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Whiteminwhill Energy Park: EIA Scoping Report

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	NAME	FUNCTION	DATE
Elaborated by	Will Chance / Uche Odubanjo	Author	30 May 2025
Validated by	Rachel Turner / Janet Burns	Reviewer	30 May 2025
Approved by	Max Goodwin	Approver	03 June 2025

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1.1 Voltalia UK Ltd (hereafter referred to as 'the Applicant') is proposing to submit an application for consent from the Scottish Ministers under the terms of Section 36 (S36) of the Electricity Act 1989 (the 1989 Act)[1] and deemed planning permission under the terms of the Town and Country Planning (Scotland) Act 1997 (the 1997 Act) to construct and operate Whiteminwhill Energy Park ('the Proposed Development').

1.1.1.2 The Proposed Development is located approximately 0.9km south of Barrhill, within South Ayrshire Council (SACo) administrative area ('the Site').

1.1.1.3 The Proposed Development has a total installed capacity of between 100 MW (megawatts) and 200 MW. This is comprised of up to five wind turbine generators with a maximum tip height up to 230m and an installed capacity of up to approximately 50 MW, ground-mounted solar photovoltaic (PV) with an installed capacity of up to approximately 50 MW, up to approximately 100MW Battery Energy Storage System (BESS) and associated infrastructure.

1.1.1.4 This Scoping Report ('the Report') has been prepared by Environmental Resources Management Ltd (ERM), with technical input from ReAmp (Planning), Abseline (Landscape and Visual), Natural Power (Ecology and Ornithology), Hoare Lea (Noise), Pager Power (Telecommunications and Utilities, Aviation, Shadow Flicker, and Glint and Glare), and RTS Forestry (Forestry) on behalf of the Applicant.

1.1.1.5 The Report forms the Applicant's written request to the Scottish Ministers, under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 as amended ('the EIA Regulations')[2], for its opinion (i.e., 'Scoping Opinion') as to the information to be provided in the Environmental Impact Assessment Report ('EIA Report') for the Proposed Development.

1.2 OBJECTIVES OF THIS REPORT

1.2.1.1 The role of this Report is to present an initial overview of potential environmental receptors within the Site and vicinity of the Proposed Development, and to determine the likelihood of significant effects on these receptors caused by the Proposed Development. This allows the Scottish Government's Energy Consents Unit (ECU) and consultees to provide an informed opinion of the Proposed Development, as well as provide advice and suggestions for the methodology of assessments included in, and the structure of, the EIA Report.

1.2.1.2 Where the Applicant is proposing to 'scope out' particular elements of the EIA, sufficient information and justification has been provided within this Report. The intention is to ensure

[1] UK Government (1989) Electricity Act 1989 [Online] Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents (Accessed 18/10/2023)
[2] Scottish Government (2017) The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. [Online] Available at: http://www.legislation.gov.uk/ssi/2017/101/contents/made (Accessed 18/10/2023)

that the EIA Report remains focused on any potentially significant effects on receptors likely to be impacted by the Proposed Development.

1.2.1.3 This Report also contains a number of questions for which it would be useful to receive feedback on from consultees, where appropriate. Please note this is not an exhaustive list and we would welcome feedback on any issues considered to be relevant to the Proposed Development. A summary of all questions raised in the Report is also provided as **Appendix A**.

1.3 THE APPLICANT

1.3.1.1 Founded in 2005, Voltalia is an experienced global renewable energy developer and Independent Power Producer ('IPP') developing, constructing, and operating solar, wind, hydro, biomass, and storage projects. Voltalia has assets with 3.3GW (gigawatt) of installed capacity, with a 17.4GW pipeline of projects globally and has a long-term commitment and experience to development in the UK.

1.3.1.2 Voltalia UK Ltd is focused on providing renewable energy schemes to help decarbonise the UK's electricity generation and combat the climate crisis by supplying affordable and renewable source of clean electricity.

1.3.1.3 The Proposed Development is one in a series of renewable projects which Voltalia are proposing to construct and operate in Scotland. If consented, international experience and expertise will allow Voltalia to develop their ~600MW of onshore renewables in Scotland to help achieve the current net zero targets and fight the climate crisis.

1.4 PLANNING HISTORY

1.4.1.1 SACo and the ECU online portals have been examined to ascertain the planning history of the Site. Previous planning applications on the Site are shown in **Table 1.1**, and an understanding of the Site's planning history has been considered in the preparation of the Report through reviewing previously provided consultation advice and site information, to help inform the proposed scope of the EIA Report for the Proposed Development.

TABLE 1-1-11 PLANNING HISTORY

DEVELOPMENT	DESCRIPTION	REFERENCE	APPROVAL STATUS
Altercannoch Wind Farm	In 2015, the application for the 'Erection of 8 wind turbines and associated development including, formation of access tracks, meteorological masts, ancillary infrastructure, control building and substation compound, temporary construction compound and 3 borrow pits'.	15/01484/APPM	Refused

1.5 REPORT CONTENT AND STRUCTURE

1.5.1.1 The Report is structured as follows:

- Chapter 1: Introduction;
- Chapter 2: The Proposed Development;
- Chapter 3: EIA Process;
- Chapter 4: Policy and Legislative Context;
- Chapter 5: Design Iteration and Layout;
- Chapter 6: Landscape and Visual Impact;
- Chapter 7: Cultural Heritage and Archaeology;
- Chapter 8: Ornithology;
- Chapter 9: Ecology and Nature Conservation;
- Chapter 10: Geology and Peat;
- Chapter 11: Water Resources and Flood Risk;
- Chapter 12: Access, Traffic and Transport;
- Chapter 13: Noise;
- Chapter 14: Climate Change and Carbon Balance;
- Chapter 15: Socio-Economics, Tourism and Recreation;
- Chapter 16: Other Issues:
  - Telecommunications and Utilities;
  - Aviation;
  - Shadow Flicker;
  - Glint and Glare
  - Forestry;
  - Human Health;
  - Major Accidents and Disasters; and,
  - Intra-Cumulative Effects;
- Chapter 17: Conclusions;
- Appendix A: Summary of Questions to Consultees;

- Appendix B: Legislation, Guidance and Standards; and
- Appendix C: Figures.

2 THE PROPOSED DEVELOPMENT

2.1 INTRODUCTION

2.1.1.1 The Proposed Development will comprise up to 5 turbines with a maximum tip height up to 230m and a generating capacity of up to approximately 50MW, ground-mounted solar photovoltaic (PV) with a generating capacity of up to approximately 50MW) and up to approximately 100MW Battery Energy Storage System (BESS) and associated infrastructure.

2.2 THE SITE

2.2.1.1 The Proposed Development would be constructed and operated on land approximately 0.9km south of Barrhill. The nearest major towns are Girvan and Ballantrae which lie approximately 20km north and 20km west, respectively. The Proposed Development is centred on National Grid Reference ('NGR') NX 24104 80083. The Site will occupy an area of approximately 440 hectares (ha) and lies within the SACo administrative area. The Site is shown in **Figure 2.1** and is the area being considered for the Proposed Development, with the final design being informed by the results of environmental assessments and required surveys.

2.2.1.2 The topography of the Site slopes from the southwest at approximately 160m above ordnance datum (AOD) down to the northeast at approximately 78m AOD. The highest point of the site is in the south at approximately 165m AOD.

2.2.1.3 The Site is located to the south of the A714. Much of the surrounding area within approximately 5km is forestry plantation and/or wind farms. Settlement and key transport routes are located in the valleys with the A714 following the Duisk River before heading eastwards; the B7027 continuing along the Duisk and Lavery Burn past the eastern boundary of the Site, and the rail route to Stranraer following the Cross Water valley to the west of the site.

2.2.1.4 Settlements in the vicinity of the Site include:

- Barrhill, 1km north of the Site;
- Colmonell, 10km northwest of the Site;
- Bargrennan, 12.5km east of the Site;
- Girvan, 20km north of the Site; and
- Ballantrae, 20km west of the Site.

2.2.1.5 Other sites of interest in the surrounding area include:

- Markhill Windfarm, 4.5km north of the Site;
- Kilgallioch Windfarm, 5km south of the Site;
- Kilgallioch Windfarm Extension and Solar Farm, 5km south of the Site;
- Arecleoch Windfarm, 6km west of the Site; and
- Pinwherry Substation, 7km northwest of the Site.

2.2.2 TURBINES

2.2.2.1 Five wind turbine generators with a maximum tip height of 230m will be included as part of the Proposed Development. The final locations for the proposed turbines and specific candidate turbine model will be determined through the design iteration process which will evolve throughout the EIA process. The location of the turbines submitted with the application for S36 consent will be subject to a micro-siting allowance of up to 150m to allow for mitigation by design following detailed ground investigation and pre-construction environmental surveys.

2.2.3 SOLAR

2.2.3.1 The Proposed Development is within approximately 5km of the consented Kilgallioch Windfarm Extension which comprises 11 wind turbine generators and solar arrays. In keeping with the form of surrounding permitted development the Proposed Development will co-locate solar arrays with wind turbine generators. The proposed solar panels are composed of photovoltaic cells and are designed to maximise the absorbance of incident solar radiation whilst minimising reflection. Each string (row) of solar panels is intended to be mounted on a rack, comprised of piles, with gaps left between each string to avoid inter-panel shading. These gaps will depend on local topography, but in general will be between 2 - 8m.

2.2.3.2 Each solar panel will be orientated to be south facing, and tilted to an angle, typically between 10 to 25 degrees from horizontal to maximise exposure to the sun. Solar panels will be mounted at a typical height of approximately 0.8m, rising to approximately 3.2m, depending on the exact angle from horizontal required.

2.2.4 BATTERY ENERGY STORAGE SYSTEM (BESS)

2.2.4.1 A BESS facility, with an anticipated generating capacity of up to approximately 100MW, will also be included as part of the Proposed Development. This will be situated in the in the northern area of the Site alongside the substation compound and solar panels. It is proposed that the BESS facility will be composed of containerised battery storage units.

2.2.5 ACCESS

2.2.5.1 Access to the Site is via the B7027 to the north. The route to site for construction traffic is not currently known, and will be developed and assessed as part of the EIA process.

2.2.6 ELECTRICAL INFRASTRUCTURE

2.2.6.1 A connection to the national grid's transmission/distribution system will be required. This does not form part of the Proposed Development and is not the subject of the proposed S36 application.

2.2.6.2 The Proposed Development will include a substation compound which will comprise space for both the proposed substation that will form part of the Proposed Development, and the substation that would be required by Scottish Power Transmission (SPT), which they will design, build, and operate. The substation required by SPT will not be the subject of the proposed S36 application.

2.2.7 TEMPORARY CONSTRUCTION COMPOUND (TCC)

2.2.7.1 A temporary construction compound will be required during the construction of the Proposed Development. This will be formed of an area of hard standing providing space for portacabins, parking, lay down areas and potentially concrete batching.

2.2.8 ANCILLARY INFRASTRUCTURE

2.2.8.1 Various ancillary infrastructure will be proposed as part of the Proposed Development to aid in the operation of the energy park. Details of this infrastructure are currently not known and will be outlined in the EIA Report.

2.2.9 BORROW PITS

2.2.9.1 If suitable material is identified via the EIA process, on-site borrow pits may be utilised to source aggregate for the construction of on-site access tracks, crane hardstanding areas and potentially concrete batching. Sourcing aggregate from within the Site, where possible, rather than an off-site quarry, has the advantage of reducing the number of Heavy Goods Vehicles (HGV) on the public road network.

2.2.9.2 Following construction, the borrow pits will be restored. The restoration will include the reuse of soil and turf materials from the construction works to restore the slopes to a stable profile and allow regeneration.

2.2.10 DEVELOPMENT PHASES

2.2.10.1 It is expected that the construction phase of the Proposed Development will take approximately 18 months, depending on the final design. This period is weather dependent and could be affected by on-site conditions. All construction activities will be carried out by suitably trained and experienced personnel, in line with good practice guidance and all relevant development consent conditions.

2.2.10.2 It is proposed that the operational phase of the Proposed Development will be for a period of 40 years, following which time it is the intention that the Proposed Development will be decommissioned. During the operational phase, the Proposed Development will be closely monitored and maintained in accordance with relevant good practice guidance. All maintenance will be carried out by trained specialists.

2.2.10.3 It is expected that at the time of decommissioning, a Decommissioning and Restoration Plan will be prepared and submitted to SACo for their approval, including timescales and transportation methods, agreed in advance of decommissioning with the appropriate consultees and conditioned as part of the of S36 consent. All decommissioning works will be carried out in accordance with good practice guidance and follow all relevant legislation at the time.

3 EIA PROCESS

3.1 REQUIREMENT FOR EIA

3.1.1.1 The Environmental Impact Assessment ('EIA') is an iterative assessment process with the aim of avoiding or reducing the potential effects resulting from the Proposed Development through the continual refinement of its design. These effects can occur throughout all phases of the Proposed Development from construction, through operation, and during decommissioning. Any potential effects will be mitigated using the mitigation hierarchy of avoid, reduce, offset and compensate.

3.1.1.2 The EIA Regulations define EIA developments as either:

- (a) Schedule 1 development (project types where EIA is mandatory); or
- (b) Schedule 2 development, likely to have significant effects on the environment by virtue of factors such as its nature, size, or location.

3.1.1.3 Wind, solar, and BESS developments are not listed in Schedule 1 of the EIA Regulations.

3.1.1.4 Schedule 2 of the EIA Regulations lists developments for which an EIA is required, including for certain types of development where there are likely to be significant effects on the environment by virtue of factors such as the nature, size or location of the development proposed. The Proposed Development falls within Category 1 (1) of Schedule 2 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations), which refers to 'a generating station'. Schedule 3 of the EIA Regulations is therefore applicable in determining the selection criteria for screening Schedule 2 Development.

3.1.1.5 Following consideration of the characteristics of the Proposed Development, the location of the Site and the characteristics of the potential impacts, as outlined within Schedule 3 of the EIA Regulations, the Applicant recognises that this is a development which requires an EIA.

3.2 APPROACH TO SCOPING

3.2.1.1 The aim of the Scoping process is to identify potential environmental and social issues at an early stage, to determine which elements of the Proposed Development are likely to result in significant effects on the receiving environment, and to establish the extent of baseline surveys and assessment required for the EIA. Scoping has an important role to play in achieving proportionate and effective EIA.

3.2.1.2 This Scoping Report therefore provides details of the technical areas which will be considered through the EIA process and included within the EIA Report to meet the information requirements as set out in Schedule 4 of the EIA Regulations.

3.3 APPROACH TO EIA

3.3.1.1 The preparation and production of the EIA Report will be conducted in accordance with legislative requirements set out within the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations).

3.3.1.2 Where additional guidance exists relevant to a specific technical discipline, this will be detailed in the relevant section.

3.3.1.3 The principal steps of the EIA process are as follows:

- Scoping: The Scoping Opinion from the ECU will be used to define the scope of the EIA and subsequent EIA Report;
- Baseline Studies: Desk-Based Assessment (DBA), baseline surveys and site visits will be undertaken, where appropriate, to determine the baseline conditions of the environment and area that may be affected by the Proposed Development;
- Assessing effects: Potential interactions between the Proposed Development and the baseline conditions will be considered, the nature of the effects (e.g., direct or indirect; positive or negative; long, medium or short term; temporary or permanent) will be predicted and assessed. Potential cumulative effects arising from the Proposed Development in conjunction with other proposed or consented developments will also be considered;
- Mitigation and assessment of residual effects: Where adverse effects are identified that cannot be avoided through layout design and embedded mitigation, suitable measures to reduce or offset effects will be proposed. Any residual effects will then be assessed to determine any effects predicted to remain following implementation of the recommended measures; and
- Production of the EIA Report: The findings of the EIA will be set out in the EIA Report.

3.4 ASSESSMENT METHODOLOGY

3.4.1.1 To conduct an EIA, an individual technical area will have a specific assessment methodology, which will be described in the relevant chapter in the EIA Report. The assessment methodologies used within the EIA Report will be in line with the standards and guidance provided in **Appendix B**.

3.4.1.2 To assess the potential effects arising from the Proposed Development, the significance of such effects will be determined, in accordance with the EIA Regulations. The determination of significance relates to the sensitivity of the resource or receptor being affected and the magnitude of change as a result of the effect.

3.4.1.3 The assessment of effects will combine professional judgement together with consideration of the following:

- The sensitivity of the resource or receptor under consideration;

- The magnitude of the potential effect in relation to the degree of change which occurs as a result of the Proposed Development;
- The type of effect (i.e., adverse, beneficial or neutral);
- The probability of the effect occurring (i.e., certain, likely or unlikely); and
- Whether the effect is temporary, permanent and/or reversible.

3.4.1.4 Effects predicted to be of major or moderate significance are considered to be 'significant' in the context of the EIA Regulations. The EIA Report will generally follow these principles in relation to the identification of significant effects; however, some technical assessments may adopt a variation process.

3.5 MITIGATION

3.5.1.1 Where the EIA identifies likely significant adverse environmental effects, mitigation measures will be proposed in order to avoid, reduce, offset or compensate those effects. These mitigation measures may be embedded in the design or compensatory. The most effective mitigation measures are those which avoid or prevent the creation of adverse effects at the source. Such measures include design evolutions, best practice management and operational measures to avoid the impact.

3.5.1.2 The strategy of avoid, reduce, offset, and compensate is a hierarchical one which seeks:

- First to avoid or prevent significant adverse effects;
- Then to reduce/minimise those which remain; and
- Lastly, where no other remediation measures are possible, to propose appropriate compensation.

3.5.1.3 In addition, enhancement measures may be incorporated into the design of the Proposed Development to maximise environmental benefits.

3.6 RESIDUAL EFFECTS

3.6.1.1 Taking into account the suggested mitigation and enhancement measures, the predicted effects will be re-assessed to determine whether any significant residual effects remain.

3.7 CUMULATIVE EFFECTS

3.7.1.1 In accordance with the EIA Regulations, this EIA will also give consideration to 'cumulative effects'. These are effects that result from incremental changes caused by past, present or reasonably foreseeable future actions together with the Proposed Development. For the cumulative assessment, two types of effects will be considered:

- Intra-cumulative: The combined impact of individual effects from the same development (e.g., noise, airborne dust or traffic) on a single receptor; and
- Inter-cumulative: The combined impact from the effects of several developments that may, on an individual basis, be insignificant but cumulatively may be significant.

3.7.1.2 In line with good practice, the methodology to be adopted for assessing the cumulative effects of wind energy developments will be in accordance with advice from NatureScot (formerly SNH)[3,4], and the Scottish Government[5,6], and the inter-cumulative baseline will be frozen 3 months in advance of the proposed application submission date. The extent of any cumulative assessment relative to each technical assessment will be agreed during the consultation process and can include both existing and proposed wind farm developments, as well as other forms of development.

3.7.1.3 It should be noted that Developments that are in the scoping phase are not generally considered as part of the cumulative assessment and will not be included in the EIA Report. Should further developments become operational, consented, begin construction or be submitted to the planning system during the EIA process, these will also be considered up to three months prior to submission of the S36 application.

3.8 STRUCTURE AND CONTENT OF THE EIA REPORT

3.8.1.1 The content of the EIA Report will broadly follow the specifications detailed within Schedule 4 of the EIA Regulations. The EIA Report will consist of the following volumes:

- Volume 1 – Non-Technical Summary;
- Volume 2 – EIA Report Text;
- Volume 3a – Figures Excluding Landscape and Visual Impact Assessment (LVIA);
- Volume 3b – LVIA Figures;
- Volume 3c – Visualisations; and
- Volume 4 – Technical Appendices.

3.8.1.2 The technical chapters of the EIA Report will present baseline conditions, details of the assessments undertaken, including any cumulative effects, required mitigation and residual effects, and will be supported by a Planning Statement, Pre-Application Consultation (PAC) Report, and a Design and Access Statement (DAS).

[3] SNH (2012) Assessing the Cumulative Impacts of Onshore Wind Energy Developments [Online] Available at: Assessing the Cumulative Impact of Onshore Wind Energy Developments (pnnl.gov) (Accessed 11/12/2023)
[4] NatureScot (2014) A handbook on environmental impact assessment: Guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland [Online] Available at: A handbook on environmental impact assessment (nls.uk) (Accessed 11/12/2023)
[5] Scottish Government (2020) Scottish Planning Policy [Online] Available at: https://www.gov.scot/publications/scottish-planning-policy/pages/2/ (Accessed 11/12/2023)
[6] Scottish Government (2021) Environmental assessment [Online] Available at: https://www.gov.scot/policies/environmental-assessment/ (Accessed 11/12/2023)

4 POLICY AND LEGISLATIVE CONTEXT

4.1.1.1 The Proposed Development will be over 50MW and therefore requires an application under Section 36 of the Electricity Act 1989 (the 1989 Act) and the EIA Regulations. Deemed planning permission will be sought by the Scottish Ministers under section 57(2) of the Town and Country Planning (Scotland) Act 1997 (the 1997 Act) as amended.

4.1.1.2 The application will 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*".

4.1.1.3 The Climate Change policy framework, in which the application for the Proposed Development will be brought forward, will be set out in the early chapters of the EIA Report. The technical chapters of the EIA Report will set out the relevant planning policy in respect of specific topics. The EIA Report will not contain an 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.

4.1.1.4 The approach that will be taken to consider the planning and renewable 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 RENEWABLE ENERGY FRAMEWORK

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

4.2.1.2 The Proposed Development relates to the generation of electricity from renewable energy sources which 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.

4.2.1.3 As the Proposed Development is located in Scotland the focus will be on the Scottish targets. Scotland's overarching statutory target is to achieve a 100% reduction in greenhouse gas emissions to net-zero by 2045, as set out in the Climate Change (Emissions

Reduction Targets) (Scotland) Act 2019 which amends the Climate Change (Scotland) Act 2009. This sets clear targets relating to climate change emissions reductions, in law, which are required for Scotland to reach net zero.

4.2.1.4 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 policy and legislation which will include reference to the following key documents:

- Climate Change (Scotland) Act 2009;
- Climate Change (Emissions Reduction Targets) (Scotland) Act 2024;
- Scottish Energy Strategy: The future of energy in Scotland (2017);
- Onshore Wind Policy Statement (2022);
- Onshore Wind Sector Deal (2023);
- Draft Energy Strategy and Just Transition Plan (2023);
- The relevant Programme for Government; and
- The Green Industrial Strategy (2024).

4.3 THE DEVELOPMENT PLAN

4.3.1.1 The Development Plan comprises the National Planning Framework 4 ('NPF4') and the Local Development Plan. Where the Local Development Plan has been adopted prior to the adoption and publication of NPF4, as is the case in this situation, the legislation (the 1997 Act section 24(3)) is clear that in the event of any incompatibility between a provision of NPF4 and a provision of the Local Development Plan the provision of NPF4 is to prevail.

4.3.1.2 The Proposed Development would be located within the administrative area of SACo. The statutory development plan for the Site comprises:

- National Planning Framework 4 (NPF4) (2023); and
- South Ayrshire Local Development Plan 2 (SALDP) (2022).

4.3.1.3 The SALDP Supplementary Guidance, which forms part of the Development Plan, relates to housing and is not relevant to the Proposed Development. Supplementary Guidance, including that on wind energy, was adopted as part of the previous Local Development Plan. This Supplementary Guidance does not form part of the Development Plan.

4.3.1.4 The technical chapters of the EIA Report will reference the Statutory Development Plan policies in so far as it is appropriate to do so.

4.3.2 NATIONAL PLANNING FRAMEWORK 4

4.3.2.1 NPF4 introduces centralised development management policies which are to be applied Scotland wide.

4.3.2.2 NPF4 identifies a number of National Developments. The Proposed Development is considered to be a National Development by virtue of its scale of energy generation.

4.3.2.3 NPF4 sets out a set of development control policies that are to be applied across Scotland. In terms of these development management policies, NPF4 states that;

"The policy sections are for use in the determination of planning applications. The policies should be read as a whole. Planning decisions must be made in accordance with the development plan, unless material considerations indicate otherwise. It is for the decision maker to determine what weight to attach to policies on a case-by-case basis. Where a policy states that development will be supported, it is in principle, and it is for the decision maker to take into account all other relevant policies".

4.3.2.4 The most relevant of the NPF4 policies to the Proposed Development are identified as follows:

- Policy 1 Tackling the climate and nature crises;
- Policy 2 Climate Mitigation and Adaptation:
- Policy 3 Biodiversity;
- Policy 4 Natural Places;
- Policy 5 Soils;
- Policy 7 Historic Assets and Places;
- Policy 11 Energy; and
- Policy 22 Flood Risk and Water Management.

4.3.3 THE LOCAL DEVELOPMENT PLAN

4.3.3.1 The South Ayrshire Local Development Plan 2 considers renewable energy under the heading of Environment and Climate Change. The SALDP contains a wind farm specific policy which is relevant to the consideration of the Proposed Development. The following policies are also relevant:

- LDP policy: landscape quality;
- LDP policy: water environment;
- LDP policy: air noise and light pollution;
- LDP policy: renewable energy;
- LDP policy: historic environment; and

- LDP policy; natural heritage.

4.4 CONSULTATION AND SCOPING QUESTIONS

- Q4.1: Do consultees agree with the policy and legislation context set out in this report?

5 LANDSCAPE AND VISUAL IMPACT

5.1 INTRODUCTION

5.1.1.1 This chapter of the Scoping Report sets out the proposed scope and approach to the LVIA of the potential likely significant landscape and visual effects resulting from the Proposed Development.

5.1.1.2 The section sets out the proposed landscape and visual baseline data that will be used as the basis of the LVIA. This includes relevant landscape designations and published landscape character assessments of relevance to the Site. This section also sets out the process of identification of key sensitive visual receptors and viewpoint locations for the visual assessment, and the reasoning behind the selection is provided.

5.1.1.3 The LVIA Scoping chapter is supported by the following figures:

- **Figure 5.1:** Bareground Zone of Theoretical View (ZTV); and
- **Figure 5.2:** ZTV.

5.2 PROPOSED ASSESSMENT METHODOLOGY

5.2.1.1 The LVIA will be undertaken in accordance with the guidance provided in the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (GLVIA3) [7] as clarified by Landscape Institute Technical Guidance Note (LITGN-01-2024) [8]. In addition to GLVIA3, the approach to the assessment will be informed by the following key documents (in addition to other relevant guidance):

- Landscape Sensitivity Assessment Guidance, NatureScot, 2022 9.
- Technical Guidance Note 06/19: Visual Representation of Development Proposals, Landscape Institute, 2019 10.
- Guidance on Aviation Lighting Impact Assessment, NatureScot, 2024 [11].

[7] Landscape Institute and Institute of Environmental Management and Assessment (2013). Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA3)
[8] Landscape Institute (2024), Notes and Clarifications on Aspects of GLVIA3. Available at: https://www.landscapeinstitute.org/technical-resource/notes-and-clarifications-on-aspects-of-the-3rd-edition-guidelines-on-landscape-and-visual-impact-assessment-glvia3-litgn-2024-01/
[9] NatureScot (2022). Landscape Sensitivity Assessment Guidance. Available at: https://www.nature.scot/doc/landscape-sensitivity-assessment-guidance-methodology
[10] Landscape Institute (2019). Technical Guidance Note 06/19: Visual Representation of Development Proposals. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf
[11] NatureScot (2024). 'Guidance on Aviation Lighting Impact Assessment'. Available at https://www.nature.scot/doc/guidance-aviation-lighting-impact-assessment

- TGN 02/19 Residential Visual Amenity Assessment (RVAA), Landscape Institute, 2019 [12].

5.2.2 LVIA STUDY AREA

5.2.2.1 Taking account of the likely extent of potentially significant effects as set out in **Section 5.4**, a 20km study area to the LVIA is proposed.

5.3 BASELINE CONDITIONS AND KEY SENSITIVITIES

5.3.1 SITE AND CONTEXT

5.3.1.1 The Site comprises an area of undulating open moorland, with the east and north edges formed by rough pasture which slopes down to the B7027. To the south and west of the Site are extensive areas of forestry.

5.3.2 LANDSCAPE CHARACTER

5.3.2.1 The Site is located partly within South Ayrshire landscape character type 13 Intimate Pastoral Valley, and partly within character type 18c Plateau Moorlands with forestry and wind farms and exhibits a transitional character across these two landscape character types. The valley character type is identified as being the more sensitive of these two character types and forms the north and eastern parts of the Site.

5.3.3 VISUAL RECEPTORS

5.3.3.1 The nearest settlement to the Site is Barrhill, 1km to the north, and further linear settlement extends south from Barrhill along the B7027 to the north of the Site. The area within 10km of the Site is sparsely populated with few transport routes outside of the Duisk valley. Other settlements within 10km include Colmonell (9.5km, northwest) and Pinwherry (7km, north-northwest). **Figure 5.1** and **Figure 5.2** indicate no visibility from Colmonell, and limited visibility from Pinwherry.

5.3.3.2 Transport routes within 10km include the B7027 which connects Barrhill to Newtown Stewart and the A714 between Girvan and Newton Stewart. Both of these routes run nearby to the northeast of the Site. To the west of the Site, there is a local road which runs between Barrhill and New Luce and the railway which connects Girvan to Stranraer. The B734 runs through a valley between Pinwherry and the A77, approximately 8.4km to the northwest.

5.3.3.3 As shown by **Figure 5.2**, long distance recreational routes which pass within 15km of the Site include the Southern Upland Way (5.3km, south), Ayrshire Coastal Path (13.3km, northwest) and National Cycle Route (NCR) 7 (11.2km, east). There is only one core path within 5km, which passes over Pinwherry Hill, and two further core paths within 10km. One of these connects Pinwherry to Ballantrae (6.8km, northwest) and the other passes over

[12] Landscape Institute (2019) Technical Guidance Note (TGN) 2/19: Residential Visual Amenity Assessment (RVA). Available at: https://www.landscapeinstitute.org/technical-resource/rvaa/

Beneraird (9.3km, southwest). **Figure 5.1** and **Figure 5.2** indicate no visibility from the Ayrshire Coastal Path, NCR7, and only a short stretch of visibility near Pinwherry from both the B734 and Ballantrae-Pinwherry Core Path.

5.3.4 DESIGNATED LANDSCAPES

5.3.4.1 The nearest nationally designated landscape is Fleet Valley National Scenic Area (35km, southeast). Gardens and Designed Landscapes (GDLs) within 20km include Glenapp (12.4km, west), Lochryan (18.5km, southwest), Castle Kennedy (19.9km, southwest) and Bargany (19.2km, north). **Figure 5.1** and **Figure 5.2** indicates that there would be no visibility from these GDLs or from others at a greater distance from the Site.

5.3.4.2 Locally designated landscapes within 20km include the Galloway Hills Regional Scenic Area in Dumfries and Galloway (9.9km, east) and the following Local Landscape Areas (LLAs) in South Ayrshire:

- Stinchar Valley LLA (1.2km, north)l;
- Girvan to Ballantrae Coast and Hills LLA (9.3km, northwest);
- Glenapp Coast and Hills LLA (7.4km, west);
- High Carrick Hills LLA (10.4km, northeast); and
- Water of Girvan Valley LLA (17.2km, north).

5.3.4.3 **Figure 5.1** and **Figure 5.2** indicate that there would be no visibility from with the Glenapp Coast and Hills LLA or Water of Girvan Valley LLA.

5.3.4.4 The Galloway Dark Sky Park is located 5.3km to the northeast, with the nearest part of the core area (darkest sky – for which the park is designated) located 13km east. As indicated by **Figure 5.1**, the nearest areas of the buffer zone are forested, but areas of visibility would arise across west facing slopes of the core area. The core area of the dark sky park also largely coincides with Wild Land Area (WLA) 01 Merrick.

5.3.5 OTHER WIND FARMS

5.3.5.1 At the time of writing, it is known that there are extensive other wind farm developments in operation, planning or that have been approved within 20km of the Site, as shown by **Figure 5.2**.

5.3.5.2 Wind farms that are operational and consented within 20km:

- There is an extensive band of existing and consented wind farms to the south and west within 2.5km;
- Mark Hill wind farm (3.6km north).

5.3.5.3 Wind farms that are in planning within 20km:

- Glenvernoch (10.6km, southeast);

- Blair Hill (16.8km, southeast);
- Craig Nab (13.7km, south);
- Knockodhar (8.4km, north); and
- Craigninmoddie, Carrick and Knockcronal cluster – the nearest of which is Craiginmoddie (18.3km, north).

5.3.5.4 Wind farms that are in scoping within 20km:

- Balunton (9km, east);
- Shennanton (14km, southeast), and
- Airies II (10km, south).

5.3.6 RESIDENTIAL RECEPTORS

5.3.6.1 Residential properties within 2km of the turbine locations include:

- The southern part of Barrhill,
- Properties along the B7027 to the north and east of the Site;
- Homes near Barrhill station to the northwest;
- Dochroyle Farm, Dochroyle Cattage and Laggish Farm to the south; and
- Blair Farm, Artnoch and Kallantringan along the A714 to the north.

5.4 POTENTIAL IMPACTS AND EFFECTS

5.4.1 GENERAL

5.4.1.1 Effects arising from the Proposed Development will be considered at construction, operation and decommissioning stages. Potential effects relevant to the LVIA for each stage will include:

- Physical changes to the landscape fabric;
- Changes to landscape character resulting from those physical changes and from changes to views;
- Changes to views seen from public places, during the day and at night; and
- Changes to the special qualities of designated landscapes as a result of changes to character and/or views.

5.4.1.2 Potential effects relevant to the Residential Visual Amenity Assessment (RVAA) include:

- Changes to residential amenity as a result of close views of the Proposed Development from private homes and gardens.

5.4.1.3 Taking account of the likely effects arising from turbines of the height proposed, the receptors described above, existing and operational wind farms and the extent of visibility illustrated by **Figure 5.1** and **Figure 5.2**, it is considered that potentially significant effects on landscape and visual receptors would be likely to arise as follows:

- Within approximately 10-12km to the northwest, beyond which visibility notably reduces, and there is a closer group of operational wind farms.
- Within approximately 3km to the north and northeast due to extensive forestry and the presence of Mark Hill wind farm.
- Within 2km to the south and west, due to the presence of existing and consented wind farms and forestry.
- Within 10km to the southeast beyond which visibility notably reduces.
- Within approximately 19km to the east, beyond which visibility notably reduces.

5.4.2 LANDSCAPE CHARACTER

5.4.2.1 The assessment of effects on landscape character will be informed by:

5.4.2.2 South Ayrshire Landscape Wind Capacity Study (2018) [13];

5.4.2.3 Dumfries and Galloway Wind Energy Landscape Sensitivity Study (2025) [14]; and

5.4.2.4 NatureScot National Landscape Character Assessment (2019) [15].

5.4.2.5 The local landscape character studies will be used as the primary source to identify character types for assessment and their sensitivity, and the NatureScot study to inform the baseline description and key characteristics.

5.4.2.6 All character types with visibility within the 20km study area will be considered in the assessment.

5.4.3 VISUAL RECEPTORS AND VIEWPOINTS

5.4.3.1 All visual receptors with visibility within the study area will be considered in the assessment. Proposed viewpoints are listed in **Table 5.1** below and are focused within the area of potential significant effects identified in **Section 5.4**. The locations are illustrated in **Figure 5.1** and **Figure 5.2**.

[13] South Ayrshire Council (2018). Landscape Wind Capacity Study. Available at: https://www.south-ayrshire.gov.uk/article/28780/Supplementary-planning-guidance
[14] Dumfries and Galloway Council (2025). Wind Energy Landscape Sensitivity Study. Available at: https://www.dumfriesandgalloway.gov.uk/sites/default/files/2025-03/Dumfries%20%26%20Galloway%20Wind%20Energy%20Landscape%20Sensitivity%20Study_0.pdf
[15] NatureScot (2019). National Landscape Character Assessment. Available at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

5.4.3.2 Except where indicated otherwise, the three main NatureScot visualisation types (baseline panorama with cumulative wireline, wireline showing aviation lights and day-time photomontage) will be prepared for each viewpoint during the daytime. For viewpoints marked as 'Night', additional visualisations will be prepared showing the baseline view at night and a night-time photomontage.

5.4.3.3 In addition to the turbines, other infrastructure, including the substation, tracks, solar panels, and BESS, will be shown on photomontages where visible within 5km. Wirelines only are proposed for more distant hill summits.

TABLE 5-1 PROPOSED VIEWPOINTS

NO	LOCATION	DISTANCE, DIRECTION	VISUALISATION TYPES	KEY RECEPTORS
1	Local road near Barrhill Station	0.9km, NW		Residents, local road and railway users
2	Barrhill - Gowlands Terrace	1.9km, N	Night	Residents, Stinchar Valley LLA
3	Barrhill - Main street	1.8km, NW		Residents
4	A714 southeast of Barrhill	1.6km, N	Night	Residents, road users
5	B7027 south of Barrhill	1.4km, N		Residents, road users
6	A714 near Killantringan Cottage	1.9km, NE		Residents, road users
7	B7027 near Lochton Mill	0.9km, E		Residents, road users
8	Local road north of Chirmorie Farm	3.7km, SE		Local road users

NO	LOCATION	DISTANCE, DIRECTION	VISUALISATION TYPES	KEY RECEPTORS
9	Hill of Ochiltree	9.5km, SE		Users of Southern Upland Way
10	Larg Hill (Lamachan Hill)	17.6km, E	Cumulative wireline	Larg Hill (Lamachan Hill)
11	The Merrick	18.8km, NE	Cumulative wireline	The Merrick
12	A714 north of Barrhill	4.9km, NW		Road users, dispersed settlement,
13	Pinwherry	6.8km, NW	Night	Residents, local road users
14	Clauchanton Hill	10.4km, NW		Core Path users, Stinchar Valley LLA

5.4.4 RESIDENTIAL VISUAL AMENITY ASSESSMENT

5.4.4.1 The LVIA will be supplemented by a RVAA, which will be undertaken in accordance with the Landscape Institute's Technical Guidance Note TGN 02/2019 Residential Visual Amenity Assessment [16].

5.4.4.2 Properties within 2km of the proposed turbines are identified in **Section 5.3** above. In order to avoid a two-tier approach to homes in Barrhill, it is proposed that the RVAA study area is set at 2km, but extend beyond this distance at Barrhill to include all of the core part of the village.

5.4.5 WILD LAND ASSESSMENT

5.4.5.1 Wild Land Area 01 The Merrick is located 14.9km to the east of the proposed turbines. Taking into account of NPF4 Policy 4g ("*effects of development outwith wild land areas will not be a significant consideration*") a Wild Land Assessment is not included in the proposed scope of the LVIA.

[16] Landscape Institute (2019)., Technical Guidance Note TGN 02/2019 Residential Visual Amenity Assessment (RVAA). Available at: https://www.landscapeinstitute.org/technical-resource/rvaa/

5.4.6 AVIATION LIGHTING / NIGHT-TIME ASSESSMENT

5.4.6.1 The proposed turbines are over 150m in height and as such, are anticipated to require visible aviation lighting. The proposed study area for the night-time assessment is 20km to match that used for the day-time effects.

5.4.7 CUMULATIVE EFFECTS

5.4.7.1 The same study area is proposed as for the main LVIA study area, as shown by **Figure 5.2**, which illustrates the locations of wind farms within 20km of the Site. Cumulative effects with operational and consented wind farms, which form part of the baseline and future baseline, respectively, will be considered within the main LVIA. Potential cumulative effects with wind farms in planning will be considered as part of the cumulative effects assessment.

5.4.7.2 Effects with wind farms in scoping will only be considered where there is a specific reason to do so (such as for sites where the application is known to be imminent and the application layout is available for assessment, and/or proximity to the Site).

5.4.7.3 Groups of fewer than 3 turbines and turbines of under 50m in height are proposed to be scoped out of the cumulative assessment as their presence is unlikely to alter the effects arising from the Proposed Development.

5.5 MITIGATION

5.5.1.1 Mitigation of landscape and visual impacts arising from wind turbines once a site has been selected mainly consist of changes to the height, number and positions of turbines; and ensuring that other infrastructure (substations, BESS, solar, tracks) is located in areas that are less sensitive to physical impacts and/or less visible to visual receptors. Standard forms of mitigation will be applied, these include:

- Pale grey turbine colour;
- Aviation lights which are focused on the horizontal plane and upwards, so that they appear dimmer when viewed from below; and
- Aviation lights which automatically dim from 200 candela to 200 candela in good visibility conditions.

5.5.1.2 In addition, agreement will be sought with the Civil Aviation Authority (CAA) to minimise the number of aviation lights on the turbines.

5.6 PROPOSED SCOPE OF EIA CHAPTER

TABLE 5-2 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE LVIA

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Effects (including cumulative and night-time) on landscape and visual receptors within 20km	In	See section 5.4.
Effects on residential visual amenity for homes within 2km., and slightly beyond this to include all homes in the main settlement at Barrhill.	In	See sections 5.4 and 5.4.4
Wild Land Assessment	Out	See section 5.4.5
Cumulative effects with wind turbines in groups of fewer than 3 and/or under 50m in height	Out	See section 5.4.7

5.7 CONSULTATION AND SCOPING QUESTIONS

- Q5.1: Do consultees agree with the proposed LVIA study area? If not, which receptors are omitted that should be included, and why should they be included?
- Q5.2: Do consultees agree with the proposed viewpoint locations and visualisations? If not, please detail (with reasons) which viewpoints should be:
  - Moved;
  - Added; or
  - have different or additional visualisation types provided.
- Q5.3: Do consultees agree that Wild Land Assessment can be scoped out? If not, please set out the basis for its inclusion?
- Q5.4: Do consultees agree with the proposed RVAA study area? If not, which homes are omitted that should be included and why should they be included?
- Q5.5: Do consultees agree with the omission of groups of fewer than 3 turbines and turbines of under 50m from the cumulative assessment? If not, which of these smaller groups/ smaller turbines do they consider should be included and why?

6 CULTURAL HERITAGE AND ARCHAEOLOGY

6.1 INTRODUCTION

6.1.1.1 The Cultural Heritage and Archaeology chapter of the EIA Report will be supported by appropriate figures and visualisations and will be prepared by a certified archaeologist with experience in the assessment of wind, solar and BESS developments in the UK.

6.1.1.2 The Cultural Heritage and Archaeology Scoping chapter is supported by the following figures:

- **Figure 6.1:** Cultural Heritage Study Areas;
- **Figure 6.2:** All Heritage Assets within 1 km; and,
- **Figure 6.3:** Nationally Designated Assets and Regionally Important assets within 5 km.

6.1.1.3 The Cultural Heritage and Archaeology Assessment will consider Direct Physical Impacts, Indirect Physical Impacts, Setting Impacts and Cumulative Impacts upon cultural heritage.

6.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

6.2.1.1 In order to inform this report, data has been collected from a variety of secondary online sources, as well as an existing Environmental Impact Assessment (AECOM 2015a) for the Altercannoch Wind Farm, which was wholly sited within the Site of the Proposed Development before the refusal of planning permission. In addition, a primary survey in the form of a setting site visit was undertaken to support the Scoping Chapter.

6.2.1.2 This Scoping Report makes use of the following data:

- Historic Environment Record (HER) data issued by the West of Scotland Archaeology Service (WoSAS), who advise South Ayrshire Council on matters pertaining to archaeology and cultural heritage;
- HER data issued by the Dumfries and Galloway Heritage Team;
- Historic Environment Scotland datasets relating to designated assets[17]; and
- National Record of the Historic Environment: Canmore database[18].

6.2.1.3 The heritage baseline within this Scoping Chapter is intended to inform the potential for Direct and Indirect Physical Impacts to heritage assets within the Site as well as Setting Impacts to designated and non-designated assets within the locality of the Proposed Development.

6.2.1.4 Three Study Areas will be used within the forthcoming EIA:

[17](https://portal.historicenvironment.scot/apex/f?p=PORTAL:downloads:::::DATASET:ALL)
[18](https://portal.historicenvironment.scot/apex/f?p=PORTAL:downloads:::::DATASET:ALL)

- 1 km study area;
- 5 km study area; and,
- 15 km study area.

6.2.1.5 The 1 km Study Area takes in the Site and land within 1 km of the Site and will be used to produce a heritage baseline to inform Direct and Indirect Physical Impacts within the Site. The wider historic environment will be considered, as and when pertinent to the Proposed Development.

6.2.1.6 The 5 km and 15 km Study Areas take in the Site and land out to 5km and 15 km from the Site and will both be used to inform Setting Impacts.

6.2.1.7 The 5km Study Area will assess Setting Impacts to designated assets and selected non-designated assets. The 15km Study Area will assess Setting Impacts limited to designated assets.

6.2.1.8 Further details regarding the use of these Study Areas are provided within **Section 6.3** below.

6.2.1.9 A gazetteer listing assets within the 1 km, 5km and 15 km Study Areas is provided within **Appendix A** of this Scoping Chapter.

6.2.2 ASSETS WITHIN THE SITE

6.2.2.1 There are no designated heritage assets within the Site.

6.2.2.2 There are 13 non-designated assets recorded within the Site, of which five are assigned to Category C by WoSAS, prescribing at least Medium (Regional) value. These Category C non-designated assets, consist of a series of Late Prehistoric settlement and funerary monuments within the south-east area of the Site.

6.2.3 ASSETS WITHIN THE 1 KM STUDY AREA

6.2.3.1 Within the 1 km Study Area, there are three designated assets:

- Category A Listed Kildonan House (LB1052);
- Category B Listed Martyr's Tomb (LB1054); and
- Category C Listed Arnsheen Church (LB51617)

6.2.3.2 There are a further 50 non-designated assets outwith the Site but within the 1km Study Area. Only the assets that are dateable (24 in total) have been discussed by period below:

PREHISTORIC

6.2.3.3 There are three known Prehistoric non-designated assets within the 1km Study Area. These consist of two cairns (WoSAS pins 11480 and 11557) as well as a findspot for a Bronze axe-hammer (WoSAS pin 63072) recovered near Craigneil Castle in the 1880s.

MEDIEVAL

6.2.3.4 There are two known Medieval non-designated assets within the 1km Study Area (WoSAS pins 11490 and 11559); and two known non-designated assets (WoSAS pins 11467 and 11529) which span from the Medieval to Post Medieval Period. These assets consist of a small cairnfield, a field system, a farmstead with associated features, a castle, a chapel, and a possible motte.

POST MEDIEVAL TO MODERN

6.2.3.5 There are 17 known Post Medieval non-designated assets within the 1km Study Area. The majority of these assets are dwellings, farmsteads, and various communal and industrial structures associated with the villages of Barrhill and Colmonell; as well as Ayrshire non-inventoried Garden and Designed Landscapes: Kildonan Parkland (53453) and Corwar (53475).

6.2.4 DESIGNATED ASSETS WITHIN THE 5 KM STUDY AREA

6.2.4.1 There are five designated assets within the 5km Study Area, consisting of one Scheduled Monument and four Listed Buildings:

- Ballmalloch Chambered Cairn (SM2503);
- Category A Listed Kildonan House (LB1052);
- Category B Listed Martyr's Tomb (LB1054);
- Category C Listed Arnsheen Church (LB51617); and
- Category B Listed Ballochmorrie House (LB1053).

6.2.4.2 Ballmalloch Chambered Cairn (SM2503) is a prehistoric ritual and funerary monument within Glentrool Wood, east of Cammock Burn on the lower foothills of Roughlea Rig to the north and Dillan Knowe to the south. The four listed buildings record Country houses and buildings in and around the settlement of Barrhill to the north-west of the Site, along the course of the Duisk River valley.

6.2.5 NON-DESIGNATED ASSETS WITHIN THE 5 KM STUDY AREA

6.2.5.1 There are 31 non-designated assets of regional importance within the 5km Study Area which are discussed by period below.

PREHISTORIC

6.2.5.2 There are 20 non-designated Prehistoric assets within the 5km Study Area. These are characterised by ritualistic and funerary monuments (such as Cairns, Chambered Cairns, and Barrows), as well as domestic settlements and pastoral features (such as Enclosures and Hut Circles). In addition, there is one non-designated site that has evidence of multi-phase use from the Prehistoric to Post Medieval period, comprised of a Cairn at Darnaconnar farmhouse (62525).

MEDIEVAL

6.2.5.3 There are two non-designated assets that are multi-phase in use, from the Medieval to Post Medieval and Modern periods. These include what are likely to be a series of eight shieling huts located at Loch Hill (11362).

POST MEDIEVAL TO MODERN

6.2.5.4 There are 8 non-designated Post Medieval assets within the 5km Study Area. These assets are characterised by farmsteads, dwellings, and agricultural and pastoral features associated with 19th and 20th century improvements.

6.2.6 DESIGNATED ASSETS WITHIN THE 15 KM STUDY AREA

6.2.6.1 Between 5 km and 15 km there are:

- 173 Scheduled Monuments;
- One Inventoried Garden and Designed Landscape (GDL00192);
- 65 Listed Buildings (of which two are Category A); and
- Four Conservation Areas.

6.3 POTENTIAL IMPACTS AND EFFECTS

6.3.1 DIRECT AND INDIRECT PHYSICAL IMPACTS

6.3.1.1 Direct and Indirect Physical Impacts are typically limited to within the Site and result from ground disturbance associated during construction.

6.3.1.2 Of the 13 non-designated heritage assets recorded within the Site. Five assets date to the Prehistoric period, and include hut circles, field systems, enclosures, and small cairns. This cluster of Category C prehistoric assets are located on a terrace above the Pollgowan Burn to the south and the Duisk River to the north and east, within the south-east area of the Proposed Development. There are two assets that span the Prehistoric to Post Medieval period, which include an enclosure and an area of probable multi-phase settlement. Two assets span the Medieval to Post Medieval periods, inclusive of two dwelling sites; and two assets date to the Post Medieval period, characterised by an unroofed structure and building footings. Two assets do not currently have any dating information available; these include two cairn sites at High Altercannoch and West Altercannoch.

6.3.1.3 Given the presence of known Prehistoric, Medieval, and Post Medieval assets in the Site and the number of assets within the wider 1 km Study Area, there is a potential for further, currently unknown assets to be located within the Site. As such, Direct and Indirect Physical Impacts to recorded assets and currently unknown assets are considered a key sensitivity and will be assessed within the forthcoming EIA Report. Within the 2015 EIA Report WoSAS identified the cluster of Late Prehistoric assets within the south-east area of the Site as an area particularly sensitive to ground disturbance.

6.3.2 SETTINGS IMPACTS

6.3.2.1 Setting Impacts are at their zenith during the operational lifetime of the Proposed Development, with Setting Impacts typically persisting until decommissioning, whereupon they are fully reversible as the Site is returned to a condition, similar to that prior to construction.

6.3.2.2 There are a total of 244 designated assets recorded within 15 km of the Site, of which two are within 5 km. A total of 30 non-designated, Ayrshire Designed Landscapes or Category C or V assets are recorded within the 5 km Study Area as being potentially particularly sensitive to changes in their setting. These include:

- 53513 Bellamore Ayrshire Designed Landscape;
- 53478 Drumlamford Ayrshire Designed Landscape;
- 53464 Glenduisk Ayrshire Designed Landscape;
- 11283 Cave Cairn, Arecleoch;
- 11360 Loch Hill Standing Stone;
- 11472 Arnsheen Cairn;
- 11473 Arnsheen Cup-marked Stone;
- 11476 Arnsheen Cairn;
- 11477 Corwar Burn Earthen Mounds/Barrows;
- 11478 Corwar Burn Earthen Mounds/Barrows;
- 11482 Craigace Cairn;
- 11483 Darnarroch Cairn;
- 11494 Long Loch, Laggish Round House;
- 11495 Long Loch Round House;
- 11515 Glenduisk Cairn;
- 11523 Balmalloch Cairnfield;
- 11527 Laggan Cairn;

- 11534 Laggan Cairn;
- 11535 Duisk Lodge Cairn;
- 11546 Knockmalloch Enclosure/Settlement;
- 11558 White Cairn, Cairn;
- 13058 Half Merk Cairn;
- 11522 Darnaconnar Cairn;
- 11362 Loch Hill Hay Ree;
- 11366 Glenour/Byne/Bane, Farmstead, Head-dyke, and Hay Ree;
- 11367 Glenour, remains of building;
- 11485 Airyewn Farmstead and Enclosure;
- 11488 Darnarroch, Unroofed Buildings and assoc. Enclosures;
- 11501 Half Merk, Farmstead;
- 11549 Blackpark/Dounie, Farmstead; and
- MDG2331 Craig Airie Fell, Cairn.

6.3.2.3 Dumfries & Galloway Council has identified one additional non-designated asset (MDG2331 Craig Airie Fell, Cairn) within the 5 km Study Area as being potentially sensitive to changes in its Setting.

6.3.2.4 Within the 2015 EIA for the Altercannoch Wind Farm, Historic Environment Scotland (HES) stated specific concerns regarding Setting Impacts to SM1925 Cairn Kenny Chambered Cairn and SM1007 Cairnderry Chambered Cairn, both within 10km of the Site; as well as LB1052, the Category A Listed Kildonan House, within 1km of the Site.

6.3.2.5 Within the same EIA WoSAS stated specific concerns regarding Setting Impacts to the prehistoric landscape within the proposed Altercannoch Wind Farm, specifically the assets concentrated around Eyes Hill:

- 11492 High Altercannoch, Hut-circle;
- 11493 High Altercannoch, Small Cairns;
- 11538 High Altercanncoh, Small Cairns;
- 11496 High Altercannoch, Small Cairns and Field System; and
- 11484 High Altercannoch, Enclosure and Small Cairns.

6.3.2.6 Beyond these, Setting Impacts to the remaining eight non-designated WoSAS-listed assets within the Site are predicted and will be assessed within the forthcoming EIA Report.

6.3.2.7 The Indicative Site Layout (**Figure 2.2**) for the Proposed Development details an array of Solar Photovoltaics, BESS, and five wind turbines, with turbines reaching a maximum tip height of c.230m.

6.3.2.8 Based on the above, Setting Impacts are considered a key sensitivity and will be assessed within the forthcoming EIA Report

6.4 PROPOSED ASSESSMENT METHODOLOGY

6.4.1.1 The Cultural Heritage and Archaeology Chapter will be completed in line with the methodology outlined below, and legislation and guidance is provided within **Appendix B** of this Scoping Report.

6.4.1.2 The assessment will consider direct and indirect physical impacts, setting impacts and cumulative impacts upon archaeology and cultural heritage. This will include consideration of the following, where they sit within the defined study areas:

- Nationally designated assets, including World Heritage Sites, Scheduled Monuments, Listed Buildings, Inventoried Gardens and Designed Landscapes, Inventoried Battlefields, Protected Wrecks and Conservation Areas;
- Known undesignated assets (including above and below ground assets) as recorded by the local Historic Environment Record (HER), Canmore, cartographic record, photographic record, or identified through the walkover survey; and, The potential for unknown (buried) archaeological remains to survive within the Site.

6.4.1.3 To assess potential impacts on the historic environment, three Study Areas (shown in **Figure 6.1**, **Figure 6.2** and **Figure 6.3)** have been established:

- 1 km Study Area;
- 5 km Study Area; and,
- 15 km Study Area.

6.4.1.4 The 1 km Study Area will be used to produce a heritage baseline to inform direct and indirect physical impacts. The wider historic environment will be considered, as and when pertinent to the Proposed Development.

6.4.1.5 The 5km Study Area will assess Setting Impacts to designated assets and selected non-designated assets, with non-designated assets to be assessed through consultation with the archaeological advisors to the relevant local planning authorities. Non-designated assets included within any assessment of Setting Impacts are expected to be limited to Category C and V assets or assets agreed upon with Dumfries & Galloway Council (D&GC).

6.4.1.6 The 15 km Study Area will limit assessment of Setting Impacts to designated assets. Any assessment of Setting Impacts to non-designated assets beyond 5 km from the Site will only be undertaken at the specific request of the archaeological advisor to the relevant local planning authority. Additionally, a 15 km Study Area will be used to assess cumulative impacts.

6.4.1.7 In relation to the assessment of Setting Impacts, a sieving exercise will first be undertaken to determine those assets which warrant a detailed assessment of Setting Impacts. The

sieving exercise will provide a list of all assets considered for inclusion within the detailed assessment of Setting Impacts, along with a rationale for inclusion or exclusion from the assessment. A summary of predicted effects will be provided for all assets within this sieving exercise. The sieving exercise will be included within the EIA Report as a separate technical appendix to the Cultural Heritage and Archaeology Chapter. The detailed assessment of Setting Impacts will also be included as a standalone technical appendix to the Chapter.

6.5 SETTINGS ASSESSMENT

6.5.1.1 Setting Impacts will be assessed in accordance with 'Managing Change in the Historic Environment: Setting' (HES 2016) and Appendix 1 of HES guidance (Scottish Natural Heritage (now known as NatureScot) and HES EIA Handbook). In accordance with the latter, setting impacts are generally viewed as direct effects resulting from the proposal causing change within the setting of a heritage asset that affects its cultural significance or the way in which it is understood, appreciated and experienced. Setting Impacts may also occur indirectly, for example, as a result of changes in traffic. Setting impacts may be permanent, reversible or temporary.

6.5.1.2 To aid the assessment of Setting Impacts, reference will be made to the extent of the potential visual changes in setting as determined through the use of bare earth ZTV and LVIA viewpoints.

6.5.1.3 A sieving exercise will be used to determine which designated/non-designated assets are to be included within the final setting assessment. For inclusion, assets will need to meet the following criteria:

- The asset must lie within the bare earth ZTV;
- The asset must have potential for views of the Proposed Development;
- An asset must derive part of its setting and therefore cultural significance, from either a historic relationship to the Site or through views from the asset, taking in the uplands of the Site or views across the Site; and
- An asset's setting and cultural significance are partly derived from views towards that asset from the wider landscape or directly on the approach to the asset. The Proposed Development must have the potential to erode these views.

6.5.1.4 Within the 5 km Study Area, it is anticipated that all Scheduled Monuments will be assessed where they fall within the bare earth ZTV. All Category A Listed Buildings will likewise be included. Selected Category B and C Listed Buildings will be included, where they meet all the criteria identified above. In relation to non-designated assets, Category C and V assets (as defined by WoSAS) will be assessed where they fall within the bare earth ZTV. Locally designated Gardens and Designed Landscapes will be assessed where they fall within the bare earth ZTV. Remaining non-designated assets to be included within the detailed assessment of Setting Impacts will be identified through consultation with the archaeological advisors to SACo and D&GC,

6.5.1.5 Within the 15 km Study Area, Scheduled Monuments, Category A Listed Buildings and Gardens and Designed Landscapes will be included within the detailed assessment of Setting Impacts where they meet the criteria outlined above. Category B and C Listed

Buildings will be sieved and are only likely to be assessed where the Proposed Development falls within key views or is likely to generate significant effects. Listed buildings located within villages and nucleated settlements, where rural views do not contribute to cultural significance, are likely to be sieved out. Selected non-designated assets identified, through consultation with WoSAS, SACo and D&GC, will also be assessed for any change to Setting within this Study Area.

6.5.1.6 A table listing assets for inclusion or exclusion within the setting assessment will be provided to stakeholders during production of the EIA Report, along with a rationale for any decisions made.

6.5.1.7 The 15 km Study Area for Setting Impacts will not be used as an arbitrary cut-off point for assessing Setting Impacts. Due consideration will be given to assets beyond 15 km that fall within the bare earth ZTV, as well as assets specifically identified for inclusion within any setting assessment by HES, WoSAS, and Dumfries and Galloway Heritage Team.

6.5.1.8 The Cultural Heritage and Archaeology assessment will refer to and make use of photomontages commissioned as part of the LVIA. Where photomontages and wirelines are required from specific heritage assets or locations, they will be commissioned. The requirement for, number and location of bespoke heritage photomontages and/or wirelines will be discussed and agreed with consultees noted in **Section 6.6** during production of the EIA Report.

6.6 PRIMARY SURVEY

6.6.1.1 The historic baseline was augmented by a walkover survey, within the Site, as well as a Setting site survey, which took place from 21-23 January 2025. These surveys are intended to:

- Validate the baseline dataset within the Site and wider Study Areas, and identify any other unrecorded archaeological remains that may exist within the Site;
- Identify unforeseen factors which may result in impacts to the historic environment as a result of the Proposed Development;
- Ground truth the ZTV; and
- Inform the Setting and key views of assets considered for a detailed assessment of Setting Impacts.

6.6.1.2 The Site walkover survey identified and validated the locations of known heritage assets within the Site, and the Settings survey of the 1km, 5km, and 15km Study Areas assessed conditions of the historic environment, recording key views and the potential for indirect impacts to heritage assets.

6.6.1.3 No further primary survey to support the EIA Report is predicted. However, the need to commission additional site surveys will be discussed with WoSAS and D&GC.

6.7 MITIGATION

6.7.1.1 In the first instance, mitigation of any Setting Impacts will be made by changes in site layout and design, where this is possible within the limits of other site constraints. Consultation

with HES and the planning advisors to the relevant Local Planning Authorities, regarding Setting Impacts and possible mitigation measures, will be conducted periodically throughout the production of the EIA Report.

6.7.1.2 In relation to Direct and Indirect Physical Impacts, there will be a presumption of preservation in situ and the avoidance of impacts to heritage assets where this is feasible within the constraints of the Site. Where impacts cannot be avoided to known assets, then there will be a presumption of preservation by record prior to construction.

6.7.1.3 Where further archaeological site investigation is required, to assess the character, preservation or presence of archaeological remains, this will be undertaken as a condition of planning consent, unless such works are specifically requested by WoSAS prior to submission of the EIA Report. Further archaeological works may include, but are not necessarily limited to, geophysical survey, test pitting, archaeological trenching, or watching brief of Ground Investigation works.

6.8 PROPOSED SCOPE OF EIA CHAPTER

6.8.1.1 **Table 6.1** contains a list of all environmental factors relating to cultural heritage and archaeology that will be scoped in to or scoped out of the assessment.

TABLE 6-1 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

HERITAGE RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Direct physical impacts to Heritage Assets	In	Direct physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant effect if identified.
Indirect physical impacts to Heritage Assets	In	Indirect physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant effect if identified.
Setting impacts to designated assets within the 5 km and 15 km Study Areas.	In	Additional assets beyond 15 km may be scoped in where: • They fall within the bare earth ZTV; • They have been requested for assessment by stakeholders; and/or, They have the potential to be impacted by the Proposed Development.
Setting impacts to regionally and nationally important non-designated heritage assets within the 5 km Study Area, with inclusion for assessment	In	Additional assets beyond 5 km may be scoped in where: • They fall within the bare earth ZTV;

HERITAGE RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
decided following consultation and sieving exercise.		• They have been requested for assessment by stakeholders; and/or, • They have the potential to be impacted by the Proposed Development.
The Cumulative Effect of the Proposed Development in conjunction with other wind farm developments/Energy Infrastructure projects within 15 km.	In	Additional developments beyond 15 km may be included for assessment where: • Bare earth ZTVs overlap; • They have been requested for assessment by stakeholders; and/or, • They have the potential to impact the setting of assets in conjunction with the Proposed Development.
Assessment of the Direct Physical Impacts to heritage assets outwith the Site, with the exception of designated assets such as bridges along transport routes.	Out	Significant, Direct Physical Impacts to heritage assets outwith the Site are considered unlikely.
Indirect Physical Impacts to heritage assets outwith the 1 km Study Area, with the exception of designated assets such as bridges along transport routes.	Out	Significant, Indirect Physical Impacts to heritage assets outwith the Site are considered unlikely.
Setting Impacts to non-designated heritage assets of Local Importance (as defined by the HER).	Out	Significant Setting Impacts to non-designated heritage assets of Local Importance are considered unlikely.
Setting impacts to Category B and C Listed Buildings within 5 km where setting does not contribute to cultural significance, or their setting is not sensitive to changes in the wider landscape.	Out	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.
Setting impacts to designated heritage assets between 5 and 15 km from the Site where setting does not contribute to cultural significance or their setting is not sensitive to changes in the wider landscape.	Out	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.
Setting impacts to Category B and C Listed Buildings beyond 5 km where they are located within or clearly associated with a nucleated settlement.	Out	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.

6.9 CONSULTATION AND SCOPING QUESTIONS

6.9.1 CONSULTEES

6.9.1.1 Consultation will be undertaken and will as a minimum include:

- West of Scotland Archaeology Service;
- South Ayrshire Council;
- Dumfries and Galloway Heritage Team; and
- HES.

6.9.2 QUESTIONS FOR CONSULTEES

6.9.2.1 The following questions have been designed to ensure that any forthcoming EIA satisfies the WoSAS, Dumfries and Gallow Heritage Team, and HES:

- Q6.1: Do Consultees agree with the proposed methodology and scope of assessment?
- Q6.2: Do Consultees have any information regarding current or recent archaeological work or projects being undertaken, within or in the vicinity of the Proposed Development, particularly those whose results may not yet be recorded in the local HER or HES datasets?
- Q6.3: Are Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Proposed Development?
- Q6.4: Do Consultees have details of any cultural heritage sites in the vicinity of the Proposed Development which they consider may raise significant issues within the EIA process for this Development?
- Q6.5: Are Consultees aware of any additional stakeholders who will require consultation or where consultation would be desirable?

7 ORNITHOLOGY

7.1 INTRODUCTION

7.1.1.1 This section describes the ornithological interests present within the Site and surrounding area. This includes any locally, nationally, or internationally designated sites. A high-level description of potential impacts on ornithological receptors arising from construction, operation and decommissioning phases of the Proposed Development is provided to determine the requirements for the assessment that will be included within the Environmental Impact Assessment (EIA) Report.

7.1.1.2 The Ornithology Scoping chapter is supported by the following figures:

- **Figure 7.1:** Study Area;
- **Figure 7.2:** Vantage Point Locations and Viewsheds; and
- **Figure 7.3:** Statutory Sites Designated for Ornithological Features.

7.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

7.2.1 SITE DESCRIPTION

7.2.1.1 The Proposed Development lies approximately 0.9 km south of Barrhill in South Ayrshire. The Site is predominantly comprised of pastoral farmland, grazed by both cattle and sheep. The gentle undulating landscape consists largely of bog habitats on open ground, although High Altercannoch Wood and another two woodlands lie within the Site.

7.2.1.2 There is a single open waterbody, Loch Alty, in the centre of the Site. The Alty Burn, Cross Water and several other unnamed burns cross the Site and flow into the Duisk River, which borders the Site to the north and east. The Pollgowan Burn, which borders the south of the Site, also flows into the Duisk River.

7.2.2 DESK STUDY

7.2.2.1 Data was requested and received in 2024 from the Royal Society for the Protection of Birds (RSPB) and South West Scotland Environmental Information Centre (SWSEIC) for all Annex I[19], Schedule 1[20], Birds of Conservation Concern (c) Red/Amber List[21], and Scottish Biodiversity List (SBL)[22]- bird species records held within the Site and a surrounding 5 km

[19] UK Government. (2009). Directive 2009/147/EC of the European Parliament and of the Council Available from - https://www.legislation.gov.uk/eudr/2009/147/contents [Accessed: 12/03/2025]
[20] UK. Wildlife and Countryside Act (1981). Available from - https://www.legislation.gov.uk/ukpga/1981/69 [Accessed: 12/03/2025]
[21] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win I. (2021). *Birds of Conservation Concern 5: the population status of birds in the United Kingdom, Channel Islands and Isle of Man.* British Birds 114, 723–747.
[22] NatureScot (2022a). The Scottish Biodiversity List (SBL). Available at: https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy/scottish-biodiversity-list [Accessed: 27/03/2025]

buffer on, 2014-2024 inclusive. Further records of Annex I and/or Schedule 1 nesting and roosting raptors within 5 km of the Site since 2014 were requested from the Dumfries and Galloway Raptor Study Group (D&GRSG).

7.2.2.2 A web-based search was undertaken to identify and provide information on statutory and non-statutory designated sites of nature conservation, with ornithological qualifying features. The search was carried out using the NatureScot Sitelink[23] and the MAGIC Map application tool[24]. The search focussed on identifying the following sites:

- Special Protection Areas (SPAs) within 10 km of the Site (25 km for SPAs designated for goose and gull species);
- Ramsar Sites (Ramsar Convention on Wetlands of International Importance) where waterfowl or waterfowl habitat are described as ecological features within 10 km of the Site (25 km for goose and gull species);
- Sites of Special Scientific Interest (SSSIs) and Important Bird Areas (IBAs) within 5 km of the Site;
- Local and National Nature Reserves (LNRs/NNRs), including Scottish Wildlife Trust (SWT) and RSPB reserves within 2 km of the Site; and
- Local Wildlife Sites (LWSs) and proposed LWSs (pLWS) within 2 km of the Site.

7.2.2.3 LNRs and LWSs (non-statutory sites that are predominantly designated for their habitat or overall biodiversity assemblage, and not specifically for their ornithological interest) were searched for indications of ornithological use. Additional records of local sites within 2 km of the Site with relevance to ornithology, designated since 2024 will be requested within an updated data search from SWSEIC for inclusion in the EIA Report.

7.2.2.4 In addition, relevant background information was obtained for the proposed Altercannoch Wind Farm Application. The footprint of the Altercannoch Wind Farm comprises the entirety of the Site of the Proposed Development, in addition to further land to the north-west.

RESULTS

7.2.2.5 Three statutory sites designated for ornithological features, all with multiple designations, were identified within 25 km of the Site within the relevant search areas defined above.

7.2.2.6 The Glen App and Galloway Moors SSSI, and the Ailsa Craig SSSI have been included in **Table 7.1** and **Figure 7.3** for completeness as they are contiguous with the associated SPAs. However, the SSSIs are outside of the 5 km search area for SSSIs and have therefore not been included within **Section 7.6**.

[23] NatureScot Sitelink. Available from: https://sitelink.nature.scot/home [Accessed: 12/03/2025]
[24] Defra MAGIC Map tool. Available from: https://magic.defra.gov.uk/ [Accessed: 12/03/2025]

TABLE 7-1 STATUTORY DESIGNATED SITES WITHIN 10 KM OF THE SITE (25 KM FOR GOOSE AND GULL SPECIES), IN ORDER OF PROXIMITY

SITE NAME	DESIGNATION	DISTANCE AND DIRECTION FROM THE SITE	QUALIFYING ORNITHOLOGICAL FEATURES
Glen App and Galloway Moors	SPA and SSSI	7.2 km west	Breeding hen harrier.
Loch of Inch and Torrs Warren	SPA	22 km south-west	Non-breeding Greenland white-fronted goose and hen harrier.
	Ramsar	22 km south-west	Non-breeding Greenland white-fronted goose.
Ailsa Craig	SPA	24.1 km north-west	Breeding kittiwake, herring gull, lesser black-backed gull, guillemot and gannet. Breeding seabird assemblage.
	SSSI	27.2 km north-west	Breeding gannet. Breeding seabird colony including kittiwake, herring gull, lesser black-backed gull, guillemot, razorbill and gannet.

Four non-statutory designated sites with ornithological features were identified within 2 km of the Site. These are summarised in **Table 7.2**.

TABLE 7-2 NON-STATUTORY DESIGNATED SITES WITHIN 2 KM OF THE SITE, IN ORDER OF PROXIMITY

SITE NAME	DESIGNATION	DISTANCE AND DIRECTION FROM THE SITE	QUALIFYING ORNITHOLOGICAL FEATURES
Cross Water	pLWS	0 km	Steep glen with semi-natural woodland and grassland of botanical and ornithological interest.

SITE NAME	DESIGNATION	DISTANCE AND DIRECTION FROM THE SITE	QUALIFYING ORNITHOLOGICAL FEATURES
Loch Duisk	pLWS	0.5 km east	Area of marsh with breeding birds and aquatic life.
Kildonan	pLWS	0.9 km north-west	Woodland and a length of the Duisk Water. Has a diversity of mammal, bird and plant species, some being uncommon.
Corwar Estate	pLWS	1.5 km east	Semi-natural woodland habitats and a pond, which provide for a good diversity of breeding birds. Botanical interest includes an area of carr.

Records returned during the 2024 data search by the RSPB, SWSEIC and D&GRSG are summarised in **Table 7.3**.

TABLE 7-3 BIRD RECORDS RETURNED BY THE RSPB, SWSEIC AND THE D&GRSG

SPECIES	NO. RECORDS	YEAR OF MOST RECENT RECORD (APPROXIMATE DISTANCE KM)	YEAR OF CLOSEST RECORD TO THE SITE (APPROXIMATE DISTANCE KM), IF DIFFERENT
RSPB Records			
Swift	1	2021 (1.08)	-
SWSEIC Records			
Pink-footed goose	1	2014 (4.35)	-
Cuckoo	4	2020 (1.31)	-
Woodpigeon	7	2023 (1.44)	2016 (0.84)
Curlew	1	2020 (4.76)	-
Lesser black-backed gull	2	2023 (1.45)	-

SPECIES	NO. RECORDS	YEAR OF MOST RECENT RECORD (APPROXIMATE DISTANCE KM)	YEAR OF CLOSEST RECORD TO THE SITE (APPROXIMATE DISTANCE KM), IF DIFFERENT
Red kite	1	2022 (1.36)	-
Barn owl	1	2020 (1.61)	-
Tawny owl	1	2016 (3.56)	-
Kestrel	1	2022 (1.90)	-
Skylark	4	2020 (4.66)	2016 (1.49)
House martin	6	2023 (1.42)	2016 (0.82)
Willow warbler	37	2015 (4.35)	2016 (1.32)
Sedge warbler	1	2016 (0.82)	-
Grasshopper warbler	1	2014 (4.35)	-
Whitethroat	1	2015 (4.35)	-
Wren	22	2022 (1.78)	2016 (0.82)
Song thrush	10	2015 (4.35)	-
Whinchat	1	2016 (1.49)	-
Wheatear	2	2022 (1.93)	-
House sparrow	1	2023 (1.41)	-
Dunnock	5	2015 (4.35)	-
Grey wagtail	1	2023 (2.51)	-
Meadow pipit	15	2016 (0.82)	-
Tree pipit	1	2014 (4.35)	-
Greenfinch	2	2022 (1.46)	-

SPECIES	NO. RECORDS	YEAR OF MOST RECENT RECORD (APPROXIMATE DISTANCE KM)	YEAR OF CLOSEST RECORD TO THE SITE (APPROXIMATE DISTANCE KM), IF DIFFERENT
Redpoll	13	2015 (4.35)	-
Crossbill	1	2015 (4.35)	-
Siskin	7	2016 (0.82)	-
Reed bunting	2	2016 (0.82)	-
D&GRSG Records			
Goshawk (roost site)	1	2014 (<2.00)	-
Barn owl (nest site)	2	2023 (<5.00)	2022 (<2.00)

7.2.2.7 Ornithology surveys were completed for the previously proposed Altercannoch Wind Farm[25] Application between May 2012 and October 2013. Surveys undertaken included; upland breeding bird surveys (2012), Vantage Point (VP) surveys (November 2012-March 2013), winter walkover (November 2012-March 2013), migration walkover (May 2013 and September-October 2013), hen harrier roost surveys (December 2012-March 2013) and breeding surveys for barn owl, goshawk raptors and black grouse (2013).

7.2.2.8 For details of methods and results of surveys for the Altercannoch Wind Farm Application, see the Environmental Statement[25,26]. A summary of the target species recorded during these surveys is presented in **Table 7.4**.

TABLE 7-4 SUMMARY OF RECORDS COLLECTED AT ALTERCANNOCH WIND FARM

GEESE AND SWANS	WADERS	GULLS	RAPTORS AND OWLS
• **Greylag goose;** • **Pink-footed goose; and** • **Whooper swan.**	• Oystercatcher; • Lapwing; • Golden plover; • Curlew; and • Snipe.	• Herring gull; and • Lesser black-backed gull.	• Osprey; • Goshawk; • Hen harrier; • Barn owl; • Merlin; and • Peregrine.

[25] Brookfield Renewable UK Ltd (2015). Altercannoch Wind Farm Environmental Statement, Volume 2 – Main Report (Ref. PPA-370-2066). Available from - https://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=118469 [Accessed: 31/03/2025]
[26] Brookfield Renewable UK Ltd (2015). Altercannoch Wind Farm Environmental Statement, Volume 4 – Appendices (Ref. PPA-370-2066). Available from - https://www.dpea.scotland.gov.uk/CaseDetails.aspx?id=118469 [Accessed: 31/03/2025]

7.2.3 COMPLETED FIELD SURVEYS

7.2.3.1 Ornithological surveys were undertaken within a relevant study area in order to inform the EIA for the Proposed Development were carried out between April 2021 and July 2024. These comprised the following surveys:

- VP surveys (March 2023 to August 2024);
- Breeding bird surveys (April to July 2021 and 2022);
- Black grouse surveys (April and May 2021 and 2022);
- Hen harrier roost surveys (October 2021 to February 2022); and
- Breeding raptor surveys (March to July 2023).

7.2.3.2 The Study Area comprises the Site and surrounding survey-specific buffers up to 2 km (as per NatureScot guidance[31]), where access is available, and desk study search area buffers up to 25 km. The survey-specific buffers are shown on **Figure 7.1**, VPs and viewsheds are shown on **Figure 7.2**, and desk study search area buffers are shown alongside statutory designated sites on **Figure 7.3**.

VANTAGE POINT SURVEYS

METHODS

7.2.3.3 VP surveys were completed at the Site between March 2023 and August 2024 (inclusive) following the standard methods outlined in NatureScot guidance[27]. VP surveys focused on recording flight paths and flight heights of the following target species:

- All raptor and owl species listed on Annex I of the EC Birds Directive[19] and/or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[20];
- All wildfowl species (excluding Canada goose and mallard);
- All wader species;
- Herring gull and lesser black-backed gull; and
- Black grouse.

7.2.3.4 During surveys detailed flight lines were drawn for target species, with the flight height noted for every 15 second interval at the following height bands:

- 1 = 0-20 m;
- 2 = 20-40 m;

[27] SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Scottish Natural Heritage, Battleby.

- 3 = 40-200 m;
- 4 = 200-250 m; and
- 5 = >250 m.

7.2.3.5 Flight activity of secondary species (species of lesser conservation concern) was also recorded. They included the following:

- All other raptor and owl species (including buzzard, sparrowhawk, kestrel, long-eared owl and tawny owl);
- All other waterfowl species (including grey heron and cormorant);
- Raven;
- Red grouse;
- Passerines listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[20]; and
- Any large aggregations of UK BoCC Red-listed[21] passerines.

7.2.3.6 VP surveys were carried out at two VP locations (VP1: NX 24508 80783 and VP2: NX 23904 79600) with viewsheds covering the proposed turbine locations and a surrounding 500 m buffer. VP locations were selected based on the results of viewshed analysis using GIS software and were ground-truthed prior to the commencement of surveys. The VP locations and associated viewsheds are shown on **Figure 7.3**.

7.2.3.7 In line with NatureScot guidance[31], 36 hours of VP survey was completed at each VP during each breeding season (March to August 2023 and March to August 2024) and non-breeding season (September 2023 to February 2024). To capture an accurate representation of bird activity throughout the day, VP surveys were spread between dawn and dusk ensuring all times of the day were surveyed. Six hours of VP survey were typically carried out during a single day, with two three-hour watches separated by a break of at least 30 minutes to maintain visual acuity. A summary of VP survey effort is provided in **Table 7.5**.

7.2.3.8 Occasional periods of moderate visibility, snow, strong winds and heavy rain were reported during the VP surveys, although it is considered that surveys completed during a range of weather conditions provides a more accurate representation of bird behaviour at the Site. Weather conditions are available on request.

TABLE 7-5 VANTAGE POINT SURVEY EFFORT

YEAR	MONTH	HOURS (VP1)	HOURS (VP2)
2023	March	6	6
	April	6	6
	May	6	6

YEAR	MONTH	HOURS (VP1)	HOURS (VP2)
	June	6	6
	July	6	6
	August	6	6
	Total	36	36
2023-2024	September	6	6
	October	6	6
	November	6	6
	December	6	6
	January	6	6
	February	6	6
	Total	36	36
2024	March	6	6
	April	6	6
	May	6	6
	June	6	6
	July	6	6
	August	6	6
	Total	36	36

RESULTS

7.2.3.9 A summary of all baseline flights of target species recorded during the VP surveys completed between March 2023 and August 2024 (inclusive) are presented in **Table 7.6**. Those ornithological features recorded at PCH are highlighted in bold text.

TABLE 7-6 TARGET SPECIES FLIGHTS RECORDED DURING MARCH 2023 TO AUGUST 2024 (INCLUSIVE) VP SURVEYS

SPECIES	SEASON	YEAR	TOTAL NO. OF FLIGHTS (INDIVIDUAL FLIGHTS)	TOTAL NO. OF FLIGHTS (INDIVIDUAL FLIGHTS) AT PCH
Greylag goose	Breeding	2023	1(2)	1(2)
	Breeding	2024	1(2)	1(2)
	Total		2(4)	2(4)
Golden plover	Breeding	2023	3(34)	2(14)
	Non-breeding	2023-2024	2(32)	-
	Breeding	2024	3(210)	3(210)
	Total		8(276)	5(224)
Curlew	Breeding	2023	2(3)	1(1)
	Non-breeding	2023-2024	1(1)	1(1)
	Breeding	2024	2(5)	2(5)
	Total		5(9)	4(7)
Herring gull	Breeding	2023	25(112)	16(81)
	Non-breeding	2023-2024	11(70)	7(62)
	Breeding	2024	12(40)	9(31)
	Total		48(222)	32(174)
Lesser black-backed gull	Breeding	2023	35(185)	23(122)
	Non-breeding	2023-2024	1(1)	1(1)
	Breeding	2024	14(48)	10(26)
	Total		50(234)	34(149)
Hen harrier	Non-breeding	2023-2024	2(2)	-

SPECIES	SEASON	YEAR	TOTAL NO. OF FLIGHTS (INDIVIDUAL FLIGHTS)	TOTAL NO. OF FLIGHTS (INDIVIDUAL FLIGHTS) AT PCH
	Total		2(2)	-
Red kite	Non-breeding	2023-2024	1(1)	1(1)
	Breeding	2024	1(1)	1(1)
	Total		2(2)	2(2)
Peregrine	Breeding	2023	1(1)	1(1)
	Total		1(1)	1(1)

7.2.3.10 A number of incidental records[28] relating to greylag goose, whooper swan, teal and goldeneye of birds loafing on Loch Alty, within the Site were noted. Similarly, incidental records of great black-backed gull, herring gull and lesser black-backed gull largely associated with loafing on Loch Alty or roosting and foraging within surrounding fields within the Site were also noted.

7.2.3.11 Secondary species recorded during surveys included 126 flights of buzzard (166 individuals) and 170 flights of raven (294 individuals). Other species recorded included mallard, little grebe, cormorant, grey heron, sparrowhawk, kestrel, mistle thrush, fieldfare and crossbill.

COLLISION RISK MODELLING

7.2.3.12 Collision Risk Modelling (CRM) uses flight activity data collected during VP surveys to predict the number of individuals per species that have the potential to collide with turbine rotors. The modelling methods proposed for the Proposed Development are based on the Band (2024)[29] collision risk model recommended by NatureScot[30].

7.2.3.13 The current layout for the Proposed Development comprises five turbines. The candidate turbine model selected for assessment currently has a hub height of 149 m and a blade length of 81 m (rotor diameter of 162 m). Potential collision height (PCH) (the height at which the rotor blades sweep) is calculated to be 68-230 m based on the lowest and highest rotor swept heights of the selected turbine model. As such, all flights recorded at height

[28] Records in this category include birds not in flight, birds heard only, birds seen simultaneously where only one could be tracked, birds recorded before or after surveys, and birds beyond the VP viewshed.
[29] Band, W. (2024). *Using a collision risk model to assess bird collision risks for onshore wind farms.* NatureScot Research Report 909.
[30] NatureScot (2024). *Guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms.* Available from - https://www.nature.scot/doc/guidance-using-updated-collision-risk-model-assess-bird-collision-risk-onshore-wind-farms [Accessed: 18/03/2025]

bands 3 and 4 are considered to be at PCH. Flights recorded at height bands 1, 2 and 5 are below or above PCH.

7.2.3.14 For the purposes of identifying species at potential collision risk within this Scoping Report, all species for which three or more flights and / or 10 or more individuals were recorded at PCH have been highlighted as requiring CRM. Following confirmation of the finalised dimensions of the proposed turbines, only those species for which three or more flights and / or 10 or more individuals were recorded at PCH within the collision risk zone (CRZ) (blade length plus 200 m buffer) will undergo CRM. As such, the preliminary selection of species which qualify for CRM in this Scoping Report can be considered precautionary. CRM has not been undertaken at this stage but is described here in order to confirm that this shall be an important part of the assessment.

BREEDING BIRD SURVEYS

METHODS

7.2.3.15 As recommended in NatureScot guidance[31], breeding bird surveys (BBS) were completed following an adapted version of the Brown and Shepherd (1993)[32] methodology detailed in Calladine (2009)[33]. Four survey visits were undertaken in both 2021 and 2022, between April and July each year. During each of the survey visits, all open ground within the Site and surrounding 100 m buffer[34] was surveyed to within 100 m where possible. Where access was not possible, the buffer area visible from the Site was scanned from the edges using binoculars.

7.2.3.16 The focus of the survey was to record waders, however, all species of conservation concern[35] were considered as target species. The behaviour of all birds observed was recorded and mapped using British Trust for Ornithology (BTO) recording codes[36], with the exception of red grouse and meadow pipit. For red grouse and meadow pipit, the number of birds recorded in each Ordnance Survey (OS) grid square were tallied. On completion of all four survey visits during each year, records were collated to estimate the location of breeding territories using the cluster analysis method[37].

RESULTS

7.2.3.17 A total of 67 species were recorded during the BBS in 2021 and 2022, 44 of which were target species. Of these, breeding territories were identified for 26. A list of the species for

[31] SNH (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms. Updated 2025 Available from - https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms [Accessed: 14/05/2025]
[32] Brown, A.F. & Shepherd, K.B. (1993). A Method for Censusing Upland Breeding Waders. *Bird Study* **40**, 189-195.
[33] Calladine, J., Garner, G., Wernham, C. & Thiel, A. (2009). The influence of survey frequency on population estimates of moorland breeding birds. Bird Study, 56, 381-388.
[34] The breeding bird surveys were completed in 2021 and 2022 when the infrastructure layout of the Proposed Development comprised solar and BESS only.
[35] Species of conservation concern are those listed on Schedule 1 of the Wildlife and Countryside Act, Annex I of the Birds Directive, the UK BoCC Red or Amber Lists, and/or the Scottish Biodiversity List.
[36] British Trust for Ornithology. 2020. Breeding Bird Survey: Download forms & instructions. Available at: https://www.bto.org/our-science/projects/bbs/taking-part/download-forms-instructions
[37] Bibby, C. J. (2014). Bird Census Techniques: Academic Press, London

which breeding territories were identified, including a summary of the number of breeding territories is provided in **Table 7.7**.

TABLE 7-7 SUMMARY OF ESTIMATED BREEDING BIRD TERRITORIES IDENTIFIED AT THE SITE

SPECIES	2021 TOTAL NO. TERRITORIES	2022 TOTAL NO. TERRITORIES
Mallard	1	1
Teal	-	1
Cuckoo	8[38]	1
Moorhen	-	1
Curlew	2	2
Snipe	5	7
Tawny owl	1	-
Skylark	33	32
Willow warbler	9	14
Sedge warbler	1	2
Grasshopper warbler	3	3
Whitethroat	-	3
Wren	15	13
Starling	-	3
Song thrush	1	5
Whinchat	-	1
Wheatear	3	5
Dipper	-	1
House sparrow	-	2
Grey wagtail	1	1
Pied wagtail	4	5

[38] Peak number of males recorded singing during a single survey visit. In 2021, eight singing males were recorded during the May survey visit. The May survey visit was carried out over two consecutive days during which fours singing males were recorded on both days. Therefore, the peak count is considered likely to be an overestimate, as the same individuals may have been recorded on both days in separate locations.

SPECIES	2021 TOTAL NO. TERRITORIES	2022 TOTAL NO. TERRITORIES
Meadow pipit[39,40]	35	192
Linnet	-	3
Redpoll	1	1
Siskin	-	1
Reed bunting	1	15

7.2.3.18 There were three species of conservation concern[35], woodpigeon, house martin and crossbill, for which no breeding territories were identified but which likely bred within the wider area.

7.2.3.19 The following 15 species of conservation concern[35] were also recorded, however, were not considered to have bred within the Site and surrounding 100 m buffer: greylag goose, pink-footed goose, pintail, red grouse, oystercatcher, lapwing, golden plover, common gull, great black-backed gull, herring gull, lesser black-backed gull, sparrowhawk, red kite, kestrel and rook.

BLACK GROUSE SURVEYS

METHODS

7.2.3.20 As recommended in NatureScot guidance[31], black grouse surveys were completed in April and May in both 2021 and 2022 following the survey methodology detailed in Etheridge and Baines (1995)[41] and summarised in Gilbert *et al.* (1998)[42]. Two survey visits were undertaken to detect lekking males in suitable habitat within the Site and a surrounding 100 m buffer.

RESULTS

7.2.3.21 No black grouse were recorded during the black grouse surveys completed in 2021 or 2022.

[39] Rather than mapping meadow pipit registrations, the total number of meadow pipits observed during each survey visit was recorded. The total number of meadow pipits recorded across all four survey visits was divided by four to give the average number of meadow pipits recorded during a single survey visit. This was then divided by two to represent the number of potential territories occupied by breeding pairs.
[40] The marked difference in the estimated number of territories identified for meadow pipit and reed bunting between years is not considered to be significant for these species and is likely due to recording differences by different surveyors in 2021 and 2022.
[41] Etheridge, B. & Baines, D. (1995). Instructions for the Black Grouse Survey 1995/6: a Joint RSPB/GCT/JNCC/SNH Project. Unpublished.
[42] Gilbert, G., Gibbons, D.W. & Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

HEN HARRIER ROOST SURVEYS

METHODS

7.2.3.22 Hen harrier roost surveys were completed within the Site between October 2021 and February 2022 (inclusive) due to the presence of suitable roosting habitat and the proximity of the Glen App and Galloway Moors SPA, designated for breeding hen harrier. Two survey visits per month (10 survey visits in total) were completed in line with methods outlined in Gilbert *et al.* (1998)[42], with a combination of visits carried out at dusk and dawn to locate active roosts and count roosting individuals.

RESULTS

7.2.3.23 No hen harrier were recorded during the hen harrier roost surveys completed between October 2021 and February 2022.

BREEDING RAPTOR SURVEYS

METHODS

7.2.3.24 Breeding raptor surveys covering the Site and a surrounding 2 km buffer were completed on a monthly basis between March and July 2023 following methods outlined in Hardey *et al.* (2013)[43]. All raptor and owl species were recorded with specific focus on target species listed on Annex I[19] and/or Schedule 1[20], including goshawk, hen harrier, barn owl and short-eared owl.

RESULTS

7.2.3.25 No target species were recorded during the breeding raptor surveys completed in 2023.

7.2.3.26 Secondary species, buzzard and raven were frequently recorded however, with breeding behaviour observed and juveniles recorded.

FIELD SURVEYS TO BE COMPLETED

7.2.3.27 No additional surveys are proposed to be undertaken in addition to those already completed to date.

7.2.4 CONSULTATION

7.2.4.1 Consultation with relevance to ornithology was undertaken with NatureScot between September 2021 and February 2025. Consultation covered the Proposed Development infrastructure (including changes to infrastructure during this time) survey methodology, results and approach to EIA.

7.2.4.2 NatureScot agreed that the baseline surveys completed to date were sufficient to inform a planning application submission in 2025 in relation to the Proposed Development.

[43] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: a field guide to survey and monitoring (3rd Edition). The Stationery Office, Edinburgh.

NatureScot advised that the 2021 survey data would be acceptable for inclusion in a planning application assessment due to be submitted in 2025, assuming there were no significant changes to baseline conditions and habitats.

7.2.4.3 NatureScot advised that a shadow Habitat Regulations Assessment (HRA) should be included in the EIA Report to assist with the assessment of potential impacts on Ailsa Craig SPA. However, that an Appropriate Assessment (AA) would likely not be required in relation to Glen App and Galloway Moors SPA.

7.2.4.4 Additionally, NatureScot advised that a Habitat Management Plan (HMP) is developed for the Proposed Development.

7.2.4.5 Consultation with relevance to ecology is provided in **Section 8.3.2**.

7.3 POTENTIAL IMPACTS AND EFFECTS

7.3.1.1 Following the implementation of embedded mitigation, potential significant effects during construction, operation and decommissioning of the Proposed Development have been identified as:

- Habitat loss or change due to land-take. Construction of the infrastructure footprint will lead to direct habitat loss, or habitat change in relation to the solar PV array. The effects of habitat loss or change will depend upon the extent of land-take and the type of habitat affected. Habitat loss or change is expected to be temporary or permanent depending on the phase of the Proposed Development:
  - Temporary habitat loss during the construction and decommissioning phases of the Proposed Development;
  - Permanent habitat loss during the operational phase of the Proposed Development; and
  - Permanent habitat change which includes the indirect change of habitat used for nesting, roosting and foraging within the footprint of the solar PV array during the operational phase.
- Disturbance and / or displacement due to noise and visual disturbance which if unmitigated could lead to the displacement or disruption of breeding and foraging birds. The impact of disturbance and / or displacement depends on the timing of potentially disturbing activities, the extent of displacement (both spatially and temporally), and the availability of suitable habitats in the surrounding area for displaced birds to occupy. Disturbance and / or displacement is expected to be temporary or permanent depending on the phase of the Proposed Development:
  - Temporary disturbance and / or displacement during all phases of the Proposed Development (particularly during construction and decommissioning); and
  - Permanent displacement during the operational phase of the Proposed Development.
- Collision mortality as a result of birds colliding with turbine blades or towers during the operational phase of the Proposed Development. The likelihood of collision depends on a number of factors, such as the ecology of the species (time spent flying, manoeuvrability, etc), the surrounding habitat, the layout of the turbines and weather

conditions. Note that birds which avoid a wind farm due to disturbance will clearly not also be subject to collision risk; and

- Barrier effects during the operational phase of the Proposed Development when turbines may act as a barrier to movement, where regularly flying around a wind farm could result in greater energy expenditure.

7.3.1.2 It is expected that following the construction phase, any temporary loss of habitat will be restored and any species displaced temporarily will return.

7.3.1.3 The baseline information outlined in **Section 7.2** has been used to identify IOFs that could sustain positive or negative impacts as a result of the Proposed Development. Where likely non-significant effects are identified, Natural Power proposes that these are 'scoped out' of the EIA.

7.3.1.4 A description of the predicted impacts on ornithological receptors is provided in **Section 7.6**, along with a justification for scoping each ornithological feature in or out of the EIA Report. A summary is provided in **Table 7.8**.

7.3.1.5 The principles of proportionate EIA state that EIA should concentrate on significant effects rather than all effects. In order to ensure that the EIA Report is compliant with the EIA Directive, and to ensure that the Ecological Impact Assessment (EcIA) is focussed on potentially significant effects only, it is proposed that only impacts of temporary habitat loss and disturbance and / or displacement during construction, permanent habitat loss and / or change, permanent displacement and collision risk during operation on features that have been scoped in (known as IOFs) are carried forward for EcIA.

7.3.1.6 During both the construction and decommissioning phase activities, the unmitigated removal of infrastructure may cause disturbance to birds. The significance of effect will depend on the bird species present at the time of decommissioning and cannot be reliably predicted at this stage. However, as a worst-case scenario, decommissioning activities are considered to be of a similar type and intensity as construction activities. The EIA Report will consider that the potential effects during decommissioning will be similar in nature to the potential effects during construction, with the exception that if habitats are being restored then displaced birds will be able to return to abandoned territories.

7.4 PROPOSED ASSESSMENT METHODOLOGY

7.4.1 APPROACH TO IMPACT ASSESSMENT

7.4.1.1 The approach to the EcIA adopted within this assessment follows current CIEEM (Chartered Institute of Ecology and Environmental Management) guidelines[44]. It should be noted that these criteria are intended as a guide and are not definitive; professional judgement will also be applied in determining the value level for IOFs. IOFs have been scoped in or out of further assessment based on these guidelines and with consideration of effects that are potentially significant as set out under the EIA Directive.

[44] CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3.* Chartered Institute of Ecology and Environmental Management, Winchester.

7.4.1.2 The guidelines set out the EcIA process, through the following stages:

- Identification of IOFs through ornithological field survey and/or desk study research;
- Determination of the importance of each identified IOF;
- Assessment of impacts affecting those IOFs and or resources, using a defined importance threshold with reference to ecological processes and functions as deemed appropriate;
- Determining the extent, magnitude, duration, timing and frequency of the impacts;
- Assessing the potential for impact reversibility;
- Determining the level of confidence in the above impact predictions;
- Identification of likely significant effects in the absence of mitigation above embedded measures; and
- The identification of residual effects following implementation of any further mitigation.

7.4.2 APPROACH TO POTENTIAL CUMULATIVE EFFECTS

7.4.2.1 Ornithological features will be identified within the EIA Report as to whether they are IOFs that require full assessment and additional mitigation. Cumulative effects will only be assessed on features that are identified as IOFs, and effects will be assessed on a Zone of Influence (ZoI) around the Proposed Development. Whilst the distance of the ZoI is dependent on the IOF, it is unlikely to be more than 15 km.

7.4.2.2 The list of developments which are considered appropriate to be included in the cumulative effects assessment are: solar farm planning applications that are in planning or are consented or operational with a capacity of 1.5 megawatts (MW) or greater, wind turbines that are in planning or are consented or operational with a capacity of 500 kilowatts (kW) or greater and planning applications of more than 10 dwellings.

7.5 MITIGATION

7.5.1.1 To ensure compliance with legislation, and to follow good practice guidance and consultation recommendations, embedded mitigation measures will be implemented should the application be consented.

7.5.2 BIODIVERSITY ENHANCEMENT

7.5.2.1 Biodiversity enhancement measures to be included as part of the Proposed Development will be described within the EIA Report. An outline Biodiversity Enhancement Management Plan (BEMP) will also be included, and where appropriate, enhancements will be included for bird species.

7.6 PROPOSED SCOPE OF EIA CHAPTER

7.6.1.1 **Table 7.8** contains a list of all environmental factors relating to ornithology that will be scoped in to or scoped out of the assessment.

TABLE 7-8 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Glen App and Galloway Moors SPA	Out	The Proposed Development is located approximately 7.2 km east of Glen App and Galloway Moors SPA, which is designated for breeding hen harrier. There were no records of hen harrier collected during any of the breeding season surveys completed at the Site. There were no breeding records provided by the RSG within 5 km of the Site in the latest ten-year period. Although the Proposed Development lies within maximum foraging distance of hen harrier during the breeding season (10 km), it lies outside of the core foraging range (2 km). There were two flights of hen harrier recorded during the non-breeding season VP surveys, both of which were below PCH. Additionally, no hen harrier were recorded during the winter roost surveys at the Site.
Ailsa Craig SPA	In	The Proposed Development is located approximately 24.1 km south-east of the Ailsa Craig SPA, which supports the following qualifying breeding species: kittiwake, herring gull, lesser black-backed gull, guillemot and gannet. A breeding seabird assemblage is also a qualifying feature of the SPA. The Proposed Development therefore falls within the maximum foraging range of both herring gull and lesser black-backed gull. Herring gull and lesser black-backed gull were recorded during the VP surveys, either in flight or roosting/loafing on Loch Alty or the surrounding fields within the Site. Given that both species are vulnerable to collisions with wind turbines, there is a potential impact pathway on two qualifying features of the SPA.
Loch of Inch and Torrs Warren SPA and Ramsar site	Out	The Proposed Development is located approximately 22 km north-east of the Loch of Inch and Torrs Warren SPA and Ramsar Site. The SPA and Ramsar Site is designated for non-breeding Greenland white-fronted goose; and the SPA is also designated for its population of non-breeding hen harrier. There were no records of Greenland white-fronted goose collected during any of the baseline ornithology surveys completed at the Site, and no records of this species returned during the data search. Furthermore, the core foraging range of Greenland white-fronted goose is 5-8 km. As a result, it is unlikely that Greenland white-fronted goose associated with the SPA will forage within or in

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
		proximity to the Proposed Development. There is therefore no potential impact pathway on the non-breeding SPA / Ramsar Site populations of Greenland white-fronted goose. Although habitat at the Proposed Development is suitable for non-breeding hen harrier it is unlikely that individuals from the SPA would commute 22 km to suitable hunting habitat during the non-breeding season. Therefore, there is no potential impact pathway on the non-breeding SPA population of hen harrier.
Greylag goose	Out	Greylag goose does not qualify for CRM as less than three flights and/or 10 individuals were recorded at PCH. There were no records of breeding greylag goose during the BBS and no roost sites were identified during the non-breeding season.
Black grouse	Out	No black grouse were recorded during any of the baseline ornithology surveys of the Site. A single record of black grouse was returned during the data search, of a male in flight approximately 5.6 km to the south-east of the Site in 2022.
Golden plover	In	Golden plover qualifies for CRM as three flights by 210 birds in total were recorded at PCH. No breeding behaviour was observed during the BBS in 2021 and 2022. Golden plover were recorded during April only and were considered to be on passage.
Curlew	In	Curlew qualifies for CRM as four flights by seven birds in total were recorded at PCH. A maximum of two territories were identified within the Site (two in both 2021 and 2022).
Snipe	In	Snipe wasn't recorded during the VP surveys, therefore does not qualify for CRM. A maximum of nine territories were identified within the Site (five in 2021 and nine in 2022).
Herring gull	In	Herring gull qualifies for CRM as 32 flights by 174 birds were recorded at PCH. There were several incidental records of birds loafing on Loch Alty or roosting and/or foraging in the surrounding fields.

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Lesser black-backed gull	In	Lesser black-backed gull qualifies for CRM as 34 flights by 149 birds were recorded at PCH. There were several incidental records of birds loafing on Loch Alty or roosting and/or foraging in the surrounding fields.
Hen harrier	Out	Hen harrier was not recorded during the 2021 to 2022 hen harrier winter roost surveys or during the breeding raptor surveys completed in 2023. The Glen App and Galloway Moors SPA and SSSI (designated / notified for breeding hen harrier), lies approximately 7.2 km west of the Site. Although there were records of hen harrier during the baseline surveys, all observations were recorded during the non-breeding season.
Red kite	Out	Red kite does not qualify for CRM as less than three flights and 10 individuals were recorded at PCH. Red kite was not recorded during the breeding raptor surveys completed in 2023. A single record of red kite was returned during the desk study, of two birds foraging in July 2022 approximately 1.36 km from the Site.
Barn owl	Out	There were no records of barn owl during the VP surveys. There was also no sign of barn owl presence despite anecdotal evidence that the species bred within the survey area in the 2023 breeding season.
Peregrine	Out	Peregrine does not qualify for CRM as less than three flights and 10 individuals were recorded at PCH. Peregrine was not recorded during the breeding raptor surveys completed in 2023 and no records of peregrine were returned during the desk study.
Breeding bird species of conservation concern	In	A total of 42 species of conservation concern, other than curlew and snipe were recorded within the Study Area during the BBS. Of these, breeding territories were identified within the Study Area for 24 species of conservation concern. There is potential that these species could be impacted due to habitat loss as a result of the solar and BESS elements of the Proposed Development.

7.7 HRA SCREENING

7.7.1.1 Under the Conservation (Natural Habitats, & c.) Regulations 1994, as amended (the Habitats Regulations)[45] any development that may have a LSE on an SPA, either alone or in combination with other projects, requires an AA to be carried out by the relevant competent authority, to determine whether or not the development would have an adverse effect on the integrity of the SPA.

7.7.1.2 Before an AA is initiated, a screening process is undertaken to determine whether any of the predicted impacts of the Proposed Development will result in LSEs. This screening assessment provides information to the competent authority to allow them to reach a decision on whether or not the development will have LSEs on any SPA and therefore whether an AA is required.

7.8 CONSULTATION AND SCOPING QUESTIONS

7.8.1.1 The questions below are for consultees regarding the information provided in this Scoping chapter, for which it would be useful to receive feedback. Not all questions will be relevant to all consultees, therefore we request that consultees provide feedback only on those questions appropriate to them. The questions should not be considered an exhaustive list, and consequently consultees are welcome to provide feedback on any issue they consider relevant to the Proposed Development. If consultees elect not to respond, the Applicant will assume that consultees are satisfied with the approach adopted/proposed.

- Q7.1: Are consultees satisfied that the completed (and proposed) ornithological survey effort provides an acceptable, robust baseline to support the assessment?
- Q7.2: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the Proposed Development (either directly or indirectly)?
- Q7.3: Table 7.8 notes the receptors and potential impacts proposed to be included within the EIA. Do consultees agree with the list of receptors and impacts to be included within the EIA Report?

[45] UK Government (1994). The Conservation (Natural Habitats, &c.) Regulations 1994. Available from - https://www.legislation.gov.uk/uksi/1994/2716/contents [Accessed: 27/03/2025]

8 ECOLOGY AND NATURE CONSERVATION

8.1 INTRODUCTION

8.1.1.1 This section describes the ecological and nature conservation interests present within the Site and the surrounding area. This includes any locally, nationally, or internationally designated sites. A high-level description of potential impacts on ecological receptors arising from construction, operation and decommissioning phases of the Proposed Development is provided to determine the requirements for the assessment that will be included within the Environmental Impact Assessment (EIA) Report.

8.1.1.2 The Ecology Scoping chapter is supported by the following figures:

- **Figure 8.1:** Statutory Sites Designated for Ecological Features
- **Figure 8.2:** UKHab Survey Results 2024
- **Figure 8.3:** NVC Survey Results 2024
- **Figure 8.4:** Protected Species Survey Results 2024

8.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

8.2.1 SITE DESCRIPTION

8.2.1.1 The Proposed Development lies approximately 0.9 km south of Barrhill in South Ayrshire. The Site is predominantly comprised of grazed farmland, used by both cattle and sheep. The landscape consists largely of bog habitats on open ground, comprising a gentle undulating landscape with two small hill peaks (Eyes at 164 m Above Ordnance Datum (AOD) and an unnamed peak at 152 m AOD with a hut circle).

8.2.1.2 There is a waterbody in the centre of the site (Loch Alty) which is bordered by vegetation to the north. High Altercannoch Wood and one unnamed woodland lie in the north of the site. The Alty Burn and associated unnamed tributaries intersect the centre of the Proposed Development from confluence with the River Duisk to Loch Alty. Tributaries of the Cross Water, from confluence with Duisk River, stretch across the west of the Site. The Duisk River bordered the north and east of the Site and flows into the Pollgowan Burn which borders the south of the Site.

8.2.2 DESK STUDY

8.2.2.1 Data was requested from the South West Scotland Environmental Information Centre (SWSEIC), for all protected and / or notable species within 5 km of the Site, extending to a 10 km buffer for bats. Records from within the 10 years previous to the request were included, for the purpose of this study, this was taken as 1 January 2014. Data was received 19 February 2024.

8.2.2.2 A web-based search was undertaken to identify and provide information on statutory and non-statutory designated sites of nature conservation, with avian species listed as

qualifying features. The search was carried out using the NatureScot's Sitelink website[46] and the Department for Environment, Food and Rural Affairs (Defra) Multi-Agency Geographic Information for the Countryside (MAGIC) Map application tool[47].

8.2.2.3 The search focussed on identifying the following sites:

- Special Areas of Conservation (SACs) within 5 km (extended to 10 km for bats) of the Proposed Development;
- Ramsar sites (Ramsar Convention on Wetlands of International Importance) within 10 km of the Proposed Development;
- Sites of Special Scientific Interest (SSSIs) within 5 km of the Proposed Development;
- Local and National Nature Reserves (LNR and NNR), including Scottish Wildlife Trust reserves within 2 km of the Proposed Development; and
- Local Wildlife Sites (LWS) and proposed LWS (pLWS) within 2 km of the Proposed Development.

8.2.2.4 In addition, relevant background information was obtained for the proposed Altercannoch Wind Farm Application. The footprint of the Altercannoch Wind Farm comprises the entirety of the Site of the Proposed Development, in addition to further land to the north-west.

RESULTS

8.2.2.5 One statutory site designated for ecological (non-avian) features was noted within 5 km of the Proposed Development and is shown in **Table 8.1** and on **Figure 8.1**.

TABLE 8-1 STATUTORY DESIGNATED SITES WITHIN 5 KM

SITE NAME	DESIGNATION	DISTANCE FROM THE PROPOSED DEVELOPMENT (KM)	QUALIFYING ECOLOGICAL FEATURES
Feoch Meadows	SSSI	1.3	Fen meadows and lowland neutral grassland

8.2.2.6 Additionally, the Site is included in the Galloway and Southern Ayrshire United Nations Educational, Scientific and Cultural Organization (UNESCO) Biosphere, however the core area is over 10 km from the Proposed Development. The Galloway and Southern Ayrshire UNESCO Biosphere covers over 9,700 km^2 of southwest Scotland, defined in 2012. Based on catchments of the rivers flowing out of the Galloway Hills. The core area is around the wetlands at Silver Flowe SSSI, and Cairnsmore of Fleet NNR, over 10 km from the Proposed Development.

[46] NatureScot Sitelink [Online] Available at: https://sitelink.nature.scot/home [Accessed 12/03/2025]
[47] Defra MAGIC Map tool [Online] Available at: https://magic.defra.gov.uk [Accessed 12/03/2025]

8.2.2.7 A summary of the national and local non-statutory protected sites designated for ecological interests, occurring up to 2 km from the site are provided in **Table 8.2**.

TABLE 8-2 NATIONAL AND LOCAL NON-STATUTORY DESIGNATED SITES WITHIN 2 KM OF THE PROPOSED DEVELOPMENT

SITE NAME	DESIGNATION	DISTANCE FROM THE PROPOSED DEVELOPMENT (KM)	FEATURES OF INTEREST
Cross Water	pLWS	0 km – within the northwestern edge of the Site boundary	Steep glen with semi-natural woodland and grassland of botanical and ornithological interest
Feoch Burn	pLWS	0.1 km northeast	Herb-rich grassland meadows, extensive areas of unimproved wet and dry ground, with uncommon and rare butterflies and a range of orchids.
Loch Duisk	pLWS	0.5 km east	Area of marsh with breeding birds and aquatic life.
Kildonan	pLWS	0.9 km northwest	Woodland and a length of the Duisk Water.
Feoch Meadows	Scottish Wildlife Trust site	1.3 km northeast	Herb-rich grassland meadows, extensive areas of unimproved wet and dry ground, with uncommon and rare butterflies and a range of orchids.
Corwar Estate	pLWS	1.5 km east	Semi-natural woodland habitats and a pond, which provide for a good diversity of breeding birds. Botanical interest includes an area of carr.
Laggan Loch	pLWS	1.5 km north	Small loch with surrounding woodland and moorland.

8.2.2.8 Records of both red and grey squirrels were returned within 5 km, though records of red squirrels were noted closer to the Proposed Development Area (0.72 km in 2023). Records of pine marten were also returned. Common frogs and toads were the only records of amphibians returned. Records of adders, common lizards and slow-worms were also returned from within 2 km.

8.2.2.9 The SWSEIC returned 1,219 records of individual bats across 10 different species / species groups within 10 km of the Proposed Development Area. No bat roost records were returned from within 5 km of the Site.

8.2.2.10 To provide additional background information on the Site, historic survey data from 2012 to 2015 was acquired from the previous Altercannoch Wind Farm application, which included

the footprint of the Site[48] within its boundary. This included a Phase 1 Habitat Survey extended to include protected species and National Vegetation Classification (NVC) surveys, as well as further targeted species surveys such as bat habitat assessment, bat roost assessment and fish surveys.

8.2.3 COMPLETED FIELD SURVEYS

8.2.3.1 Natural Power have carried out ecological and ornithological baseline survey work at the Proposed Development since April 2021.

8.2.3.2 Ecological surveys to inform the EIA for the Proposed Development commenced in May 2023. These comprised the following surveys:

- Static acoustic bat detector surveys (May to October 2023);
- Extended UK Habitat classification (UKHab) surveys (May to June 2024);
- National Vegetation Classification (NVC) surveys (May to June 2024);
- Protected mammal surveys (including bat roost assessments) (May to July 2024); and
- Great crested newt environmental DNA (eDNA) (June 2024).

8.2.4 KEY SENSITIVITIES

VEGETATION

METHODS

8.2.4.1 A UKHab survey was undertaken to identify and map habitats within the Site. Habitats were classified in accordance with standardised methodology to determine the condition and distinctiveness of habitats through the recording of indicative species and / or features (Butcher, 2020)[49].

8.2.4.2 The minimum mapping unit (MMU) for this survey was 25 m^2 polygon (5 m x 5 m), which was considered an appropriate scale for mapping the survey area due to the scale and type of habitats and the use of target notes to record additional information when required. The habitat was digitally mapped using a suitable mobile application. For this survey, the UKHab-P system was adopted, and level 5 Primary Code hierarchy used where possible. A condition assessment of the habitats was also undertaken to inform an assessment of the best quality habitats and areas suitable for enhancement.

8.2.4.3 An NVC survey was undertaken in combination with the UKHab survey. This allowed for the identification of any sensitive or priority habitats present on site and produced a detailed habitat map that was used when assessing any impacts of development. This survey also informed the Groundwater Dependent Terrestrial Ecosystems (GWDTE) assessment, which

[48] Brookfield Renewable UK Ltd (2015). Altercannoch Wind Farm Environmental Statement, Volume 2 – Main Report.
[49] Butcher, B., Carey, P., Edmonds, R., Norton, L., Treweek, J. (2020). *The UK Habitat Classification Manual.* Version 1.1

is a requirement under the Water Framework Directive[50]. The NVC survey was undertaken in summer (between May to July 2024), during appropriate weather conditions, i.e. dry and more than 24 hours after periods of heavy rain.

8.2.4.4 NVC habitat codes were recorded alongside the UKHab codes with both mapped digitally in the field, NVC codes were identified to sub-community level. As far as practical the surveyor avoided recording mosaics that were a mix of potential GWDTE and non-GWDTE habitats, this aided more accurate mapping of potential GWDTE habitats.

RESULTS

8.2.4.5 UKHab survey results (see **Table 8.3** and **Figure 8.2**) shows that the majority of the Site consists of blanket bog in varying conditions including blanket bog (H7130) – an Annex 1 habitat, and areas of degraded blanket bog with numerous secondary codes including scattered of trees, rushes, exposed peat and grazing. Other prominent habitats recorded are *Holcus-juncus* and *Lolium-cynosurus* neutral grassland, upland and other upland acid grassland, upland flushes, fens and swamps and purple moor-grass and rush pastures. Another notable habitat, recorded in small quantity, is bog woodland (H91D0), another Annex 1 habitat.

8.2.4.6 The NVC results (see **Table 8.3** and **Figure 8.3**) show that the Site consists of mostly mire and flush communities such as M6, M17, M23, M25 and their sub communities as well as some M5 and M20. Other habitats present include M6 upland grassland with M6a and M6b subcommunities and MG10 neutral grassland. NVC communities which have the potential for GWDTE are noted in **Table 8.3**.

[50] Land Use Planning System SEPA Guidance Note 31 *Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*. (n.d.)

TABLE 8-3 NATIONAL AND LOCAL NON-STATUTORY DESIGNATED SITES WITHIN 2 KM OF THE PROPOSED DEVELOPMENT

UKHAB HABITAT (PRIMARY CODE)	AREA (HA)	UKHAB SECONDARY CODES	NVC CODES*	CONSERVATION STATUS
Acid grassland (g1)	1.5	14 Scattered rushes 15 Rushes dominant	U6- M6c+ M6d+	
Blanket bog (f1a)	66.8	101 Cattle grazed 57 Peat 32 Scattered trees 102 Sheep grazed	M17 M17a M25a- M20 M5+	SBL
Blanket bog (H7130); (f1a5)	114	14 Scattered rushes 100 Grazed 101 Cattle grazed 32 Scattered trees	M17a M17c M25- M29+ M20	Annex 1 SBL
Degraded blanket bog (f1a6)	11.3	101 Cattle grazed	M17a	
Holcus-juncus neutral grassland (g3c8)	48.5	15 Rushes dominant	MG10- M23+ M23b+ M6+	
Lolium-cynosurus neutral grassland (g3c6)	43.2	14 Scattered rushes	MG6 MG10-	
Modified grassland (g4)	9.4	14 Rushes dominant	M23b+	
Other neutral grassland (g3c)	6.2	14 Scattered rushes 128 Tall or tussocky sward	MG10-	

UKHAB HABITAT (PRIMARY CODE)	AREA (HA)	UKHAB SECONDARY CODES	NVC CODES*	CONSERVATION STATUS
Other upland acid grassland (g16b)	60.5	14 Scattered rushes 15 Rushes dominant 101 Cattle grazed	U6- U6a- U4b M6+ M25b-	
Purple moor grass and rush pastures (f2b)	33.6	15 Rushes dominant	MG10- M23+ M23a+ M23b+	SBL
Upland acid grassland (g1b)	13.3	14 Scattered rushes	U6-	
Upland flushes, fens and swamps (f2c)	34.6	15 Rushes dominant 57 Peat 14 Scattered rushes 410 Open water fen	M6b+ M6c+ M6d+ U4	SBL
Wet woodland (w1d)	4.3	29 Plantation	W7a+ W4c+	SBL
Bog woodland (H91D0); (w1d6)	1.2			Annex 1
Other broadleaved woodland (w1g)	1.2			

* + LIKELY HIGHLY GROUNDWATER DEPENDANT, - LIKELY MODERATELY GROUNDWATER DEPENDANT

FAUNA

METHODS

8.2.4.7 A survey was undertaken for signs of or suitability for protected species, including signs of badger, bat, pine marten, otter, water vole and red squirrel within the Site. Surveys also included the portion of Pollgowan Burn to the immediate south of the Site boundary. The surveys were undertaken during appropriate weather conditions, i.e. dry and more than 24 hours after periods of heavy rain, between May - July 2024.

8.2.4.8 Surveys for badgers, pine marten and red squirrel were undertaken of all suitable habitat (including all woodland) within the Site. The survey consisted of searches for field signs and sett/den/drey searches as described by Bang & Dahlstrøm (2001)[51] and Sargent *et al*. (2003)[52] amongst other sources. Signs were recorded following standard guidance on identifying field signs of those species (e.g. Neal and Cheeseman[53]).

8.2.4.9 All suitable habitat (i.e. all watercourses and the edges of water bodies) within the Site were surveyed for signs of otter and water voles. In accordance with guidance, the surveys were undertaken when water vole breeding territories were established and likely to be marked by latrines. Surveys for otter followed standard methods as described in Chanin[54] and surveys for water vole followed methods described by Strachan *et al*. (2011)[55].

8.2.4.10 Six static bat detectors were installed across the site within the full variety of different habitats present. They were deployed for a total of 14 days once per season (i.e. three deployments). In addition, a roost assessment of buildings and mature trees within the Site was undertaken, to identify suitable locations for roosting or hibernating bats. They were inspected following standard methodology[56] to determine their suitability and any evidence of occupation.

8.2.4.11 During bat roost surveys, assessment was made for the potential of trees and buildings to support breeding owl species.

8.2.4.12 One waterbody is located within the Site (Loch Alty; NGR NX 23560 79840) that has potential for use by great crested newt, which are fully protected under The Habitats Regulations. A habitat suitability index (HSI) assessment was undertaken to score the waterbody from poor to excellent suitability for great crested newts in different indicators, following methods

[51] Bang, P. & Dahlstrøm, P. (2001). *Animal Tracks and Signs*. Oxford University Press, Oxford
[52] Sargent, G., Morris, P. and Troughton, G. (2003). *How to Find and Identify Mammals*, 3rd Edition. The Mammal Society, Southampton.
[53] Neal, E., Cheeseman, C. (1996). *Badgers*. Poyser Natural History, London
[54] Chanin, P. (2003). *Monitoring the Otter Lutra lutra*. Conserving Natura 2000 Rivers: Monitoring Series No. 10. English Nature, Peterborough.
[55] Strachan, R., Moorhouse, T. & Gelling, M. (2011). *The Water Vole Conservation Handbook*. Third Edition, Wildlife Conservation Research Unit, University of Oxford, Abingdon.
[56] Bat Conservation Trust. (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines 4th edition – Guidance for professionals.*

described in Oldham et al. (2000)[57] and the Amphibians and Reptile Group (ARG) advice note[58].

8.2.4.13 Following the HSI, an environmental DNA (eDNA) sample survey for great crested newt was undertaken following standard methodology[59] on the waterbody. The eDNA test kits were from and analysed at an approved laboratory (ADAS)[60] to determine the presence or likely absence of great crested newts. The survey was undertaken in suitable weather conditions on 19 June 2024, and given that Loch Alty is greater than 1 ha in size, two eDNA test kits were used.

RESULTS

8.2.4.14 The protected mammal surveys confirmed the presence of otter, water vole and badger and found potential for bats, pine marten and reptiles within the Site.

8.2.4.15 A summary of the records within the Site are included below in **Table 8.4** and shown on **Figure 8.4**.

TABLE 8-4 SUMMARY OF PROTECTED SPECIES RECORDED WITHIN THE SITE BOUNDARY

SPECIES	PRESENCE/ LIKELY ABSENCE	NOTES
Otter	Present	One fresh spraint recorded on the edge of the Site. Dense gathering of rhododendron considered to be of good potential for shelter opportunities. No other signs recorded, and no opportunities for shelter other than daytime couches.
Water vole	Present	Localised population on a small un-named drain with five feeding stations and two latrines and one burrow. Two further possible burrows/holes on a different watercourse on the west side of the Site.
Badger	Present	Some potential evidence of foraging in the north of the Site, but no opportunities for sett building nearby. A potential disused set (occupied by foxes) was found within the Site. Tracks noted in farm roads, indicating their presence in the wider area.
Pine marten	Potential	Mature woodland at the north of the Site includes many mature broad-leaved trees with a variety of features and rot holes which

[57] Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt Triturus cristatus*. Herpetological Journal 10(4), 143-155

[58] ARG UK (2010). Advice Note 5: Great Crested Newt Habitat Suitability Index. Amphibian and Reptile Groups of the United Kingdom

[59] Biggs J et al, (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt.* Appendix 5. Technical advice note for field and laboratory sampling of great crested newt *Triturus cristatus* environmental DNA. Freshwater Habitats Trust, Oxford.

[60] Natural England (2021). *Technical Advice Note 2: Environmental DNA (eDNA) for Great Crested Newt Surveys*. ADAS.

SPECIES	PRESENCE/ LIKELY ABSENCE	NOTES
		might be used by pine marten. One potential holt noted in mature birch. No other definitive signs recorded.
Red squirrel	Likely absent	Very limited opportunities in the Site. No signs of squirrel noted. To the south, west and east of the Site there are extensive areas of spruce plantation which would likely support red squirrel populations, however habitat on site is limited, relatively low favourability and is unlikely to be used on any regular basis.
Bats	Potential	Suitable features and wooded areas with potential for bat roosts limited to the small blocks of woodland to the north of the Site and the woodland to the north of Loch Alty. Several trees with at least moderate roosting potential were noted on the northern and western margin of the wood at Loch Alty. Some trees with bat roost potential were noted in the woods and along the track at High Altercannoch woods.
Reptiles	Potential	Some good potential for common lizard and adder in the open bog areas. Many incidences of partially vegetated piles of stone recorded, providing excellent reptile hibernacula. Several dry stone walls also providing shelter for both reptiles and amphibians. A total of 14 potential hibernacula recorded.

8.2.4.16 Nine species / species groups of bats were recorded by the static detectors in 2023, totalling 22,234 passes across all species. The number of bat passes per species are shown in **Table 8.5**. Acoustic data analysis was undertaken using Kaleidoscope automatic identification software. Full analysis of the static detector results will be presented in the EIA Report.

8.2.4.17 No bat roost records were returned from within 5 km of the Site.

TABLE 8-5 THE TOTAL NUMBER OF BAT PASSES RECORDED FOR EACH SPECIES ACROSS ALL DETECTORS

SPECIES/ SPECIES GROUP	TOTAL NUMBER OF PASSES	PERCENTAGE OF TOTAL (%)
Myotis species*	398	1.8%
Leisler's	689	3.1%
Lesser noctule	142	0.6%
Nyctalus species	165	0.7%
Nathusius pipistrelle	66	0.3%
Common pipistrelle	6,779	30.5%

SPECIES/ SPECIES GROUP	TOTAL NUMBER OF PASSES	PERCENTAGE OF TOTAL (%)
Soprano pipistrelle	13,366	60.1%
Pipistrelle species	616	2.8%
Brown long-eared	13	0.1%

* MYOTIS SPECIES WERE NOT IDENTIFIED FURTHER THAN GENUS DUE TO THE OVERLAP BETWEEN SPECIES FREQUENCY CALLS.

8.2.4.18 **Table 8.6** presents the HSI results for Loch Alty. The waterbody was rated a HSI score of 0.64 which indicates that it has an 'Average' suitability for great crested newts.

TABLE 8-6 HSI CALCULATOR RESULTS FOR LOCH ALTY

SUITABILITY INDEX	SUITABILITY INDEX DESCRIPTION	LOCH ALTY SUITABILITY INDEX VALUE
1	Geographic location	0.5
2	Pond area	*
3	Pond permanence	0.9
4	Water quality	1
5	Shade	1
6	Waterfowl effect	0.67
7	Fish presence	0.67
8	Pond density	0.1
9	Terrestrial habitat	1
10	Macrophyte cover	0.6
HSI Score		0.64
Pond suitability		Average

** THIS POND AREA IS LARGER THAN 2000M^2 AND IS TO BE OMITTED FROM THE HSI CALCULATION FOLLOWING ACCEPTED METHODOLOGY*

8.2.4.19 Following standard guidance, surveyors used two sampling kits (one kit per hectare of loch area). The condition of the sample for one kit was 'good' and the other was determined as having 'low sediment'. Both samples returned a negative result for the presence of great crested newt DNA which means it is likely that great crested newts were absent in Loch Alty during the 2024 newt breeding season.

8.3 FIELD SURVEYS TO BE COMPLETED

8.3.1.1 A Peatland Condition Assessment will be required, based on NatureScot guidance[61]. This is due to the presence of continuous blanket bog (>25 ha) on Site, and the hydro-connectivity of the Site to the Feoch Meadows SSSI. The Peatland Condition Assessment will be carried out by selecting points associated with all the infrastructure on site (including a 250 m buffer) and completing the associated questions in the NatureScot peatland assessment framework.

8.3.2 CONSULTATION

8.3.2.1 Consultation with relevance to ecology was undertaken in March/April 2023. An email was drafted to NatureScot on 7 March 2023. The email described the changes to the infrastructure scheme of the Proposed Development (to include turbines, solar and BESS), outlining the surveys completed to date along with a summary of results, and the proposed scope of ecology and ornithology surveys. NatureScot Responded on 26 April 2023 with no specific inferences regarding the ecology methodology.

8.3.2.2 Consultation in relation to ornithology is included in **Section 7.2.4**.

8.4 POTENTIAL IMPACTS AND EFFECTS

8.4.1.1 Potential significant effects during construction, operation and decommissioning of the Proposed Development have been identified as:

- Habitat loss due to land-take: construction of turbine bases, access tracks, solar PV array, BESS and other structures will lead to direct habitat loss. The effects of habitat loss will depend upon the extent of land-take and the type of habitat affected Embedded mitigation measures will be put in place to prevent any associated damage to, or destruction of, protected species habitat (e.g. setts etc) as discussed below.

- Disturbance and / or displacement: The construction and decommissioning stages of wind farm developments can have potential impacts caused by associated noise and visual disturbance and if unmitigated could lead to the temporary displacement or disruption of protected species and aquatic species whilst the construction/decommissioning activities are taking place. The level of impact depends on the timing of potentially disturbing activities, the extent of displacement (both spatially and temporally), and the availability of suitable habitats in the surrounding area for displaced protected species to occupy. Disturbance impacts during the operational phase are likely to be less than during the construction / decommissioning phases, as disturbance due to human activities will be considerably reduced, plus some species may become habituated to the activity. Displacement around turbines following

[61] NatureScot (2023). Advising on peatland, carbon-rich soils and priority peatland habitats in development management

construction and lasting throughout the operational phase may result for some ecological features. The extent of this depends on the sensitivity of the species, the season (breeding or non-breeding) as well as site-specific factors (including factors such as restoration plans and their implementation).

- Collision with turbines: collision of a bat with the turbine rotors or tower is likely to be fatal. The likelihood of collision depends on a number of factors, such as the ecology of the species (time spent flying, manoeuvrability, etc), the surrounding habitat, the layout of the turbines and weather conditions. Note that bats which avoid a wind farm due to disturbance, will clearly not also be subject to collision risk.

- Pollution: pollution of water courses can occur during construction, operation and decommissioning of wind farms due to the release of sediments during construction works, increased site transport and the presence of borrow pits etc. Increased sedimentation has a negative effect on water quality, and can adversely affect aquatic habitat, which may have an impact on fish and macroinvertebrates.

8.4.1.2 It is expected that following the construction phase, any habitat lost temporarily will be restored and any species displaced temporarily will return where habitat is not lost permanently.

8.4.1.3 The baseline information outlined in **Section 8.2** has been used to identify IEFs that could sustain positive or negative impacts as a result of the Proposed Development. Where likely non-significant impacts are identified, Natural Power proposes that these are 'scoped out' of the EIA.

8.4.1.4 A description of the predicted impacts on ecological receptors is provided in **Section 8.7**, along with a justification for scoping each feature in or out of the EIA Report. A summary is provided in **Table 8.7**.

8.4.1.5 The principles of proportionate EIA state that EIA should concentrate on impacts resulting in potentially significant effects rather than all impacts and account for the adherence to best practice construction methodology as well as embedded mitigation measures. In order to ensure that the EIA Report is compliant with the EIA Directive, and to ensure that the EIA is focussed on potentially significant effects only, it is proposed that only impacts of temporary habitat loss and disturbance and / or displacement during construction, permanent habitat loss and / or change, permanent displacement and collision risk during operation on features that have been scoped in is carried forward for EIA.

8.5 PROPOSED ASSESSMENT METHODOLOGY

8.5.1 APPROACH TO IMPACT ASSESSMENT

8.5.1.1 The approach to the Ecological Impacts Assessment (EcIA) adopted within this assessment follows the CIEEM guidelines. It should be noted that these criteria are intended as a guide and are not definitive; professional judgement will also be applied in determining the value level for IEFs. IEFs have been scoped in or out of further assessment based on these guidelines and with consideration of effects that are potentially significant as set out under the EIA Directive.

8.5.1.2 The guidelines set out the EIA process, through the following stages:

- Identification of IEFs through field survey and / or research;
- Determination of the importance of each identified IEF;
- Assessment of impacts affecting those IEFs and or resources, using a defined importance threshold with reference to ecological processes and functions as deemed appropriate;
- Determining the extent, magnitude, duration, timing and frequency of the impacts;
- Assessing the potential for impact reversibility;
- Determining the level of confidence in the above impact predictions;
- Identification of likely significant effects in the absence of mitigation; and
- The identification of residual impacts following implementation of mitigation.

8.5.2 APPROACH TO POTENTIAL CUMULATIVE EFFECTS

8.5.2.1 Cumulative effects will only be assessed on features that are identified as IEFs, and effects will be assessed on a Zone of Influence (ZoI) around the Site. Whilst the distance of the ZoI is dependent on the IEF, it is unlikely to be more than 10 km.

8.5.2.2 The list of developments which are considered appropriate to be included in the cumulative effects assessment are: solar farm planning applications that are in planning or are consented or operational with a capacity of 1.5 megawatts (MW) or greater, wind turbines that are in planning (including those at the scoping stage) with a capacity of 500 kilowatts (kW) or greater and planning applications of more than 10 dwellings.

8.6 MITIGATION

8.6.1.1 This section outlines any embedded mitigation / good practice measures assumed to be in place prior to undertaking the assessment.

8.6.1.2 To ensure compliance with legislation, and to follow good practice guidance and consultation recommendations, a number of standard measures will be implemented should the application be consented. The standard measures which are relevant to avoiding and reducing impacts on IEFs include:

- Appropriate buffers surrounding potential protected species shelters and watercourses shall be implemented during construction and operation.
- A maximum of eight months prior to commencement of works, pre-construction ecology walkover surveys will be carried out, including surveys for potential bat roosts, badger setts and pine marten dens, and a check of all riparian habitat for signs of otter or water vole. This will enable any refinements to be made, if necessary, to mitigation, micrositing and/or the construction programme to take account of any updated distribution or presence of protected species, with a suitable mitigation plan adopted on a case by case basis.
- The design incorporates a high front edge to the solar panels (80 cm), which will allow for mowing equipment and/or sheep to access the grass beneath the leading edge of

the solar panels and prevent shading from taller flowers or grasses to reduce the impacts on the habitats around and below the array[62].

8.6.1.3 No development shall take place (including demolition, ground works, vegetation clearance) until a construction environmental management plan (CEMP), incorporating a Construction Method Statement (CMS), has been submitted to and approved in writing by the local planning authority. The CEMP shall include the following:

- Practical measures (both physical measures and sensitive working practices) to avoid or reduce impacts during construction (may be provided as a set of method statements), including a Pollution Prevention Plan outlining measures to control pollution and a Drainage Management Plan outlining measures for management of surface and groundwater;
- The location and timing of sensitive works to avoid harm to ecological features;
- The times during construction when specialist ecologists need to be present on site to oversee works;
- Species Protection Plans (SPPs) outlining specific measures to avoid and reduce impacts on protected species;
- Responsible persons and lines of communication; and
- The role and responsibilities on site of an Ecological Clerk of Works (ECoW) or similarly competent person.

8.6.1.4 No development shall commence until the role and responsibilities and operations to be overseen by an appropriately competent ECoW have been submitted to and approved in writing by the local planning authority. The appointed person shall undertake all activities, and works shall be carried out, in accordance with the approved details. The ECoW will monitor and advise on potential effects on ecological features during construction in order that impacts are avoided or minimised through best practice. This includes maintaining water quality and minimising the potential for disturbance or risk of injury/death for protected species which may be using the Site.

8.6.1.5 The approved CEMP shall be adhered to and implemented throughout the construction period strictly in accordance with the approved details, unless otherwise agreed in writing by the local planning authority.

8.6.2 BIODIVERSITY ENHANCEMENT

8.6.2.1 Biodiversity enhancement measures to be included as part of the Proposed Development will be described within the EIA Report. An outline Biodiversity Enhancement Management Plan (oBEMP) will also be included.

8.6.2.2 In the absence of guidance relevant to Scotland, a qualitative enhancement approach will be adopted instead of a quantitative approach such as Biodiversity Net Gain (BNG).

[62] Solar Energy UK (2022). Natural Capital Best Practice Guidance

8.7 PROPOSED SCOPE OF EIA CHAPTER

8.7.1.1 **Table 8.7** contains a list of all environmental factors relating to ecology and nature conservation that will be scoped in to or scoped out of the assessment.

TABLE 8-7 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Designated Sites	In	The Proposed Development lies 1.3 km from the Feoch Meadows SSSI, which is hydrologically connected via the River Duisk, which borders the Site to the north and east. Feoch Meadows SSSI is designated for fen meadows and lowland neutral grassland. Although the majority of the Site is comprised of blanket bog, other prominent habitats include *Holcus-juncus* and *Lolium-cynosurus* neutral grassland and upland flushes, fens and swamps. The Site is hydrologically connected to Cross Water pLWS, Feoch Burn pLWS, Loch Duisk pLWS, Kildonan pLWS and Laggan Loch pLWS. The proximity of the Site to watercourses draining into the SSSI and hydrologically connected pLWS suggests that further assessment is required. It is therefore proposed to scope in the Feoch Meadows SSSI and all locally designated pLWS to the EIA Report.
Habitats	In	The results of the UKHab and NVC survey have provided an overview of the habitats at the Site. Full results from this survey will be presented in the EIA Report. There is a requirement under the Water Framework Directive to carry out assessment of the likely effects of development on habitats which are GWDTEs. Guidance[13] states that survey of all habitats within 250 m of excavations greater than 1 m deep is undertaken, and within 100 m of all other excavations. The habitat survey work undertaken to date has identified presence of some habitat types that have a high or moderate potential to support GWDTEs, and some Annex I and SBL habitats and habitats indicative of areas of deep peat. The Proposed Development could cause pollution to sensitive habitats present onsite. Due to the presence of a continuous blanket bog (>25 ha) on site, NVC communities within the Site have the potential to hold national interest relating to priority peatland habitats. The standard mitigation outlined in Section 8.6 will reduce the effect of pollution to sensitive habitats; however, there is still the potential for pollution events to affect sensitive habitats within the Site, particularly GWDTE habitats. A Peatland Condition Assessment will be required, based on NatureScot guidance.

Otter	Out	Signs of otter, including spraint and suitable habitat to support otter resting places, have been recorded within proximity to Loch Alty. However, no holts have been recorded within the Site. Furthermore, a 200 m buffer from infrastructure has been incorporated around the habitat with suitability for sheltering otters. The methods outlined in the embedded mitigation would be sufficient to minimise any impacts on otters at the Site. Any otter activity would be identified during pre-construction and construction surveys carried out by the ECoW and mitigation would be implemented under the CEMPI. Therefore, the Proposed Development should not have a significant effect on otter.
Water vole	Out	Signs of water vole, including feeding stations and latrines, as well as possible burrows, have been recorded within the Site. A 30 m buffer from infrastructure will be in place around watercourses, to reduce disturbance or displacement of sheltering water voles. The methods outlined in the standard mitigation would be sufficient to minimise any impacts on water voles at the Proposed Development. Water vole activity would be picked up during pre-construction and construction surveys carried out by the ECoW and mitigation would be implemented under the CEMP. Therefore, the Proposed Development should not have a significant effect on water voles.
Badger	Out	Signs of badger tracks and potential snuffle holes suggest they are active within the Site, though no active setts were recorded. The methods outlined in the standard mitigation would be sufficient to minimise any impacts on badgers present at the Site. Badger activity would be picked up during pre-construction and construction surveys carried out by the ECoW and mitigation would be implemented under the CEMP. Therefore, the Proposed Development should not have a significant effect on badger.
Pine marten	Out	Previous surveys identified pine marten scat within the Site, however, none were found during the 2024 surveys. One potential pine marten den was noted within the Site. However, no other signs were recorded. A 30 m buffer from infrastructure will be in place around the potential pine marten den. The methods outlined in the standard mitigation would be sufficient to minimise any impacts on pine marten at the Site. Pine marten activity would be picked up during pre-construction and construction surveys carried out by the ECoW and mitigation would be implemented under the CEMP. Therefore, the Proposed Development should not have a significant effect on pine marten.
Red squirrel	Out	No evidence of red squirrel was noted within the Site. The methods outlined in the standard mitigation would be sufficient to minimise any impacts on red squirrel using the Site for passage. Red squirrel activity would be picked up during pre-construction and construction surveys carried out by the ECoW and mitigation would be implemented under the CEMP. Therefore, the Proposed Development should not have a significant effect on red squirrel.

Bats	In	Surveys indicate that bats are active within the Proposed Development. Presently, the previous baseline surveys for bats were undertaken in 2023. Updated surveys are proposed for 2025. Bat species may suffer disturbance or displacement effects or damage to their roost sites during wind farm development. They are also vulnerable to collisions during the wind farm operational period.
Reptiles	Out	Areas of potential hibernacula were recorded within the Site. No sightings of any reptiles were recorded, however, their presence is assumed due to their widespread nature and favourable habitat features. The CEMP will include embedded mitigation measures and presence/likely absence checks by an ECoW to mitigate the potential impacts on reptiles during the construction phase of the Proposed Development. Therefore, the Proposed Development is not expected to have significant not have a significant effect on reptiles.
Great crested newt	Out	The eDNA survey results indicate that great crested newts were likely absent in Loch Alty during the 2024 newt breeding season. The CEMP will include embedded mitigation measures and the presence of/checks by an ECoW to mitigate the potential impacts on any great crested newt and other amphibians during the construction phase of the Proposed Development. Therefore, the Proposed Development should not have a significant effect on amphibians.
Fish	In	There are three watercourses within, or within proximity to, the Site which hold connectivity to the site and may prove suitable habitat for fish. The Ayrshire Rivers Trust advise that salmon, brown trout (including sea-trout), European eels and lamprey are known to be monitored in the Duisk River catchment areas. The methods outlined in the standard mitigation, the inclusion of an SPP and CEMP, and good practice construction measures will avoid significant effects on fish species using the watercourses downstream of the Site. There have been no significant effects predicted for fish as a result of the Proposed Development.

8.8 CONSULTATION AND SCOPING QUESTIONS

8.8.1.1 The questions below are for consultees regarding the information provided in this scoping chapter, for which it would be useful to receive feedback. Not all questions will be relevant to all consultees, therefore we request that consultees provide feedback only on those questions appropriate to them. The questions should not be considered an exhaustive list, and consequently consultees are welcome to provide feedback on any issue they consider relevant to the Proposed Development. If consultees elect not to respond, the Applicant will assume that consultees are satisfied with the approach adopted/proposed.

- Q8.1: Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the Proposed Development (either directly or indirectly)?

- Q8.2: Are consultees satisfied that the ecological survey effort of all completed surveys and proposed surveys provides a robust assessment of effects?

- Q8.3: **Table 8.7** above notes the receptors and potential impacts proposed to be included within the EIA. Do consultees agree with the list of receptors and impacts to be included within the EIA Report?

9 GEOLOGY AND PEAT

9.1 INTRODUCTION

9.1.1.1 This section of the Scoping Report considers the likely significant effects of the Proposed Development on the Geological Environment. This section provides an overview of the existing geology, soils and peat, followed by an assessment of the likely significant effects of the construction, operation (including maintenance) and decommissioning phases of the Proposed Development on the Geological Environment.

9.1.1.2 The purpose of the assessment will be to:

- Define the peat extent, depth and properties across the Study Area; and
- Assess the potential effects on soil, peat and geology.

9.1.1.3 The Geology and Peat Scoping Chapter will be supported by the following figures:

- **Figure 9.1:** Superficial Soils;
- **Figure 9.2:** Bedrock Geology;
- **Figure 9.3:** National Soils Map of Scotland;
- **Figure 9.4:** Carbon and Peatland Map 2016; and
- **Figure 9.5:** Interpolated Peat Depths.

9.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

9.2.1.1 This section sets out the baseline conditions of the Proposed Development. The following data sources have been reviewed as part of the scoping process:

- The British Geological Survey (BGS) GeoIndex Superficial Soils Map[63];
- The British Geological Survey Bedrock Geology Map[64];
- The National Soils Map of Scotland[65];
- The Carbon and Peatland Map 2016 [66];

[63] British Geological Society (2023) Superficial Soils Map [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html (Accessed 24/03/2025)
[64] British Geological Society (2023) Bedrock Geology Map [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html (Accessed 24/03/2025)
[65] Scotland's Soils (2023) National Soils Map of Scotland [online] Available at: https://map.environment.gov.scot/Soil_maps/?layer=1 (Accessed 24/03/2025)
[66] Scotland's Soils (2023) 2016 Carbon and Peatland Map [online] Available at: https://soils.environment.gov.scot/maps/thematic-maps/carbon-andpeatland-2016-map/ (Accessed 24/03/2025)

- The Coal Authority Interactive Map Viewer67; and

9.2.1.2 A Zetica Unexploded Ordnance (UXO) Desk Study and Constraints Assessment68.

9.2.2 SUPERFICIAL SOILS

9.2.2.1 The BGS GeoIndex Superficial Soils Map indicates that the following superficial soils are present within the Study Area:

- Peat – "Peat is a partially decomposed mass of semi-carbonized vegetation which has grown under waterlogged, anaerobic conditions, usually in bogs or swamps.". Peat dominates the central, eastern, western and southern portions of the Site;
- Devensian Diamicton Till – Present in north of the Site and in isolated pockets across the whole Site.

9.2.3 BEDROCK GEOLOGY

9.2.3.1 The BGS GeoIndex Bedrock Geology Map indicates the following bedrock Geology is present within the Study Area:

- Kirkcolm Formation – Sedimentary – Wacke sandstone and siltstone turbidite sequence. This bedrock is located throughout the majority of the Site, and,
- Galdenoch Formation - Sedimentary – Massive wacke and siltstone turbidite sequence. There are small areas of this bedrock trending east to west across the Site and surrounded by the Kirkcolm Formation.

9.2.4 SOIL TYPES

9.2.4.1 The National Soils Map of Scotland indicates the Site to be underlain by the following soil types:

- Peat Podzols; and,
- Brown Soils.

9.2.4.2 When evaluating the soil profile, the soil is divided into different horizons. There are six major horizons that define the different layers of the soil, the O, A, E, B, C, and R horizons which are defined as follows[69]:

- O Horizon: This layer is made up of organic matter;

[67] The Coal Authority (2023) Interactive Map Viewer [online] Available at: https://mapapps2.bgs.ac.uk/coalauthority/home.html (Accessed 24/03/2025)
[68] Zetica (2023) UXO Risk Map [online] Available at: https://zeticauxo.com/guidance/risk-maps (Accessed 24/03/2025)
[69] SoilErosion.com, 2019. [online] Available at: https://soilerosion.com/the-ultimate-guide-to-soil-horizons/#:~:text=O%20is%20the%20soil%20horizon,is%20made%20up%20of%20subsoil. (Accessed 24/03/2025)

- A Horizon: This layer is the topsoil, made up of a combination of organic matter and mineral material;
- E Horizon: This layer consists mostly of mineral particles that cannot be leached away. This horizon is often found in older, undisturbed soils;
- B Horizon: This layer is the subsoil layer, formed of leached materials, minerals and salts;
- C Horizon: This layer is the parent material layer, this layer would have been formed from the earth's surface deposits; and
- R Horizon: This layer is the bedrock.

9.2.4.3 In addition to the layers above, letters can be added to these horizons to indicate any special features that the horizon may show[70]. These suffixes are indicated in **Table 9.1** below.

TABLE 9-1 SUFFIXES TO SOIL HORIZONS

SUFFIX	DEFINITION	SUFFIX	DEFINITION
a	Highly decomposed organic matter	o	Accumulation of oxides of iron and aluminium
b	Buried horizon	p	Ploughing or other anthropogenic disturbance
c	Concretions or hard nodules (iron, aluminium, manganese, or titanium)	q	Accumulation of silica
e	Organic matter of intermediate decomposition	r	Weathered or soft bedrock
f	Frozen soil	s	Accumulation of metal oxides and organic matter
g	Gray colour with strong mottling and poor drainage	t	Accumulation of clay
h	Accumulation of organic matter	v	Plinthite (hard, iron-enriched subsoil material)
j	Slightly decomposed organic matter	w	Development of colour or structure
k	Accumulation of carbonate	x	Fragipan character (high-density, brittle)
m	Cementation or induration	y	Accumulation of gypsum
n	Accumulation of sodium	z	Accumulation of salts

[70] Balasubramanian, A (2017). *Characteristics of Soil Profile*. University of Mysore. Available at: https://www.researchgate.net/publication/314497793_CHARACTERISTICS_OF_SOIL_PROFILE (Accessed 24/03/2025)

9.2.4.4 A brief description of the characteristics and formation of component soil groupings is detailed below, described by Scotland's Soils Map[71], although these do not include information on depths or engineering properties:

9.2.4.5 Peaty podzols have an organic surface layer (O or H horizon) up to 50cm thick overlying a grey, leached E Horizon. There may be a dark brown to black Bh horizon where translocated organic matter has accumulated and a strong brown sesquioxide-rich Bs or a combination of both (Bhs). Some peaty podzols may have some degree of waterlogging, generally in the lower horizons resulting in weak gleying with ochreous mottling and grey patches.

9.2.4.6 Brown Soils are defined as moderately acid soils with brown mineral topsoils and brown or yellowish-brown subsoils.

9.2.5 CARBON AND PEATLAND MAP 2016

9.2.5.1 The Carbon and Peatland Map 2016[72] was consulted to determine likely peatland classes present at the Site. The map is a predictive tool that provides an indication of the likely presence of peat at a coarse scale. The Carbon and Peatland map has been developed as a high-level planning tool to promote consistency and clarity in the preparation of spatial frameworks by planning authorities. It identifies areas of "*nationally important carbon-rich soils, deep peat and priority peatland habitat*" as Class 1 and Class 2 peatlands. Class 1 peatlands are also "*likely to be of high conservation value*" and Class 2 "*of potentially high conservation value and restoration potential*".

9.2.5.2 According to the predictive tool and map, the Site contains Mineral Soils, Class 1, Class 3, and Class 5 peatlands and mineral soils. The majority of the Site is underlain by Class 1 peat in the southeast and southwest of the Site, pockets of Class 3 peat in scattered across the whole site, Class 5 in the central and western side of the Site and mineral soils in the north of the Site.

9.2.5.3 The Carbon and Peatland Map 2016 characterises peatland as follows:

- Class 1 Peat: "Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of a high conservation value".
- Class 2 Peat: "Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas of potentially high conservation value and restoration potential".
- Class 3 Peat: "Dominant vegetation cover is not priority peatland habitat but is associated with wet and acid type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat".
- Class 4 Peat: "Area unlikely to be associated with peatland habitats or wet and acid type. Area unlikely to include carbon-rich soils".

[71] James Hutton Institute, National soil map of Scotland, available at: https://soils.environment.gov.scot/maps/ [Accessed May 2025]
[72] Scottish Natural Heritage, Carbon Peatland Map 2016, available at https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ [Accessed May 2025]

- Class 5 Peat: “Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil, Soils are carbon-rich and deep peat.”

9.2.5.4 As the Carbon and Peatland Map is a high-level tool, detailed habitat and peat depth surveys will be carried out across the Study Area to inform siting, design and mitigation and the detailed Site assessment on peatland and associated habitats.

9.2.6 COAL MINING

9.2.6.1 The Coal Authority Interactive Map Viewer[73] shows that the Study Area is not within a coal mining reporting areas and therefore is not considered to be at risk from coal mining activities.

9.2.7 UNEXPLODED ORDNANCE (UXO)

9.2.7.1 The Zetica UXO Desk Study and Constraints Assessment[74] identifies the Study Area to be at a low risk of UXO. There is therefore no requirement for UXO precautions when surveying this area.

9.3 POTENTIAL IMPACTS AND EFFECTS

9.3.1.1 At this stage, the main key sensitivities within the Study Area are considered to be:

- Soil types that are highly sensitive (e.g. peat / blanket bog);
- Highly sensitive soils that have peat deposits with depths greater than 1.0 m; and,
- Class 1 priority peatland, carbon rich and peaty soils.

9.3.1.2 The following effects on geological receptors have the potential to result from the Proposed Development and shall be considered in the undertaking of further geology and peat assessment:

- **Peat Stability (Construction and Operation):** Peat Instability is generally the result of a combination of causative factors. Several construction activities have the potential to increase the likelihood of peat slides in areas where peat is present at a sufficient depth and where gradients are sufficiently steep to result in a peat slide event. Peat stability is to be assessed with the Peat Slide Risk Assessment (PSRA). The PSRA will be supplemented by peat probing data and desktop assessments in order to evaluate the stability of the substrate in the Study Area.
- **Disturbance of deep peat (Construction):** If construction activities take place in areas with peat, then peat will be disturbed. The outline Peat Management Plan (oPMP) will evaluate areas that have deep peat greater than 1.0 m in depth and this will inform the design in order to minimise the disturbance of deep peat.

[73] Coal Authority Interactive Map (2024), available at: https://datamine-cauk.hub.arcgis.com/ [Accessed May 2025].
[74] Zetica UXO (2024), available at: https://zeticauxo.com/guidance/risk-maps/ [Accessed May 2025]

- **Loss and compaction of peat and soils (Construction):** The loss and compaction of peat and soils could occur should the development take place in areas with peat. Even with avoidance of peat, construction activities could lead to the compaction of soils and peat. This can reduce soil permeability and increase runoff and erosion. The loss and compaction of peat and soils will be assessed and mitigated within the oPMP.

- **Excavated Peat (Construction):** If peat is excavated it will need to be reused and there may be areas within the Study Area that will require restoration. The reuse and restoration of peatland will be addressed in the oPMP.

- **Contaminated Land (Construction and Operation):** There is not considered to be a risk from contaminated land within the Study Area; therefore, further assessment related to contaminated land has been scoped out of the EIA Report chapter on geology and peat.

- **Cumulative Effects (Construction):** Assessment of likely direct, indirect and cumulative effects of the Proposed Development on the geology and peat would take into account receptor sensitivity and the likely magnitude of any change/impact in order to determine the nature and extent of any resulting effects. A determination will then be made as to whether the identified effects are significant for the purpose of the EIA.

9.4 PROPOSED ASSESSMENT METHODOLOGY

9.4.1.1 The Study Area for the Geology and Peat assessment will be the area within the Site Boundary, inclusive of any new access tracks, as there are unlikely to be impacts on the geology and peat outside this area. The Site Boundary is displayed on **Figure 9.1**

9.4.1.2 The proposed methodology will be prepared in line with the guidance and standards listed in **Appendix B**.

9.4.1.3 The purpose of the Geology and Peat assessment will be to:

- Define the peat extent, depth, and properties across the Site;

- Identify any areas susceptible to peat slide, using peat thickness and digital terrain model (DTM) data to analyse slopes;

- Advise on micro-sighting of turbines, solar infrastructure, BESS, tracks and all other associated infrastructure in areas consisting of shallow or no peat;

- Assess potential effects on geology and peat; and,

- Develop an acceptable code for construction that will adopt best practise procedures, effective management, and control of on-site activities to reduce or offset any detrimental effects on the geology and soils including peat.

9.4.1.4 Assessment and reporting of the impacts on geology and peat will be included in the EIA Chapter on Geology and Peat.

9.4.2 PEAT PROBING

9.4.2.1 Peat probing will be done in accordance with Scottish Government guidance - Peat Landslide Hazard And Risk Assessments Best Practise Guide For Proposed Electricity Generation Developments[75] and NatureScot guidance on peat probing[76].

9.4.2.2 Preliminary Peat probing (Phase1) has been completed in 2022 and is discussed in more detail in **Section 9.4.2.4**.

9.4.2.3 Further peat investigation will consist of a more detailed exercise once the Proposed Development infrastructure has been defined (Phase 2) – this will focus on the layout of the Proposed Development following design freeze and be undertaken at 50 m centres along proposed tracks with 10 m – 25 m offsets either side to allow of micro-siting. Peat probing will also be undertaken over a 100 m x 100 m crosshair at 10 m intervals at each proposed turbine location and as a 10 m x 10 m grid across other proposed infrastructure such as substations and construction compounds. A 25 m x 25 m grid will be probed at proposed borrow pit locations (if applicable).

PHASE 1 PEAT PROBING

9.4.2.4 Phase 1 Peat Probing consisted of a 100 m x 100 m grid survey undertaken in 2022. A total of 458 probes were taken over the course of the survey. The peat depths across the Site are indicated in **Table 9.2.**

TABLE 9-2 PHASE 1 PEAT PROBING RESULTS

PEAT DEPTH RANGE	NO OF PEAT PROBES	PERCENTAGE OF TOTAL
> 0.5	266	58
0.5 – 1.0	52	11
1.0 – 2.0	52	11
2.0 +	88	19
Total	458	100

9.4.2.5 Data from the Phase 1 peat probing shows that the majority of the Site (69 %) is underlain by peat with depths less than 1.0 m. Only 140 of the 458 probes recorded peat depths

[75] Scottish Government (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition) [Online] Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposedelectricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf (Accessed 24/03/2025)

[76] NatureScot (2021) Peatland Action - Peat Depth and Peatland Condition Survey [Online] Available at: https://www.nature.scot/doc/peatland-action-peat-depth-and-peat-condition-survey-guidance-andrecording-form-guidance (Accessed 24/03/2025)

greater than 1.0 m, with the majority of deep peat being identified to the east of the Study Area and in isolated pockets in the central and southwestern portions of the Study Area.

9.4.3 PEAT SLIDE RISK ASSESSMENT (PSRA)

9.4.3.1 A Peat Slide Risk Assessment (PSRA) will be undertaken in accordance with the Scottish Government guidance 'Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition)[77], and full consultation with the relevant consultees will be undertaken as required.

9.4.3.2 The PSRA will contain detailed analysis and reporting of the design freeze and will include a hazard and slope stability assessment and preliminary peat management recommendations.

9.4.3.3 Hazards on the Site will be ranked based on factors that influence stability, namely peat depth and slope gradient. In addition, potential receptors' exposure to risk will be established and hazard rankings applied across the Site, with management and mitigation measures recommended for an acceptable construction.

9.4.4 OUTLINE PEAT MANAGEMENT PLAN (oPMP)

9.4.4.1 An outline Peat Management Plan (oPMP) will accompany the EIA Report which will:

- Define the materials that will be excavated as result of the Proposed Development, focussing specifically on the excavation of peat;
- Determine volumes of excavated arisings, the cut/fill balance of the Proposed Development and proposals for re-use or reinstatement using excavated materials; and,
- Detail management techniques for handling, storing and depositing peat for reinstatement.

9.4.5 ASSESSMENT APPROACH

SENSITIVITY OF RECEPTORS

9.4.5.1 The sensitivity of a receiving environment is defined as its ability to absorb an effect without noticeable change and can be classified as either very high, high, medium, low, or negligible. The receptor classification is determined by a series of factors, including: the nature and extent of peat, associated habitats, soil characteristics, geology, and land use. Peat soils of high moisture content, such as those found in blanket bog, are considered to be highly sensitive receptors.

[77] Scottish Government (2017) Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Second Edition) [Online] Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-andguidance/2017/04/peat-landslide-hazard-risk-assessments-best-practice-guide-proposedelectricity/documents/00517176-pdf/00517176-pdf/govscot%3Adocument/00517176.pdf (Accessed 24/03/2025)

9.4.5.2 **Table 9.3** details the different classifications of receptor sensitivity that are used to inform the assessment of the geology and peat present within the site boundary, assessing whether the effects would be significant under the EIA regulations.

TABLE 9-3 FRAMEWORK FOR DETERMINING SENSITIVITY OF RECEPTORS

SENSITIVITY OF RECEPTOR	DEFINITION
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance. Very deep peat, where peat depths are >3.0 m.
High	Soil type and associated land use are highly sensitive (e.g. peat/blanket bog); Class 1 or 2 priority peatland, carbon-rich and peaty soils cover >20% of the Project area. Deep peat (>1.0 m) is present in area of blanket bog. Nationally important carbon rich soils are present. Areas containing geological or geomorphological features considered to be of national importance (e.g. geological Sites of Special Scientific Interests (SSSIs)). Receptor contains areas of regionally important economic mineral deposits.
Medium	Soil type and associated land use are moderately sensitive (e.g. commercial forestry). Class 1 or 2 priority peatland, carbon-rich and peaty soils cover <20% of the Development Area. Class 3 and 5 peatland areas, carbon rich and peaty soils. Deep peat (>1.0 m) is present out with blanket bog. Receptor contains areas of locally important economic mineral deposits. Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS), considered worthy of protection for their historic or aesthetic importance.
Low	Geological features or geology not protected and not considered worthy of specific protection. Soil type and associated land use not sensitive to change in hydrological regime (e.g. intensive grazing). Receptor contains Class -2, -1, 0, and 4 non-peatland areas, with no carbon-rich and/or peaty soils.
Negligible	The receptor is resistant to change and is of little environmental value.

MAGNITUDE OF EFFECT

9.4.5.3 The magnitude of potential impacts on geology and peat will be identified through consideration of the Proposed Development, the degree of change to baseline conditions predicted as a result of the Proposed Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

9.4.5.4 The criteria for assessing the magnitude of an impact is presented in **Table 9.4.**

TABLE 9-4 FRAMEWORK FOR DETERMINING MAGNITUDE OF IMPACTS

SENSITIVITY OF RECEPTOR	DEFINITION
High	Major or total loss of or alteration to peatland resource such that post development characteristics or quality will be fundamentally or irreversibly changed. Long term/permanent change to human or environmental health. Catastrophic failure of site infrastructure due to ground instability. Long term/permanent change to baseline resource. Major or total loss of a geological site or mineral deposit, where the value of the site would be severely affected.
Medium	Loss of, or alteration to, the baseline resource such that post development characteristics or quality will be partially changed. Mid-term / permanent change to human or environmental health. Ground failure that requires remediation but does not cause catastrophic failure of site infrastructure. Mid-term / permanent change to baseline resource. Partial loss of a geological site or mineral deposit, with major effects to the settings, or where the value of the site would be affected.
Low	Small loss of soils or peatland, or where soils will be disturbed but the value not impacted. Short-term change to human or environmental health. Ground settlement/subsidence that does not adversely affect site infrastructure or require remedial action. Short-term change to baseline resource. Small effect on a geological site or mineral deposit, such that the value of the site would not be affected.
Negligible	Minimal or no change to soils or peatland deposits. Minimal or no change to human or environmental health. Minimal or no change to ground stability. A very slight change from the baseline conditions. The change is barely distinguishable, and approximates to the 'no-change' situation. Minimal or no change to a geological site or mineral deposit.

SIGNIFICANCE OF EFFECT

9.4.5.5 The sensitivity of the receptor and the magnitude of the predicted effects will be used as a guide, in addition to a professional judgement, to predict the significance of the likely effects on the geology and peat resource as a result of the Proposed Development. **Table 9.5** summarises guideline criteria for assessing the significance of effects.

TABLE 9-5 FRAMEWORK FOR ASSESSMENT OF THE SIGNIFICANCE OF EFFECTS

MAGNITUDE OF EFFECT	SENSITIVITY OF RESOURCE OR RECEPTOR				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

9.5 MITIGATION

9.5.1.1 The Proposed Development will first undertake mitigation by design through the implementation of an iterative design process to ensure the appropriate siting of infrastructure in order to protect the Geology and Peat receptors identified within this chapter.

9.5.1.2 Construction good practice will be followed throughout the construction process and more detailed mitigation measures relating to Geology and Peat will be identified and discussed within the EIA chapter.

9.5.1.3 A Construction Environmental Management Plan (CEMP) will be produced by the appointed contractor prior to construction, incorporating specific measures based on the recommendations of the EIA Report and best practice guidance to minimise impacts on the geological environment.

9.5.1.4 Potential significant effects on peat disturbance and excavation will likely require mitigation, which will be managed through the effective implementation of the oPMP during the pre-construction and construction phases.

9.5.1.5 Mitigation to avoid deep peat will be embedded into the design of the Proposed Development by siting infrastructure away from those areas. Mitigation to prevent peat slides will be provided in the PSRA, and mitigation to manage the storage and handling of peat will be provided in the oPMP.

9.5.1.6 Where borrow pits are proposed, a Borrow Pit Assessment (BPA) will be undertaken.

9.6 PROPOSED SCOPE OF EIA CHAPTER

9.6.1.1 **Table 9.6** contains a list of all environmental factors relating to geology and peat that will be scoped in to or scoped out of the assessment.

TABLE 9-6 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Peat Stability	In	Peat instability is generally the result of a combination of causative factors. Several construction activities have the potential to increase the likelihood of peat slides in areas where peat is present at a sufficient depth and where gradients are sufficiently steep to result in a peat slide event. Peat stability is to be assessed within the PSRA. The PSRA will be supplemented by peat probing data and desktop assessments in order to elevate the stability of the substrate and the risk of the stability related failures within the Study Area.
Disturbance of deep peat	In	If construction activities take place in areas with peat, the peat will be disturbed. The oPMP will evaluate areas that have deep peat (peat with depths greater than 1.0 m), and this will inform the design in order to minimise the disturbance of deep peat.
Loss and Compaction of peat and soils	In	Loss and compaction of peat and soils will occur should the development take place over areas with peat. Even with the avoidance of peat, construction activities could lead to the compaction or soils and peat. This can reduce soil permeability and increase surface run-off and erosion. This will be assessed and mitigation detailed in the oPMP.
Peat as a waste material	In	If peat is disturbed it will need to be reused. There may be areas within the Study Area that need to be utilised for peatland restoration depending on volumes of excavated peat. The reuse and restoration of peatland will be addressed in the oPMP.
Geology	In	Geology may be affected by the construction activities within the Study Area. The impacts will be evaluated within the EIA chapter.
Contaminated Land	Out	The Site is largely vacant and there is no history if landfills, mining or water / waste treatment that could lead to contamination.

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Cumulative Developments	Out	Cumulative Developments will not affect the geology and peat within the Study Area. Construction activities where soil is excavated or loaded are the main project activities that will have an impact on soils and peat within the Study Area; therefore, the occurrence of additional developments will not have an effect within the Study Area.
Coal Mining	Out	Risks relating to historic coal mining activities are scoped out of the assessment due to the lack of coal mining in the area.

9.7 CONSULTATION AND SCOPING QUESTIONS

9.7.1.1 Consultation will be conducted with the following consultees:

- NatureScot; and,
- SEPA.

9.7.1.2 Key questions for consultees are:

- Q9.1: Do you agree that the data sources identified are sufficient to inform the Geology and Peat baseline for the EIA (and therefore that no further baseline data collection is merited)?
- Q9.2: Have all Geology and Peat receptors and potential impacts that could result from the Proposed Development been identified?
- Q9.3: Do you agree with the proposed approach to assessment (scoped in or out) for each of the impacts in Table 9.6 Environmental Factors to be scoped in or out of the Assessment for Geology and Peat?
- Q9.4: Do you agree that the embedded mitigation measures described provide a suitable means for managing and mitigating the relative potential effects of the Proposed Development on Geology and Peat receptors?
- Q9.5: Do you agree with the proposed methodology and scope of the Geology and Peat assessment?
- Q9.6: Do you have any information that will be useful in the preparation of the Geology and Peat assessment, such as information on local quarrying, or infilled land?

10 WATER RESOURCES AND FLOOD RISK

10.1 INTRODUCTION

10.1.1.1 This chapter sets out the water resources and flood risk baseline within the Site and surrounding area and the sensitivity of the different receptors. A high-level description of potential effects on water resources and flood risk receptors arising from construction, operational, and decommissioning phases of the Proposed Development is provided to determine the requirements for the assessment that will be included within the EIA Report.

10.1.1.2 The methodology of the assessment that will be included within the Water Resources and Flood Risk chapter of the EIA Report is provided along with the mitigation that will be included within the Proposed Development, and potential effects which are proposed to be scoped out of the assessment along with justification as to why.

10.1.1.3 This Water Resources and Flood Risk Scoping chapter has been prepared by a hydrologist with experience in the assessment of energy park developments in the UK.

10.1.1.4 This chapter is supported by the following figures:

- **Figure 10.1:** Water Resources and Flood Risk Study Area;
- **Figure 10.2:** Surface Water Features;
- **Figure 10.3:** WFD Watercourse Status;
- **Figure 10.4:** SEPA Flood Maps;
- **Figure 10.5:** Hydrogeology; and
- **Figure 10.6:** Water Resources.

10.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

10.2.1 STUDY AREA

10.2.1.1 **Section 2.2** of this report describes the general context of the Site.

10.2.1.2 The Water Resources and Flood Risk Study Area for this Scoping Report is based on professional judgement and comprises the Site plus a 1km buffer around it. Watercourses or water resources outside the 1km buffer that are considered to be hydrologically connected to the Site and which have the potential to be impacted by the Proposed Development are also included. The Study Area is shown on **Figure 10.1.**

10.2.2 SURFACE WATER HYDROLOGY

10.2.2.1 The Study Area is located within the hydrological catchment area of the Duisk River, which originates along the eastern boundary of the Site and flows north adjacent to the Site boundary before turning west and flowing along the northern boundary of the Site.

10.2.2.2 A number of watercourses originate in and flow through the Site. The Cross Water flows north, adjacent to the western boundary of the Site. Tributaries of the Cross Water originate within the western extent of the Site and flow west into the Cross Water approximately 50 - 200 m downstream of the Site. The Cross Water discharges into the Duisk River approximately 2km north of the Site boundary at Barrhill.

10.2.2.3 Through the centre of the Site flows an unnamed burn which originates at the southern boundary of the Site, and the Alty Burn, which originates from Loch Alty. Both watercourses flow north, with the Alty Burn discharging into the unnamed burn approximately 300m north of the Site. The burn continues north, discharging into the Duisk River approximately 1km north of the Site.

10.2.2.4 The northeastern extent of the Site is drained by a number of small unnamed burns which flow north and east into the Duisk Water along the northern and eastern boundaries of the Site.

10.2.2.5 A small, unnamed burn originates in the southeast of the Site and flows south into the Pollgowan Burn. The Pollgowan Burn flows east along the southern boundary of the Site and then turns north, becoming the upper reaches of the Duisk River. Surface watercourses are shown on **Figure 10.2**.

10.2.2.6 The Cross Water, Pollgowan Burn, and Duisk Water are all classified under the Water Framework Directive (WFD) and have an overall status of Good condition[78] as shown on **Figure 10.3**.

10.2.2.7 SEPA have created a recommended riparian corridor GIS layer for use in land use planning. The dataset indicates the minimum space needed along rivers to give them space to adapt to changes in flood frequency and magnitude, and which has other environmental benefits[79]. The watercourse buffers within the Site boundary range from 10m to 15m, as shown in **Figure 10.2**. These corridors are applicable to the solar and BESS elements of the Proposed Development. In line with current SEPA guidance[79], the wind farm elements of the Proposed Development are subject to the 50m watercourse buffers which are also shown on **Figure 10.2**.

10.2.3 FLOOD RISK

10.2.3.1 A review of the SEPA Flood Maps[80] indicates there is a High likelihood (10% chance of flooding each year) of fluvial flooding from the Cross Water at the very western margin of the Site, the Pollgowan Burn along the southern boundary of the Site, and along the small unnamed burn in the north of the Site east of Glenalty Cottage. The Site is at risk of flooding from the Duisk River at the eastern margin of the Site under the low probability event (0.1% chance each year of flooding).

[78] SEPA (2015) Water Classification Hub [Online] Available at: https://www.sepa.org.uk/data-visualisation/water-classification-hub/ (Accessed 24/03/2025)
[79] SEPA. Recommended riparian corridor layer for use in land use planning. July 2024. [Online] Available at: recommended-riparian-corridor-note.docx (Accessed 24/03/2025).
[80] SEPA. Flood Maps. [Online] Available at: SEPA Flood Maps (Accessed 24/03/2025)

10.2.3.2 The surface water and small watercourses flood maps indicate a High likelihood of surface water flooding within the Site boundary and at Loch Alty. The scoping turbine layout places them out with the flood extents. However, the indicative BESS, solar energy and associated infrastructure are within the indicative High likelihood flood extents, with a greater proportion of the infrastructure in the north-east of the Site at risk of flooding under the Medium (0.5% chance of flooding each year) and Low (0.1% chance of flooding each year) probability events.

10.2.3.3 The river and surface water flood maps are shown in **Figure 10.4**.

10.2.3.4 The Site is inland and therefore not at risk of coastal flooding.

10.2.4 HYDROGEOLOGY

10.2.4.1 The BGS 1:625,000 scale mapping[81] identifies the Site as being underlain by the Kirkcolm Formation which is classified as a "*low productivity aquifer*" where "*flow is virtually all through fractures and other discontinuities*" as shown in **Figure 10.5**. A band of the Blackcraig Formation and Galdenoch Formation (Undifferentiated) passes south-west to north-east through the southern corner of the Site. It is also classified as a "*low productivity aquifer*".

10.2.4.2 The entire Study Area falls within the SEPA South Ayrshire Hills groundwater Drinking Water Protection Area (DWPA). The groundwater area (ID: 150660) is classified under the WFD as being in overall Good condition[82]. The Study Area is not within a Scottish Government groundwater DWPA[83].

10.2.5 WATER RESOURCES

PRIVATE WATER SUPPLIES

10.2.5.1 The Applicant has not yet completed a survey of Private Water Supplies within the Study Area.

DRINKING WATER PROTECTED AREAS

10.2.5.2 The Study Area is not located within a Scottish Government Surface Water DWPA[84].

10.2.5.3 It is requested via this EIA Scoping Report that Scottish Water confirm if there are any drinking water protected catchments, water abstraction sources, or Scottish Water assets within the Study Area.

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[81] British Geological Survey Geology Viewer. [Online] Available at BGS Geology Viewer - British Geological Survey (Accessed 24/03/2025).
[82] SEPA Water Classification Hub. [Online] Available at: Water Classification Hub (Accessed 24/03/2025)
[83] Scottish Government (March 2014). Drinking water protected areas – Scotland river basin district maps. Groundwater maps. Map 12 of 22. [Online] Available at: DWPA+-+Scotland+RBD+-+groundwater+-+map+12+of+22.pdf (Accessed 24/03/2024).
[84] Scottish Government (March 2014). Drinking water protected areas – Scotland river basin district maps. Surface water maps. Map 1 of 22. [Online] Available at: DWPA+-+Scotland+RBD+-+surface+water+-+map+1+of+22.pdf (Accessed 24/03/2024).

10.2.6 GROUNDWATER DEPENDENT TERRESTRIAL ECOSYSTEMS (GWDTEs)

10.2.6.1 NVC surveys have been completed for the Site. However, the classification of groundwater dependency based on the NVC codes e.g. High / Moderate, was not available for review by the hydrology team at the time of writing.

10.2.7 DESIGNATED SITES

10.2.7.1 A review of NatureScot GIS datasets available through NatureScot's Site Link Map[85] does not identify any designated sites within the Study Area.

10.3 POTENTIAL IMPACTS AND EFFECTS

10.3.1.1 The Proposed Development may impact hydrological receptors during the construction and operational phases through:

- A reduction in surface water quality as a result of chemical pollution from spills, vehicles, and stored materials; and an increase in erosion and therefore sedimentation due to removal of vegetation, soil compaction, and excavation activities;
- Changes to water quantity: either through reduced surface water quantity as a result of flow impediments and changes to surface water flow paths; or an increase in surface water runoff and flood risk due to increased impermeable surfaces including hardstandings and access tracks which will increase fluvial flows;
- Altered groundwater interflow from temporary works such as borrow pits, physical cut-offs or dewatering for turbine foundations and crane hardstandings affecting flow to GWDTEs;
- Reduced water quantity impacts to public or private water supplies from changes in groundwater, near-surface, or surface water flow; and reduced water quality impacts as a result of chemical and / or sedimentation effects;
- Acidification of watercourses as a result of construction works and related tree felling; and,
- Cumulative effects with other developments.

10.4 PROPOSED ASSESSMENT METHODOLOGY

10.4.1.1 The Study Area of the EIA will be based on professional judgement and will comprise the Site plus a 1km buffer around it. Generally, impacts to water resources occur at a catchment scale. The catchment areas of the watercourses on the Site are within the 1km Study Area. Watercourses or water resources that are out with the 1km buffer but are considered to be hydrologically connected to the Site (which will be determined through the EIA process) and therefore have the potential to be impacted by the Proposed Development, will also be included.

[85] NatureScot SiteLink Map. [Online] Available at: SiteLink - Home (Accessed 24/03/2025).

10.4.1.2 A desk-based study has been conducted to inform the baseline conditions given in this EIA Scoping Report. This will be expanded upon in the EIA using OS maps, hydrogeological maps, aerial photography, public datasets, datasets obtained from consultees (e.g. PWS datasets from South Ayrshire Council) and Site-specific data such as habitat mapping (to inform the GWDTE assessment).

10.4.1.3 A hydrological site survey will be conducted to ground truth the desktop baseline data. This will include identification and assessment of key surface water receptors, surveying the locations of any proposed watercourse crossings, verifying PWS and GWDTE data (if available at the time of the site visit), and a visual assessments of primary surface water catchments that could be affected by the Proposed Development. The results of the Site survey will be used to identify possible constraints and to inform the design of the Proposed Development.

10.4.1.4 A list of PWS's within a 1km buffer of the Site boundary (the Study Area) will be requested from South Ayrshire Council as part of the EIA process, with further details obtained through the issuing of surveys to residents.

10.4.1.5 An NVC Survey has been completed for the Site. The classification of groundwater dependency based on the NVC codes e.g. High / Moderate, and the location and extent of potential GWDTEs has not been completed at the time of writing this report. Through the full EIA process the results of the NVC survey will be screened to consider the condition of each GWDTE and if it is truly groundwater dependent or ombrotrophic (rainwater fed). If GWDTEs are groundwater fed and are within 250m of proposed infrastructure (reduced to 100m for elements requiring excavations less than 1m), further hydrological analysis of these habitats to assess their hydrological function, and if required any mitigation needed to protect GWDTEs, will be addressed in the EIA in line with SEPA guidance[86].

10.4.1.6 As part of the EIA, a Watercourse Crossing Schedule will be provided, which will summarise the location and type of proposed and existing watercourse crossings within the Site based on proposed access tracks, crossing locations, and findings from the Site-based survey.

10.4.1.7 The SEPA surface water flood maps indicate there is a High risk of flooding on Site. A standalone Flood Risk Assessment (FRA) may be required if, following the next stages of design, there is still infrastructure within the indicative flood extents. The FRA would evaluate all potential sources of flooding and identify mitigation measures where required.

10.4.1.8 Once the baseline environment has been described and the hydrological receptors of interest identified, the sensitivity of each receptor will be defined. The magnitude of change (effect) on receptors will be determined by considering the intensity (or scale), spatial coverage, and longevity of an impact. The magnitude assigned will use professional judgement to take into consideration the application of statutory standards and non-statutory standards or guidelines. The significance of effect is determined by assessing the potential magnitude of impact on the receptors against the sensitivity of the receptor.

[86] SEPA (2024). Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems [Online] Available at: guidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx (Accessed 15/05/2025)

10.4.1.9 The potential for cumulative effects to occur during the construction and operational phases of the Proposed Development in combination with other developments will be assessed based on the potential hydrological connectivity of the Proposed Development to other developments which are the subject of a valid consented planning application, are subject to planning conditions related to the water environment, or there is the potential for concurrent phases of construction. Developments meeting these conditions will be included in the cumulative assessment, and impacts to hydrological receptors will be considered.

10.5 MITIGATION

10.5.1.1 A Construction Environmental Management Plan (CEMP) will be produced prior to construction, incorporating specific measures based on the recommendations of the EIA Report and best practice guidance to minimise impacts on water resources and flood risk.

10.5.1.2 In line with SEPA guidance, a 50m buffer zone around watercourses on-Site for the wind farm infrastructure, and the Riparian Corridor widths for the solar elements of the Proposed Development, will be used to ensure no infrastructure, except watercourse crossings, are located within those areas during the design process[79].

10.5.1.3 Infrastructure, with the exception of watercourse crossings, will be located out with the indicative flood extents shown in the SEPA Flood Maps. Where this is not possible, a detailed FRA will be carried out to inform the design.

10.5.1.4 A Watercourse Crossing Schedule will be provided as part of the EIA, which will detail the nature of the crossing points, and the possible new crossing type needed. This will be finalised by the Applicant at the detailed design stage ahead of construction. All watercourse crossings will be designed in accordance with Construction Industry Research and Information Association (CIRIA) Culvert Design and Operation Guide (C689)[87], CIRIA Culvert, Screen and Outfall Manual (C786)[88] and incorporating the most recent climate change and freeboard allowances, to ensure sufficient capacities for flooding events in accordance with SEPA guidance[89,90]. Any new watercourse crossing would also be subject to registration under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended)[91] (CAR) and Water Environment (Miscellaneous) (Scotland) Regulations 2017[92].

10.5.1.5 The EIA process will identify what PWSs are within 1km of the Proposed Development. Where possible, the source of the supply will also be identified (e.g. spring, surface water, groundwater). If the supply is groundwater fed and within 250m of excavations greater than 1m in depth, or 100m for elements requiring excavations of less than 1m, or if the supply is surface water fed and in direct hydrological connectivity to the Proposed Development, a

[87] CIRIA (2010) Culvert Design and Operation Guide (C689). Environment Agency, UK.
[88] CIRIA (2019) Culvert, Screen and Outfall Manual (C786). Environment Agency, UK.
[89] SEPA. Engineering in the water environment: good practice guide. River crossings. Second edition, November 2010. [Online] Available at: River crossings - good practice guide (Accessed 24/03/2025).
[90] SEPA WAT-PS-06-02: Culverting of watercourses – Position statement and supporting guidance. [Online] Available at: WAT-PS-06-02 (Accessed 24/03/2025).
[91] Scottish Government (2011) The Water Environment (Controlled Activities) (Scotland) Regulations 2011. [Online] Available at: https://www.legislation.gov.uk/ssi/2011/209/contents/made (Accessed 24/03/2025)
[92] Scottish Government (2017) Water Environment (Miscellaneous) (Scotland) Regulations 2017. [Online] Available at: https://www.legislation.gov.uk/ssi/2017/389/contents/made (Accessed 24/03/2025)

detailed PWS impact assessment will be completed as part of the EIA which will outline the mitigation measures and guidance to be followed pre- and during construction.

10.5.1.6 Should GWDTEs be identified within 250m of the Proposed Development, a detailed GWDTE impact assessment will be completed as part of the EIA, which will outline the mitigation measures and guidance to be followed pre- and during construction.

10.5.1.7 The final detailed design of the Proposed Development will include the use of SuDS to control water quality and quantity from the Site, reduce flood risk, and maintain water quality. An outline surface water drainage strategy will be provided alongside the hydrology chapter of the EIA.

10.6 PROPOSED SCOPE OF EIA CHAPTER

10.6.1.1 **Table 10.1** contains a list of all environmental factors relating to water resources and flood risk that will be scoped in or scoped out of the assessment.

TABLE 10-1 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Surface water hydrology	In	Watercourses within the Study Area have the potential to be impacted by the Proposed Development as a result of changes to water quality and quantity and are hydrologically linked to WFD waterbodies.
Hydrogeology	In	The Site is underlain by a low productivity aquifer which may be impacted by the Proposed Development through excavations and construction of foundations.
Private Water Supplies	In	No information is currently known about PWSs in the area. South Ayrshire Council will be contacted to obtain a list of known PWSs in the Study Area and PWS surveys issued to residents. If any PWSs are hydrologically connected to the Proposed Development, a detailed PWS assessment will be carried out.
GWDTEs	In	The NVC survey to be conducted by the ecology team will identify the presence of GWDTEs. The results will be screened to identify if any of these habitats are within up to 250 m of the Proposed Development and the level to which they are groundwater dependent. If the GWDTEs are considered to be at risk of impacts from the Proposed Development a detailed GWDTE assessment will be carried out.

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN/OUT	RATIONALE
Flood Risk	In	The SEPA Flood Maps indicate the Site is at High risk of surface water flooding. The design of the Proposed Development will aim to ensure no infrastructure, with the exception of watercourse crossing points, will be within the indicative SEPA flood extents. Where this is not possible a detailed FRA will be carried out.
Watercourse Crossing Schedule	In	The Proposed Development will be designed to use existing crossings where possible and minimise construction of new crossings. The EIA will identify the location of existing and proposed new crossing points, and the type of crossing type that may be required. However, the final detailed design and types of registration required will be the responsibility of the appointed contractor at the detailed design stage. The guidance to be followed by the contractor will be set out in the EIA.

10.7 CONSULTATION AND SCOPING QUESTIONS

10.7.1.1 Consultation will take place with:

- SACo for information on PWSs and flood risk; and
- Scottish Water regarding public water assets and drinking water protected areas.

10.7.1.2 Key questions for consultees are:

- Q10.1: Are consultees content with the proposed methodology and scope of the assessment of water resources and flood risk?
- Q10.2: Can Scottish Water confirm if there are any drinking water protected areas and / or Scottish Water assets within the Study Area.
- Q10.3: Can SEPA and / or South Ayrshire Council provide any information on known flooding within the Study Area, and do you agree with the approach to flood risk?
- Q10.4: Does the Council, NatureScot, SEPA or other consultees have any information that would be useful in the preparation of the water resources and flood risk chapter assessment?

11 ACCESS, TRAFFIC AND TRANSPORT

11.1 INTRODUCTION

11.1.1.1 The Access, Traffic and Transport chapter of the EIA Report will evaluate the effect of the Proposed Development on traffic and transport resource within the Study Area. Vehicle movement to the Proposed Development will consist of abnormal load vehicles (ALVs), heavy goods vehicles (HGVs), light goods vehicles (LGVs) and cars.

11.1.1.2 The EIA will identify potential effects from increased road traffic arising from the construction, operation and decommissioning of the Proposed Development. The significance of these effects will be assessed against recognised guidelines outlined within this chapter. Where required, appropriate mitigation measures will be proposed to reduce these effects.

11.1.1.3 The Access, Traffic and Transport Scoping chapter is supported by the following figure:

- **Figure 11.1:** Proposed Study Area

11.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

11.2.1.1 The Study Area for Access, Traffic and Transport, hereafter referred to as the 'Study Area', has been defined by the public road network in the vicinity of the Site that is expected to experience increased traffic flows associated with the construction of the Proposed Development. The current geographic scope has been determined through a review of the other developments in the area, and an assessment of the potential origin locations of construction staff and supply locations for construction materials, including stone and concrete from local quarries.

11.2.1.2 Immediate access to the Proposed Development will likely be from an existing Forestry Land Scotland (FLS) access road via the B7027 or A714.

11.2.1.3 The Port of Entry (PoE) for turbine components is unknown at the time of finalising this report; however, it is likely to originate from the King George V Dock in Glasgow, the Port of Ayr in Ayr, or the Port of Cairnryan in Cairnryan. Regardless of the chosen PoE, the ALVs will approach the Site from the southeast via the A75, A714 or B7072 and the existing FLS access road.

11.2.1.4 At this stage, a number of access points into the Site are being considered, including the potential to approach from the A77 in southwest via a consented route of a neighbouring wind farm. The preferred access strategy the public road will be determined as the Proposed Development design progresses. The finalised Study Area will also be confirmed once the initial access assessment has been completed and may include additional roads from the local authorities adopted road network. The extent of the Study Area will be confirmed in consultation with SACo and Transport Scotland.

11.2.1.5 No core path network has been identified within the Site, and a review of Sustrans' National Cycle Network (NCN) map indicates that there are no existing cycle facilities in close proximity to the Site. Further details on baseline conditions will be set out in detail in the EIA.

11.2.1.6 The following sensitive receptors have been identified and will be considered within the EIA:

- Motorised users of the surrounding highway network, including vehicle drivers and public transport users;
- Non-motorised users of the surrounding highway network, core path networks and non-designated public routes, caravan parks, including pedestrians, cyclists, and vulnerable groups; and,
- Residents within the settlements along the roads outline above including Barrhill and Newton Stewart.

11.3 POTENTIAL IMPACTS AND EFFECTS

11.3.1.1 Details of the construction programme, including required items of plant, are unknown at this stage, however, the impacts of the construction traffic have the potential to result in significant effects at nearby receptors and will be assessed. See **Table 11.1** for all potential effects that will be scoped in to and scoped out of further assessment.

11.4 PROPOSED ASSESSMENT METHODOLOGY

11.4.1.1 Key data for the assessment will include traffic flow and Road Traffic Collision (RTC) data from the past five years, which will provide information on each collision, including severity as well as factors which contributed to the collision. With respect to traffic flow data, the baseline traffic data will be obtained through an independent Automatic Traffic Count (ATC) survey and augmented with data from publicly available data sources where possible. The timings and locations of the surveys will be agreed with SACo. The locations selected will provide a basis for the analysis and incorporate local routes within the corridor close to potential sensitive receptors and routes along key strategic links to provide a robust baseline for assessment.

11.4.1.2 The estimated construction traffic generation associated with the Proposed Development will be compared with baseline traffic flows data to determine the percentage increase in traffic. Road links on which potentially significant environmental effects are likely to occur will then be assessed based upon two criteria within the IEMA 2023 Guidelines[93]. These are:

- Road links where traffic flows will increase by more than 30% as a result of the Proposed Development (or where the number of heavy goods vehicles is predicted to increase by more than 30%) must be assessed; and,
- Road links of high sensitivity where traffic flows have increased by 10% or more.

11.4.1.3 Any change in traffic flow which is greater than the thresholds outlined above would be subject to further detailed assessment. Where a detailed assessment is required, sensitivity and magnitude criteria will be used in order to determine the significance of effects. These criteria will be clearly presented in the EIA Report.

[93] Institute of Environmental Management and Assessment (2023) Guidelines for the Environmental Assessment of Traffic and Movement. [Online] Available at: https://s3.eu-west amazonaws.com/iema.net/documents/IEMA-REPORT-Environmental-Assessment-of-Traffic-and-Movement-Rev07.pdf (Accessed 26/03/2025)

11.4.1.4 In accordance with guidance, the assessment will consider the potential for any significant cumulative effects that may occur in combination with other consented, and / or in planning, traffic-generating developments that exist within the Study Area. Consultation will be undertaken with relevant authorities to confirm which developments should be considered.

11.4.1.5 It is not proposed to submit a standalone Transport Assessment (TA), as it is assumed that all relevant matters will be covered in the EIA Report. An Abnormal Load Route Assessment (ALRA) will be undertaken to confirm that the proposed route can accommodate abnormal load vehicles and that the delivery of Abnormal Indivisible Load (AILs) can be made without adverse effects on the proposed route. The ARLA will also identify any necessary off-site improvements required to the route viable.

11.5 MITIGATION

11.5.1.1 The Access, Traffic and Transport EIA chapter will outline standard mitigation through an Outline Construction Traffic Management Plan (oCTMP). The ALRA will detail any potential mitigation to facilitate AIL deliveries. Additional mitigation may be included should the assessment reveal criteria that are significant following the application of standard mitigation measures. All new access arrangements will be designed in accordance with the SCOTS National Roads Development Guide[94].

11.6 PROPOSED SCOPE OF EIA CHAPTER

11.6.1.1 **Table 11.1** contains a list of all environmental factors relating to access, traffic and transport that will be scoped in to or scoped out of the assessment.

TABLE 11-1 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Severance of Communities	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
Road Vehicle Driver and Passenger Delay	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
Non-Motorised User Delay	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
Fear and Intimidation on and by Road Users	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic

[94] Scottish Collaboration of Transportation Specialists (SCOTS) (2025) *National Roads Development Guide*. [Online] Available at: https://www.scotsnet.org.uk/data/assets/pdf_file/0035/45998/National-Roads-Development-Guide.pdf (Accessed: 15 May 2025)

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Road User and Pedestrian Safety	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
Hazardous and Large Loads	In	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
Standalone Transport Assessment	Out	It is considered that all traffic and transport matters can be covered by the EIA Report chapter given that, the Study Area, current traffic conditions, construction trip generation, impacts, cumulative effects, and mitigation measures will be addressed in this chapter.
Operational Traffic	Out	Traffic associated with the operation of the Proposed Development is limited to maintenance and is expected to be insignificant in comparison to traffic generated during construction. General maintenance and Site monitoring visits will likely be undertaken by car and LGVs and can be expected to be in the region of three visits per day on average. The effect of operational traffic is expected to be minimal and negligible in terms of existing traffic flow levels on routes within the vicinity of the Proposed Development
Noise and Vibration	Out	Environmental impacts arising from HGV movements will include vibration, noise, and road safety risks, however these will be temporary during the construction phase and when the Site is operational would have a negligible impact. Furthermore, ground-borne vibration resulting from HGV and Abnormal Load Vehicle (ALV) movements is generally only likely to be significant where vehicles traverse discontinuities, such as rough surfaces (including potholes) or speed-humps. Effects from the temporary increase in traffic are therefore only likely to be experienced at receptors located next to such road defects, in which case the maintaining authority (i.e., SACo, or TS) would be responsible for enacting repairs. Any likely significant effects in relation to noise and vibration will be considered within Chapter 13: Noise of the EIA Report.

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Visual Effects	Out	The movements of Abnormal Indivisible Loads (AILs) could be considered visually intrusive. This effect would be short-term and would only occur during the movement of abnormal loads. The movements of HGVs are not considered visually intrusive as it is an everyday occurrence, and any effects will be short term, fully reversible and would only occur during construction hours. Any likely significant environmental effects relating to visual effects due to traffic generated during the construction phase of the Proposed Development are considered within the landscape and visual amenity assessment (see Chapter 6: Landscape and Visual Amenity)
Air Quality	Out	The IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic advice that significant impacts to local air quality may occur if changes to LGVs are more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) and more than 500 AADT elsewhere. For HGVs, the criteria are more than 25 AADT within or adjacent to an AQMA, and more than 100 AADT elsewhere. Based on the expected volume of construction traffic, none of the above criteria will be met or exceeded. In addition, the Proposed Development is not located within an AQMA and due to the temporary nature of the increase in vehicles using the proposed access route, any effects on local air quality will be short term and reversible

11.7 CONSULTATION AND SCOPING QUESTIONS

11.7.1.1 Consultation will be conducted with the following consultees:

- SACo; and,
- Transport Scotland.

11.7.1.2 Key questions for consultees are:

- Q11.1: Are consultees content with the proposed methodology and scope of the traffic and transport assessment?
- Q11.2: Are the council / statutory consultees aware of any specific access restrictions or limitations on the proposed abnormal loads route?
- Q11.3: Are consultees content to scope out operational traffic from further assessment?

- Q11.4: Are you aware of any relevant policies or guidance documents not specifically mentioned in **Appendix B** of the Report?

12 NOISE

12.1 INTRODUCTION

12.1.1.1 The Noise chapter of the EIA Report will evaluate effects arising from the construction, operation and decommissioning of the Proposed Development. The significance of these effects will be assessed against recognised guidelines outlined within this chapter. Where required, appropriate mitigation measures will be proposed to reduce these effects.

12.1.1.2 The Noise chapter of the EIA Report will be supported by appropriate figures and will be prepared by an acoustic consultant from Hoare Lea with experience in the assessment of wind, solar and BESS energy developments in the UK.

12.1.1.3 This chapter outlines the baseline environment, extent of the assessment study area, and describes the methodology and scope for the assessment of potential significant effects on noise-sensitive receptors within the study area from the construction, operation, and decommissioning of the Proposed Development.

12.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

12.2.1 KEY SENSITIVITIES AND STUDY AREA

12.2.1.1 The assessment will consider noise sensitive residential locations in the vicinity of the Proposed Development. Specifically, ETSU-R-97[95] states that noise levels will be considered acceptable, even in the absence of measured baseline data, if predicted noise levels (including cumulative contributions from all wind farms) do not exceed 35 dB L_{A90}. This is often referred to as the simplified ETSU-R-97 noise assessment methodology.

12.2.1.2 The assessment study area will encompass dwellings where cumulative predicted levels exceed, approach or are likely to approach this 35 dB L_{A90} threshold, provided the specific contribution of the Proposed Development is not acoustically negligible relative to that of the other nearby wind developments, including those wind turbines built and operating and those which are proposed within the planning system. There are a number of operational wind farms near the Proposed Development, including: the Arecleoch, Mark Hill and Kilgallioch Windfarms. In addition, consented wind farm development in the area includes Chirmorie, and the Arecleoch Extension Wind Farm. These wind developments will be included in the cumulative study area. A search will be undertaken for wind farm developments which may be in planning near the time of submission. Some of these wind farms may, however, have likely negligible effects, particularly if located more than 5 km from the Proposed Development turbines.

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

12.2.1.3 Noise sensitive properties located within 1 km of the proposed BESS, solar and substation development areas can potentially be affected by operational noise and will be assessed in accordance with BS 4142[96].

12.2.1.4 Some of these noise-sensitive residential locations will also be potentially affected by noise or vibration effects from the construction activities of the Proposed Development. In addition, dwellings located along site access tracks or transport routes will also be considered in relation to construction traffic.

12.2.2 BASELINE CONDITIONS

12.2.2.1 The Site is located in an area of low population density, with a settlement at Barrhill to the north and north-west. The noise environment in the surrounding area is expected to be characterised by mainly 'natural' sources, such as wind disturbed vegetation, birds and farm animals, with a varying influence of noise from local roads and water courses in some cases.

12.2.2.2 For the EIA, the baseline environment will be assessed by measuring background noise levels as a function of Site wind speed at the nearest neighbours (or, at a representative sample of the nearest neighbours), as required under ETSU-R-97, 'The Assessment and Rating of Noise from Wind Farms'.

12.2.2.3 The baseline measurements previously made as part of the application for neighbouring windfarms, such as, for example, the Arecleoch Windfarm Extension and Altercannoch Windfarms, will be considered. This may avoid the need for baseline measurement at locations which could be influenced by the turbines of the Arecleoch and Kilgallioch Windfarms when operating, which must be avoided under the requirements of ETSU-R-97. Consideration will also be given to new measurements using wind direction filtering to minimise the influence of existing operating wind farms in the area.

12.2.2.4 Historical baseline noise measurement data at 14 locations obtained from past surveys, as part of Arecleoch Extension[97] and Altercannoch[98] Wind Farm applications are publicly available. It is considered likely that results at several of these locations near the Site can be used and supplemented by additional noise monitoring. At this stage, it is proposed that this additional survey will comprise three properties near the Site to provide a comprehensive coverage of the baseline representative data. Where possible, the survey will combine baseline monitoring locations for the ETSU-R-97 (wind turbine noise) and BS 4142 (BESS, solar & substation noise) assessments.

12.2.2.5 The exact measurement locations and survey methodology will be discussed and agreed in consultation with the Environmental Health Department (EH) of South Ayrshire Council (SACo).

[96] British Standards Institute (2019) BS 4142:2014+A:2019 'Method for rating and assessing industrial and commercial sound.'
[97] Scottish Energy Consent Unit – ECU00001864
[98] South Ayrshire Council – Application Ref: 15/01484/APPM

12.3 POTENTIAL IMPACTS AND EFFECTS

12.3.1 CONSTRUCTION

12.3.1.1 In assessing the impact of noise and vibration from the construction activities, it is usual to accept that the associated works are of a temporary nature. The assessment of potential impacts due to noise emissions during construction will be undertaken in accordance with the BS 5228[99] British Standard guidance 'Code of practice for noise and vibration control on construction and open sites.' Predictions of construction noise will be made referencing typical activity emission levels and likely variations in noise levels at surrounding receiver locations, using the methodology set out in BS 5228 Part-1. This standard is referenced in Technical Advice Note to PAN 1/201[100]1: Planning and Noise and can be used to predict noise levels associated with the different construction activities used throughout the construction programme. Part 2 of the BS 5228[101] standard considers construction vibration, and this will also be referenced.

12.3.1.2 Any blasting if used for rock extraction at borrow pits may also create vibration and air overpressure which will be considered in the assessment in accordance with BS 6472-2[102] if applicable.

12.3.1.3 Consideration will also be given to the potential impact of construction traffic noise on sensitive receptors in the area. The impact of traffic noise along the Site access routes will be assessed on the basis of the methodology within BS 5228-1, and the 'Calculation of Road Traffic Noise'[103] (CRTN) publication, where appropriate.

12.3.2 OPERATION

12.3.2.1 The methodology for the assessment of operational noise from wind farms in Scotland is recommended in planning guidance[104] documented in ETSU-R-97. In summary, the assessment shall:

- Identify the nearest noise sensitive receptors (NSR);
- Determine the quiet daytime and night-time noise limits from the background noise levels at the nearest neighbours;
- Specify the type and noise emission characteristics of the wind turbines proposed for the Proposed Development;

[99] British Standards institute (2014) BS 5228-1:2009+A:2014 'Code of practice for noise and vibration control on construction and open sites – Part 1: Noise.'
[100] Scottish Government (2011) Planning Advice Note 1/2011: Planning & Noise.
[101] British Standards institute (2014) BS 5228-2:2009+A:2014 'Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration'.
[102] British Standards institute (2008) BS 6472-2:2008: 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration'.
[103] Her Majesty's Stationary Office (HMSO) Department of Transport (1988) 'Calculation of Road Traffic Noise'
[104] Scottish Government (2022) - Onshore wind - Policy statement, December 2022

- Calculate noise emission levels which would be due to the operation of the wind turbines as a function of site wind speed at the nearest neighbours, including the cumulative effect of all turbines from other wind farms where relevant;

- Compare the calculated wind farm noise emission levels with the derived noise limits; and

- The Institute of Acoustics Good Practice Guide105 (IOA GPG) will be taken into account, including advice on baseline survey, wind shear calculations, and noise prediction methodology.

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

12.3.2.3 When considering neighbouring cumulative wind farm noise, the potential noise emissions from the adjacent wind farm sites will be considered by examining the potential level of noise emission allowed under the respective consent for each of the sites, in line with the IOA GPG current best practice. The assessment methodology, in particular with regard to cumulative impacts, will also be discussed with South Ayrshire Council.

12.3.2.4 The potential implication of wind shear effects due to the potential difference in heights of the turbines considered for the Proposed Development would be taken into account in line with best practice. This would consist of referencing a sufficiently high wind speed reference for any new measurement and / or through the application of correction factors to any historical data used (if necessary).

12.3.2.5 Noise from the operation of the proposed substation, solar, and BESS would be assessed using the methodology in BS 4142, which compares noise from the specific source with typical baseline background noise levels, taking into account a range of contextual factors. If, however, the proposed plant is located more than 1 km away from the nearest NSR, this would be considered unlikely to be associated with any significant effects, and this may therefore not require a detailed BS 4142 assessment; this will be determined once the design of these components has sufficiently progressed.

12.4 PROPOSED ASSESSMENT METHODOLOGY

12.4.1 SENSITIVITY OF RECEPTORS

12.4.1.1 All residential properties will be considered to be of **high** sensitivity to noise. Other receptors, such as commercial, industrial, or agriculture properties are of low sensitivity and will not have significant effects even with high impact magnitude; as such, these are not considered further in the assessment.

[105] M. Cand et al (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics'

12.4.2 MAGNITUDE OF IMPACT

12.4.2.1 The assessment of construction noise and vibration will identify if and when predicted noise levels may be above standard guideline limits, taking into account the rural character of the area. The assessment of the temporary effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment. **Table 12.1** below presents the criteria for impact magnitude from construction noise effects.

TABLE 12-1 – IMPACT MAGNITUDE CRITERIA FOR CONSTRUCTION NOISE

IMPACT MAGNITUDE	DEFINITIONS
High	Construction noise is generally greater than 75 dB $_{LAeq,T}$ during the construction period, or with periods of more than 85 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period.
Medium	Construction noise is generally less than or equal to 75 dB $L_{Aeq,T}$ during the construction period, with periods of up to 85 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period.
Low	Construction noise is generally less than or equal to 65 dB $L_{Aeq,T}$ during the construction period, with periods of up to 75 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period.
Negligible	Construction noise is generally less than or equal to 55 dB $L_{Aeq,T}$, with periods of up to 65 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12-month period.

12.4.2.2 For construction traffic, the criteria set out in the DMRB[106] are likely to be referenced. Construction noise management procedures will also be determined.

12.4.2.3 For operational noise from the proposed turbines, the calculated wind farm noise emission levels will be compared with the noise limits derived in accordance with ETSU-R-97 (as set out above), including consideration of cumulative noise levels.

12.4.2.4 The magnitude of potential impacts from noise from the operation of the substation, solar, and BESS, unless considered negligible due to large separation distances, will be assessed using the guidance from BS 4142 based on criteria to be discussed with the EH of SACo and professional judgement. This will result in magnitude levels from negligible to high defined in line with BS 4142 guidance.

[106] The Highways Agency, Transport Scotland, Transport Wales and The Department for Regional Development (Northern Ireland) (2020) Design Manual for Roads and Bridges, LA 111 Noise and vibration, revision 2.

12.4.3 SIGNIFICANCE OF EFFECT

12.4.3.1 For construction noise of all project elements, and operational noise from the substation, solar, and BESS, the magnitude of impacts translates directly to effect significance, given that all receptors would be of high sensitivity, with a scale of significance from negligible, through minor, to moderate, and major. Major or moderate construction impacts are considered 'significant' in the context of the EIA Regulations.

12.4.3.2 If predicted (cumulative) noise levels from wind turbines are within the ETSU-R-97 derived noise limits, operational noise would be considered acceptable, and therefore not significant in EIA terms. If the predicted wind turbine noise levels are above the ETSU-R-97 noise limits, operational noise would be considered unacceptable and significant in EIA terms.

12.4.4 CUMULATIVE IMPACTS

12.4.4.1 Cumulative wind farm developments within 10 km of the Proposed Development will be considered within the cumulative operational noise assessment (although it may be possible to scope out some developments within that area if predicted noise contributions at the nearest NSRs are negligible).

12.5 MITIGATION

12.5.1.1 Mitigation measures will be outlined for the construction and operation of the Proposed Development where required to achieve the respective criteria and to reduce the level of adverse effects, where possible to non-significant levels if required.

12.5.1.2 The assessment of the effects of construction noise is primarily aimed at understanding the need for dedicated management measures and, if so, the types of measures that are required. In this respect, relevant working practices, traffic routes, and proposed working hours will be considered in the assessment. The following standard construction mitigation measures are assumed to be in place for the purposes of the assessment: restriction of construction hours, and good practice management measures relating to control of construction noise and vibration.

12.5.1.3 The above measures will be implemented through the Construction Environmental Management Plan (CEMP). The CEMP will also implement any additional site-specific management measures, which are not part of standard good practice, and these will be highlighted as part of the assessment and clearly presented in the noise and vibration assessment.

12.5.1.4 Mitigation of wind turbine operational noise will be achieved through the design of the Proposed Development, such that the relevant ETSU-R-97 noise limits can be achieved at the surrounding properties with commercially available wind turbines, including consideration of cumulative effects.

12.5.1.5 If there is a potential for significant noise from non-turbine components associated with the Proposed Development, engineering and design control measures will be outlined.

12.6 PROPOSED SCOPE OF EIA CHAPTER

12.6.1 SUMMARY OF THE PROPOSED EIA SCOPE

12.6.1.1 **Table 12.2** contains a list of all environmental factors relating to noise that will be scoped in or scoped out of the assessment.

TABLE 12-2– ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Construction Noise	In	Construction noise may have some impact at nearby NSRs
Construction Traffic Noise	In	Construction traffic noise requires assessment to determine impact
Construction Vibration	In	Vibration effects from construction activities, such as blasting, may be possible, and will be reviewed in the assessment where required.
Operational Noise – Wind Turbine	In	Wind Turbine noise will likely have some impact on surrounding NSRs and requires detailed assessment.
Operational Noise – BESS & Substation	In	BESS noise may have some impact at closest NSRs and needs to be assessed.
Operational Vibration	Out	Vibration from wind turbines, solar, or BESS operation is imperceptible at typical NSR distances and will be scoped out
Operational Traffic Noise	Out	Traffic during the operational phase of the Proposed Development is likely to be very low and is considered unlikely to have any noise effects, and so will be scoped out.
Infrasound, Low Frequency Noise (LFN), Amplitude Modulation (AM)	Out	The Online Planning Advice Note[107], Onshore wind turbines, refers to a report for the UK Government which concluded that "*there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested*". specific assessments of infrasound, LFN, and AM will be scoped out, EIAR will present latest supporting information on these subjects.
Decommissioning Noise & Vibration	Out	Decommissioning noise is typically similar or less in effects than construction, and similar management measures can be employed, and therefore this will be scoped out

[107] Scottish Government (updated 28 May 2014) Online Renewables Planning Advice, Onshore Wind Turbines (https://www.gov.scot/publications/onshore-wind-turbines-planning-advice): Accessed [13/05/25]

12.7 CONSULTATION AND SCOPING QUESTIONS

12.7.1.1 Q12.1: Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?

12.7.1.2 Q12.2: Do the consultees have any objection to referencing previous publicly available historical background noise data acquired around the Site?

13 CLIMATE CHANGE AND GHG ASSESSMENT

13.1 INTRODUCTION

13.1.1.1 This chapter sets out the approach for assessing the impact of the Proposed Development on climate change (the 'GHG assessment'); and the impact of climate change on the Proposed Development (the 'climate change resilience assessment' (CCRA)). The chapter also sets out the approach to the 'in-combination climate change impact assessment'.

13.1.1.2 The Proposed Development is a renewable energy project that replaces traditional GHG intensive fossil fuel power generation. As a result, the Proposed Development will avoid or displace GHG emissions over its lifetime. Overall, the Proposed Development will deliver a net benefit to the climate by saving GHG emissions over its lifetime and supporting the UK's net zero ambitions and targets.

13.2 GHG ASSESSMENT

13.2.1.1 This section outlines the approach of the greenhouse gas (GHG) emissions (the 'GHG assessment') assessment for the Proposed Development. The methodology used is guided by the Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating the Significance (IEMA, 2022)[108]. The GHG assessment will be presented in a Technical Appendix to the EIA Report.

13.2.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

13.2.2.1 The primary objective of the Proposed Development is to generate renewable electricity from wind and solar energy and provide storage capacity to the grid by using battery storage systems. These forms of electricity generation will contribute to climate change mitigation by generating renewable energy and avoiding GHG emissions from other more GHG intensive energy generation sources.

13.2.2.2 However, some GHG emissions are likely to occur from the construction, operation and decommissioning of the Proposed Development. For example, GHG emissions will arise from the use of fuels in equipment and vehicles and from the life cycle emissions associated with the materials used. **Chapter 2: Proposed Development** presents a summary of the current design, which will be used to inform the GHG assessment.

13.2.2.3 The Site (described in detail in **Chapter 2, Proposed Development** and shown in **Figure 2.1**) contains carbon rich soils involving Mineral Soils, Class 1, Class 3 and Class 5 peatland as well as forestry (described in more detail in **Chapter 10, Geology and Peat** and **Chapter 16, Forestry**). These features will be considered in the GHG assessment.

13.2.2.4 An assessment will be undertaken to consider the GHG emissions from the Proposed Development and the GHG emissions saved in comparison with a baseline scenario. The baseline will be the GHG emissions associated with the mix of electricity generators on the

108 Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating the Significance (IEMA, 2022), 2022_iema_greenhouse_gas_guidance_eia.pdf

UK grid which represents the equivalent emissions for the Proposed Development if it was not to go ahead.

13.2.3 POTENTIAL IMPACTS AND EFFECTS

13.2.3.1 Any GHG emissions released to the atmosphere is classified as an impact to climate change due to the importance of limiting GHG emissions to the atmosphere as set out by the Paris Agreement[109] and the UK Government's net zero ambitions.

13.2.3.2 In terms of the Proposed Development, the generation of renewable electricity will contribute to the UK's renewable energy generation targets as well as the GHG emission reduction targets as it will avoid or displace more GHG intensive electricity generation sources. The GHG emissions produced during construction and decommissioning will be offset by the GHG emissions avoided or displaced during the operation of the Proposed Development. This means the Proposed Development will have a net positive impact on the climate. As the Proposed Development will mitigate GHG emissions it is proposed that the GHG assessment is presented in a Technical Appendix to the EIA Report and ***scoped out*** of the EIA Report.

13.2.4 PROPOSED ASSESSMENT AND METHODOLOGY

13.2.4.1 The GHG assessment will be completed using best practice GHG reporting guidance and tools. This will include the Scottish Government Carbon Calculator Tool which is the standardised tool for calculating the net GHG emissions from wind farm developments. For the Scottish Government Carbon Calculator Tool a Phase 1 peat survey will be undertaken to determine the extent of the carbon rich soils within the Site.

13.2.4.2 The GHG assessment will report the GHG emissions in tonnes of carbon dioxide equivalent (tCO_2e). To calculate the tCO_2e the following methodology will be used:

- Activity data x GHG emissions factor = GHG emissions (tCO_2e)

13.2.4.3 Where feasible, activity data will be gathered from primary sources such as the quantity of materials used, wastes generated, or distances travelled. The activity data will then be multiplied by the most appropriate conversion factor. The individual quantification calculations are then summed to form a total GHG emission inventory for the project and its activities.

13.2.4.4 The GHG assessment will use the most up-to-date conversion factors as detailed by non-financial reporting guidance and specifically the UK Government Department for Energy Security and Net Zero (DESNZ) conversion factors for company reporting[4] and the UK Government's electricity emission factors to 2100 which are part of its Green Book appraisal guidance (DESNZ, 2023).

13.2.4.5 Where data is not available, alternative approaches would be taken using generic or publicly available information that best represents the projects and its activities.

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[109] The Paris Agreement, parisagreement_publication.pdf

13.2.5 MITIGATION

13.2.5.1 To mitigate GHG emissions a Construction Environmental Management Plan (CEMP) and opportunities for recycling and reuse of materials will be incorporated into the construction, operation and decommissioning of the Proposed Development.

13.3 CLIMATE CHANGE RESILIENCE ASSESSMENT

13.3.1.1 This section sets out the approach for assessing the impact of climate change on the Proposed Development (the 'climate change resilience assessment' (CCRA)). The approach has been developed in line with the Institute of Environment Management and Assessment (IEMA) for Climate Change and Resilience and Adaptation (IEMA, 2020)[110] guidance.

13.3.2 BASELINE ENVIRONMENT

13.3.2.1 The baseline climate at the Site is a temperate climate (meaning it is generally cool and wet with relatively mild temperatures). The Site experiences cool summers, mild winters and rainfall throughout the year. The climate is expected to change at the Site due to climate change and based on the IPCC and the UK Met office climate projections the region is likely to experience wetter, warmer winters and hotter, drier summers with increased frequency of extreme weather events over the lifetime of the Proposed Development.

13.3.2.2 The boundary of the Site is the land within the site (described in detail in **Chapter 2, Proposed Development** and shown in **Figure 2.1**) and this does not extend to any infrastructure beyond the Site boundary for the Proposed Development.

13.3.3 PROPOSED ASSESSMENT METHODOLGY

13.3.3.1 A CCRA uses climate projections generated by the Intergovernmental Panel on Climate Change (IPCC) and the UK Met Office climate projections for the UK in 2018 (UKCP18)[111] to understand the climate change hazards and risks that might impact the Proposed Development.

13.3.3.2 Using the data sources above, the CCRA will identify the climate change hazards and risks and assess the magnitude and significance of risk to the Proposed Development. The CCRA will then identify any additional adaptation and resilience measures to mitigate any significant risks to the Proposed Development.

13.3.4 POTENTIAL IMPACTS AND EFFECTS

13.3.4.1 **Table 13.1** describes the relevant projected climate hazards that have the potential to impact the construction, operation and decommissioning of the Proposed Development and details the climate hazards that have been **scoped in** or **out** of the CCRA.

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[110] Institute of Environment Management and Assessment (IEMA) for Climate Change and Resilience and Adaptation (IEMA, 2020) iema-eia-climate-change-resilience-june-2020.pdf

[111] UK Met Office climate projections (2018) UK Climate Projections (UKCP) - Met Office

TABLE 13-1 PROJECTED CLIMATE CHANGE HAZARDS TO BE SCOPED IN/ OUT

CLIMATE CHANGE	PROJECTED CLIMATE CHANGE HAZARDS	SCOPED IN / OUT	RATIONALE
Temperature-related climate hazards	Changing temperature; heat stress; temperature variability; heat / cold waves and frost; and wildfires.	Out	Given the elevated location of the Proposed Development and its geographical location changing temperature-related climate hazards will not pose a significant effect on the construction, operation and decommissioning of the Proposed Development.
Water-related climate hazards	Changing precipitation patterns and types (i.e. rain, hail, snow and ice); precipitation or hydrological variability; water stress; drought; heavy precipitation; and floods. Ocean acidification, saline intrusion, sea level rise and glacial outbursts.	Out	Given the elevated location of the Proposed Development and its geographical location changing water-related climate hazards will not pose a significant effect on the construction, operation and decommissioning of the Proposed Development.
Wind-related climate hazards	Changing wind patterns, storms.	Out	Climate projections for changing wind patterns and storms are uncertain and variable, however if these wind-related hazards do change the wind turbines are designed to adapt to these variable wind speeds and storms. Therefore, wind-related climate hazards associated with changing wind patterns and storms will not pose a significant effect on the construction, operation and decommissioning of the Proposed Development.
	Cyclones, hurricanes, typhoon and tornados.	Out	Cyclones, hurricanes, typhoons and tornados are scoped out as the Proposed Development is not located in an area that is susceptible to these wind-related climate hazards now and in the future.
Solid mass-related climate hazards	Coastal erosion, soil degradation, soil erosion, solifluction, avalanche, landslide and subsidence	Out	Solid mass-related climate hazards are scoped out as the Proposed Development is not located in an area that is susceptible to these climate hazards now and in the future.

13.3.5 MITIGATION

13.3.5.1 The following embedded mitigations will be incorporated into the design and construction process:

- Construction Environmental Management Plan (CEMP);
- Drainage design standards and water sensitive urban design guidelines; and
- Structural engineering standards for wind loading.

13.4 IN-COMBINATION CLIMATE CHANGE IMPACT ASSESSMENT

13.4.1.1 All environmental topics assessed within the EIA Report have the potential to be impacted by climate change (in-combination climate change impact assessment, 'ICCI'). The key environment topics most likely to be impacted by climate change will be peat, forestry, ecology and hydrology.

13.4.1.2 The impact of climate change on these other environmental topics will be reviewed and assessed by the topic experts using qualitative assessment. Mitigation measures will be identified as part of this process. The in-combination climate impacts will be reported in the relevant EIA Report chapter.

13.5 PROPOSED SCOPE OF EIA CHAPTER

13.5.1.1 This chapter set out the proposed approach to the GHG, climate resilience and ICCI assessments. **Table 13.2** contains a list of the factors relating to climate change that will be **scoped in** or **out** of the assessment.

TABLE 13-2 CLIMATE FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

CLIMATE FACTORS	SCOPED IN / OUT	RATIONALE
GHG assessment	Out	The Proposed Development will generate renewable electricity and support GHG emission reduction targets by avoiding or displacing more GHG intensive electricity generation sources. The overall GHG emission impact will be a net benefit to the climate. Therefore the GHG assessment is scoped out of the EIA Report. A GHG assessment will be presented in a technical appendix to the EIA Report.
Climate resilience assessment associated with temperature, water, wind and solid-mass climate hazards	Out	The elevation, geography and Proposed Development's design mitigate the impact of these climate hazards on the Proposed Development's construction, operation and decommissioning both now and in the future and therefore this is scoped out of the EIA Report.

CLIMATE FACTORS	SCOPED IN / OUT	RATIONALE
In-combination climate change assessment	In	Whilst the Proposed Development will benefit the climate, GHG emissions and climate change have the potential to impact other environmental receptors. The relevant environmental chapters in the EIA Report will scope in the in-combination climate change impacts.

13.6 CONSULTATION AND SCOPING QUESTIONS

13.6.1.1 Key questions for consultees are:

- Q13.1: Are consultees content with the suggested approach to the climate assessments, including the elements scoped in and out?
- Q13.2: Do consultees have any other information that would be useful in the preparation of the climate assessments?

14 SOCIO-ECONOMICS, LAND USE, TOURISM AND RECREATION

14.1 INTRODUCTION

14.1.1.1 This chapter sets out the proposed scope and methodology for assessing the impact of the Proposed Development on socio-economics, land use, tourism and recreation.

14.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

14.2.1.1 Baseline data has been collected across multiple spatial scales, informed by the likely effects of the Proposed Development and the study areas where effects would be expected to occur:

- **Socio-economic impacts:** Socio-economic impacts are likely to be realised at a national and local level.
- **Wider socio-economic effects:** The wider socio-economic effects are unlikely to be significant at a national level but may affect very localised industries at the neighbourhood or local level.
- **Socio-cultural effects:** Socio-cultural effects are not likely to be significant at a national or local level but may be perceived or observed at a small area level where there are changes impacting small communities nearby.
- **Land use effects:** Land use effects relate to the impact of the change in land use and are specific to the project site. Therefore, the study area for land use includes the project site and implications for the surrounding neighbourhood and local area.
- **Tourism and recreation effects:** Tourism and recreation effects could be significant at a neighbourhood level where the community and related tourism and recreation receptors are directly impacted by the project. Tourism accommodation in the wider local area may also be affected.

14.2.1.2 The study areas used for the baseline, that are proposed to be used for the assessment in the EIA, are summarised in **Table 14.1**.

TABLE 14-1: PROPOSED STUDY AREAS FOR SOCIO-ECONOMICS, TOURISM AND RECREATION

IMPACTS AND EFFECTS	THE SITE AND 5KM BUFFER	NEIGHBOURHOOD: CARRICK SOUTH	LOCAL: SOUTH AYRSHIRE	NATIONAL: SCOTLAND
Socio-economic			✓	✓
Wider socio-economic		✓	✓	
Socio-cultural		✓	✓	
Land Use	✓			
Tourism and recreation (5km of the Site)	✓	✓	✓	

14.2.2 ECONOMIC CONTEXT

EMPLOYMENT

14.2.2.1 As above, socio-economic impacts will be assessed at a local and national level. Therefore, the employment data below is presented for the local authority and national study areas. **Table 14.2** below highlights that South Ayrshire has a higher proportion of residents who are economically inactive in comparison to the national average. This is driven by the high proportion of retirees, which indicates an ageing population.

TABLE 14-2: ECONOMIC ACTIVITY

CATEGORY	SOUTH AYRSHIRE	SCOTLAND
Economically active	75.2%	77.0%
In employment	72.4%	74.5%
Employees	65.3%	66.1%
Self employed	6.6%	8.1%
Unemployed	3.8%	3.3%
Economically inactive	24.8%	23.0%
Retired	24.8%	15.4%
Student	13.5%	23.8%
Looking after home or family	22.2%	16.1%
Long-term sick	35.6%	33.7%
Other	3.9%	11.0%

SOURCE: APS, 2024

GROSS VALUE ADDED (GVA)

14.2.2.2 At a local level, the total GVA in 2022[112] for Carrick South was £21m which is 0.8% of the total GVA for South Ayrshire as a whole (£2,552m[113]). However, the GVA per head shows that Carrick South has a higher productivity per resident compared to South Ayrshire (£25,623 and £22,884 respectively), but a lower GVA per head compared to the national average (£30,400).

[112] ONS (2022) UK small area gross value added GVA estimates. Online. Available at < UK small area gross value added (GVA) estimates - Office for National Statistics >
[113] ONS (2022) Regional gross value added (balanced) by industry: local authorities by ITL1 region. Online. Available at < Regional gross value added (balanced) by industry: local authorities by ITL1 region - Swyddfa Ystadegau Gwladol >

14.2.3 WIDER SOCIO-ECONOMIC CONTEXT

ECONOMIC STRUCTURE

14.2.3.1 In terms of employment, the latest Census states that there is just under 50,000 employees in South Ayrshire (49,189). The largest employment sectors are: Health (16.6% and 11.2% respectively), wholesale and retail trade (11.6% and 11.2% respectively), and manufacturing (9.4% and 8.0%). Employment in these sectors is higher than the Scotland average.

QUALIFICATIONS

14.2.3.2 **Table 14.3** below shows that on average, the population closest to the Proposed Development have a lower level of qualification achieved compared to both wider South Ayrshire and Scotland average which indicates a lower skilled local workforce. However, there is a higher proportion of people who have achieved apprenticeship and level 3 qualifications across Carrick South.

TABLE 14-3: QUALIFICATIONS

CATEGORY	CARRICK SOUTH	SOUTH AYRSHIRE	SCOTLAND
Other Qualifications	N/A	17.7%	N/A
Apprenticeships	9.4%	8.0%	7.7%
No Qualifications	19.0%	18.7%	16.7%
Level 1 and entry level qualifications	18.7%	18.7%	18.9%
Level 2 qualifications	9.4%	10.9%	11.1%
Level 3 qualifications	14.5%	14.1%	13.2%
Level 4 qualifications or above	27.8%	30.6%	32.5%

SOURCE: CENSUS, 2022

EARNINGS

14.2.3.3 The latest average earnings data (2024[114]) shows that South Ayrshire has significantly higher average weekly earnings compared to the national average, on both a resident (£849.3 and £740.0 respectively) and workplace basis (£820.3 and £739.7 respectively). Additionally, the average weekly resident salary in South Ayrshire is £29 higher than the

[114] ONS (2024) Annual Survey of Hours and Earnings, resident and workplace

workplace salary – which indicates that residents commute outside of the local authority for higher paid employment.

14.2.4 SOCIO-CULTURAL CONTEXT

POPULATION AND DEMOGRAPHICS

14.2.4.1 Socio-cultural effects are likely to be observed at the neighbourhood and local study areas. Therefore, data is provided for the neighbourhood (Carrick South) and local (South Ayrshire) study areas, with Scotland data provided for context. According to the latest Census, the population of Carrick South was 802 in 2022. The total population of the wider local authority of South Ayrshire is 111,519. **Table 14.4** below shows the breakdown of the population by age brackets. The table highlights that the population located closest to the Proposed Development is more elderly than the national average, while also having fewer children and working age residents (16–64).

TABLE 14-4 - POPULATION PROFILE

AGE PROFILE	CARRICK SOUTH	SOUTH AYRSHIRE	SCOTLAND
0 – 15	13.5%	15.2%	16.4%
16 – 64	55.6%	58.2%	63.6%
65+	30.2%	26.4%	20.0%

SOURCE: CENSUS, 2022

DEPRIVATION

14.2.4.2 The Scottish Index of Multiple Deprivation (SIMD[115]) is a relative measure of deprivation in Scotland. SIMD is used to understand the outcomes and circumstances of people living in the most deprived areas in Scotland. There are 6,976 data zones across Scotland which are ranked (1 being the most deprived). Carrick South is made up of one data zone which ranks 2,712th nationally which places it in the top 40% most deprived. South Ayrshire is made up of 153 data zones, the average SIMD rank for the local authority is 3,439 which means on average the local authority is in the top 50% most deprived.

HOUSING

14.2.4.3 The breakdown of household tenure[116] is shown in **Table 14.5** below, the data shows that there is a much higher proportion of residents located near to the Proposed Development who own their household outright than nationally. Additionally, there is a fraction of the

[115] SG (2020) Scottish Index of Multiple Deprivation
[116] SG (2022) Census – Household Tenure

residents who live in social housing in Carrick South compared to both South Ayrshire and the national average.

TABLE 14-5: HOUSEHOLDS

AGE PROFILE	CARRICK SOUTH	SOUTH AYRSHIRE	SCOTLAND
Total no. households	356	52,491	2,509,269
Owned	70.5	70.1	63.2
Private rented	17.1	10.6	12.87
Social rented	7.6	17.9	22.5
Lives rent free	5.6	1.5	1.43

SOURCE: CENSUS, 2022

14.2.5 LAND USE

14.2.5.1 The Site is currently in agricultural use. Land capability for agriculture mapping available online shows that the land within the Site is not classed as prime agricultural land, with most of the Site classed as class 6.3 and class 5.3, with smaller areas of class 5.1.[117]

14.2.5.2 The surrounding area is mostly rural and agricultural in nature. Residential properties are found in Barrhill and there are also some commercial and community land uses within the village, including a shop, doctor's surgery, community hall, primary school, and cemetery. A cement manufacturer, Solway Precast, occupies a large site to the north of the village Main Street. There are a number of existing wind farms in the surrounding area.

14.2.6 TOURISM AND RECREATION

EMPLOYMENT AND ECONOMIC VALUE

14.2.6.1 South Ayrshire falls within the Ayrshire and Arran tourism region from Visit Scotland. The Ayrshire and Arran tourism region is made up of three local authority areas. In 2023 the tourism sector accounted for 13.3% of all employment in South Ayrshire which was notably higher than the other two local authorities that make up the tourism region (East Ayrshire, 5.4%, and North Ayrshire, 8.6%[118]). In 2024 the tourism sector accounted for 9.7% of all businesses in South Ayrshire. Further, in 2022 the tourism turnover was significantly higher than the other two local authorities at £213m (East Ayrshire, £60m and North Ayrshire, £94m).

14.2.6.2 The Scotland Visitor Survey (2023[119]) provides some insight to the profile of visitor and the accommodation. The majority of visitors were domestic (81%), with 14% classified as long-

[117] Land capability for agriculture map, available online at: Scotland's Soils - soil maps
[118] Scottish Growth Sector Statistics, December 2024, available via: Ayrshire and Arran - Research I VisitScotland.org
[119] Scotland Visitor Survey (2023) Local Area Factsheet: Ayrshire & Arran. Accessed via: Ayrshire and Arran - Research I VisitScotland.org

haul visitors (9% North America and 5% Australasia). 77% visitors said that the scenery and landscape was one of the main reasons for visiting. In terms of accommodation, 31% of visitors stayed in serviced accommodation (hotel, b&b etc) and 69% stayed in non-serviced accommodation (self-catering, camping etc).

TOURISM AND RECREATION RECEPTORS

14.2.6.3 The Proposed Development is located in a sparsely populated area with relatively few tourism and recreation receptors. There is one core path in Barrhill, which provides access from Main Street, along the Cross Water River, to the Martyr's Tomb heritage site. Other recreational facilities within the village of Barrhill include a bowls club, community centre, and a recreation ground and play area.

14.2.6.4 Tourism facilities within 5km of the site of the Proposed Development include Barrhill Holiday Park and Queensland Holiday Park, located approximately 2km to the west along the A714 road. There are a small number of other accommodation providers including bed and breakfasts and holiday lets within the 5km study area.

14.3 POTENTIAL IMPACTS AND EFFECTS

14.3.1.1 Potential impacts and effects on socio-economics, land use, tourism and recreation that could occur from the construction and operation of the Proposed Development are likely to include:

- **Employment and supply chain effects** (construction and operation). The construction and operation of the Proposed Development will create jobs directly and in the supply chain which could have the potential for a positive effect.
- **GVA effects** (construction and operation). The construction and operation of the Proposed Development will generate GVA in the local and national economy which could have the potential for a positive effect.
- **Wider socio-economic effects** (construction only). The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries which could have the potential for significant positive or negative effects.
- **Socio-cultural effects** (construction only). Changes to local demographics and the local environment associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life. This could have the potential for negative effects.
- **Land use effects** (construction only). The construction of the Proposed Development will directly impact land use within the site boundary.
- **Direct effects on tourism and recreation receptors** (construction only). Direct impacts on tourism and recreation receptors, such as any temporary diversion of PRoW could have the potential for significant negative effects.
- **Indirect effects on tourism and recreation receptors** (construction only). Indirect impacts on tourism and recreation receptors, such as in-combination effects on amenity for users of PRoW or sensitive visitor attractions, could have the potential for negative effects.

- **Effects on tourism accommodation** (construction only). There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce. This has the potential to result in positive or negative effects.

14.3.1.2 Effects from decommissioning are expected to be comparable to, or less than, those arising during construction, and will be assessed qualitatively based on estimated construction effects.

14.4 PROPOSED ASSESSMENT METHODOLOGY

14.4.1.1 There is little published guidance for assessing the socio-economic, land use, tourism and recreation impacts and effects of a Proposed Development. The assessment will therefore be based on professional judgement and established industry best practice, informed by relevant policy and legislation and the approach taken for other comparable developments. Appropriate sensitivity and magnitude criteria will be determined and applied to assess the significance of effects.

14.4.1.2 This section describes the methodology that will be used to assess each category of effect.

ECONOMIC EFFECTS

14.4.1.3 An economic model will be built to estimate the jobs and GVA associated with the construction and operation and maintenance phases of the Proposed Development. The model will be based on the estimated capital expenditure (CAPEX) and operational expenditure (OPEX) for the Proposed Development and will apply industry standard best practice to estimate the direct, indirect and induced effects of construction and operation on the local (South Ayrshire) and national (Scotland) economy and supply chain.

WIDER SOCIO-ECONOMIC EFFECTS

14.4.1.4 Wider socio-economic effects, such as structural economic change or disruption to established local industries, will be assessed based on the findings of the economic assessment and of relevant findings from other EIA topics, including Traffic and Transport. It will also take into account baseline data in relation to the structure of the local economy, its existing strengths and growth areas.

SOCIO-CULTURAL EFFECTS

14.4.1.5 The assessment of socio-cultural effects will consider the potential effects on local demographics associated with an incoming construction workforce, and the effect on local service provision and availability from any increase in demand. The assessment will be qualitative and will take into account the size of the estimated workforce and baseline data relating to the age profile of the population and existing service provision. It will also consider the potential for environmental impacts identified in the Noise and Landscape and Visual assessments to affect community identity within the local study area.

LAND USE

14.4.1.6 The assessment will consider the direct impact of the construction of the Proposed Development on land use within the Site. Long-term effects arising during construction that would continue into operation will be assessed as construction effects.

TOURISM AND RECREATION

14.4.1.7 The assessment of direct effects on tourism and recreation receptors will be based on the design of the Proposed Development and the findings of the Traffic and Transport assessment. There are no core paths, tourism or recreation receptors within the site, therefore at this stage it is expected that any direct impacts would be associated with impacts on the road and core path network during construction, or any temporary or permanent reduction in recreational access within the site.

14.4.1.8 The assessment of indirect effects on tourism and recreation receptors will consider the findings of the Noise, Traffic and Transport, and Landscape and Visual assessments. It will assess the potential for significant effects reported in these chapters to result in effects on amenity for users of tourism and recreation resources within 5km of the site.

14.5 MITIGATION

14.5.1.1 The assessment will consider embedded mitigation and mitigation measures identified in other relevant topic chapters, including Noise, Traffic and Transport, and Landscape and Visual. It will also consider the need for any further mitigation measures to address any significant adverse effects on socio-economics, land use, tourism and recreation. The assessment will also recommend measures that could be put in place to support the delivery of positive effects for the local economy and supply chain.

14.6 PROPOSED SCOPE OF EIA CHAPTER

14.6.1.1 **Table 14.6** contains a list of all environmental factors relating to socio-economics, land use, tourism and recreation that will be scoped in to or scoped out of the assessment.

TABLE 14-6 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Employment and supply chain effects (construction)	In	The construction of the Proposed Development will create jobs directly and in the supply chain.
Employment and supply chain effects (operation)	In	The construction of the Proposed Development will generate GVA in the local and national economy.
GVA effects (construction)	In	The operation of the Proposed Development will create jobs directly and in the supply chain.
GVA effects (operation)	In	The operation of the Proposed Development will generate GVA in the local and national economy.

ENVIRONMENTAL RECEPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Wider socio-economic effects (construction)	In	The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries.
Wider socio-economic effects (operation)	Out	These impacts are not expected to arise during the operational phase.
Socio-cultural effects (construction)	In	Changes to local demographics and the local environment associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life.
Socio-cultural effects (operation)	Out	These impacts are not expected to arise during the operational phase.
Land use effects (construction)	In	The construction of the Proposed Development will impact on land use within the Site.
Land use effects (operation)	Out	Changes in land use will arise during construction. No new effects are expected during operation.
Direct effects on tourism and recreation receptors (construction)	In	Construction activity could result in direct impacts on tourism and recreation receptors, such as temporary closures or diversions of core paths.
Direct effects on tourism and recreation receptors (operation)	Out	These impacts are not expected to arise during the operational phase. Any permanent changes arising during construction would be assessed as construction effects.
Indirect effects on tourism and recreation receptors (construction)	In	Construction activity could result in indirect impacts on tourism and recreation receptors, such as in-combination effects on amenity for users of core paths or sensitive visitor attractions.
Indirect effects on tourism and recreation receptors (operation)	In	There could be indirect effects on amenity for users of core paths or sensitive visitor attractions associated with the presence of wind turbines and other infrastructure.
Effects on tourism accommodation (construction)	In	There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce.
Effects on tourism accommodation (operation)	Out	Any requirement for worker accommodation during the operational phase is expected to be very small.

14.7 CONSULTATION AND SCOPING QUESTIONS

14.7.1.1 Key questions for consultees are:

- Q14.1: Are consultees content with the proposed methodology, scope and study areas for the assessment of socio-economics, land use, tourism and recreation?

- Q14.2: Can consultees provide information of any further tourism or recreation receptors within the 5km study area?

- Q14.3: Do consultees have any other information that would be useful in the preparation of the socio-economics, land use, tourism and recreation assessment?

15 OTHER ISSUES

15.1.1.1 This Chapter provides the methods and scope of other issues, including telecommunications and utilities; aviation; shadow flicker; glint and glare, forestry, human health, major accidents and disasters, and cumulative effects assessment in relation to the Proposed Development.

15.2 TELECOMMUNICATIONS AND UTILITIES

15.2.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.2.1.1 An initial review of the Ofcom Spectrum Information Portal indicates that telecommunication infrastructure pertaining to Vodafone exists in the vicinity of the Site.

15.2.1.2 The online Freeview coverage checker indicates that television services will be provided primarily by the Divis main transmitter and the Pinwherry local relay transmitter.

15.2.1.3 A full technical assessment of telecommunications and utilities assets present in the area will be completed and presented in the EIA Report.

15.2.2 POTENTIAL IMPACTS AND EFFECTS

15.2.2.1 Wind farms have the potential to interfere indirectly with electromagnetic infrastructure and utilities passing above ground, and physically with existing infrastructure below ground. This can therefore potentially affect television reception, fixed telecommunication links and other utilities.

15.2.3 PROPOSED ASSESSMENT METHODOLOGY

15.2.3.1 The proposed methodology will be prepared in line with the guidance and standards listed in **Appendix B**.

15.2.3.2 A desk-based assessment and consultation with the relevant stakeholders will identify the existing infrastructure and assess the potential impact.

15.2.3.3 Consultation with relevant telecommunication and utilities providers is a routine part of wind farm development, and consultees will include:

- Television and telecommunications providers as appropriate; and
- Water, gas, and electricity utilities providers.

15.2.3.4 Other additional information obtained from consultation will be used to inform future layout iterations.

15.2.3.5 Telecommunication identified within the vicinity of the Site will be taken forward for technical assessment in accordance with the recommended methodology from the JRC (UHF links) and/or Ofcom (Microwave links) to predict potential impacts and plot relevant exclusion zones.

15.2.3.6 To determine the existing television reception, survey locations will be selected based on residential areas within the forward scatter region out to 10km of the Proposed Development. At each location, the relevant transmitter(s) and the signal strength will be recorded.

15.2.4 MITIGATION

15.2.4.1 The Proposed Development will be designed to avoid impacts on telecommunication infrastructure and utilities, where possible. Technical solutions are likely to be available if significant effects cannot be avoided.

15.2.4.2 Any technical mitigation will be implemented prior to construction through ongoing consultation with the relevant stakeholders. A record of these consultations will be included in the project consultation log, and any design changes will be documented in the EIA Report design chapter.

15.2.5 PROPOSED SCOPE OF EIA CHAPTER

15.2.5.1 Based on the commitment to ensure there is no significant effect to telecommunications and/or utilities as a result of the Proposed Development, it is proposed to **Scope Out** this topic from the EIA.

15.3 AVIATION

15.3.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.3.1.1 The Proposed Development is located approximately 45km south of Glasgow Prestwick Airport. The Site exists within Class G uncontrolled airspace. The Site is laterally outside the P600 area navigation route by approximately 1.25 Nautical Miles (NM) within the P600 area navigation route, below 5,500 ft exists uncontrolled airspace. Above 5,500 ft is Class D controlled airspace up to Flight Level (FL) 195 (approx. 19,500 ft), above FL 195 exists Class C controlled airspace up to FL 255 (approx. 25,500 ft).

15.3.1.2 The Proposed Development is located approximately 190km from Warton Aerodrome, the nearest military aerodrome.

15.3.2 POTENTIAL IMPACTS AND EFFECTS

15.3.2.1 The development of wind turbines has the potential to cause a variety of adverse effects on aviation activity during operation. These include (but are not limited to): physical obstructions, false readings and unwanted returns on Primary Surveillance Radar (PSR), and adverse effects on the overall performance of Communications, Navigation and Surveillance (CNS) equipment.

15.3.2.2 Where there is line of sight between turbines and air traffic control radars it is possible that the turbines may be detected by the radar, dependent on atmospheric conditions, and appear as clutter on the controllers' screens; such clutter can have a direct operational impact on air traffic control operations. Similarly, turbines when constructed can pose a

physical obstruction risk either to aviation operations at aerodromes in the vicinity of the development or aircraft transiting the area.

15.3.3 PROPOSED ASSESSMENT METHODOLOGY

15.3.3.1 The assessment of effects of the proposed turbines will be based upon the guidance laid down in Civil Aviation Authority (CAA) Publication, CAP 764 Policy and Guidelines on Wind Turbines Version 6 (February 2016)[120], and other guidance and standards listed below in **Appendix B**.

15.3.3.2 It is necessary to take into account the aviation and air defence activities of the Ministry of Defence (MOD) as safeguarded by the Defence Infrastructure Organisation (DIO). The types of issues that will be addressed in the EIA Report include:

- Licensed and unlicensed aerodromes within the relevant safeguarding distances;
- MOD Airfields, both radar and non-radar equipped;
- MOD remote ATC radars;
- MOD air defence radars;
- UK Met Office meteorological radars; and,
- Military low flying.

15.3.3.3 It is also necessary to take into account the possible effects of turbines upon NATS (formerly National Air Traffic Services) En Route Ltd (NERL) CNS systems – a network of primary and secondary radars and navigation facilities around the country. As well as examining the technical impact of turbines on Air Traffic Control (ATC) facilities, it is also necessary to consider the physical safeguarding of ATC operations using the criteria laid down in CAP 168 Licensing of Aerodromes[121] to determine whether the Proposed Development will breach obstacle clearance criteria.

15.3.3.4 Pager Power's aviation database and assessment software will be used to identify potential aviation effects of the Proposed Development as its design evolves. The results will then be used as a basis for consultation and liaison with relevant aviation bodies, including Glasgow Prestwick Airport, Defence Infrastructure Organisation (MOD DIO), and NATS.

15.3.4 AVIATION LIGHTING

15.3.4.1 The UK statutory requirements for the lighting of en–route obstacles (i.e. those away from the vicinity of a licensed aerodrome) are set out in Article 222 of the UK Air Navigation Order

[120] Civil Aviation Authority (2019) Policy and Guidelines on Wind Turbines. Version 6. CAP764. [Online] Available at: https://www.caa.co.uk/our-work/publications/documents/content/cap-764/ (Accessed 12/05/2025)
[121] Civil Aviation Authority (2019) Licensing of Aerodromes. Version 11. CAP168. [Online] Available at: https://www.caa.co.uk/publication/download/14796 (Accessed 12/05/2025)

(ANO) 2016. In June 2017 the CAA issued a policy statement clarifying the requirements for lighting onshore wind turbines over 150 m in height.

15.3.4.2 Under Article 222 (5), it is likely that the CAA direct that an en-route obstacle must be fitted with and must display such additional lights in such positions and at such times as it may specify. The policy statement describes a scenario with a red light fitted as close as possible to the top of the fixed structure i.e. the nacelle with additional lights to provide 360° coverage at half of the nacelle height. It should be noted that CAP 764[122] also states that for turbines of a similar height in a windfarm group, only the peripheral turbines need to be marked. If required, a night-time impact assessment and associated visualisations would be produced to illustrate the turbine lighting at night.

15.3.4.3 The Proposed Development is located within an MOD tactical low-flying area of High Priority; therefore, an initial low-flying objection is possible (subject to consultation with the MOD), expressed as a 'concern' by the MOD, in order to ensure that Infra-Red lighting is applied. If required, the Applicant will provide an aviation lighting scheme to be approved by the CAA and MOD.

15.3.5 MITIGATION

15.3.5.1 Any technical mitigation will be implemented prior to construction where required, as informed by the aviation impact technical assessment and consultation, in accordance with the relevant operators. A list of common mitigation strategies will be presented within the technical assessment.

15.3.6 PROPOSED SCOPE OF EIA CHAPTER

15.3.6.1 It is proposed that aviation is Scoped In the EIA for further assessment in the first instance due to the significance of any impact and the potential implications upon planning and aviation safety.

15.4 SHADOW FLICKER

15.4.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.4.1.1 Shadow flicker receptors constitute office buildings and residential properties, or other buildings where it can be justified that people may spend a significant amount of time, and therefore be impacted by shadow flicker effects. Given the rural nature of the Site, residential properties within the vicinity of the Site are sparsely distributed. Properties are predominantly located along the minor roads surrounding the Site. These include farmhouses and other rural residential dwellings. The nearest settlement to the Site is the village of Barrhill located approximately 1.6 km to the north of the turbines.

[122] UK Civil Aviation Authority (2006; amended 2024) *CAA Policy and Guidance on Wind Turbines – CAP 764 Seventh Edition* [Online] Available at: https://consultations.caa.co.uk/policy-development/proposed-revision-to-cap-764-caa-policy-and-guidel/supporting_documents/Draft%20CAP764%20Ed7%20Red%20Underline.pdf (Accessed 12/05/2025)

15.4.1.2 A desk-based assessment will be completed to confirm properties which are residential in nature and fall within the shadow flicker study area for further assessment.

15.4.2 POTENTIAL IMPACTS AND EFFECTS

15.4.2.1 Under certain combinations of geographical position and time of day, when a wind farm is operational, rotating wind turbine blades can cause brightness levels to vary periodically at locations where they obstruct the sun's rays. This intermittent shadow is described by the term 'Shadow Flicker'. Shadow flicker is an effect that can occur when the shadow of a blade passes over a small opening (such as a window), briefly reducing the intensity of light within the room, and causing a flickering to be perceived. Shadow flicker effects can only occur inside buildings when the blade casts a shadow across an entire window opening.

15.4.3 PROPOSED ASSESSMENT METHODOLOGY

15.4.3.1 The proposed methodology will be prepared in line with guidance and standards listed in **Appendix B**.

15.4.3.2 Due to the lack of explicit guidance in Scotland, guidance within the UK is considered to be applicable material for assessing shadow flicker effects. Guidance produced by the UK Government, 'Planning Practice Guidance for Renewable and Low Carbon Energy'[123] states that "*only properties within 130 degrees either side of north relative to the turbines can be affected at these latitudes in the UK – turbines do not cast long shadows on their southern side.*"

15.4.3.3 In addition, the Online Scottish Planning Guidance Note[124] on onshore wind provides information on shadow flicker. It states: "where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), "shadow flicker" should not be a problem." An assessment area of 10 rotor diameters is understood to be industry standard. Assessment of dwellings beyond this distance may be carried out where there is sufficient evidence to suggest significant effects may occur.

15.4.3.4 The guidance regarding this criterion differs across various documents and countries. Some suggest that effects can only occur within a specific distance, while others state that this distance serves as a general guideline or indicates that the risks beyond this range are low. In reality, there is no fixed cutoff distance for when effects may occur, as this is influenced by several factors, including the precise latitude and the terrain surrounding the development location. Initial baseline analysis has indicated that there are properties located within 10 rotor diameters of the Indicative Site Layout (**Figure 2.2**), specifically rural properties along Forest Road, Gowlands Terrace, the A714, and B7027. A shadow flicker assessment will therefore be undertaken to determine whether there will be any impacts on surrounding properties, and the results of the assessment will be included in the EIA Report. This will examine all properties which lie within the assessment area and 130 degrees either

[123] UK Government Department for Communities and Local Government (2013) Planning Practice Guidance for Renewable and Low Carbon Energy. [Online] Available at: https://data.parliament.uk/DepositedPapers/Files/DEP2013-1395/Planning_Practice_Guidance_for_Renewable_and_Low_Carbon_Energy.pdf (Accessed 12/05/2025)
[124] Scottish Government (2014) *Onshore Wind Turbines: Planning Advice.* [Online]. Available at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/ (Accessed 12/05/2025)

side of north for each turbine. Should any properties be located within this area, Resoft Windfarm, a computer modelling programme, will be used to model the potential effects at surrounding properties to quantify the potential effects.

15.4.3.5 It is proposed that the industry recognised limits are applied for the purpose of the significance levels for the assessment. Significant shadow flicker impacts would therefore be defined as exceeding the following limits:

- Worst-Case Scenario – 30 hours per year or 30 minutes per day; and
- Realistic Scenario – 8 hours per year based on the 'likely' duration of effects, which would be the worst-case scenario model outputs amended to reflect the realistic possible sunshine hours (and therefore conditions suitable for shadow flicker effects) at the Site.

15.4.4 PROPOSED SCOPE OF EIA CHAPTER

15.4.4.1 Any properties where shadow flicker effects are not deemed to be geometrically possible will be scoped out of the shadow flicker assessment. Based on the commitment to ensure that any significant shadow flicker effects as a result of the Proposed Development are sufficiently mitigated, it is proposed to **Scope Out** this topic from the EIA.

15.5 GLINT AND GLARE

15.5.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.5.1.1 The Proposed Development is located in an area of predominantly single lane tracks. The A714 runs east-west to the northeast of the Proposed Development and is approximately 390m from the Site. There are several rural residential dwellings scattered in the surrounding area, the closest residential area (the village of Barrhill) is approximately 1km to the north of the Site. The closest railway line is approximately 350m to the north-west of the Site. The closest aerodrome (Castle Kennedy Airfield – unlicensed) is 22.7km to the southwest of the Site.

15.5.2 POTENTIAL IMPACTS AND EFFECTS

15.5.2.1 Potential effects on the identified ground-based receptors are caused by:

- Glint – a momentary flash of bright light (typically experienced by moving receptors); and
- Glare – a continuous source of bright light (typically experienced by static receptors).

15.5.2.2 The term 'solar reflection' is used to refer to both reflection types i.e., glint and glare. The significance of any effects will be determined by considering the visibility of the solar reflection including the level of screening (existing or proposed), the sensitivity of the receptor, the location of origin of the solar glare, time and duration of any reflection and the location of the Sun at the time a solar reflection is possible.

15.5.3 PROPOSED ASSESSMENT METHODOLOGY

15.5.3.1 The proposed methodology will be prepared in line with the guidance and standards listed in **Appenidx B**. There is no formal guidance with regard to the maximum distance at which glint and glare should be assessed. From a technical perspective, there is no maximum distance for potential reflections. However, the significance of a solar reflection decreases with distance. This is because the proportion of an observer's field of vision that is taken up by the reflecting area diminishes as the separation distance increases. In most instances, terrain and shielding by vegetation are also more likely to obstruct an observer's view at greater distances.

15.5.3.2 The above parameters and extensive experience over a significant number of glint and glare assessments undertaken show that a 1km Study Area is appropriate for glint and glare effects on residential dwellings and road users, a 500m Study Area is appropriate for railway infrastructure and a 10km Study Area is appropriate for aviation activity. Potential receptors within the Study Areas are identified based on mapping, aerial photography of the region, and available resources online.

15.5.3.3 The initial judgement will be made based on high-level consideration of aerial photography and mapping, and receptors will be excluded if it is clear from the outset that no visibility would be possible. A more detailed assessment will be made if the geometric modelling reveals a reflection would be geometrically possible.

15.5.4 MITIGATION

15.5.4.1 Any solution that sufficiently obstructs the visibility of the potentially reflecting panels will mitigate impacts. The most common mitigation solution is the provision of hedgerow planting around the Site. The reflecting panels that are the basis for any significant effects will be defined within the technical assessment (if any). These panels will then be obstructed from view and secured through the landscaping plan.

15.5.5 PROPOSED SCOPE OF EIA CHAPTER

15.5.5.1 Based on the commitment to ensure that any significant glint and glare effects from the Proposed Development are sufficiently mitigated, it is proposed to **Scope Out** this topic from the EIA.

15.6 FORESTRY

15.6.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.6.1.1 This section outlines the approach to integrating the Proposed Development into the existing woodland structure in South Ayrshire.

15.6.1.2 The Site is located within an open upland landscape predominantly comprising hill grazing land. Within the Site, there are small, scattered clusters of broadleaved woodland, primarily located in the northern and central areas. These woodlands are limited in extent and represent a medium overall woodland cover.

15.6.1.3 The surrounding landscape features a mix of land uses. To the east, south, and west, the land is largely occupied by commercial conifer plantations, creating a relatively enclosed and forested setting, comprising both publicly and privately owned areas. In contrast, the landscape to the north and towards the Duisk River area is more open, consisting of agricultural land with arable fields interspersed with water bodies and riparian woodlands. These features contribute to woodland connectivity and enhance visual diversity across the lower ground terrain.

15.6.1.4 The topography ranges from approximately 150 metres above sea level (a.s.l.) at the hilltop within the Site, to around 90 metres a.s.l. in the riparian zone of the Duisk River, located north of the Site.

15.6.1.5 A desk-based assessment indicates that there are no statutory designations affecting the Site. However, a small area, approximately 1.0 hectare (ha) of Ancient Woodland, is present within the Site. This area is listed in the Ancient Woodland Inventory (AWI)[125] as type 2a, indicating semi-natural woodland continuously wooded since at least 1860, and is recognised for its high conservation value.

15.6.1.6 A second database, the Native Woodland Survey of Scotland (NWSS)[126], conducted between 2006 and 2013, identifies three small clusters of native broadleaved woodland within the Site. These are classified as wet woodland, a biodiverse habitat type.

15.6.1.7 In addition, the database for the native woodland Integrated Habitat Network (IHN) indicates the native woodland areas within the central and northern parts of the Site as Core Native Woodland, where native woodland exists. These areas, along with surrounding Primary (up to 500 metres from a core native woodland area) and Secondary Zones (up to 2,000 metres from a core native woodland area), represent potential opportunities for native woodland expansion and connectivity.

15.6.1.8 Parts of the Site also fall within zones identified as sensitive in relation to the Ayrshire and Arran Forest and Woodland Strategy, indicating potential compatibility with broader regional objectives for woodland enhancement and biodiversity.

15.6.1.9 Within the Site, three main woodland blocks have been identified:

- To the north of the Site, along the B7027 road and extending south toward the Duisk River, lies an Ancient Woodland site of Semi-Natural Origin (AWSNO), classified as type 2a in the AWI. This woodland, while sparse, comprises predominantly immature pole-stage birch, rowan, and willow, with trees reaching heights of up to 12 metres. The densest concentration of trees occurs along the roadside edge, although the Ancient Woodland site extends beyond the visible tree line into the adjacent grazing fields.

- To the northeast of the Site it is located High Altercannoch woodland, an area of approximately 7.2 hectares. This woodland consists of a mixed composition of immature native broadleaves with scattered conifers throughout open ground. According to the NWSS, 2.9 hectares (approximately 40%) is classified as wet woodland. These areas exhibit an open canopy structure. The remaining 60% of the area

[125] Ancient Woodland Inventory
[126] Native Woodland Survey of Scotland

comprises open ground with scattered, established native broadleaved trees of Scotland.

- A third woodland cluster is located centrally within the Site, on the northeastern shore of Loch Alty. This woodland, approximately 2.0 ha in size, is also classified as wet woodland under the NWSS. It comprises mature native broadleaved species and features a semi-closed canopy structure, suggesting relatively undisturbed ecological development.

15.6.1.10 The forestry baseline will document the current woodland conditions. Further information will include details such as current tree species, year of planting, felling history, and any other relevant silvicultural information. The baseline will be compiled using available forest management records, supplemented by desk-based assessments, site visits, and interpretation of aerial photography.

15.6.2 POTENTIAL IMPACTS AND EFFECTS

TREE CLEARANCE

15.6.2.1 For the wind farm component of the Proposed Development, forestry impacts are assessed based on the minimum safe distance required between turbines and surrounding trees. This accounts for the rotor sweep radius of 81 metres (based on a 162-metre rotor diameter) for turbines with a maximum tip height of 230 metres, as well as the potential maximum height of adjacent trees estimated. To ensure safe operation and minimise the risk of windblow impacts, a minimum buffer of 40 metres between the turbine base and the nearest tree has been set.

15.6.2.2 For the solar component of the Proposed Development, forestry impacts have been assessed using the Root Protection Area (RPA), calculated as 12 times the average Diameter at Breast Height (DBH), with an additional safety buffer included following BS 5837:2012 – Trees in relation to Design, Demolition and Construction. This approach defines the minimum distance required to avoid significant effects on surrounding trees. Based on this assessment, a minimum buffer of 3 metres has been established to minimise the risk of root disturbance and to evaluate potential impacts of the solar panels on adjacent woodland. Given the location of the proposed solar farm and the nature of the surrounding woodland, this 3-metre buffer has been applied between the edge of the solar panel layout and the base of the nearest tree.

15.6.2.3 Refer to **Figure 15.1** Forestry Scoping map for further reference.

POTENTIAL IMPACTS

15.6.2.4 Turbine siting and operational safety zones are designed to avoid any requirement for tree clearance beyond an 40-metre buffer from each turbine.

15.6.2.5 All identified woodlands within and around the Site lie outside this buffer with the closest woodland being the one at Loch Alty of over 200 m, complying fully with the required safety distance. This existing native woodland within the Site, will be retained in full.

15.6.2.6 As a result, no direct impacts on woodland, either within or beyond the Site, are anticipated.

15.6.2.7 No woodland impacts are anticipated from the positioning of the wind turbines, and therefore, no cumulative forestry effects are expected across the wider landscape.

15.6.2.8 Access considerations are a key aspect of the Proposed Development. The primary access route is anticipated to enter the Site from the southeast, involving upgrades to an existing forest track and the construction of a new section extending to the development area. The proposed route spans approximately 450 m, of which an estimated 400 m (88%) will traverse existing forestry. These works will be carefully planned to minimise environmental impact and comply with relevant forestry regulations and best practice.

15.6.2.9 Any resulting woodland loss and the associated requirement for compensatory planting will be assessed in accordance with the Scottish Government's Control of Woodland Removal Policy[127] and in consultation with Scottish Forestry.

15.6.2.10 Should tree clearance be necessary for access track construction, harvested timber may be transported via the B7027, a designated consultation route for timber haulage. Use of this route must comply with protocols agreed upon by the local authority and relevant forestry stakeholders. Coordination with existing timber traffic will be essential to prevent disruption to ongoing forestry operations.

15.6.2.11 The solar farm component is situated on the northern section of the Site and may directly affect areas of the High Altercannoch woodland, as well as sections of roadside woodland along the B7027. A minimum setback of 3 m has been established between the edge of the solar panels and the base of the nearest tree to minimise forestry impacts.

15.6.2.12 Removal of some young, naturally regenerated broadleaved trees, at the establishing, early pole, or immature growth stages, may be required within the High Altercannoch native woodland and along the northern boundary of the Site. However, as this woodland is relatively sparse and interspersed with areas of open ground, careful micrositing of solar panels and associated infrastructure within these open areas will significantly reduce or eliminate the need for tree removal.

15.6.2.13 Given the current size and developmental stage of trees within High Altercannoch, no indirect impacts, such as those associated with windblow, are anticipated.

15.6.3 PROPOSED ASSESSMENT METHODOLOGY

GUIDANCE AND LEGISLATION

15.6.3.1 The proposed methodology will be prepared in line with guidance and standards listed in **Appendix B**.

15.6.3.2 In the UK, there is a strong presumption against permanent woodland removal unless it addresses other environmental concerns or where it would achieve significant and clearly defined additional public benefits. In Scotland, such woodland removal is dealt with under the Scottish Government's "*Control of Woodland Removal Policy*" (2009). The purpose of the

[127] Scottish Forestry (2019) Scottish Government's Policy on Control of Woodland Removal: Implementation Guidance

policy is to provide directions for decisions on woodland removal in Scotland. It will be essential that the requirements of the Policy are addressed within the EIA Report.

CONSULTATION

15.6.3.3 The primary forestry consultee for the Proposed Development is Scottish Forestry, South Scotland Conservancy. Ongoing consultation with Scottish Forestry will be undertaken throughout the design process to ensure that any proposed changes to woodland areas are appropriate and consistent with the requirements of the Control of Woodland Removal Policy and other relevant guidance. In addition, other consultees—such as SEPA, in relation to forestry residues, and the local authority, regarding timber transport or compensatory planting—may raise related issues. These will be addressed as part of the forestry assessment to ensure an integrated and coordinated approach.

15.6.4 MITIGATION

15.6.4.1 For the wind farm element of the Proposed Development, no mitigation is required, as no woodland will be directly affected.

15.6.4.2 For the solar farm element, woodland impacts may be avoided through careful micrositing of the solar panels, particularly around the High Altercannoch woodland and near the B7027 roadside.

15.6.4.3 If any further mitigation is required, it would likely involve minor interventions such as crown reduction or selective removal of key individual trees.

15.6.4.4 For areas of broadleaved trees identified within the Site and conifer woodland that may be permanently affected by the creation of the access road as part of the Proposed Development, embedded mitigation accounts for the compensatory planting, as required by the Scottish Government's Control of Woodland Removal Policy (2009). This will address the permanent loss of forest resources due to infrastructure placement or safety buffers. As such, any potential woodland loss would be mitigated through compensatory planting, which could potentially be accommodated within the same Site.

15.6.4.5 In cases where temporary tree clearance is required for construction activities, those areas will be replanted as part of embedded mitigation in line with the Forestry and Land Management (Scotland) Act 2018.

15.6.4.6 Another measure of mitigation to reduce the loss of woodland resource may include encouraging natural regeneration of low-growing native shrub species where feasible, provided they do not interfere with the safe and efficient operation of the Proposed Development.

15.6.5 PROPOSED SCOPE OF EIA CHAPTER

15.6.5.1 We would propose to **Scope Out** the forestry element as it is considered that the Proposed Development has no significant effect on either the loss of forest resource or adverse impact on designated woodlands. Therefore, a dedicated Forestry chapter is not considered necessary.

15.6.5.2 Instead, a formal Technical Appendix may be a more appropriate format to address woodland retention within the Site and to outline any mitigation measures required in relation to the solar farm component of the Proposed Development.

15.7 HUMAN HEALTH

15.7.1 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.7.1.1 Please refer to **Section 2.2** of the Report for details on the general Site context.

15.7.2 POTENTIAL IMPACTS AND EFFECTS

15.7.2.1 Aspects which have potential to affect human health during construction and operation include land contamination, pollution of water supplies, noise and vibration, traffic, and socio-economics. All these aspects are covered by other chapters including:

- Chapter 11: Water Resources and Flood Risk
- Chapter 12: Access, Traffic and Transport
- Chapter 13: Noise
- Chapter 15: Socio-economics

15.7.2.2 Electromagnetic fields (EMFs) are a product of the generation, transmission and use of electricity. Primary EMF sources associated with the Proposed Development include the substation, BESS, and underground cables. Given the separation distance between EMFs, which dimmish rapidly with increasing distance from source, and potential receptors, no significant effects are predicted. Consequently, EMF is scoped out of the EIA.

15.7.3 PROPOSED ASSESSMENT METHODOLOGY

15.7.3.1 The proposed methodology will be prepared in line with guidance and standards listed in **Appendix B**.

15.7.3.2 Methodologies proposed to assess potential impacts and effects on human health are included in the chapters noted in **Section 15.7.2.1**.

15.7.4 MITIGATION

15.7.4.1 Mitigation proposed to address any likely significant adverse effects on human health are included in the chapters noted in **Section 15.7.2.1**.

15.7.5 PROPOSED SCOPE OF EIA CHAPTER

15.7.5.1 There are unlikely to be significant effects to human health as a result of the Proposed Development that are not adequately covered by other chapters as noted in **Section 15.7.2.1**. It is therefore proposed that Human Health as a stand-alone topic is scoped out of the EIA.

15.8 MAJOR ACCIDENTS AND DISASTERS

15.8.1.1 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, presented by unplanned events, such as major accidents and disasters.

15.8.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.8.2.1 Please refer to **Section 2.2** of the Report for details on the general Site Context.

15.8.2.2 The Proposed Development, located in within the administrative district of SACo, southwest of Scotland. It is not within an area known for natural disasters such as floods, hurricanes, tornadoes, wildfires, volcanic eruptions, earthquakes, or tsunamis. It is still important, however, to recognise the effects of climate change and extreme weather events, meaning it is possible that Scotland may see more extreme temperatures in summer and winter and / or large storms with high rainfall events and flooding at any time of the year.

15.8.2.3 Given the location of the Proposed Development, the most probable natural disaster would be due to flood risk. Flood risk will be assessed in Chapter 11: Water Resources and Flood Risk of the EIA Report.

15.8.2.4 The Project Site has features of peat and forestry. As such, there is an increasing risk of wildfires due to climate change, especially as summers become hotter and drier.

15.8.3 POTENTIAL IMPACTS AND EFFECTS

15.8.3.1 During all phases of the Proposed Development, there is a risk of environmental incidents such as accidental spills of chemicals or waste material, and of major accidents resulting from infrastructure failure.

15.8.3.2 There is a risk of a major accident and / or infrastructure failure caused by natural disasters which may increase as a result of climate change. This should be considered during the preparation of major accident scenarios. However, as previously stated, natural disasters are unlikely at this Site and are therefore unlikely to have a hearing on the risk of major accidents and disasters.

15.8.3.3 Wind turbines and BESS are susceptible to fires due to overheating or electrical faults. Similar developments within the area have experienced fire outbreaks due to these faults. BESS units also contain hazardous materials and chemicals, which could spill during accidents or due to manufacturing faults, leading to environmental contamination. For further details of flooding impacts associated with the Proposed Development, see Chapter 11: Water Resources and Flood Risk.

15.8.4 PROPOSED ASSESSMENT METHODOLOGY

15.8.4.1 The proposed methodology will be prepared in line with guidance and standards listed in **Appendix B**.

15.8.4.2 Relevant information pertaining to the definition and management of major accidents, which may include chemical spills and infrastructure failures which results in serious bodily harm, will be obtained pursuant to the legislation of the European Union, such as Directive 2012/18/EU of the European Parliament on the control of major-accident hazards involving dangerous substances[128][129].

15.8.5 MITIGATION

15.8.5.1 During the construction phase these types of incidents will be managed by the Applicant's appointed Principal Contractor through the implementation of a Pollution Prevention Plan (PPP) and CEMP, which is usually provided to consultees prior to the commencement of construction under the condition of S36 consent. During the operational phase, an inspection and maintenance regime shall be implemented which would identify potential equipment failures to prevent leaks from occurring. The storage and handling of oils, fuels and waste shall be controlled by standard operational procedures, as well as ongoing audits and inspections.

15.8.5.2 Brake mechanisms installed on turbines allow them to be operated only under specific wind speeds and, should severe windstorms be experienced, then the turbines would be shut down to prevent any infrastructure failure or collapse. The Proposed Development is not located within an area prone to such disasters, and the likelihood of such an event is extremely rare. Safety regulations and measures will be in place throughout the lifetime of the Proposed Development, and all turbines will be located at a minimum 1 km distance from any residential properties, so it is very unlikely that structural failure will impact upon human health. The BESS will be installed in accordance with good practice guidance, with suitable buffers from potential flammable materials and woodland, minimising the risk of BESS failure causing forest fires. Appropriate fire safety precautions will be put in place, and all members of staff will be briefed on what to do in case of a fire breaking out at the Proposed Development.

15.8.5.3 Health and safety during the construction and operation phases of the Proposed Development is of utmost importance to the Applicant and is subject to relevant legislation including, but not limited to, The Construction (Design and Management) Regulations 2015, and good practice Health and Safety during the construction and operation phases of the Proposed Development is of utmost importance to the Applicant and is subject to relevant legislation including, but not limited to, The Construction (Design and Management) Regulations 2015[130], and good practice.

[128] The Scottish Government has committed to align with this EU Directive
[129] 126 European Union (2012) Directive 2012/18/EU [Online] Available at: https://eur-lex.europa.eu/legalcontent/EN/TXT/?uri=CELEX:32012L0018 (Accessed 03/04/2025)
[130] UK Government and Health and Safety Executive (2015) The Construction (Design and Management) Regulations 2015. [Online] Available at: https://www.hse.gov.uk/construction/cdm/2015/index.htm (Accessed 03/04/2025)

15.8.6 PROPOSED SCOPE OF EIA CHAPTER

15.8.6.1 Health and safety matters will be covered by Health and Safety legislation and therefore there is no further requirement for health and safety to be assessed within the EIA and it is scoped out of further assessment.

15.8.6.2 The risks associated with accidental leaks/spills of oil, fuel, chemicals, and wastes are also scoped out of any further assessment of Major Accidents and Disasters, as this will be covered **in Chapter 11: Water Resources and Flood Risk**, and suitable mitigation will be provided prior to construction, as per standard construction mitigation practice, within the PPP and CEMP.

15.8.6.3 The area is not known for hurricanes, tornadoes, or volcanoes, and thus these natural disasters can be scoped out of assessment, It is proposed that the Proposed Development's vulnerabilities and resilience to natural disasters related to climate change can be scoped out of the EIA, as none of the identified climate change trends are likely to significantly affect the Proposed Development, with the exception of increased windstorms and potential wildfires caused by infrastructure failure. The potential for these latter natural disasters will be sufficiently mitigated that the likelihood of them occurring is minimal to negligible.

15.8.6.4 It is concluded that no significant effects will arise due to major accidents and natural disasters as a result of the Proposed Development, and this topic can be scoped out of the EIA.

15.9 CUMULATIVE EFFECTS ASSESSMENT

15.9.1.1 In accordance with the EIA Regulations, the EIA Report will consider cumulative effects.

15.9.2 BASELINE CONDITIONS AND KEY SENSITIVITIES

15.9.2.1 Please refer to **Section 2.2** of the Report for details on the general Site Context.

15.9.3 POTENTIAL IMPACTS AND EFFECTS

15.9.3.1 Currently, there are no standard EIA methodologies for assessing cumulative effect, however, IEMA recognises two types of cumulative assessment in their guidance, which are:

- Intra-project effects: These effects occur when a single receptor is impacted by multiple sources of effects stemming from various aspects of the project. For instance, an intra-project effect might be experienced by a local resident who is simultaneously affected by dust, noise, and traffic disruption during the construction phase. The combined impact of these factors can be greater than the effect of each one individually, and

- Inter-project effects: These effects arise from various developments that, on their own, might not be significant. However, when combined, they could have a substantial cumulative impact on a shared receptor. This includes both developments related to and separate from the project.

15.9.4 PROPOSED ASSESSMENT METHODOLOGY

15.9.4.1 The proposed methodology will be prepared in line with the guidance and standards listed in **Appendix B**.

15.9.4.2 Detailed consideration of inter-project effects has been undertaken for all relevant technical assessments and will be included in the relevant EIA Report chapters.

15.9.4.3 The methodology for assessing intra-project effects involves the identification of impact interactions associated with the construction and operation phases of the Proposed Development upon one or more receptors. This is undertaken using a qualitative appraisal process, which will be detailed within the Other Issues chapter of the EIA Report.

15.9.4.4 A receptor experiencing multiple effects, each individually assessed as perceptible (i.e., Minor or above), could still be significantly impacted due to the combination of one or more other perceptible effects. The intra-project assessment takes into account all effects (both adverse and beneficial) that have been assessed as Minor (which, individually, are not significant in EIA terms), Moderate, or Major.

15.9.4.5 The approach adopted for this intra-project assessment is to examine in turn each residual effect for each individual receptor. These are presented as the Stage 1 assessment. It is then identified if multiple effects are experienced at an individual receptor and if so, using professional judgement, whether this could give rise to a significant intra-project effect to that receptor. This is presented as the Stage 2 assessment.

15.9.5 PROPOSED SCOPE OF EIA CHAPTER

15.9.5.1 **Table 15.1** contains a list of all environmental factors that will be scoped in or scoped out of the assessment.

TABLE 15-1 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

ENVIRONMENTAL RECERPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Telecommunications and Utilities	Out	Based upon a commitment to mitigate any significant effects identified, for example through turbine micrositing.
Aviation	In	Due to the potential for significant effects requiring mitigation and the potential implications upon planning and aviation safety
Shadow Flicker	Out	Based upon a commitment to mitigate any significant effects identified, for example through a shutdown scheme.
Glint and Glare	Out	Based upon a commitment to mitigate any significant effects identified, for example through additional vegetation screening.

ENVIRONMENTAL RECERPTOR, ASSESSMENT OR EFFECT	SCOPED IN / OUT	RATIONALE
Forestry	Out	There is unlikely to be a significant effect on forestry, as the Proposed Development will avoid Ancient Woodland sites. Any potential impacts on native woodland will be addressed through micrositing and mitigation measures in accordance with the EIA Regulations.
Cumulative Effects	In	Cumulative effects must be considered in accordance with the EIA Regulations
Human Health	Out	There are unlikely to be significant effects to human health because of the Proposed Development that are not adequately covered by other chapters (see Section 15.7.2), and a standalone chapter regarding Human Health is considered not be necessary
Intra-cumulative effects	In	The potential for intra-cumulative effects cannot be ruled out with the information currently available and will therefore be assessed in line with the EIA Regulations
Inter-cumulative effects	In	Inter-cumulative effects must be considered in accordance with the EIA Regulations and will be assessed within each chapter of the EIA Report
Major Accidents and Natural Disasters	Out	No significant effect will arise due to major accidents and natural disasters as long as suitable and sufficient mitigation measures are put in place

15.10 CONSULTATION AND SCOPING QUESTIONS

- Q15.1: Are any consultees aware of any additional telecommunication links or utilities stakeholders that should be taken into account?
- Q15.2: Are consultees content that effects upon television reception and utilities can be scoped out of the EIA based on the commitment that the Proposed Development will be designed to not impact these receptors?
- Q15.3: Do consultees agree with the proposed scope of the aviation assessment?
- Q15.4: Do consultees agree with the suggested approach regarding the proposed assessment of shadow flicker within the EIA Report?
- Q15.5: Are there any other relevant consultees who should be consulted with respect to the assessment of effects on forestry?
- Q15.6: Are there any other factors which should be taken into consideration in the assessment of effects upon forestry?
- Q15.7: Do consultees agree with the proposed approach for the intra-cumulative assessment?

16 CONCLUSIONS

16.1.1.1 Responses to this Report will be considered in the EIA Report. A compilation of the Questions for Consultees listed throughout this Report is provided in **Table 16.3**. A summary of the environmental factors to be scoped in to the EIA Report is presented in **Table 16.1**. A summary of the environmental factors to be scoped out of the EIA Report is presented in **Table 16.2**.

TABLE 16-1 ENVIRONMENTAL FACTORS TO BE SCOPED IN TO THE EIA REPORT

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE / OTHER COMMENTS
Chapter 5: Landscape and Visual	Effects (including cumulative and night-time)	See section 5.4.
	Effects on residential visual amenity for homes	See sections 5.4 and 5.4.4
	Wild Land Assessment	See section 5.4.5
	Cumulative effects with wind turbines in groups of	See section 5.4.7
Chapter 6: Cultural Heritage and Archaeology	Direct physical impacts to Heritage Assets	Direct physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant effect if identified.
	Indirect physical impacts to Heritage Assets	Indirect physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant effect if identified.
	Setting impacts to designated assets within the 5 km and 15 km Study Areas.	Additional assets beyond 15 km may be scoped in where: • They fall within the bare earth ZTV; • They have been requested for assessment by stakeholders; and/or, • They have the potential to be impacted by the Proposed Development.
	Setting impacts to regionally and nationally important non-designated heritage assets within the 5 km Study Area, with inclusion for assessment decided following consultation and sieving exercise.	Additional assets beyond 5 km may be scoped in where: They fall within the bare earth ZTV; They have been requested for assessment by stakeholders; and/or, They have the potential to be impacted by the Proposed Development.

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE / OTHER COMMENTS
	The Cumulative Effect of the Proposed Development in conjunction with other wind farm developments/Energy Infrastructure projects within 15 km.	Additional developments beyond 15 km may be included for assessment where: Bare earth ZTVs overlap; They have been requested for assessment by stakeholders; and/or, They have the potential to impact the setting of assets in conjunction with the Proposed Development.
Chapter 9: Geology and Peat	Peat Stability	Peat instability is generally the result of a combination of causative factors. Several construction activities have the potential to increase the likelihood of peat slides in areas where peat is present at a sufficient depth and where gradients are sufficiently steep to result in a peat slide event. Peat stability is to be assessed within the PSRA. The PSRA will be supplemented by peat probing data and desktop assessments in order to elevate the stability of the substrate and the risk of the stability related failures within the Study Area.
	Disturbance of deep peat	If construction activities take place in areas with peat, the peat will be disturbed. The oPMP will evaluate areas that have deep peat (peat with depths greater than 1.0 m), and this will inform the design in order to minimise the disturbance of deep peat.
	Loss and Compaction of peat and soils	Loss and compaction of peat and soils will occur should the development take place over areas with peat. Even with the avoidance of peat, construction activities could lead to the compaction or soils and peat. This can reduce soil permeability and increase surface run-off and erosion. This will be assessed and mitigation detailed in the oPMP.
	Peat as a waste material	If peat is disturbed it will need to be reused. There may be areas within the Study Area that need to be utilised for peatland restoration depending on volumes of excavated peat. The reuse and restoration of peatland will be addressed in the oPMP.
	Geology	Geology may be affected by the construction activities within the Study Area. The impacts will be evaluated within the EIA chapter.
Chapter 10: Water Resources and Flood Risk	Surface water hydrology	Watercourses within the Study Area have the potential to be impacted by the Proposed Development as a result of changes to water quality and quantity and are hydrologically linked to WFD waterbodies.
	Hydrogeology	The Site is underlain by a low productivity aquifer which may be impacted by the Proposed Development through excavations and construction of foundations.

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE / OTHER COMMENTS
	Private Water Supplies	No information is currently known about PWSs in the area. South Ayrshire Council will be contacted to obtain a list of known PWSs in the Study Area and PWS surveys issued to residents. If any PWSs are hydrologically connected to the Proposed Development, a detailed PWS assessment will be carried out.
	GWDTEs	The NVC survey to be conducted by the ecology team will identify the presence of GWDTEs. The results will be screened to identify if any of these habitats are within up to 250 m of the Proposed Development and the level to which they are groundwater dependent. If the GWDTEs are considered to be at risk of impacts from the Proposed Development a detailed GWDTE assessment will be carried out.
	Flood Risk	The SEPA Flood Maps indicate the Site is at High risk of surface water flooding. The design of the Proposed Development will aim to ensure no infrastructure, with the exception of watercourse crossing points, will be within the indicative SEPA flood extents. Where this is not possible a detailed FRA will be carried out.
	Watercourse Crossing Schedule	The Proposed Development will be designed to use existing crossings where possible and minimise construction of new crossings. The EIA will identify the location of existing and proposed new crossing points, and the type of crossing type that may be required. However, the final detailed design and types of registration required will be the responsibility of the appointed contractor at the detailed design stage. The guidance to be followed by the contractor will be set out in the EIA.
Chapter 11: Access, Traffic and Transport	Severance of Communities	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
	Road Vehicle Driver and Passenger Delay	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
	Non-Motorised User Delay	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
	Fear and Intimidation on and by Road Users	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
	Road User and Pedestrian Safety	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic
	Hazardous and Large Loads	Scoped in for assessment as identified by the IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE / OTHER COMMENTS
Chapter 12: Noise	Construction Noise	Construction noise may have some impact at nearby NSRs
	Construction Traffic Noise	Construction traffic noise requires assessment to determine impact
	Construction Vibration	Vibration effects from construction activities, such as blasting, may be possible, and will be reviewed in the assessment where required.
	Operational Noise – Wind Turbine	Wind Turbine noise will likely have some impact on surrounding NSRs and requires detailed assessment.
	Operational Noise – BESS & Substation	BESS noise may have some impact at closest NSRs and needs to be assessed.
Chapter 13: Climate Change and GHG Assessment	In-combination climate change assessment	Whilst the Proposed Development will benefit the climate, GHG emissions and climate change have the potential to impact other environmental receptors. The relevant environmental chapters in the EIA Report will scope in the in-combination climate change impacts.
Chapter 14: Socio-economics, Land use, Tourism and Recreation	Employment and supply chain effects (construction)	The construction of the Proposed Development will create jobs directly and in the supply chain.
	Employment and supply chain effects (operation)	The construction of the Proposed Development will generate GVA in the local and national economy.
	GVA effects (construction)	The operation of the Proposed Development will create jobs directly and in the supply chain.
	GVA effects (operation)	The operation of the Proposed Development will generate GVA in the local and national economy.
	Wider socio-economic effects (construction)	The construction of the Proposed Development could have wider and knock-on socio-economic effects including structural economic change or disruption to established local industries.
	Socio-cultural effects (construction)	Changes to local demographics and the local environment associated with construction activity and the presence of an incoming construction workforce could result in increased demand for social infrastructure and changes in community identity and way of life.
	Land use effects (construction)	The construction of the Proposed Development will impact on land use within the Site.
	Direct effects on tourism and recreation receptors (construction)	Construction activity could result in direct impacts on tourism and recreation receptors, such as temporary closures or diversions of core paths.

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE / OTHER COMMENTS
	Indirect effects on tourism and recreation receptors (construction)	Construction activity could result in indirect impacts on tourism and recreation receptors, such as in-combination effects on amenity for users of core paths or sensitive visitor attractions.
	Indirect effects on tourism and recreation receptors (operation)	There could be indirect effects on amenity for users of core paths or sensitive visitor attractions associated with the presence of wind turbines and other infrastructure.
	Effects on tourism accommodation (construction)	There may be an increase in demand for tourist accommodation associated with the presence of an incoming construction workforce.
Chapter 15: Other Issues	Aviation	Due to the potential for significant effects requiring mitigation and the potential implications upon planning and aviation safety
	Cumulative Effects	Cumulative effects must be considered in accordance with the EIA Regulations
	Intra-cumulative effects	The potential for intra-cumulative effects cannot be ruled out with the information currently available and will therefore be assessed in line with the EIA Regulations
	Inter-cumulative effects	Inter-cumulative effects must be considered in accordance with the EIA Regulations and will be assessed within each chapter of the EIA Report

TABLE 16-2 ENVIRONMENTAL FACTORS TO BE SCOPED OUT OF THE EIA REPORT

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE/OTHER COMMENTS
Chapter 6: Cultural Heritage and Archaeology	Assessment of the Direct Physical Impacts to heritage assets outwith the Site, with the exception of designated	Significant, Direct Physical Impacts to heritage assets outwith the Site are considered unlikely.
	Indirect Physical Impacts to heritage assets outwith the 1 km Study Area, with the exception of designated	Significant, Indirect Physical Impacts to heritage assets outwith the Site are considered unlikely.
	Setting Impacts to non-designated heritage assets	Significant Setting Impacts to non-designated heritage assets of Local Importance are considered unlikely.
	Setting impacts to Category B and C Listed Buildings within 5 km where setting does not contribute to	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.
	Setting impacts to designated heritage assets between 5 and 15 km from the Site where setting does not contribute to cultural significance or their setting	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.
	Setting impacts to Category B and C Listed Buildings beyond 5 km where they are located within or clearly	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.
Chapter 9: Geology and Peat	Contaminated Land	The Site is largely vacant and there is no history if landfills, mining or water / waste treatment that could lead to contamination.
	Cumulative Developments	Cumulative Developments will not affect the geology and peat within the Study Area. Construction activities where soil is excavated or loaded are the main project activities that will have an impact on soils and peat within the Study Area; therefore, the occurrence of additional
	Coal Mining	Risks relating to historic coal mining activities are scoped out of the assessment due to the lack of coal
Chapter 11: Access, Traffic and Transport	Standalone Transport Assessment	It is considered that all traffic and transport matters can be covered by the EIA Report chapter given that, the Study Area, current traffic conditions, construction trip generation, impacts, cumulative effects, and mitigation measures will be addressed in this chapter.

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE/OTHER COMMENTS
	Operational Traffic	Traffic associated with the operation of the Proposed Development is limited to maintenance and is expected to be insignificant in comparison to traffic generated during construction. General maintenance and Site monitoring visits will likely be undertaken by car and LGVs and can be expected to be in the region of three visits per day on average. The effect of operational traffic is expected to be minimal and negligible in terms of existing traffic flow levels on routes within the vicinity of the Proposed Development
	Noise and Vibration	Environmental impacts arising from HGV movements will include vibration, noise, and road safety risks, however these will be temporary during the construction phase and when the Site is operational would have a negligible impact. Furthermore, ground-borne vibration resulting from HGV and Abnormal Load Vehicle (ALV) movements is generally only likely to be significant where vehicles traverse discontinuities, such as rough surfaces (including potholes) or speed-humps. Effects from the temporary increase in traffic are therefore only likely to be experienced at receptors located next to such road defects, in which case the maintaining authority (i.e., SACo, or TS) would be responsible for enacting repairs. Any likely significant effects in relation to noise and vibration will be considered within Chapter 13: Noise of the EIA Report.
	Visual Effects	The movements of Abnormal Indivisible Loads (AILs) could be considered visually intrusive. This effect would be short-term and would only occur during the movement of abnormal loads. The movements of HGVs are not considered visually intrusive as it is an everyday occurrence, and any effects will be short term, fully reversible and would only occur during construction hours. Any likely significant environmental effects relating to visual effects due to traffic generated during the construction phase of the Proposed Development are considered within the landscape and visual amenity assessment (see Chapter 6: Landscape and Visual Amenity)

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE/OTHER COMMENTS
	Air Quality	The IEMA (2023) Guidelines for the Environmental Assessment of Road Traffic advice that significant impacts to local air quality may occur if changes to LGVs are more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an Air Quality Management Area (AQMA) and more than 500 AADT elsewhere. For HGVs, the criteria are more than 25 AADT within or adjacent to an AQMA, and more than 100 AADT elsewhere. Based on the expected volume of construction traffic, none of the above criteria will be met or exceeded. In addition, the Proposed Development is not located within an AQMA and due to the temporary nature of the increase in vehicles using the proposed access route, any effects on local air quality will be short term and reversible
Chapter 12: Noise	Operational Vibration	Vibration from wind turbines, solar, or BESS operation is imperceptible at typical NSR distances and will be scoped out
	Operational Traffic Noise	Traffic during the operational phase of the Proposed Development is likely to be very low and is considered unlikely to have any noise effects, and so will be scoped out.
	Infrasound, Low Frequency Noise (LFN), Amplitude Modulation (AM)	The Online Planning Advice Note131, Onshore wind turbines, refers to a report for the UK Government which concluded that "there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested". specific assessments of infrasound, LFN, and AM will be scoped out, EIAR will present latest supporting information on these subjects.
	Decommissioning Noise & Vibration	Decommissioning noise is typically similar or less in effects than construction, and similar management measures can be employed, and therefore this will be scoped out
Chapter 13: Climate Change and GHG Assessment	GHG assessment	The Proposed Development will generate renewable electricity and support GHG emission reduction targets by avoiding or displacing more GHG intensive electricity generation sources. The overall GHG emission impact will be a net benefit to the climate. Therefore the GHG assessment is scoped out of the EIA Report. A GHG assessment will be presented in a technical appendix to the EIA Report.

[131] Scottish Government (updated 28 May 2014) Online Renewables Planning Advice, Onshore Wind Turbines (https://www.gov.scot/publications/onshore-wind-turbines-planning-advice): Accessed [13/05/25]

CHAPTER	RECEPTOR / ASSESSMENT / EFFECT	RATIONALE/OTHER COMMENTS
	Climate resilience assessment associated with temperature, water, wind and solid-mass climate hazards	The elevation, geography and Proposed Development's design mitigate the impact of these climate hazards on the Proposed Development's construction, operation and decommissioning both now and in the future and therefore this is scoped out of the EIA Report.
Chapter 14: Socio-economics, Land use, Tourism and Recreation	Wider socio-economic effects (operation)	These impacts are not expected to arise during the operational phase.
	Socio-cultural effects (operation)	These impacts are not expected to arise during the operational phase.
	Land use effects (operation)	Changes in land use will arise during construction. No new effects are expected during operation.
	Direct effects on tourism and recreation receptors (operation)	These impacts are not expected to arise during the operational phase. Any permanent changes arising during construction would be assessed as construction effects.
	Effects on tourism accommodation (operation)	Any requirement for worker accommodation during the operational phase is expected to be very small.
Chapter 15: Other Issues	Telecommunications and Utilities	Based upon a commitment to mitigate any significant effects identified, for example through turbine micrositing.
	Shadow Flicker	Based upon a commitment to mitigate any significant effects identified, for example through a shutdown scheme.
	Glint and Glare	Based upon a commitment to mitigate any significant effects identified, for example through additional vegetation screening.
	Forestry	There is unlikely to be a significant effect on forestry, as the Proposed Development will avoid Ancient Woodland sites. Any potential impacts on native woodland will be addressed through micrositing and mitigation measures in accordance with the EIA Regulations.
	Human Health	There are unlikely to be significant effects to human health because of the Proposed Development that are not adequately covered by other chapters (see Section 15.7.2), and a standalone chapter regarding Human Health is considered not be necessary
	Major Accidents and Natural Disasters	No significant effect will arise due to major accidents and natural disasters as long as suitable and sufficient mitigation measures are put in place

17 APPENDIX A SUMMARY OF QUESTIONS TO CONSULTEES

CHAPTER	REF	QUESTIONS FOR CONSULTEES
Chapter 4: Policy and Legislative Context	Q4.1	Do consultees agree with the policy and legislation context set out in this report?
Chapter 5: Landscape and Visual	Q5.1	Do consultees agree with the proposed LVIA study area? If not, which receptors are omitted that should be included, and why should they be included?
	Q5.2	Do consultees agree with the proposed viewpoint locations and visualisations? If not, please detail (with reasons) which viewpoints should be: • Moved; • Added; or • have different or additional visualisation types provided.
	Q5.3	Do consultees agree that Wild Land Assessment can be scoped out? If not, please set out the basis for its inclusion?
	Q5.4	Do consultees agree with the proposed RVAA study area? If not, which homes are omitted that should be included and why should they be included?
	Q5.6	Do consultees agree with the omission of groups of fewer than 3 turbines and turbines of under 50m from the cumulative assessment? If not, which of these smaller groups/ smaller turbines do they consider should be included and why?
Chapter 6: Cultural Heritage and Archaeology	Q6.1	Do Consultees agree with the proposed methodology and scope of assessment?
	Q6.2	Do Consultees have any information regarding current or recent archaeological work or projects being undertaken, within or in the vicinity of the Proposed Development, particularly those whose results may not yet be recorded in the local HER or HES datasets?
	Q6.3	Are Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Proposed Development?
	Q6.4	Do Consultees have details of any cultural heritage sites in the vicinity of the Proposed Development which they consider may raise significant issues within the EIA process for this Development?
	Q6.5	Are Consultees aware of any additional stakeholders who will require consultation or where consultation would be desirable?
Chapter 7: Ornithology	Q7.1	Are consultees satisfied that the completed (and proposed) ornithological survey effort provides an acceptable, robust baseline to support the assessment?

CHAPTER	REF	QUESTIONS FOR CONSULTEES
	Q7.2	Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the Proposed Development (either directly or indirectly)?
	Q7.3	Table 7.12 notes the receptors and potential impacts proposed to be included within the EIA. Do consultees agree with the list of receptors and impacts to be included within the EIA Report?
Chapter 8: Ecology and Nature Conservation	Q8.1	Do consultees have any comments regarding the EIA only concentrating on those receptors which may be subject to significant effects from the Proposed Development (either directly or indirectly)?
	Q8.2	Are consultees satisfied that the ecological survey effort of all completed surveys and proposed surveys provides a robust assessment of effects?
	Q8.3	Table 8.7 above notes the receptors and potential impacts proposed to be included within the EIA. Do consultees agree with the list of receptors and impacts to be included within the EIA Report?
Chapter 9: Geology and Peat	Q9.1	Do you agree that the data sources identified are sufficient to inform the Geology and Peat baseline for the EIA (and therefore that no further baseline data collection is merited)?
	Q9.2	Have all Geology and Peat receptors and potential impacts that could result from the Proposed Development been identified?
	Q9.3	Do you agree with the proposed approach to assessment (scoped in or out) for each of the impacts in Table 9.6 Environmental Factors to be scoped in or out of the Assessment for Geology and Peat?
	Q9.4	Do you agree that the embedded mitigation measures described provide a suitable means for managing and mitigating the relative potential effects of the Proposed Development on Geology and Peat receptors?
	Q9.5	Do you agree with the proposed methodology and scope of the Geology and Peat assessment?
	Q9.6	Do you have any information that will be useful in the preparation of the Geology and Peat assessment, such as information on local quarrying, or infilled land?
Chapter 10: Water Resources and Flood Risk	Q10.1	Are consultees content with the proposed methodology and scope of the assessment of water resources and flood risk?
	Q10.2	Can Scottish Water confirm if there are any drinking water protected areas and / or Scottish Water assets within the Study Area?
	Q10.3	Can SEPA and / or South Ayrshire Council provide any information on known flooding within the Study Area, and do you agree with the approach to flood risk?

CHAPTER	REF	QUESTIONS FOR CONSULTEES
	Q10.4	Does the Council, NatureScot, SEPA or other consultees have any information that would be useful in the preparation of the water resources and flood risk chapter assessment?
Chapter 11: Access Traffic and Transport	Q11.1	Are consultees content with the proposed methodology and scope of the traffic and transport assessment?
	Q11.2	Are the council / statutory consultees aware of any specific access restrictions or limitations on the proposed abnormal loads route?
	Q11.3	Are consultees content to scope out operational traffic from further assessment?
	Q11.4	Are you aware of any relevant policies or guidance documents not specifically mentioned in Appendix B of the Report?
Chapter 12: Noise	Q12.1	Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?
	Q12.2	Do the consultees have any objection to referencing previous publicly available historical background noise data acquired around the Site?
Chapter 13: Climate Change and GHG Assessment	Q13.1	Are consultees content with the suggested approach to the climate assessments, including the elements scoped in and out?
	Q13.2	Do consultees have any other information that would be useful in the preparation of the climate assessments?
Chapter 14: Socio-economics, Land use, Tourism and Recreation	Q14.1	Are consultees content with the proposed methodology, scope and study areas for the assessment of socio-economics, land use, tourism and recreation?
	Q14.2	Can consultees provide information of any further tourism or recreation receptors within the 5km study area?
	Q14.3	Do consultees have any other information that would be useful in the preparation of the socio-economics, land use, tourism and recreation assessment?
Chapter 15: Other Issues	Q15.1	Are any consultees aware of any additional telecommunication links or utilities stakeholders that should be taken into account?
	Q15.2	Are consultees content that effects upon television reception and utilities can be scoped out of the EIA based on the commitment that the Proposed Development will be designed to not impact these receptors?
	Q15.3	Do consultees agree with the proposed scope of the aviation assessment?
	Q15.4	Do consultees agree with the suggested approach regarding the proposed assessment of shadow flicker within the EIA Report?
	Q15.5	Are there any other relevant consultees who should be consulted with respect to the assessment of effects on forestry?

CHAPTER	REF	QUESTIONS FOR CONSULTEES
	Q15.6	Are there any other factors which should be taken into consideration in the assessment of effects upon forestry?
	Q15.7	Do consultees agree with the proposed approach for the intra-cumulative assessment?

18 APPENDIX B LEGISLATION, GUIDANCE, AND STANDARDS

CHAPTER 7 CULTURAL HERITAGE AND ARCHAEOLOGY

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