacent to the Site during the Proposed Development's lifespan. The PSRA will be undertaken in compliance with the Scottish Government's Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2017) and will make use of best practice guidance in the joint Scottish Government, NatureScot and SEPA document Peatland Survey: Guidance on Developments in Peatland (2017). Other relevant guidance will be used where appropriate.

A drainage impact assessment and watercourse crossing inventory will be provided, to ensure that appropriate drainage is designed into the Proposed Development from the outset. This will consider suitable sustainable drainage systems to manage and treat runoff arising from the Proposed Development. Outline watercourse crossing designs will be prepared, to ensure that suitable crossing structures are proposed for each location.

A GWDTE assessment will be provided, to ensure that areas of potential GWDTE are appropriately considered and protected within the design process. The assessment will consider all potential GWDTE based on habitat mapping and will provide a site-specific assessment of each habitat in the context of the Proposed Development. Mitigation measures to protect and, if necessary, minimise direct impacts will be set out.

A borrow pit assessment will be provided to consider the suitability of the local bedrock for use as aggregate within the Proposed Development. The assessment will identify areas where bedrock extraction could be undertaken and will provide outline designs and restoration profiles for all proposed borrow pits.

An assessment will be made of the potential direct, indirect, cumulative and in-combination effects of the Proposed Development on geology, hydrogeology, hydrology and soils. Where relevant, mitigation and control measures will be put forward in order to manage or mitigate any potential impacts to sensitive receptors that may arise from the Proposed Development. A hierarchy of mitigation strategies will be devised and will follow best practice guidance including the Guidelines for Pollution Prevention (GPP), the Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) and relevant SEPA policies and guidance.

8.4 Baseline

8.4.1 Study Area

The study area assessed will include the Site and a buffer zone of 2km around the Site Boundary. For hydrological receptors, impacts downstream up to 5km from the Site will be considered, as impacts such as pollution events can be transmitted downstream for distances greater than 2km.

8.4.2 Bedrock Geology

The Site is situated on bedrock belonging to the Lorn Plateau Volcanic Formation, mainly comprising basalts and andesites, of late Silurian to early Devonian age[59]. Some microgranitic dykes are present within the Site.

A minor fault is present in the south-west part of the Site, trending north-east to south-west.

8.4.3 Superficial Geology

BGS GeoIndex indicates that there is limited superficial geology present within the Site. Some areas of peat are identified, along with an area of alluvial deposits. Raised marine deposits consisting of mixed clay, silt and sand are present on parts of the proposed access route, nearer the coast.

No artificial ground is identified within the Site.

8.4.4 Mineral extraction

The Coal Authority[60] and BGS GeoIndex maps show no records of active or historic mining within the Site. No mines or quarries were identified from available mapping within the Site or a 2km area from the Site Boundary.

8.4.5 Soils

The National Soil Map of Scotland 2023[61] indicates that the soil coverage at the Site is predominantly peaty gleys and peaty gleyed podzols of the Sourhope association. Peaty gleys are described as poorly drained acidic soils.

The Carbon and Peatland Map 2016[62] indicates that the majority of the Site is underlain by Class 2 peatland which is considered to be nationally important carbon-rich soils, deep peat and priority peatland habitat. Smaller areas of Class 5 peatland, described as carbon-rich soils and deep peat, are present near the south-western boundary and to the south of the Site.

8.4.6 Hydrogeology

The bedrock at the Site is classed as a low-productivity aquifer with flow virtually all through fractures and other discontinuities, small amounts of groundwater are present in near-surface weathered zones and secondary fractures with rare springs yielding up to 2 l/s[63].

The Proposed Development is associated with the Oban and Kintyre groundwater body. Both water quality and overall status are considered to be good according to SEPA's Water Environment Hub 2023[64].

8.4.7 Hydrology

Within the Site there are eight small watercourses, all forming headwaters to larger watercourses outwith the Site.

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[59] BGS GeoIndex, 2022, available at: https://mapapps2.bgs.ac.uk/geoindex/home.html
[60] Coal Authority Interactive Map, 2022, available at https://mapapps2.bgs.ac.uk/coalauthority/home.html
[61] The National Soil Map of Scotland, 2023, available at https://map.environment.gov.scot/Soil_maps/?layer=1#
[62] Carbon and Peatland Map, 2016, available at available at: https://map.environment.gov.scot/Soil_maps/?layer=10
[63] Scotland's Environment, 2023, available at map.environment.gov.scot/sewebmap
[64] SEPA's Water Environment Hub, 2023, available at https://www.sepa.org.uk/data-visualisation/water-environment-hub/.

The main drainage is to the north, with three of the eight watercourses all combining to form the Eas nan Meirleach, which is a tributary to the Allt Nathais. The Allt Nathais flows directly into Loch Etive approximately 4km north-east of the Site Boundary.

One watercourse, which runs parallel to the south-eastern Site Boundary, forms a tributary to the Allt na Seabhaig. The Allt na Seabhaig is also a tributary to the Allt Nathais.

Three of the watercourses near the western end of the Site are tributaries to the River Lonan. This river flows west into Loch Nell and eventually reaches the sea at Loch Feochan approximately 5.5km south of Oban and 7km south-west of the Site Boundary.

The remaining watercourse is a tributary to the Allt an t-Sean-achaidh which flows north into the Black Lochs. The outflow from the Black Lochs via the Lusragan Burn eventually reaches the sea at Connel, just upstream of the Falls of Lora, approximately 4.7km north-west of the Site Boundary.

SEPA's Water Environment Hub identifies the overall water quality status of the Lusragan Burn and the Black Lochs, the Allt Nathais and River Lonan all as *High*.

8.4.8 Groundwater-Dependent Ecosystems

Groundwater-dependent terrestrial ecosystems (GWDTE) are areas of wetland or marshy ground that are dependent on groundwater to maintain their function as a wetland or marsh area. Although vegetation mapping is not currently available for this Site, potential GWDTE have been identified in similar habitats on other developments. There is therefore potential for GWDTE to be present within the study area.

8.4.9 Designated Sites

NatureScot (2023)[65] indicates that a small part of a Site of Special Scientific Interest (SSSI) is located within the Site Boundary. This is Clais Dhearg, designated for its freshwater habitats, fens, woodlands, dragonflies and butterfiles. Most of the SSSI lies north and west of the Site.

The Loch Etive Woods Special Area of Conservation is located approximately 300m north of the Site Boundary. The area has been designated for its woodlands, base-rich soils associated with rocky slopes and the presence of otters.

8.4.10 Public and Private Water Supply

Argyll and Bute Council's Environmental Health Department, SEPA and Scottish Water will all be consulted as appropriate to identify any water supply assets that require detailed consideration, assessment and, where necessary, protection. Public and private water supply assets will be further assessed as part of the Site survey.

8.4.11 Flood risk

SEPA's Indicative Flood Map[66] was consulted to gain an understanding of the main flood risk in the area. There is no risk of river or coastal flooding within the Site. Scattered small areas within the Site are identified as having a high likelihood of surface water flooding (defined as a 10% chance of flooding each year).

[65] NatureScot, 2022, available at https://sitelink.nature.scot/map

[66] SEPA's Indicative Flood Map, 2023, available at https://map.sepa.org.uk/ floodmaps/FloodRisk/PostCode.

8.5 Potential Significant Effects

Potential impacts on geology, groundwater, surface water, soils and peat will be assessed. Emphasis will be given to potential impacts on watercourses, peat and on changes to groundwater quality or quantity with respect to water resources, GWDTE and designated sites.

8.5.1 Construction

During the construction phase, potential impacts that will be considered include:

- Changes to overland drainage and surface water flows;
- Water contamination by particulates and suspended solids;
- Water and soil contamination from fuels, oils, foul drainage or concrete;
- Changes in or contamination of water supply to vulnerable receptors;
- Increased flood risk;
- Modification to groundwater flow paths;
- Soil erosion and compaction; and
- Peat instability.

8.5.2 Operation

Operational impacts are anticipated to be considerably reduced from the construction phase. The main potential impacts would be pollution events that may affect the quality of surface water, groundwater and soils.

8.5.3 Decommissioning

During decommissioning, it is anticipated that buried infrastructure (such as cables) would remain buried to avoid the disruption required for removal and that all above-ground infrastructure associated with the wind farm would be removed to a depth of 1m below ground. All areas would be fully reinstated. Potential impacts on geology, hydrogeology, hydrology and soils would be expected to be similar to those during the construction phase, but less extensive.

8.5.4 Cumulative Impacts

An assessment of the impacts of the Proposed Development in combination with, and sequential to, other wind farms within 5km of the Site Boundary will be undertaken. The assessment will include wind farms under construction, consented wind farms and wind farms at the application stage, including wind farms scheduled for decommissioning and/or repowering. Wind farms at the scoping stage will not be included. Wind farms that are already operational would be included as part of the baseline description.

Combined geological, hydrogeological, hydrological and soil effects of the Proposed Development with other wind farms will be assessed based on several factors. Due to the static nature of geology and soils, cumulative effects are likely to be negligible, although cumulative effects arising from peat loss or disturbance would be considered. Hydrogeological and hydrological effects will be assessed by the distance between the developments and flow directions/catchment areas. Designated sites will be assessed on their position in relation to all relevant developments.

8.5.5 Matters Scoped Out

Impacts arising from former mine workings and quarries are considered not to require assessment as there are no recorded mine workings within the Proposed Development or the wider study area.

Impacts arising from contaminated land are considered not to require assessment as the Site is rural and previously undeveloped, with no potentially contaminative activity having taken place.

8.6 Mitigation

Implementing good practices during the construction and operation of wind farm sites and, taking into account the current regulatory context, any potential effects on the geology, hydrogeology, hydrology and soils environment identified by the assessment will be addressed and managed by the conceptual site design and application of best practice guidance to prevent, reduce or offset effects.

In consequence, a number of measures are not considered to form mitigation but are rather an integral part of the design and construction process. It is proposed that these will be taken into account prior to assessing the likely effects of the Proposed Development. Where appropriate, more tailored and location-specific mitigation measures will be identified prior to determining the likely significance of residual effects.

Specific measures will also be detailed within the draft Construction Environmental Management Plan (CEMP) and will include as a minimum:

- Adoption of best practice pollution prevention, drainage management and waste management procedures;
- Control of drainage and sediment runoff from excavation areas and access tracks;
- Control of drainage and sediment runoff during the construction or upgrading of watercourse crossings;
- Control of concrete pouring; and
- Appropriate design of foundations and foundation installation, taking into account the presence of peat on the Site, the management of soil water levels and potential to generate volumes of collected water contaminated with suspended sediment.

8.7 Questions for Consultees

- **Q8/1:** Is the proposed peat assessment method acceptable?
- **Q8/2:** Is the proposed scope of assessment acceptable?
- **Q8/3:** Are there any other relevant consultees which should be consulted about the geology, hydrogeology, hydrology and soils assessment?
- **Q8/4:** Are there any known flooding problems downstream that could potentially be affected by the Proposed Development?

9 ECOLOGY

This chapter sets out the proposed approach to the assessment of potential effects on terrestrial ecology during the construction and operation of the Proposed Development. The ornithological baseline conditions and potentially significant effects are covered in **Chapter 10: Ornithology** of this Scoping Report.

This chapter has been completed by competent and suitably qualified WSP Ecologists who are members of the Chartered Institute of Ecology and Environmental Management (CIEEM).

9.1 Legislation, Policy and Guidance

The following legislation, policies and guidance will be taken into consideration when developing assessment methodologies and mitigation measures:

- European Union Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the 'Habitats Directive');
- European Union Council Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy (the 'Water Framework Directive);
- Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
- Nature Conservation (Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992 (as amended);
- The Scottish Biodiversity List (SBL);
- The Argyll and Bute Biodiversity Technical Note for Planners and Developers[67];
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine[68];
- Environmental Impact Assessment Handbook – Version 5: Guidance for Competent Authorities, Consultation Bodies, and Others Involved in the Environmental Impact Assessment process in Scotland[69];
- Bats and Onshore Wind Turbines: Survey Assessment and Mitigation[70];
- Assessing the Cumulative Impact of Onshore Wind Energy Developments[71]; and
- Land Use Planning System: Guidance Note 31 – Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems[72].

[67] Argyll and Bute Council (2017). The Argyll and Bute Biodiversity Technical Note for Planners and Developers. Available at: https://www.argyll-bute.gov.uk/sites/default/files/biodiversity_technical_note_feb_2017_4.pdf
[68] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Available at: https://cieem.net/resource/guidelines-for-ecological-impact-assessment-ecia/
[69] SNH (2018). Environmental Impact Assessment Handbook – Version 5: Guidance for Competent Authorities, Consultation Bodies, and Others Involved in the Environmental Impact Assessment process in Scotland. Available at: https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf
[70] NatureScot (2021). Bats and onshore wind turbines – survey, assessment and mitigation. Available at: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation
[71] SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments. Available at: https://www.nature.scot/sites/default/files/2019-11/Guidance%20-%20Assessing%20the%20cumulative%20impact%20of%20onshore%20wind%20energy%20developments.pdf
[72] SEPA (2017). Land Use Planning System: Guidance Note 31 – Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf

9.2 Consultation

To date, no consultation has taken place but it is intended and expected that NatureScot and Argyll and Bute Council will comment on the acceptability of the survey methods and where appropriate advise on the assessment approach, mitigation and compensation design in relation to the ecological impact assessment through this Scoping process.

9.3 Methodology

9.3.1 Desk Study Methods

The desk study will be undertaken to identify designated sites of international importance. The study area includes up to 10km from the Site and sites of national/local importance up to 2km from the Site. The desk study will include a review of existing ecological baseline information available in the public domain including:

- NatureScot's Sitelink website[73];
- Argyll and Bute Online Local Development Plan[74];
- NatureScot Habitat Maps of Scotland[75];
- Ancient Woodland Inventory (AWI)[76];
- Native Woodland Survey of Scotland (NWSS)[77];
- Carbon and Peatland 2016 map[78];
- National Biodiversity Network (NBN) Atlas[79];
- Publicly available datasets including wildcat priority areas, red squirrel strongholds, important invertebrate areas, B-lines and butterfly conservation areas;
- Aerial imagery;
- The Argyll and Bute Biodiversity Technical Note for Planners and Developers[67];
- UK Biodiversity Action Plan: Priority Habitats (UKBAP);
- SBL.; and
- Any relevant Environmental Statements/EIA Reports and associated technical reports from other proposed or consented developments in the local area.

The desk study will be undertaken to identify records from the last 10 years of extant protected species populations within 2km of the Site and extended to 5km for records of roosting bats.

The desk study will also include data requested from the following biological interest groups:

- NatureScot;
- Scottish Wildlife Trust;
- Argyll Fisheries Trust;
- Argyll District Salmon Fishery Board;

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[73] NatureScot (2022). Sitelink. Available at: https://sitelink.nature.scot/map
[74] Argyll and Bute Council (2015). Argyll and Bute Local Development Plan 2015 App. Available at: https://argyll-bute.maps.arcgis.com/apps/webappviewer/index.html?id=31c55e6ada6049679f456a212e99f541
[75] NatureScot (2018). Habitat Map of Scotland (HabMoS). Available at: https://cagmap.snh.gov.uk/natural-spaces/dataset.jsp?code=HABMOS
[76] Scottish Government (2022). Ancient Woodland Inventory Scotland (AWI). Available at: https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland
[77] Scottish Government (2022). Available at: https://www.data.gov.uk/dataset/da3f8548-a130-4a0d-8ddd-45019adcf1f3/native-woodland-survey-of-scotland-nwss
[78] Scotland's Soils (2016). Carbon and peatland 2016 map. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10&layer=10.
[79] NBN Atlas (2023). Available at: https://nbn.org.uk/

- Argyll Biological Records Centre;
- Botanical Society of Britain and Ireland;
- Saving Scotland's Red Squirrels; and
- Scottish Wildcat Conservation Action Plan Steering Group.

9.3.2 Field Survey Methods

The ecological surveys were based upon the 'Developable Area' comprising an envelope around the indicative wind turbine layout and Site access track. Surveys comprised the Developable Area as well as associated survey buffers detailed below. The Developable Area is different from the Site Boundary and is based on the a pre-scoping turbine layout.

A UK Habitats (UKHab) survey[80] was undertaken on 22nd – 24th June, 12th – 14th and 19th – 20th October 2022 of the wind farm area covering the Developable Area and a further 250m survey buffer. The surveys were extended to include the access track within the Developable Area and an additional 100m buffer on the 25th – 27th April 2023. Surveys were conducted by WSP ecologists, who are capable and accomplished[81] in surveying sites containing similar habitat types and species. The UKHab data informs the priority status of the habitats present on site, such as Annex I[82] and SBL.

A National Vegetation Classification (NVC) survey[83] will be undertaken in the 2023 survey season and will inform the potential for Ground Water Dependent Terrestrial Ecosystem (GWDTE) communities as per Scottish Environment Protection Agency (SEPA) guidance[84]. Potential GWDTE habitats will be provided to project hydrologists which will then be assessed within the Hydrology chapter of the EIA Report.

Protected species surveys were carried out between the 12th-14th and 19th–20th October 2022 of the wind farm area within the Developable Area and associated buffers (see below), and on the 25th – 27th April 2023 of the access track within the Developable Area and associated buffers. Surveys were conducted by WSP Ecologists, who are capable to accomplished in the ecological assessment of the pertinent species. The protected species surveys have been undertaken within the accepted survey windows and include:

- Bats – Preliminary Bat Roost Assessments have been undertaken on structures suitable for bat roosting (any buildings and trees) within the Developable Area and 30m buffer. Following this and only if required, bat activity surveys will be completed for any structures, following best practice methods[85];
- Bats – activity surveys have been undertaken in compliance with current best practice methods to include deployment of six static full-spectrum bat detectors[86] for a minimum of ten consecutive nights during three seasons between May and August 2022 (defined in the Bats and Onshore Wind Turbine Guidance[70]);

[80] Butcher, B., Carey, P., Edmonds, R., Norton, L., and Treweek, J. (2020a). The UK Habitat Classification User Manual Version 1.1 at http://www.ukhab.org/
[81] CIEEM (2021). Competency Framework. Available at: https://cieem.net/resource/competency-framework/
[82] Annex I of the Habitats Directive (Council Directive 92/43/EEC) adopted in 1992
[83] Rodwell, R, S. (2006). NVC Users' Handbook, JNCC, Peterborough
[84] 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. Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf
[85] Bat Conservation Trust (BCT) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Available at: https://www.bats.org.uk/resources/guidance-for-professionals/bat-surveys-for-professional-ecologists-good-practice-guidelines-3rd-edition
[86] The number of detectors was based on the initial 6-turbine layout, which is now 8 turbines. Given the generic habitat conditions across Site it was not considered necessary to deploy additional detectors

- Otter – detailed survey of suitable habitats within the Developable Area and 200m buffer following guidance[87,88];
- Badger – survey of suitable habitats within the Developable Area and 100m buffer following Scottish Badgers guidance[89,90];
- Red squirrel – survey of suitable habitats within the Developable Area and up to 50m buffer following guidance[91,92];
- Pine marten – survey of suitable habitats within the Developable Area and up to 250m buffer following guidance[93,94]; and
- Great Crested Newt (GCN) – habitat suitability assessment of the ponds/lochans located within the Developable Area as identified through aerial maps following guidance[95].
- Fish and Freshwater Pearl Mussel (FWPM) – habitat suitability survey of watercourses within the Developable Area and up to 100m following guidance for fish[96] as well as key faunal groups[97,98,99,100,101].

Protected species surveys still to be undertaken within the accepted survey windows during the 2023 survey season include:

- Water vole – a detailed survey of suitable habitats within the Developable Area, including a 50m buffer upstream and downstream following standard guidance[102,103].

All data collected through field surveys will be analysed and interpreted in compliance with good practice methods as referenced throughout for each species.

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[87] Chanin, P. (2003). Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough
[88] NatureScot (2020a). Standing advice for planning consultations – Otters. Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-otters
[89] Scottish Badgers (2018). Surveying for Badgers. Good Practice Guidelines. Available Online at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf
[90] NatureScot (2020b). Standing advice for planning consultations – Badgers. Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-badgers
[91] Gurnell, J., Lurz, P., McDonald, R. and Pepper, H. (2009) Practical Techniques for Surveying and Monitoring Squirrels. Practice Note. Forestry Commission, Edinburgh
[92] NatureScot (2020c). Standing advice for planning consultations – Red Squirrels. Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-red-squirrels
[93] O'Mahony, D., O'Reilly, C. and Turner, P. (2005). National Pine Marten Survey of Ireland 2005. Available online at: https://pinemarten.ie/wp-content/uploads/2018/11/2005-National-Pine-Marten-Survey-Ireland.pdf
[94] NatureScot (2020d). Standing advice for planning consultations – Pine Martens. Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-pine-martens
[95]Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt (Triturus cristatus). Herpetological Journal, 10: 143-155
[96]Hendry, K., & Cragg-Hine, D. (1997). Restoration of Riverine Salmon Habitats: A Guidance Manual. R&D Technical Report W44. Environment Agency, Bristol
[97] Skinner, A., Young, M. and Hastie, L. (2003). Ecology of the Freshwater Pearl Mussel. Conserving Natura 2000 Rivers Ecology Series No. 2 English Nature, Peterborough
[98]Tesch, F.W. (2007). The Eel: Third Edition. Blackwell Science, Oxford
[99]Drake CM, Lott DA, Alexander invertebrates for conservation England, Peterborough
[100]Kirby, P. (2001) Habitat Management for Invertebrates: A Practical Handbook. RSPB, Sandy
[101]NatureScot (2020e). Standing advice for planning consultations – Freshwater Pearl Mussels Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-freshwater-pearl-mussels (Accessed November 2022)
[102]Dean, M., Strachan, R., Gow, D. and Andrews, R. (2016). The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Matthews and Paul Chanin. The Mammal Society, London
[103] NatureScot (2020f). Standing advice for planning consultations – Water Voles. Available online: https://www.nature.scot/doc/standing-advice-planning-consultations-water-voles

Where relevant, this data will be utilised to inform the design of the Proposed Development as well as construction and operational methods.

9.3.3 Assessment Method

The approach taken to the assessment of ecological effects will follow the 2018 CIEEM guidelines[68]. These guidelines set out the process for assessment through the following stages:

- Describing the ecological baseline through survey and desk study;
- Identifying and evaluating 'Important Ecological Features' (IEFs);
- Identifying and characterising the potential impacts on IEFs;
- Determining the significance of effects in the absence of mitigation;
- Describing mitigation, compensation and/or enhancement measures associated with the Proposed Development and assessing residual significance; and
- Identification of monitoring requirements.

In the context of the CIEEM guidelines, significant effects are any effects considered to be sufficiently important to require detailed assessment and reporting, so that a decision-maker is adequately informed of the environmental consequences of permitting a project. In these guidelines, the concept of significance is linked to a specific geographic scale.

The assessment will determine the significance of effects by considering whether an effect supports or undermines conservation objectives for each IEF. Effects will either be significant or not significant at the relevant geographical scale.

An assessment of cumulative effects will be undertaken following published guidance[71]. Cumulative effects on each IEF will be assessed in relation to other projects and activities subject to the EIA process within a relevant search area, and their effects on a relevant reference population.

The ecology chapter of the EIA Report will be accompanied by a number of technical appendices, including the following:

- Habitat Survey Report(s);
- Protected Species Survey Report; and
- Bat Technical Report.

9.4 Baseline

9.4.1 Designated Sites

From an initial review of relevant designated sites, there are two statutory international/European designated sites and six national designated sites for ecological features, located within 10km of the Site. Details of designated sites are summarised in **Table 9.1** and locations are shown in **Figure 9.1** Woodlands listed on the AWI are located around the Site. These are summarised in Table 9.1 and shown in **Figure 9.1**

TABLE 9.1 : DESIGNATED SITES

SITE NAME AND DESIGNATION	APPROXIMATE DISTANCE AND DIRECTION FROM THE SITE	NOTIFIED FEATURES
Loch Etive Woods SAC	Eleven areas are all within 10km. At the	Annex I habitats that are a primary reason for the selection of this site:

SITE NAME AND DESIGNATION	APPROXIMATE DISTANCE AND DIRECTION FROM THE SITE	NOTIFIED FEATURES
	closest point, the SAC is located c.140m north.	• Tilio-Acerion forests of slopes, screes and ravines • Old sessile oak woods with Ilex and Blechnum in the British Isles Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) Annex II species present as a qualifying feature, but not a primary reason for site selection: • Otter
Inner Hebrides and the Minches Special Area of Conservation (SAC)	c.7.7km west	Annex II species that are a primary reason for selection of this site: Harbour porpoise.
Clais Dhearg Site of Special Scientific Interest (SSSI)	Immediately adjacent to the north/north-west	Notified features: • Oligotrophic loch; • Open water transition fen; • Upland oak woodland; • Dragonfly assemblage; and • Marsh fritillary butterfly
Airds Park and Coille Nathais SSSI	c.2.3km north-east	Notified features: • Upland oak woodland • Marsh fritillary
Glen Nant SSSI	c.3.9km south-east	Notified features: • Upland oak woodland • Bryophyte assemblage • Lichen assemblage • Cranefly
Kennacraig and Esragan Burn SSSI	c.6.2km north-east	Notified features: • Upland oak woodland
Bonawe to Cadderlie SSSI	c.6.2km north-east	Notified features: • Upland oak woodland

SITE NAME AND DESIGNATION	APPROXIMATE DISTANCE AND DIRECTION FROM THE SITE	NOTIFIED FEATURES
Barran Dubh SSSI	c.8.2km north-east	Notified features: • Upland oak woodland
Ancient/Semi-Natural Woodland	Several areas of ancient woodland are located around the Site.	The access track will potentially pass through 1a - Ancient (of semi-natural origin) and 2a - Ancient (of semi-natural origin) woodland.

9.4.2 Habitats

Habitats recorded as area features during surveys to date within the Site and 250m survey buffer comprised:

- f1a Blanket bog;
- f1a6 Degraded blanket bog;
- f2b Purple moor grass and rush pastures;
- g1c Bracken, h1b5 Dry heaths; upland;
- h1b6 Wet heathland with cross-leaved heath; upland;
- r1 Standing open water and canals;
- w1e Upland birchwoods;
- w1h5 Other woodland; mixed; mainly broadleaved; and
- w2c Other coniferous woodland.

Habitats recorded as area features within the access track area and 100m buffer comprised:

- w1e Upland birchwoods;
- w1g7 Other broadleaved woodland types;
- w1h5 Other woodland; mixed; mainly broadleaved;
- w1h6 Other woodland; mixed; mainly conifer;
- w2c Other coniferous woodland; and
- u1b Developed land; sealed surface.

Additionally, watercourses were mapped as linear features and included: r2 - Rivers and lakes.

UKHab Primary Habitats of conservation importance found within the Developable Area and associated survey buffers include:

- f1a Blanket bog – SBL, Local Biodiversity Action Plan (LBAP);
- f1a6 Degraded blanket bog – SBL, LBAP;
- f2b Purple moor grass and rush pastures – SBL, LBAP;
- h1b5 Dry heaths; upland – Annex I, SBL, LBAP;
- h1b6 Wet heathland with cross-leaved heath; upland - Annex I, SBL, LBAP;
- r1 Standing open water and canals – SBL;
- w1e Upland birchwoods – SBL, LBAP;
- w1g7 Other broadleaved woodland types – LBAP;
- w1h5 Other woodland; mixed; mainly broadleaved – LBAP;
- w1h6 Other woodland; mixed; mainly conifer – LBAP; and
- r2 - Rivers and lakes – SBL, LBAP.

The carbon and peatland map suggests there is Class 2 peatland within much of the Site. Class 2 peatland is defined as '*nationally important carbon-rich soils, deep peat and priority peatland habitat; and areas of potentially high conservation value and restoration potential*'[78]. The carbon and peatland map data are shown in **Figure 2.1** and peat is discussed further in **Chapter 8**.

There are several watercourses within the Developable Area. The Ean nam Meirleach is present in the wind farm area of the Site and flows east into the River Luachragan in the access track area which then flows towards Loch Etive after leaving the Site. Tributaries of the Allt na Seabhaig are present within the east of the Site and flow towards the Allt Nathais and Loch Etive after leaving the Site. Tributaries of the Allt Frogach and Allt Oishnean are also present in the west of the Site and flow towards the River Lonan and Loch Nell after leaving the Site. Lastly, Allt na t-Sean-achaidh is present in the north of the Site and flows towards Black Lochs to the north-west of the Site.

9.4.3 Protected Species

Protected species surveys have been undertaken within the Developable Area and associated survey buffers. Results of the protected species surveys are detailed below in **Table 9.2**.

TABLE 9.2: PROTECTED SPECIES SURVEY RESULTS

SPECIES	RESULTS
Otter	Suitable resting features were recorded along the watercourses within the search area. Larger watercourses within 200m of the access track were used frequently by otters and spraints were recorded throughout River Luachragan.
Water vole	The watercourses within the Developable Area were suitable to support water vole. The survey of the access tracks and 50m buffer found no evidence of water vole. Dedicated water vole surveys are due to be undertaken in the 2023 survey season of the Developable Area.
Fish and FWPM	Salmonids were observed in the River Luachragan during the access track surveys. The watercourses immediately surrounding the wind farm area of the Developable Area were small upland headwaters that had limited salmonid and overall fish habitat suitability. Similar to fish, the larger waterbodies bisecting the access track and the surrounding area have the potential to support FWPM. The watercourses within the wind farm area of the Developable Area have poor suitability to support FWPM due to the likely absence of host species (salmonids), poor connectivity, and a lack of suitable substrate and flow conditions.
Badger	No evidence of badger was recorded within the Developable Area. The surrounding woodland and heathland does nonetheless provide suitable habitat for sett creation and badger could forage and commute throughout the area.
Red squirrel	A potential disused drey was identified during the access track surveys as well as several chewed pinecones. The woodland within and surrounding the Developable Area provides suitable foraging and commuting habitat for red squirrels and individuals have occasionally been observed incidentally within Fearnoch Forest during ornithological surveys.
Pine marten	Potential pine marten scat was identified during the access track surveys. The woodland within and surrounding the Developable Area provides suitable foraging and commuting habitat for pine marten. Whilst no pine marten dens were identified, the surrounding woodland and rock outcrops throughout the area have the potential

SPECIES	RESULTS
	to provide denning opportunities. Pine marten could also forage amongst the bog and heathland habitats (for species such as field voles).
Bats	Preliminary Roost Assessment: three trees with Potential Roost Features (PRF) were identified during the surveys of the wind farm section of the Developable Area and a further tree with PRFs was identified during the access track surveys. Activity Surveys: four species/genera of bats were recorded, including soprano pipistrelle, common pipistrelle, *Myotis* species and brown long-eared bat. Bat activity on Site was comparable with typical activity levels according to species and habitat class outlined in Dowse et al.[104]. Bat activity did not exceed typical levels and was generally low typical across the survey effort for all species with some medium typical activity levels recorded. Activity recorded is not indicative of notable roosts being in proximity to the Site i.e., maternity roosts or large colonies. However, it should be noted that this does not equate to bat roosts being absent on Site or within proximity to the Proposed Development. In the absence of mitigation, the Proposed Development could pose a mortality risk to individual bats but is unlikely to pose a moderate or high risk to the local population of the species within the area.
GCN	Two ponds/lochans within 500m of the wind farm section of the Developable Area were subject to a habitat suitability assessment and deemed to be of poor suitability to support GCN. Additionally, Argyll is not known to support the species[105,106].
Other notable species	Many wood ant nests were recorded during the access track survey located along woodland edges and adjacent to the tracks and footpaths. Smooth newts were recorded along ditches and in puddles throughout the access track surveys. The wetland habitats present within the Developable Area could also support amphibians including common frog and common toad. Similarly, the waterbodies could be used for breeding by amphibians. The heathland, degraded bog and woodland rides/edge as well as stone tracks and rock outcrop for basking provides suitable habitat for reptiles including common lizard, slow worm and adder. Deforested woodland brash piles and tussocks present within the degraded blanket bog and heathland provides hibernacula for reptiles. No evidence of wildcats has been recorded during the protected species surveys. Wildcats could potentially utilise the woodland edges within the Developable Area and are known to occur in a mosaic of habitats including woodland, scrub, rough grassland and moorland.

[104] Dowse. D., Daisley. J., Parry. G. (2015). A Technique for Assessing Bat Activity for Ecological Impact Assessment. Heritage Environmental Ltd.
[105] Baker, J., Beebee T., Buckley, J., Gent, A. and Orchard, D. (2011). Amphibian Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth.
[106] Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

9.5 Potential Significant Effects

9.5.1 Potential Effects Scoped into Assessment

It is proposed that the following receptors are scoped into the assessment to assess the impact on the baseline conditions:

- Potential effects on Loch Etive Woods SAC;
- Potential effects on the surrounding Clais Dhearg SSSI;
- Potential effects on the surrounding AWI areas;
- Potential effects on habitats of conservation concern during construction;
- Potential effects on protected and notable species recorded within the Developable Area and associated buffers, during construction;
- Potential effects on bats, during operation; and
- Potential effects on ecological features during decommissioning.

9.5.2 Potential Effects Scoped Out of Detailed Assessment

It is proposed that the following receptors are scoped out of the detailed assessment:

- Potential effects on designated sites, with the exception of Clais Dhearg SSSI and the AWI areas, due to a lack of structural or functional connectivity; and
- Potential effects on ecological features during operation (excluding bats).

9.6 Mitigation

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

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

Mitigation measures may include:

- Design iteration to avoid or reduce effects on ecological features (embedded mitigation);
- On-site construction support to advise on, and monitor, effect reduction on ecological features;
- Species Protection Plans (SPP) during construction where required;
- A Habitat Management Plan (HMP), aiming to facilitate biodiversity enhancement, nature recovery and nature restoration focusing on habitats of conservation concern; and
- Post-construction monitoring to ensure mitigation remains successful, appropriate and proportionate.

9.7 Questions for Consultees

- **Q9/1:** Do consultees agree with the scope of the surveys as set out above?
- **Q9/2:** Do consultees agree with the assessment method (including features scoped in/out)?
- **Q9/3:** Do consultees hold any existing ecological data relating to the Site that may further inform the ecological baseline?
- **Q9/4:** Are consultees aware of any local nature organisations with whom further consultation should be undertaken?

10 ORNITHOLOGY

This chapter sets out the proposed approach to the assessment of potential effects on ornithological features of interest during the construction and operation of the Proposed Development. The baseline conditions and potential significant effects regarding terrestrial ecology are covered in **Chapter 9: Ecology** of this Scoping Report.

This chapter has been completed by competent and suitably qualified WSP Ecologists who are members of CIEEM.

10.1 Legislation, Policy and Guidance

The following legislation, policy and guidance will be taken into account in the assessment of ornithological features of interest:

- European Union Council Directive 79/409/EEC on the Conservation of Wild Birds (the 'Birds Directive');
- Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
- The Nature Conservation (Habitats, &c.) Regulations 1994 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);
- The Scottish Biodiversity List[107];
- The Argyll and Bute Biodiversity Technical Note for Planners and Developers (Argyll and Bute Council, 2017[108]);
- The Chartered Institute for Ecology and Environmental Managements (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (CIEEM, 2018[109]);
- Birds of Conservation Concern 5 (Stanbury, et al, 2021[110]);
- Windfarms and Birds: Calculating a Theoretical Collision Risk Assuming No Avoidance Action (Scottish Natural Heritage (SNH), 2000[111]);
- Assessing Connectivity with Special Protection Areas (SNH, 2016[112]);
- Recommended bird survey methods to inform impacts assessments for onshore windfarms (SNH, 2017[113]);
- Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas (SNH, 2018a[114]);
- Assessing the Cumulative Impacts of Onshore Wind farms on Birds (SNH, 2018b[115]); and

[107] NatureScot Scottish Biodiversity List webpage. Available at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list.
[108] Argyll and Bute Council (2017). A Biodiversity Technical Note for Planners and Developers. Argyll and Bute Planning Service. February 2017.
[109] CIEEM (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland.
[110] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.
[111] SNH (2000). Windfarms and Birds: Calculating a Theoretical Collision Risk Assuming No Avoidance Action (Scottish Natural Heritage.
[112] SNH (2016). Assessing Connectivity with Special Protection Areas. Version 3.
[113] SNH (2017). Recommended bird survey methods to inform impacts assessments for onshore windfarms.
[114] SNH (2018a). Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas.
[115] SNH (2018b). Assessing the Cumulative Impacts of Onshore Wind farms on Birds.

- NatureScot's Environmental Impact Assessment Handbook – Version 5: Guidance for Competent Authorities, Consultation Bodies, and Others Involved in the Environmental Impact Assessment process in Scotland (SNH, 2018c[116]).

10.2 Consultation

The following nature conservation organisations, wildlife groups and data sources will be consulted as part of the ornithological desk study:

- NatureScot's Sitelink website[117];
- Argyll Raptor Study Group;
- Royal Society for the Protection of Birds (RSPB); and
- Any relevant Environmental Statements/EIA Reports and associated technical reports from other proposed or consented developments in the local area.

To date, NatureScot have been consulted on the scope and findings of the two-year ornithological survey programme which has been conducted across the Site and surrounding area between April 2021 and February 2023, further details of which are presented below.

10.3 Methodology

10.3.1 Designated Sites

A search for information on statutory nature conservation sites, designated for features of ornithological interest within a minimum of 2km from the Site, was conducted using freely downloadable datasets. This search was extended to 10km for European sites, and to 20km for European sites designated for wintering geese, as this is the upper core range of geese species, as stated in NatureScot's guidance on connectivity (SNH, 2016[112]).

From this search there is one statutory international/European designated site for ornithological features located within 20km of the Site; Glen Etive and Glen Fyne Special Protection Area (SPA), details of which are summarised in **Table 10.1**. The location of this designated site is shown in **Figure 9.1**.

TABLE 10.1: SUMMARY OF STATUTORY SITES DESIGNATED FOR ORNITHOLOGICAL INTEREST WITHIN 20KM OF THE SITE

SITE NAME	APPROXIMATE DISTANCE AND DIRECTION FROM THE SITE*	NOTIFIED FEATURES
Glen Etive and Glen Fyne SPA	7.1km east	Breeding golden eagle

*From the closest point

10.3.2 Ornithological Surveys

Ornithological surveys of the Site and surrounding area commenced in April 2021 and were completed in February 2023, with the compilation of 23 months of survey effort[118]. The surveys covered the 2021 and 2022 breeding seasons (taken from March to August inclusive) and the 2021/22 and 2022/23 non-breeding

[116] SNH (2018c). Environmental Impact Assessment Handbook – Version 5: Guidance for Competent Authorities, Consultation Bodies, and Others Involved in the Environmental Impact Assessment process in Scotland.
[117] NatureScot Sitelink website. Available at: https://sitelink.nature.scot/map.
[118] Surveys were commenced in April 2021, thereby missing March from the 2021 breeding season. However, this is not considered to represent a significant limitation to the robustness of the survey programme.

seasons (taken as September to February inclusive). Additionally, surveys of the proposed access route through Fearnoch Forest are being conducted throughout the 2023 breeding season.

The surveys have focused on recording target species falling under the following categories in line with NatureScot's guidance (SNH, 2017[113]):

- Birds listed on Annex I of the EU Birds Directive[119];
- Birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[120];
- Birds that are qualifying features of European designated sites of nature conservation importance for birds (i.e., Special Protection Areas (SPAs) and Wetlands of International Importance (Ramsar Sites) in proximity or potentially connected to the Site; and
- Red-listed Birds of Conservation Concern (BoCC) (Eaton et al., 2021)[121].

The following provides a brief overview of the methodologies of the surveys undertaken throughout the survey programme.

10.3.2.1 Flight Activity Surveys

A programme of flight activity surveys has been undertaken from a single vantage point (VP) overlooking the Site and surrounding 500m; located at Deadh Choimhead Ordnance Survey grid reference NM 94725 28716, the location and visibility from which are shown in **Figure 10.1.** Surveys have been completed to achieve a minimum of 36 hours of survey effort over the 2021 and 2022 breeding seasons and the 2021/22 and 2022/23 non-breeding seasons and have followed the methods set out in NatureScot's standard survey guidance for onshore wind farms (SNH, 2017[113]).

10.3.2.2 Scarce Breeding Bird Surveys

Scarce Breeding Bird Surveys have been completed over the 2021 and 2022 breeding seasons. These surveys involved an amalgamation of the standard methodologies for the following bird groups;

- moorland breeding waders (Brown and Shepherd, 1993)[122] within the Site and a surrounding buffer of 500m;
- breeding divers (Gilbert et al., 1998[124]) within the Site and a surrounding buffer of 1km; and
- scare breeding raptor surveys (Hardey et al., 2013[123] and Gilbert et al., 1998[124]) covering the Site and a surrounding buffer of up to 2km.

The surveys involved a minimum of four survey visits conducted between April and July in each year, with additional walkovers conducted in March 2022 for early display activity by hen harrier. Additionally, surveys have been undertaken for breeding waders and scarce raptors in relevant areas of suitable habitat within 1km of the access track in 2023 including VP watches from strategic locations overlooking Fearnoch Forest.

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[119] EU Birds Directive: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147.
[120] Schedule 1-listed species of the Wildlife and Countryside Act 1981: http://www.legislation.gov.uk/ukpga/1981/69/schedule/1.
[121] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. 2021. The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.
[122] Brown, A.F. and Shepherd, K, B. (1993). A method for censusing upland breeding waders. Bird Study, 40: 189-195.
[123] Hardey, J.; Crick, H.; wernham, C.; Riley, H.; Etheridge, B. and Thompson, D. (2013). Raptors. A Field Guide for Surveys and Monitoring. SNH, Inverness.
[124] Gilbert, G., Gibbons D.W., and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

10.3.2.3 Eagle Surveys

Throughout the 2021 breeding season, and in March 2022, dedicated eagle surveys were undertaken to determine the presence of and signs of breeding activity by golden and white-tailed eagles in the wider area surrounding the Site. The surveys were conducted from the same hill from which the flight activity surveys were undertaken (Deadh Choimhead) but looking due south and east in the opposite direction from the Site, towards areas of habitat with the highest suitability for eagles (i.e. across Fearnoch Forest and south of Glen Lonan including towards Glen Nant). These surveys involved using a telescope to scan for the presence of birds up to 6km from the Site.

10.3.2.4 Black Grouse Surveys

Black grouse surveys were undertaken across areas of suitable habitat within the Site and a buffer of up to 1.5km to check for the species' presence and active lek sites following the standard methodology detailed in Gilbert et al., 1998[124]. Additionally, surveys have been undertaken in areas of suitable habitat within 1km of the access track in 2023.

10.3.3 Ornithological Impact Assessment

The assessment of ornithological effects associated with the Proposed Development, including cumulative effects, will be undertaken in accordance with guidelines published by NatureScot (SNH, 2018[114]) and the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018[109]). This process involves defining Important Ecological Features (in the case of this chapter, Important Ornithological Features, or IOFs), and then characterising the potential effects on those features and determining the significance of those effects.

In the context of the CIEEM guidelines, significant effects are any effects considered to be sufficiently important to require detailed assessment and reporting, so that a decision-maker is adequately informed of the environmental consequences of permitting a project. In these guidelines, the concept of significance is linked to a specific geographic scale (i.e. local, regional, national and international). The assessment will determine the significance of effects by considering whether an effect supports or undermines the favourable conservation status of each IOF. Specific conservation objectives exist for designated sites of European importance while for individual species their favourable conservation status will be based on the latest population estimates at the regional or national level.

The default regional scale for the assessment of effects on birds that are not part of a designated site of European importance is the Natural Heritage Zone (NHZ), and in line with NatureScot guidance, this assessment will consider effects and cumulative effects at the NHZ scale. The Proposed Development Site falls within Argyll West and Islands NHZ and so effects and cumulative effects for IOFs scoped into the assessment will be considered in the context of this NHZ.

10.4 Baseline

Table 10.2 provides an overview of the presence, distribution and breeding activity of key target species recorded within and surrounding the Site during the surveys completed to date.

TABLE 10.2: SUMMARY OF SURVEY FINDINGS UNDERTAKEN BETWEEN APRIL 2021 AND MAY 2023.

SPECIES	SUMMARY OF SURVEY FINDINGS
Hen harrier	During the 2021 breeding season, extensive display activity was observed within the Site in April during SBBS walkovers and a single breeding pair were later recorded. A nest site was subsequently recorded outside the Site to the north where at least a single

SPECIES	SUMMARY OF SURVEY FINDINGS
	juvenile was produced that season. Despite the extensive flight activity recorded during the SBBS in the early part of the breeding season, only six flights were recorded throughout the season during the flight activity surveys. In 2022, extensive display activity was again recorded in the early part of the breeding season with up to five birds (two adult males, two adult females and one second calendar year bird) being recorded. Subsequently, two breeding pairs were recorded with two nest sites being established within the Site. From these, at least two fledged juveniles were observed, thought to be single juveniles from each of the two breeding pairs. As well as numerous flights recorded during the SBBS, 34 flights were recorded over and immediately surrounding the Site during the flight activity surveys. During the non-breeding season, hen harrier observations were limited to single observations in each autumn/winter period demonstrating the Site's low importance to the species outside of the breeding season.
Golden eagle	The dedicated wide-ranging eagle surveys undertaken in 2021 only recorded a single bird which was observed flying east over high ground approximately 4km south of the Site in April. A single golden eagle flight was also recorded over the north-west boundary of the Site during the flight activity surveys that year. During the dedicated eagle surveys undertaken in March 2022, a total of 13 golden eagle flights were recorded. Most of these flights were located over 3km south of the Site and involved up to two adults which were assumed to be a territorial pair. Only one of the observed flights came into proximity to the Site; this involved a single adult bird which flew around the southern and eastern peripheries of the Site. In the same year, six golden eagle flights were recorded over and around the Site (i.e. within 500m) during the flight activity surveys. These involved at least three different birds including a single adult bird and two separate observations of two sub-adult birds. A single bird was also observed over the Site during an SBBS walkover survey in July. There was, however, no evidence that golden eagles were breeding within, or in close proximity to the Site. Indeed, the habitat within and immediately surrounding the Site is largely unsuitable for breeding golden eagles with negligible nesting opportunities, although the Site does offer foraging/hunting potential. Eminently more suitable habitat is located over 3km south of the Site, south of Glen Lonan. Only a very small number of golden eagle flights were recorded over and around the Site during flight activity surveys in the two non-breeding seasons covered during the survey programme.
White-tailed eagle	White-tailed eagles were recorded infrequently throughout the survey programme. Two flights were recorded high over the Site during flight activity surveys and SBBS in 2021. However, most observations, including a pair of adult birds, were made in the wider surrounding area to the south and south-east, particularly over and beyond Glen Lonan and towards Glen Nant, during the wider-ranging eagle surveys. No evidence of breeding by this species was recorded in the vicinity of the Site.
Osprey	An osprey nest located over 1km north-east of the Site within Fearnoch Forest and which is known to Forestry and Land Scotland was confirmed to be active in 2021 during the SBBS. The nest was also occupied in 2022 producing at least two chicks. This nest site has been confirmed to be occupied again in 2023 through surveys of the proposed access route. Despite flights occasionally being recorded over and around this nest site during the flight activity and SBBS, only two flights have been recorded passing over the Site indicating that it is not an important area for the species or on a

SPECIES	SUMMARY OF SURVEY FINDINGS
	regular flight path between the nest site and foraging areas in the wider surrounding area.
Red kite	The only observation of a red kite was made during an eagle watch in April 2021 when an individual bird was observed at the head of Glen Nant and around Beinn Ghlas Wind Farm. No observations of red kite or evidence of breeding were made over or immediately surrounding the Site throughout the survey programme.
Peregrine	Peregrine have only been recorded twice over the course of the survey programme, both times involving a single bird circling above the flight activity survey VP. However, there has been no evidence of breeding by this species in the vicinity of the Site.
Merlin	The only definitive records of merlin were of a male bird observed along the Site's southern boundary during SBBS in April and May 2021. An additional, very brief sighting of a possible merlin was also recorded along the southern boundary of the Site during a flight activity survey in April 2021. There has, however, been no evidence of breeding by this species in the vicinity of the Site.
Red-throated diver	The only record of red-throated diver was of a single individual observed far off to the west of the Site during a flight activity survey in 2021. There was no evidence of breeding by red- or black-throated divers on any of the waterbodies within 1km of the Site.
Black grouse	A lek comprising up to three males and a single female was recorded during surveys undertaken in 2021 along the Site's northern boundary to the north-east of Cruach Clenamacrie. This lek was reconfirmed the following year, again comprising three males, while a second lek also comprising three males as well as a single female was recorded in the north-east corner of the Site. A single lekking male was also recorded just north of the Site Boundary although this may have been a roving bird affiliated with either of the larger lek sites.
Waterfowl	Activity by waterfowl over and around the Site was limited to a very small number of flights (i.e. less than three) by greylag geese, pink-footed geese and whooper swans during the autumn and spring passage periods of 2021/22 and 2022/23. There were no observations to suggest that the Site or habitats in the immediately surrounding area were used by these species for foraging or roosting.
Waders	The only scarce wading bird recorded on Site during the SBBS was a single greenshank which was observed briefly at the edge of Lochan na Creige Deirge to the north of the Site Boundary in April 2022. There were; however, no further observations of this species, and the record is presumed to have involved a passage bird. The habitat within and immediately surrounding the Site was generally considered to be of low suitability for breeding waders, comprising dense tussocks grassland.

10.5 Potential Significant Effects

The Proposed Development is not anticipated to pose potential significant effects on Glen Etive and Glen Fyne SPA, since it is located 7.1km from this designated site, hence there will be no direct impacts. Furthermore, it is over the recognised 6km core range for golden eagles (SNH, 2016[112]); hence any birds which may occur over or around the Site are unlikely to be affiliated with this designated site.

NatureScot[125] summarises wind farms as presenting three main potential risks to birds:

- death through collision or interaction with wind turbine blades;
- direct habitat loss through wind farm construction; and
- displacement through indirect loss of habitat if disturbance causes birds to avoid the Site and immediate surroundings.

Based on the survey results collected to date, the following key target species have been identified to pose a potential constraint to the Proposed Development with the following potential significant effects:

- Breeding hen harrier: collision mortality and disturbance and displacement from breeding sites; and
- Lekking black grouse: loss of lek sites and potential disturbance during construction and operation.

There is not anticipated to be any risk of significant effects on any other target species recorded during the survey programme as all are considered to occur infrequently with the Site being of low importance to them as a breeding or foraging resource. This includes breeding osprey within Fearnoch Forest as the nest site is over 750m from the nest site which is beyond the upper-range disturbance distance for this species (Goodship and Furness, 2022[126]).

10.6 Mitigation

Significant effects upon ornithological receptors will be avoided/minimised where possible through the design process. Good practice during construction (NatureScot, 2019[127]) and operation of the Proposed Development will also be implemented (for example through the sensitive timing of works and pre-construction checks for nesting birds).

Where significant effects on IOFs are identified, measures to prevent, reduce, and where possible offset these adverse effects will be investigated and proposed. A Breeding Bird Protection Plan (BBPP) will be produced to ensure that all reasonable precautions are taken to protect and, where necessary, enhance conditions for ornithological features of interest associated with the Proposed Development. In particular, it is anticipated that habitat management measures will need to be developed and implemented to dissuade hen harriers from the Site in order to reduce the species' risk of collision mortality. At the same time, measures to enhance conditions for the species off-site in the nearby surrounding area are expected to be required in order to compensate for the displacement of birds which currently inhabit the Site during the breeding season. It is intended to discuss this issue with NatureScot and to develop appropriate habitat management measures in consultation with them.

10.7 Questions for Consultees

The following questions are posed to consultees in relation to the ornithological assessment;

- **Q10/1:** Do consultees agree that the consultation and range of ornithological surveys proposed or undertaken are sufficient and proportionate to inform the design and assessment of the Proposed Development?
- **Q10/2:** Do consultees agree with the assessment approach proposed?
- **Q10/3:** Do consultees agree with the IOFs upon which the Proposed Development may potentially pose significant effects?

[125] NatureScot website. Wind farm impacts on birds. https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/renewable-energy/onshore-wind-energy/wind-farm-impacts-birds.
[126] Goodship, N.M. and Furness, R.W. (MacArthur Green) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.
[127] NatureScot (2019). Wind Farm Construction: Good Practice 4th Edition. https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction.

- **Q10/4:** Do consultees hold any existing information that may be considered relevant to the assessment?

11 TRANSPORT AND ACCESS

This chapter covers the potential transport and access issues that may arise from the construction of the Proposed Development, the significance of these effects and what suitable mitigation can be put in place to offset any adverse impacts.

The Transport and Access Chapter will be authored by an appropriately trained and qualified professional and will be supported by a Transport Assessment report, Abnormal Load Route survey and technical figures.

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

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

The potential effects of these will be examined in detail.

11.1 Legislation, Policy and Guidance

A Transport Assessment (TA) will be provided to review the impact of transport-related matters associated with the Proposed Development. This will be appended to the EIA Report and will be summarised into a Transport and Access Chapter within the EIA Report.

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

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

11.2 Consultation

Consultation on the detailed transport assumptions for use in the TA will be undertaken with the following:

- Transport Scotland for the trunk road network; and
- Argyll and Bute Council for the local road network.

Further consultation on the weight limits on the Abnormal Indivisible Load (AIL) route will be undertaken with all structure operators on the route via the ESDAL consultation database.

11.3 Methodology

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

The Guidelines for the Environmental Assessment of Road Traffic[128] (IEMA 1993) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of the assessment will focus on:

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

[128] Institute of Environmental Assessment (IEMA) 1993. Guidelines for the Environmental Assessment of Road Traffic.

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

The following rules taken from the guidance 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.

Increases below these thresholds are generally considered to be not significant 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 environmental effects.

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

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

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

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

Each wind turbine is likely to require between 11 and 14 AIL 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.

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 wind turbine components can be delivered to Site and to identify any temporary road works which may be necessary.

11.4 Baseline

The Proposed Development will be accessed directly from the A85 near Fearnoch. The exact location of the access junction will be confirmed following detailed engineering consideration of the access tracks and junction requirements. The use of an existing junction may be considered. Loads will then proceed through the existing forestry to the proposed wind turbine locations.

Two access options from the public road to the Site are under consideration and are illustrated in **Figure 2.2**. Only one access option would be considered in the EIA Report.

It is proposed that all vehicular access would use this access, including AIL. A detailed Route Survey Report will support the application and will identify the necessary access improvements that will be required to enable loads to access the Site. This will include an initial ESDAL weight review for structures on the proposed access route from Corpach to the Site via the A82 and A85 via Tyndrum to avoid bridge weight and height restrictions.

Material will be sourced locally where feasible and traffic will avoid impacting on local communities as far as is practicable.

Baseline traffic count data will be obtained from multiple sources including:

- Automatic Traffic Count (ATC) surveys located on the A85 at the proposed site access junction;
- The Transport Scotland traffic count database for the A85 and A82; and
- The Department for Transport traffic count database.

National Road Traffic Forecast (NRTF) Low Traffic Growth assumptions will be used to provide a common future year baseline to coincide with the expected construction traffic peak.

Traffic accident data would be obtained from Crashmap UK for the study network to inform the accident review for the immediate road study area. Three years worth of data for the A85 between Connel and Taynuilt would be collated.

11.5 Potential Significant Effects

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

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

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 to the wind farm for maintenance checks. The vehicles used for these visits are likely to be 4x4 vehicles and there may also be the occasional need for a HGV to access the Proposed Development 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 Proposed Development is proposed.

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

11.6 Mitigation

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

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

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

11.7 Questions for Consultees

Can the consultees please confirm:

- **Q11/1:** That the proposed methodology is acceptable?
- **Q11/2:** That the methods proposed for obtaining traffic flow data are acceptable?
- **Q11/3:** That the use of Low National Road Traffic Forecasts (NRTF) is acceptable for the whole of the study?
- **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:** Details of any upgrades or network changes that may be undertaken to the study area network within the next five years?

12 SOCIO-ECONOIMCS, TOURISM AND RECREATION

12.1 Legislation, Policy and Guidance

The following legislation, policy and guidance are considered as part of this assessment:

- National Planning Framework 4 – Policy 11 (2023);
- Onshore Wind – Policy Statement (2022);
- Argyll and Bute Corporate Plan (2018);
- Office for National Statistics: Wind Energy in the UK: June 2021;
- Scottish Planning Policy (2020);
- Scotland's Tourism Strategy (2020);
- BVG Associates, Economic Benefits from Onshore Wind Farms (2017);
- BiGGAR Economics: Wind Farms and Tourism Trends in Scotland (2017);
- Mountaineering Scotland, Wind Farms and Tourism in Scotland: A Review with Focus on Mountaineering and Landscape (2017);
- Land Reform Act (Scotland) 2003 (as amended in 2016);
- Onshore Wind Turbines: Planning Advice (2014);
- Renewable UK, Onshore Wind: Planning Advice (2014);
- VisitScotland Position Statement (2014);
- VisitScotland, Wind Farm Consumer Research (2012); and
- Argyll and Bute Local Development Plan (2015).

12.2 Consultation

To date, no consultation has been undertaken in relation to socio-economics, tourism, or recreation. It is anticipated that the following consultees will be contacted but this list is not exhaustive:

- Scottish Rights of Ways & Access Society (ScotWays)
- Local Community Councils including;
    - Connel
    - Kilmore & Kilbride
    - Taynuilt
    - Dunberg
    - Ardchattan
    - Oban
    - Avich and Kilchrenan and
    - Kilniver and Kilmelford.
- Visit Scotland;
- Mountaineering Scotland; and
- Other local groups which will be identified via community consultation.

12.3 Methodology

There are no recognised standards or methodology for assessing the socio-economic, tourism and recreation effects of wind farm developments. The methodology used to inform this assessment will be previous experience, established EIA best practice, and professional judgement.

Socio-economic impacts will be considered at the regional (Argyll and Bute) level, with impacts at the national level also considered where applicable. The potential impacts of the Proposed Development upon tourist/recreational activity will be considered within a 10km study area.

The assessment will include:

- Consultation with the relevant statutory and non-statutory bodies;
- Completion of baseline conditions describing the economic baseline and identifying tourist and recreational activities and facilities within the study area;
- An assessment of the impact of the Proposed Development on the socio-economic, tourism and recreational receptors in the study area; and
- Identification of possible measures to avoid and mitigate against any potential adverse effects resulting from the Proposed Development.

Other environmental topics have relevance to aspects considered in this chapter such as traffic and transport, noise, cultural heritage and landscape and visual amenity. The potential impacts of these will be provided elsewhere in the EIA Report as separate chapters and will not be reassessed in this chapter.

12.3.1 Socio-economic

Regional employment statistics will be reviewed, and settlements will be identified and described using sources such as the National Online Manpower Information System (NOMIS), National Records of Scotland and the Scottish Index of Multiple Deprivation (SIMD). Socio-economic impacts will be assessed at the regional (Argyll and Bute) level and at a national (Scotland) level to understand how the Argyll and Bute regions' socio-economic data compares to the national average.

The assessment will aim to provide the likely employment opportunities, gross value added (GVA) contribution and job creation of the Proposed Development. This assessment will be undertaken based on the largest anticipated MW output from the Proposed Development to create a ‘best case’ scenario using the 2014, Renewable UK study ‘Onshore Wind: Economic Benefits in 2014’.

It will also refer to BVG Associates' study ‘Economic Benefits from Onshore Wind Farms (2017)’ to understand how the output per MW installed capacity compares with the one generated from the Renewable UK study.

12.3.2 Tourism

A review of national and regional tourism strategies, as well as visitor statistics will be undertaken. Accommodation and tourist attractions within 10km of the Site will be identified using public sources such as VisitScotland and input from consultation. A qualitative assessment will be undertaken based on the changes in availability, accessibility, and amenity on tourist receptors during the construction and operational maintenance phases.

12.3.3 Recreation

This section of the assessment will assess the significance of effects on recreation. Any recreational facilities within 10km of the Site will be identified and assessed for any potential effects. These will be based on any estimated changes to recreational facilities in the local area. This includes changes in accessibility and amenity of recreational receptors, which will include core paths, cycle routes and other recreational activities.

12.3.4 Assessment

The sensitivity and magnitude of effect on each receptor will be assessed to determine the magnitude of effect. A description of the different significance levels is noted below. A moderate or major effect is considered significant within the scope of this chapter.

- Major – The value of the receptor and the magnitude of effects are predicted to give rise to major, detectable impacts and may be fundamental in the decision-making process.
- Moderate – The value of the receptor and the magnitude of effects are predicted to give rise to moderate, detectable impacts but alone will not be fundamental in the decision-making process.
- Minor – The value of the receptor and the magnitude of effects are predicted to give rise to minor, detectable impacts but will not be fundamental in the decision-making process.
- Not significant – The value of the receptor and the magnitude of effects are not predicted to give rise to any discernable or detectable impacts outside the norm of typical variation.

12.4 Baseline

12.4.1 Socio-economic

The EIA Report will use tourism statistics from the Argyll and Bute area. This desk-based study will determine how Argyll and Bute Council perform with population trends and sectors in which residents are employed. This will be compared to the Scottish averages.

The nearest settlements to the Site are:

- Glenamachrie (0.8km approximately south-west);
- Fearnoch (2km approximately north-east);
- Ardchonnel (4.9km approximately west);
- Connel (5.2km approximately north-west);
- Taynuilt (5.6km approximately east); and
- Oban (7km approximately south-west)

12.4.2 Tourism

Tourism statistics for Argyll and Bute are collected as part of the Argyll and Isles area of Scotland's west coast.

In 2019, Argyll and the Isles experienced notable growth in both day and overnight tourism. There was an increase in domestic and international visitors which resulted in rises in expenditure and nights. There was a total of 5.5-million-day visit tourists, a 14% increase since 2018. The average spend associated with day visits was £182 million for 2019. International overnight trips to the region grew by a fifth in 2019 compared to 2018 figures, with 150,000 international visits. During the 2019 period, Argyll and the Isles accounted for 4.3% of all international trips and 3.5% of the total overseas spending in Scotland.[129]

In 2019, domestic visitors stayed overnight in the Argyll and Isles area mainly for a holiday (70%), visiting friends or relatives (18%), business (10%) and other trip purposes (2%). For international visitors a holiday was the key driver for visiting the area (83%), visiting family and relatives was second (14%) and less visits for business (2%) were made by international visitors.[130]

The list below highlights the five, free, top-rated tourist attractions within the Argyll and Isles region (with visitor numbers) for 2019:

- Argyll Forest Park (151,538);
- Staffa National Nature Reserve (107,725);
- Oban War and Peace Museum (33,310);
- Iona (29,808); and

[129] VisitScotland (2020). Argyll and Isles Factsheet 2019 (Accessed May 2023)
[130] VisitScotland (2020). Argyll and Isles Factsheet 2019 (Accessed May 2023)

- Aros Park (19,710).

In 2019, the five, paid, top-rated tourist attractions in the Argyll and Isles region (with visitor numbers) were:

- Inveraray Castle (125,462);
- Iona Abbey & St Columba Centre (Mull) (63,884);
- Oban Distillery Visitor Centre (57,031);
- Benmore Botanic Garden (53,318); and
- Mount Stuart (42,809).

Tourist attractions identified within 10km of the Site include:

- Angus's Garden (3.3km approximately east);
- Argyll Safaris (5.8km approximately north-west);
- Glencruitten Golf Club (6.2km approximately west);
- Bonawe Historic Iron Furnace (6.5km approximately north-east);
- McCaig's Tower and Battery Hill (7.1km approximately west);
- Oban Distillery (7.2km approximately west);
- Ocean Explorer Centre (7.3km approximately north-west);
- Dunstaffnage Castle and Chapel (7.3km approximately north-west);
- Glen Nant National Forest (7.5km east);
- Dunollie Museum, Castle, and Grounds (7.8km approximately west);
- Dunollie Wood (7.8km approximately west); and
- Ganavan Maze (7.9km approximately west).

12.4.3 Recreation

An initial study identified that there are no core paths within the Site. Four core paths and one cycle route are situated within 5km of the Site; C160 (Taynuilt to Oban), C177 (Black Lochs, Kilvaree, Connel), C152 (Oban to Appin) which is also part of route 78 of the National Cycle Network, and C157 (Taynuilt, Airds circular). These core paths and cycle routes have the potential to be sensitive receptors given their proximity to the Proposed Development. Further desk-based studies will identify if there are any additional recreation facilities within the Site and the sensitivity of these.

12.5 Potential Significant Effects

The Proposed Development has the potential to have both beneficial and adverse impacts on socio-economics, tourism, and recreation.

12.5.1 Construction

There is potential for socio-economic benefits during construction including the creation of jobs, GVA contributions and use of local businesses and accommodation. There is the potential for impacts on tourism during the construction phase including accessibility and amenity relating to tourist attractions and the availability of tourist accommodation. Access improvement may be considered as part of the Proposed Development, which may result in a beneficial effect on tourism and/or recreational receptors. The possibility and suitability for incorporating such arrangements will be explored within the EIA Report.

There may be the potential for temporary adverse effects on access to recreational facilities during the construction phase as a result of construction traffic and activities. Improved access arrangements may be considered as part of the Proposed Development, which may result in a beneficial effect on tourism and/or

recreational receptors. The possibility, and suitability, for incorporating such arrangements will be explored within the EIA Report.

12.5.2 Operational

The operational phase will comprise visits to the Site for maintenance activities. This may lead to the creation of jobs and the use of local facilities providing GVA contributions to the local economy and resulting in a beneficial effect. Temporary diversions and/or closures on the road network or recreational paths may be required for some maintenance activities.

12.6 Mitigation

12.6.1 Socio-economic

Depending on the magnitude of effect determined in the EIA Report, some of the following mitigation measures may be put forward for the Proposed Development

12.6.1.1 Construction

- An on-site borrow pit will reduce construction traffic on the road network and therefore reduce the impact upon tourist routes and facilities;
- Transportation of abnormal loads would be programmed to avoid peak hours on the road network, thus reducing delays and disruption. Deliveries would also be scheduled to avoid clashing with any events planned in the area;
- Construction activities would be limited to normal working hours to minimise noise and other impacts during recreational and leisure periods;
- Employing a local workforce and procuring local goods and services, where possible to maximise local benefits; and
- Contractors shall ensure ongoing safe access to all designated cycling and walking routes and provide alternatives where feasible.

12.6.1.2 Operation and Maintenance

It is expected that the Proposed Development would create a beneficial effect through employment opportunities created during construction, operation and decommissioning. However, to follow best working practices, the Applicant will aim to maximise local benefits by procuring goods and services locally, where possible.

The Applicant is committed to investing in the local community and will be undertaking engagement throughout the planning process to understand local needs and identify opportunities for how the Proposed Development could benefit those in the local area.

12.6.2 Tourism and Recreation

Public notices would be issued prior to the commencement of construction to inform local residents, recreational users and businesses of the dates and duration of works. It is anticipated that there may be a need for temporary diversions and/or closures on the road network and recreational paths as a result of construction traffic and activities, and some maintenance activities during operation.

12.7 Potential Significant Effects

The Proposed Development has the potential to have both beneficial and adverse impacts on socio-economics, tourism, and recreation.

12.7.1 Socio-economics

There is the potential for benefits to the local and regional economy during the construction and operation of the Proposed Development. This will be in the form of jobs, GVA contributions and increased use of local facilities during construction and operation.

12.7.2 Tourism

There is potential for temporary adverse effects on tourist facilities during the construction and operational phase of the Proposed Development. The construction of the Proposed Development could affect the accessibility and amenity of the tourist attraction and the availability of tourist accommodation. Improved access arrangements for tourist attractions may be considered as part of the Proposed Development, which may result in a beneficial effect. The possibility and suitability for incorporating such arrangements will be explored within the EIA Report.

12.7.3 Recreation

There is the potential for temporary adverse effects on access to recreational facilities during the construction and operational maintenance phases of the Proposed Development. This would be due to temporary restrictions on the surrounding area. Access to recreational facilities may be also restricted by construction traffic and activities. During the construction and operational maintenance phases, the amenity of recreational facilities and activities may be affected which may cause an adverse impact on user experience. Improved access arrangements for recreational facilities and activities may be considered as part of the Proposed Development. The possibility, and suitability, for incorporating such arrangements will be explored within the EIA Report.

12.8 Issues Scoped Out

No issues have been scoped out of the EIA Report assessment.

12.9 Questions for Consultees

- **Q12/1:** Do you agree with the proposed approach for the chapter ‘Socio-economics, Tourism and Recreation?’
- **Q12/2:** Are there any other receptors that should be included within the scope of the assessment?
- **Q12/3:** Are there any other consultees that should be consulted with for the purpose of these assessment?

13 OTHER ISSUES

13.1 Introduction

An 'Other Issues' chapter will be included in the EIA Report and will contain the assessments of the potential impact of the Proposed Development from other issues which are not covered in the other technical chapters.

This section of the Scoping Report sets out the proposed approach in respect to the 'Other Issues' assessments that are required in order to provide a comprehensive assessment of the potential environmental impacts of the Proposed Development.

Other Issues include:

- Forestry;
- Aviation and Radar;
- Shadow Flicker;
- Telecommunications;
- Climate Change and Carbon Balance;
- Population and Human Health;
- Major Accidents and Disasters; and
- Material Assets.

13.2 Forestry

13.2.1 Introduction

In the UK there is a strong presumption against permanent deforestation unless it addresses other environmental concerns. In Scotland, such deforestation is dealt with under the Scottish Government's "Control of Woodland Removal Policy" (Forestry Commission Scotland, 2009)[131]. The purpose of the policy is to provide direction for decisions on woodland removal in Scotland. It will be essential that the Proposed Development addresses and satisfies the requirements of the Policy.

While there is no forestry or woodlands, other than semi-natural woodland, in the area proposed for the wind turbines, both access route options pass through areas of commercial forestry. Therefore, the forestry methodology will follow that used in other wind farm projects located in commercial forestry, where the changes to the forestry have been considered part of the project description, rather than as a receptor which requires a formal EIA assessment.

13.2.2 Legislation, Policy and Guidance

A desktop study will be undertaken drawing upon published National, Regional and local level publications, assessments and guidance to establish the broad planning and forestry context within which the Proposed Development is located. The documents listed below will be considered within the forestry assessment.

[131] Forestry Commission Scotland (2009). The Scottish Government's Policy on the Control of Woodland Removal. Forestry Commission, Edinburgh.

13.2.2.1 Legislation

- Forestry and Land Management (Scotland) Act 2018[132];
- The Waste (Scotland) Regulations 2012[133];
- UK Environmental Protection Act 1990[134]; and
- EU Waste Legislation Waste Framework Directive[135].

13.2.2.2 Policy and Guidance

- Argyll and Bute Woodland and Forestry Strategy 2011[136];
- Scotland's Forestry Strategy 2019 – 2029[137];
- Scotland's Third Land Use Strategy 2021 – 2026[138];
- National Planning Framework 4[139];
- Right Tree in the Right Place[140];
- The Scottish Government's Control of Woodland Removal Policy;
- Scottish Government's Policy on Control of Woodland Removal: implementation guidance[141];
- The Scottish Environment Protection Agency (SEPA) guidance document WST-G-027, 'Management of Forestry Waste'[142];
- SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land;
- The UK Forestry Standard 2017[143]; and
- The UK Woodland Assurance Standard 2018[144].

13.2.3 Consultation

The main forestry consultee will be Scottish Forestry (SF), Perth and Argyll Conservancy. SF will be consulted to ensure that the proposed changes to forestry address the requirements of the Scottish Government's Control of Woodland Removal Policy and other relevant guidance. In addition, there may be interrelated issues raised by other consultees.

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[132] The Scottish Government (2018). The Forestry and Land Management (Scotland) Act 2018, Edinburgh. Available at https://www.legislation.gov.uk/asp/2018/8/contents/enacted.
[133] The Scottish Government (2012): The Waste (Scotland) Regulations 2012 No. 148. Available at https://www.legislation.gov.uk/sdsi/2012/9780111016657.
[134] UK Environmental Protection Act 1990 1990 c. 43 Part II Duty of care etc. as respects waste Section 34. A available at http://www.legislation.gov.uk/ukpga/1990/43/section/34.
[135] EU Waste Legislation Waste Framework Directive. Available are: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098.
[136] Argyll and Bute Council (2011). The Argyll and Bute Council Woodland and Forestry Strategy, Lochgilphead.
[137] The Scottish Government (2019). Scotland's Forestry Strategy 2019 -2029, Edinburgh.
[138] Scottish Government (2021): Scotland's Third Land Use Strategy 2021 - 2026 https://www.gov.scot/publications/scotlands-third-land-use-strategy-2021-2026-getting-best-land/.
[139] The Scottish Government (2023). National Planning Framework 4. Available at https://www.gov.scot/publications/national-planning-framework-4/.
[140] Forestry Commission Scotland (2010): Right Tree in the Right Place - Planning for Forestry & Woodlands. Forestry Commission, Edinburgh.
[141] Forestry Commission Scotland (2019): Scottish Government's policy on control of woodland removal: implementation guidance. Available at https://forestry.gov.scot/publications/349-scottish-government-s-policy-on-control-of-woodland-removal-implementation-guidance.
[142] SEPA (2017): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land. https://www.sepa.org.uk/media/143799/use_of_trees_cleared_to_facilitate_development_on_afforested_land_sepa_snh_fcs_guidance-_april_2014.pdf.
[143] SEPA (2014): LUPS-GU27 "Use of Trees Cleared to Facilitate Development of Afforested Land. https://www.sepa.org.uk/media/143799/use_of_trees_cleared_to_facilitate_development_on_afforested_land_sepa_snh_fcs_guidance-_april_2014.pdf.
[144] UKWAS (2018). The UK Woodland Assurance Standard Fourth Edition, UKWAS, Edinburgh.

13.2.4 Methodology

The Forestry study area will be limited to the woodlands within the Site Boundary and along the preferred main access route to the Site.

The forestry baseline will describe the crops existing at the time of preparation of the EIA Report. This will include current species; planting year; any felling and replanting plans; and other relevant woodland information. The baseline will be compiled from a desk-based assessment and field surveys. The desk-based assessment will include landowner crop databases; the Native Woodland Survey of Scotland[145]; the National Forest Inventory (Forestry Commission Scotland, 2018)[146]; aerial photography; SF publicly available databases[147]; and current Policy, Legislation and Guidance. The field survey will consist of a Site walkover to verify and update baseline data as necessary; assess the crops with respect to the integration of the development infrastructure; and to identify any opportunities within the woodlands for on-site compensatory planting if required.

A Proposed Development Forest Plan will be prepared. This will include a felling plan to show which woodlands are to be felled, and when, for the construction and operation of the Proposed Development. It will further include a restocking plan showing any areas which are to be replanted and with which species, and which areas are to be left unplanted for the Proposed Development infrastructure.

A key issue will be the integration of the Proposed Development infrastructure into the forest structure to minimise the loss of woodland area and to prevent fragmentation of the remaining woodlands. Forest design and the effect of the Proposed Development infrastructure on it is an important part of the overall design process.

The changes to the woodland structure will be analysed and described including changes to woodland composition, timber production, traffic movements and the felling and restocking plans. The resulting changes to the woodland structure will be assessed for compliance with the UKFS and the requirement for compensation planting to mitigate against any woodland loss. The Proposed Development Forest Plan will be assessed against the baseline data in line with the methodology outlined in Annex V of the Control of Woodland Removal Policy Guidance (Forestry Commission Scotland, 2019).

13.2.5 Baseline

Within the Site Boundary, there is no commercial forestry. Small areas are identified in the Native Woodland Survey of Scotland as native woodland, specifically upland birch woodland, but these areas are not recorded in the Ancient Woodland Inventory Scotland[148] as being Ancient Woodland.

The Proposed Development Option 1 access runs through Fearnoch Forest. The forest is part of Scotland's National Forest Estate, owned by Scottish Ministers on behalf of the nation, and managed by Forestry and Land Scotland (FLS). Fearnoch is part of the Taynuilt Land Management Plan (LMP) 2020 – 2029[149] which has been developed in accordance with the requirements of the UK Forestry Standard (UKFS)[150] and its

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[145] Forestry Commission Scotland (2013). The Native Woodlands Survey of Scotland. Available at https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18 (accessed on 26 May 2023).

[146] Forestry Commission Scotland (2018). The National Forest Inventory Woodland Scotland. Available at https://data-forestry.opendata.arcgis.com/datasets/b71da2b45dde4d0595b6270a87f67ea9_0 (accessed on 16 May 2023).

[147] Scottish Forestry Map Viewer. Available at https://scottishforestry.maps.arcgis.com/apps/webappviewer/index.html?id=0d6125cfe892439ab0e5d0b74d9acc18 (accessed on 16th May 2023)

[148] Scottish Natural Heritage (2010). Ancient Woodland Inventory Scotland. Available at: https://map.environment.gov.scot/sewebmap/ (accessed on 26 May 2023).

[149] Forestry and Land Scotland (2020). Taynuilt Land Management Plan. Available at https://forestryandland.gov.scot/what-we-do/planning/active/taynuilt (accessed on 6 April 2023).

[150] Forestry Commission (2017). The UK Forestry Standard: The Government's Approach to Sustainable Forestry, Forestry Commission, Edinburgh.

supporting guidelines. The UKFS is the benchmark for sustainable forestry practice, and the Scottish Government is committed to its use.

Fearnoch is well roaded and contains a wide range of soil types, ages and species. Restructuring of species and age classes has taken place across the full extent of the forest as part of previous LMPs. The forest is a very popular recreational area and part of the forest falls within the catchment of the Oban water supply.

The Ancient Woodland Inventory Scotland identifies extensive areas of Fearnoch as Ancient Woodland. The Native Woodland Survey of Scotland further identifies these areas as PAWS sites – Plantations on Ancient Woodland Sites. A core issue for the Fearnoch block is the restoration of the PAWS sites and this is reflected in the Future Habitat plans for the forest which shows extensive conversion to native broadleaf woodland in the northern part of Fearnoch.

Option 2 runs through various woodland types, primarily ancient and semi-natural woodland recorded in both the Ancient Woodland Inventory Scotland and Native Woodland Survey of Scotland.

13.2.6 Potential Significant Effects

There is potential for changes to forest structures resulting from the Proposed Development, with consequential implications for the wider felling and restocking plans across the remaining parts of the woodlands. In this case, the main effect will be on the forestry within Fearnoch along the main access route for the Proposed Development. While it is proposed to utilise existing forestry roads where possible there may be sections of new roads and other sections will need to be upgraded to allow for the delivery of wind turbine components. Within the Site Boundary felling of woodlands and tree removal are expected to be minimal.

It is anticipated that all wind farm infrastructure would be keyholed into the woodlands thus minimising the requirement for felling and consequential woodland loss. However, this will depend on the crop age and risk of windblow to the remaining woodlands. Where felling of coupes is proposed to mitigate against such risks the infrastructure will be keyholed into the restocking plan. The potential effects will be changes to the structure of the woodlands, which may result in a loss of woodland area.

The changes to the woodlands for a particular development are regarded as site specific and it is considered there are no cumulative on-site forestry issues to be addressed, therefore cumulative forestry effects are scoped out of the EIA Report.

Commercial forests are dynamic environments and constantly changing, through for example landowner activities; market forces; natural events, such as windblow or pest and diseases; or developments. Forestry is not regarded as a receptor for EIA purposes. The forestry assessment will be a factual assessment describing the changes to the forest structure resulting from the incorporation of the Proposed Development into the forests, in particular the loss of woodland area. Other chapters within the EIA Report will identify the sensitive receptors relevant to their disciplines and report on the effects of the Proposed Development due to the forestry proposals.

13.2.7 Mitigation

Measures to avoid or mitigate potential effects upon the woodlands will, as far as practicable, seek to be embedded in the design of the Proposed Development through consideration of the siting of the wind turbines; and by using existing access tracks and forest roads where possible. The woodland loss would be minimised by keyholing infrastructure into the felling and/or restocking plans as appropriate.

Potential forms of mitigation may include a redesign of the existing forest structures including, for example; changes to the felling programme, the use of designed open space, alternative species and woodland types, changing the management intensity or the provision of compensatory planting on or off-site in collaboration with FLS.

13.2.8 Questions for Consultees

The following questions have been designed to ensure that the proposed methodologies and assessments are carried out in a robust manner and to the satisfaction of the determining authorities.

- **Q13/1:** Are consultees content with the proposed methodology and scope for the forestry assessment?
- **Q13/2:** Do the consultees have any information, particularly with reference to new guidance, which should be taken into account?

13.3 Aviation and Radar

13.3.1 Introduction

The EIA assessment of the Proposed Development will address potential significant effects on air traffic control and air defence radars, military low flying and Oban Airport.

13.3.2 Legislation, Policy and Guidance

The aviation assessment of the Proposed Development will take account of the following legislation, policy and guidance:

- The Air Navigation Order 2016;
- Civil Aviation Authority (CAA), CAA Policy and Guidelines on Wind Turbines (CAP 764, 2016); and
- CAA, Licensing of Aerodromes (CAP 168, 2019).

13.3.3 Consultation

Consultation will be undertaken with aviation stakeholders to identify assets which may be subject to potentially significant effects from the Proposed Development.

13.3.4 Methodology

The aviation assessment of the Proposed Development will be conducted in accordance with the guidance set out in CAP 764 and CAP 168.

13.3.5 Baseline

The Site is located in uncontrolled airspace from ground level to Flight Level 195 (approximately 19,500 feet above sea level). Above that level is the Class C controlled airspace of the Scottish Upper Airspace Control Area, within which air traffic services are provided by the NATS En Route (NERL) Prestwick Centre. Primary Surveillance Radars (PSRs) used to provide these services in the vicinity of the Site include those at Tiree, approximately 97km west of the Site, and Lowther Hill, approximately 152km south-east of the Site.

The nearest air defence PSR is located on South Clettraval, North Uist, approximately 184km north-west of the Site.

The Site is located approximately 6km south-east of Oban Airport. This is a CAA-licensed aerodrome with obstacle limitation surfaces that extend to a radius of 10km from the airport. There are no other airports, airfields, landing sites, secondary surveillance radars, Meteorological Office radars, aeronautical radio navigation aids or communications facilities within 30km of the Site.

The Site is located in military Low Flying Area (LFA) 14, within which military aircraft may carry out low flying training down to a minimum of 250 feet separation from the terrain and obstacles. The Site is wholly located within a part of LFA 14 which has been designated by the Ministry of Defence (MoD) as a “low priority military low flying area less likely to raise concerns”.

13.3.6 Potential Significant Effects

A review of published data shows that there is no MoD radar coverage at 200 metres above ground level (m agl) within 50km of the Site and no NERL radar coverage at 200m agl within 7km of the Site Boundary. Therefore, it is proposed that air traffic control and air defence radar are scoped out from the EIA Report.

It is also proposed to scope out effects on unlicensed aerodromes or landing sites, secondary surveillance radars, Meteorological Office radars and aeronautical radio navigation aids or communications facilities.

The Proposed Development has the potential to infringe the obstacle limitation surfaces of Oban Airport. This will be explored by comparing the terrain and blade tip heights of the proposed wind turbines with the calculated heights of the relevant obstacle limitation surfaces.

Potential effects on military low flying will be assessed against established MoD policy on the effects of wind turbines on low flying aircraft in this and similar parts of LFA 14.

13.3.7 Mitigation

For any significant effects on Oban Airport, the standard mitigation measures for structures infringing obstacle limitation surfaces will be considered. This will consider the listing of the obstacles in the airport’s listing in the UK Aeronautical Information Publication, the depiction of the obstacles on aeronautical charts, and lighting.

Lighting will also be considered as a potential mitigation measure for any significant effects on military low flying.

13.3.8 Questions for Consultees

- **Q13/3:** Does the proposed scope of the aviation assessment address all potential significant effects?

13.4 Shadow Flicker

13.4.1 Introduction

This section of the Scoping Report assesses possible shadow flicker impacts as a result of the proposed wind turbine(s) at the Proposed Development.

Tall structures such as wind turbines cast shadows. The shadows vary in length according to the sun’s altitude and azimuthal position. Under certain combinations of geographical position and time of day, the sun may pass behind the rotor of a wind turbine and cast a moving shadow over neighbouring properties. Where this shadow passes over a narrow opening such as a window, the light levels within the room affected will decrease and increase as the blades rotate, hence the shadow causes internal light levels to ‘flicker’ - an effect commonly known as 'shadow flicker'.

Whilst the moving shadow can occur outside, the shadow flicker effect is only considered for indoor receptors where the shadow passes over a window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the Site. A single window in a single building

is likely to be affected for a few minutes at certain times of the day for short periods of the year. The likelihood of this occurring and the duration of such an effect depend upon:

- The direction of the residence relative to the wind turbine(s);
- The distance from the wind turbine(s);
- The wind turbine hub-height and rotor diameter;
- The time of year;
- The proportion of time in which the wind turbine operates;
- The frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon); and
- The prevailing wind direction.

The further the observer is from the wind turbine the less pronounced the effect will be. There are several reasons for this:

- There are fewer times when the sun is low enough to cast a long shadow;
- When the sun is low it is more likely to be obscured by either cloud on the horizon or intervening buildings and vegetation; and,
- The centre of the rotor's shadow passes more quickly over the land reducing the duration of the effect.

At a distance, the blades do not cover the sun but only partly mask it, substantially weakening the shadow. This effect occurs first with the shadow from the blade tip, the tips being thinner in section than the rest of the blade. The shadows from the tips extend the furthest and so only a weak effect is observed at a distance from the wind turbines.

13.4.2 Guidance

The Scottish Government's online planning guidance for renewable energy[151], specifically the 'Onshore Wind Turbines' note last updated in October 2012, states that:

"Where this (shadow flicker) could be a problem, developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), "shadow flicker" should not be a problem…"

This has been appraised by ClimateXChange (2017)[152] on behalf of the Scottish Government in the 'Review of Light and Shadow Effects from Wind Turbines in Scotland', which concluded that the guidance is still relevant.

Department of Environment and Climate Change (DECC)[153] studies have shown that even in UK latitudes, shadows from wind turbines can only be cast approximately 130 degrees either side of north relative to the turbine due to the orientation of the earth's axis and the positioning of the sun. This leaves a region between 50 degrees either side of due south where a wind turbine will not cast a shadow; properties within this region will not experience shadow flicker effects, regardless of their distance from the wind turbine. While DECC has now been replaced by the Department for Business, Energy and Industrial Strategy (BEIS), which does not provide guidance on shadow flicker, these findings are still considered relevant.

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151 Scottish Government (2014) Online renewables advice, https://beta.gov.scot/publications/onshore-wind-turbines-planning-advice/

152 Review of Light and Shadow Effects from Wind Turbines, by ClimateXChange, commissioned by Scottish Government, 2017

153 Update of UK Shadow Flicker Evidence Base, by PB Power, commissioned by DECC, 2011 http://www.decc.gov.uk/assets/decc/What%20we%20do/UK%20energy%20supply/Energy%20mix/Renewable%20energy/ORED/1416-update-uk-shadow-flicker-evidence-base.pdf

13.4.3 Methodology

13.4.3.1 ReSoft Windfarm Software

ReSoft Windfarm software would be used to model the shadow flicker effects of the Proposed Development. The program uses simple geometric considerations: the position of the sun at a given date and time; the size and orientation of the windows that may be affected; and the size of the wind turbine that may cast the shadows. The model assesses the maximum possible impact by assuming that:

- Wind turbines are facing the sun at all times of the day;
- It is always sunny;
- The wind turbines are always operating; and
- There is no local screening.

13.4.3.2 Modelling of Façades

Where the glazed area is not known, windows will be modelled conservatively with a size of 4m x 4m.

The orientation of each façade will be included in the model, measured in terms of degrees clockwise from north. This means, for example, that if a window faces due west it is 270 degrees clockwise from north.

13.4.3.3 Modifying Factors

The degree of shadow flicker impact that will typically occur in practice is always much less than the maximum possible flicker calculated by the model. Modifying factors take into account actual annual hours of sunlight for the area and hours of wind turbine operation. These factors have been applied to the modelling results in order to reach a more realistic estimate of shadow flicker impact that would typically occur in practice.

The modifying factors are derived from the following:

- The average sunlight hours for the local area have been taken as 1227 hours, based on meteorological data for Dunstaffnage (~8km north-west of the Proposed Development)[154]. Therefore, on average, it is sunny for ~27% of the daylight hours;
- The rotor of a modern wind turbine can be expected to turn approximately 90% of the time; and
- No adjustment would be made in regards to wind direction and it has been assumed that the wind turbines are always yawed such that flicker is possible.

Therefore, the realistic hours of flicker were estimated to be <24% of the theoretical maximum (0.27 x 0.90 = 0.24).

13.4.3.4 Assessment of the Impact

There is currently no standard UK Guidance on acceptable levels of shadow flicker. The only guidance that provides suggested levels is Northern Ireland's Best Practice Guidance to Renewable Energy[155], which recommends that shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year. This document also comments that at distances greater than 10 rotor diameters, the potential for shadow flicker is very low. This position is based on research by Predac, a European Union

[154] https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcud384hu

[155] Best Practice Guidance to Planning Policy Statement 18: Renewable Energy, Department of the Environment (Northern Ireland), (2009). https://www.infrastructure-ni.gov.uk/sites/default/files/publications/infrastructure/Best%20Practice%20Guidance%20to%20PPS%2018%20-%20Renewable%20Energy_0.pdf

sponsored organisation promoting best practice in energy use and supply which draws on experience from Belgium, Denmark, France, the Netherlands and Germany. In 2017, this research was reviewed by ClimateXChange13 and remains an industry standard.

The assessment would define the study area as 10 rotor diameters from any proposed wind turbine location. The threshold of significance is considered to be 30 hours per year.

13.4.4 Cumulative Impact

The cumulative assessment would include third party wind turbines that are also within 10 rotor diameters of any receptor identified in the study area. The combined flicker times would then be reported and assessed against the 30 hours per year threshold.

13.4.5 Questions for Consultees

- **Q13/4:** Do consultees agree with the methodology used to assess potential shadow flicker impacts and the threshold for significant impact?
- **Q13/5**: Do consultees agree that provided no receptor falls within 10 rotor diameters of both the Proposed Development and a neighbouring development, cumulative shadow flicker can be scoped out of the EIA?
- **Q13/6**: Do consultees agree that shadow flicker can be suitably managed via planning condition?

13.5 Telecommunications

13.5.1 Legislation, Policy and Guidance

Scottish Government Planning Advice Note (PAN) 62 provides guidance on planning in relation to radio telecommunications.

13.5.2 Consultation

Consultation will be undertaken with relevant telecommunications stakeholders to identify assets which may be subject to potential significant effects from the Proposed Development.

13.5.3 Methodology

The physical separation distances between the proposed wind turbine blade tips and any fixed telecommunications links will be calculated and assessed against standard industry safeguarding criteria.

13.5.4 Baseline

The Ofcom Spectrum Information Portal identifies two fixed microwave telecommunications links passing over or within 2km of the Proposed Development Site Boundary.

Scanning telemetry and television re-broadcast links in the vicinity will be identified through consultations with the operators of those facilities.

13.5.5 Potential Significant Effects

Wind turbines have the potential to cause diffraction, scattering or reflection of the radio signals carried by fixed telecommunications links.

13.5.6 Mitigation

In the event of any significant effects on telecommunications being found, the design of the Proposed Development will be refined to reduce any effects to an acceptable level.

13.5.7 Questions for Consultees

- **Q13/7:** Does the proposed scope of the telecommunications assessment address all potential significant effects?

13.6 Climate Change and Carbon Balance

13.6.1 Introduction

This section considers the potential impact of greenhouse gas (GHG) emissions arising from the Proposed Development on the climate.

Whilst the generation of electricity from wind farms potentially offsets carbon emissions from other generation sources, this requires to be balanced with carbon emissions associated with the construction of the Proposed Development.

13.6.2 Wind Turbines

Renewable electricity generated by wind turbines is already considered to be the cheapest form of new electricity generation[156] and as such, has a vital role to play in achieving the ambitious targets set by the UK Government.

The manufacturing, construction, and installation of the wind turbines have an associated carbon cost. Carbon losses are also generated by the requirement for extra capacity from carbon intensive sources to back up wind power generation in times of intermittency. Carbon losses are also associated with reduced carbon fixing potential and loss of soil organic matter occurs through the excavation of peat for construction and drainage effects.

Turbine blades currently make up approximately 13% of the carbon impact of a wind turbine and are the hardest section of the turbine to be recycled. However, there are options for recycling or disposal, such as generating recoverable energy by burning the epoxy materials. The residues from the fibreglass incineration can be used in other secondary applications, such as cement production. The carbon cost of the blades is incorporated into the lifecycle emission of the turbine.[157]

13.6.3 Battery Storage

Battery energy storage systems (BESS) are used to shave off-peak electricity demands, stabilise grid electricity systems and increase the proportion of renewable energy that is intermittent in the energy mix. BESS is key to optimising renewable electricity generation by enhancing the stability, reliance, security, and efficiency of renewable energy systems[158]. Thus, BESS plays an important role in achieving local,

[156] https://www.renewableuk.com/general/custom.asp?page=WindEnergy – (Accessed May 2023)
[157]https://www.siemensgamesa.com/-/media/siemensgamesa/downloads/en/products-and-services/offshore/brochures/siemens-gamesa-environmental-product-declaration-epd-sg-8-0-167.pdf (Accessed May 2023)
[158] (PDF) An In-Depth Life Cycle Assessment (LCA) of Lithium-Ion Battery for Climate Impact Mitigation Strategies (researchgate.net) (Accessed May 2023)

national, and international climate mitigation targets (e.g., net zero), by complementing energy systems within the arena of carbon reduction.

13.6.4 Legislation, Policy and Guidance

The United Nations, UK Government, Scottish Government and Argyll and Bute Council have developed ambitious targets for tackling climate change which are outlined below.

13.6.4.1 Global Context

Tackling climate change is part of the United Nations' global effort to promote sustainable development. As a United Nations member state, the UK is committed to working towards 17 Sustainable Development Goals (SDGs) which aim to reduce poverty, limit climate change, promote quality education, improve health and create cleaner air, rivers, and seas. The UK is a signatory of the 2015 Paris Agreement and is therefore bound with other countries to limit global warming to between 1.5 and 2 degrees Celsius (compared to pre-industrial levels). Using climate-aware policy and net zero strategies, the UK can positively contribute to the international effort to reduce climate change effects, whilst acting as a catalyst for wider global benefits[159].

13.6.4.2 National Context

- The UK Government, in the 2008 Climate Change Act, made a commitment to reduce the UK's emissions of CO_2 by 34% (on 1990 levels) by 2020 and 80% by 2050.
- The UK Government, in 2021 added a new target of reducing CO_2 by 78% (on 1990 levels) by 2035, whilst currently working towards the target of 68% CO2 reduction by 2030[160].
- The Climate Change (Scotland) Act 2009 set in statute the Government's Economic Strategy target to reduce Scotland's emissions of GHG by 80% by 2050 (on 1990 levels), with an interim reduction target of at least 42%.
- Scotland has set a target of becoming net zero by 2045. With a new legally binding target for 2030 of a 75% reduction in emissions compared to 1990[161].
- The UK Government amended the Climate Change Act of 80% reduction, to 100% reduction by 2050. These targets will be achieved through an investment in energy efficiency and clean technologies such as renewable energy generation[162].

13.6.4.3 Local Context

Argyll and Bute Council is working in line with the Climate Change (Scotland) Act to reduce GHG emissions. The Argyll and Bute Council Decarbonisation Plan (2022-2025) was published in 2019 which details their aim of reducing carbon emissions by 75% by 2030 and achieving net zero by 2045[163].

[159] https://sdgs.un.org/goals (Accessed May 2023).
[160] UK enshrines new target in law to slash emissions by 78% by 2035 - GOV.UK (www.gov.uk) (Accessed May 2023).
[161] https://www.legislation.gov.uk/asp/2019/15/section/1/enacted (Accessed May 2023).
[162] https://www.legislation.gov.uk/ukpga/2008/27/section/1 (Accessed May 2023).
[163] https://www.argyll-bute.gov.uk/sites/default/files/Unknown/decarbonisation_plan_2022_v0.8_.pdf (argyll-bute.gov.uk) (Accessed May 2023).

13.6.5 Methodology

To provide the carbon calculations for the assessment, the Scottish Government's Carbon Calculator Tool V1.6.1[164] will be used to inform the discussion in this section. Details of the carbon calculator input data, their sources, and results for the expected, maximum, and minimum (best and worst case) scenarios will be able to be viewed online via a link and a reference will be provided in the EIA Report.

Once a design has been established and the excavation and construction parameters are obtained, the Carbon Calculator will present results based on the input variables entered. The data delivered will inform the quantity of tCO_2 eq over the life of the Proposed Development. The following activity will be calculated from the calculator:

- Losses due to turbine life (e.g., manufacture, construction, decommissioning);
- Losses due to backup;
- Losses due to reduced carbon fixing potential;
- Losses from soil organic matter; and
- Losses due to Dissolved Organic Carbon and Particulate Organic Carbon (DOC & POC) leaching.

13.6.6 Baseline

The Proposed Development will consist of eight wind turbines with a tip height of up to 200m, with a potential capacity of up to 57.6MW and a battery energy storage system (BESS) of up to 20MW taking overall capacity up to 77.6MW. This capacity will positively contribute to meeting local and national renewable energy targets by producing clean energy to be distributed to the local grid network.

The Proposed Development is situated in an area of class 2 peat. Peat surveys and peat probing will be carried out to determine if carbon-rich soils can be avoided during construction.

13.6.7 Mitigation

The Proposed Development will reduce the CO_2 released by the electricity generation system.

The use of peat surveys and peat probing will enable the potential loss and disturbance of peat to be estimated and minimised. The implementation of a Peat Management Plan will reduce the negative impacts associated with work on carbon-rich soils.

The Applicant will seek to incorporate any additional enhancements at the construction phase with their appointed contractor through the provision of a Construction and Environmental Management Plan, to be agreed upon during the discharging of planning conditions. The document will be produced in line with best practice guidance and appropriate consultation with key stakeholders.

13.6.8 Summary

Given the current challenges to deliver net zero in the timescales outlined by The Scottish Government, it is considered that the Proposed Development will deliver an overall positive effect on carbon savings, contributing to the decarbonisation of the electricity sector in Scotland.

13.6.9 Questions for Consultees

- **Q13/8:** Do the consultees agree with the proposed methodologies?

[164] https://informatics.sepa.org.uk/CarbonCalculator/index.jsp (Accessed May 2023)

- **Q13/9:** Do the consultees have any further information that would assist in the preparation of the assessments?
- **Q13/10:** Are consultees aware of any further guidance or policy documents not mentioned within the report that are relevant to the assessments?

13.7 Population and Human Health

The Proposed Development will be designed and maintained in accordance with all relevant industry guidelines, standards and regulations including those pertaining to safeguarding the risk to human health. This includes the design and siting of wind turbines at an appropriate distance from sensitive receptors such as roads, core paths and residences. This will minimise the risk to human health during operation. Risks associated with ice build-up, lightning strike and structural failure are removed or reduced through wind turbine manufacture and industry best practice guidance on construction procedures.

As the Proposed Development is non-emitting, it is considered that it will not present a risk to human health from an emissions perspective. There will be some greenhouse gas and dust emissions during construction and decommissioning, however appropriate air quality and dust management measures will be put in place via the CEMP. As a result, emissions are not considered to present a risk to human health.

There is potential for impacts on the local population in relation to amenity. These will be included as part of the relevant assessments and reported accordingly. This includes the following:

- Visual Impacts (landscape and visual impact assessment);
- Residential and Settlements (landscape and visual impact assessment);
- Noise;
- Shadow Flicker;
- Private Water Supplies (Hydrology and Hydrogeology chapter);
- Traffic and Transportation; and
- Socio-Economics, Recreation and Tourism

Given the absence of potentially significant effects on human health from emissions and the capture of other population issues in other technical assessments, a stand-alone Population and Human Health chapter is proposed to be scoped out of the EIA.

13.8 Major Accidents and Disasters

The EIA Regulations state that an EIA must identify, describe and assess in an appropriate manner, the expected effects deriving from the vulnerability of the Proposed Development to risks of major accidents and natural disasters, so far as relevant to the development.

Renewable energy development has an exemplary safety record, with stringent best practice guidance to minimise risk during the construction, operation and decommissioning phases of the Proposed Development.

During the construction phase, the Proposed Development will be under the supervision of a suitably qualified team, governed by Health and Safety legislation and best practices. This will include the induction of all staff to the Proposed Development and the publication of all appropriate Health & Safety practices applicable to the Proposed Development.

Climate change is considered in **Section 13.6** of this Scoping Report. It is considered that the Proposed Development will deliver an overall positive effect on carbon savings and will contribute to the decarbonisation of the electricity sector.

Flood risk and any potential for peat slide will be addressed in the Hydrology and Hydrogeology assessment of the EIA Report.

The Proposed Development is not located in an area that is known to be prone to natural disasters, and climate change, flooding and peat slide risk will be covered in other chapters. Therefore, it is considered that a stand-alone chapter for major accidents and disasters is not required and it should therefore be scoped out of the EIA.