Intended for
Ravengill Energy Park Ltd

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Project Number
1620017435

RAVENGILL ENERGY PARK
EIA SCOPING REPORT

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EIA Scoping Report

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APPENDICES

GLOSSARY AND ABBREVIATIONS

Abbreviation/Terminology	Expanded Term/Possible variables
the Applicant	Ravengill Energy Park Limited
AIL	Abnormal Indivisible Load
AM	Amplitude Modulation
AOD	Above Ordnance Datum
ATC	Automatic Traffic Count
ATC	Air Traffic Control
BESS	Battery Energy Storage System
BGS	British Geological Survey
BS	British Standard
CAA	Civil Aviation Authority
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CIfA	Chartered Institute for Archaeologists
CLVIA	Cumulative Landscape and Visual Impact Assessment
CRMS	Collision Risk Modelling
dB	decibel
DfT	UK Department for Transport
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EKA	Eskdalemuir Seismic Array
GDL	Gardens and Designed Landscapes
GPP	Guidance for Pollution Prevention
GWDTE	ground water dependant terrestrial ecosystems
Ha	Hectare
HEPS	Historic Environment Policy for Scotland
HER	Historic Environment Record
HES	Historic Environment Scotland
HLAMap	Historic Land-Use Assessment Data for Scotland
HRA	Habitat Regulations Appraisal
IEMA	Institute of Environmental Management and Assessment
km	kilometres
L_{A90}	The A-weighted noise level exceeded for 90% of the time, often used to describe background or wind turbine noise as it excludes transient noises that affect the LAeq.
LCT	Landscape Character Type
LDP	Local Development Plan
LDP2	South Lanarkshire Local Development Plan 2
LUPS	Land Use Planning System
LVIA	Landscape and Visual Impact Assessment
m	metres
MoD	Ministry of Defence

Abbreviation/Terminology	Expanded Term/Possible variables
MW	megawatts
NCN	National Cycle Network
ND3	National Development 3
NERL	NATS En Route
NPF4	National Planning Policy Framework 4
NRHE	National Record for the Historic Environment
NSR	non-statutory register
NSR	noise-sensitive receptors
NVC	National Vegetation Classification
PAN	Planning Advice Note
PPG	Pollution Prevention Guidelines
PWS	Private Water Supply
RSPB	Royal Society for the Protection of Birds
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
SIL	Seismic Impact Limit
SLA	Special Landscape Area
SLC	South Lanarkshire Council
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SPG	Supplementary Planning Guidance
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
TA	Technical Appendix
TA	Transport Assessment
TMA	Terminal Manoeuvring Area
WFD	Water Framework Directive
WoSAS	West of Scotland Archaeology Service
VP	Vantage Point
ZTV	Zone of Theoretical Visibility

1. INTRODUCTION

This Scoping Report is provided in support of a request to the Scottish Ministers for a Scoping Opinion under the terms of Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ('the EIA Regulations').

Scoping is a statutory procedure by which an Applicant may ask a competent authority for its formal opinion on the information to be supplied within an EIA Report (EIAR). This provision allows the Applicant to be clear about what the authority considers the main effects of the proposal are likely to be, and therefore the topics on which the EIAR should focus.

1.1 Background

Ravengill Energy Park Limited ('the Applicant') is seeking consent to construct and operate the Ravengill Energy Park ('the Proposed Development') on land ('the Site') located approximately 1 km to the north of Leadhills village and 1.5 km south of Abington village, with the A74(M) motorway located to the east, in South Lanarkshire, Scotland. The Site is entirely within the administrative boundary of South Lanarkshire Council (SLC) and the site location is presented on **Figure 1.1 (Appendix A)**.

The scoping layout for the Proposed Development is presented on **Figure 1.2 (Appendix A)** and shows the Site is currently anticipated to accommodate approximately 32 wind turbine generators with a maximum tip height of 220 m and with a generation capacity of >50 Megawatts (MW). In addition, the Site will accommodate a battery energy storage system (BESS) of approximately 50 MW capacity.

The layout of the Proposed Development should be considered preliminary as it will evolve as further survey information is gathered in relation to environmental and technical constraints. The evolution of the layout will also respond to stakeholder consultation feedback from the scoping process and parallel engagement with the local community.

Following on from the development of the turbine layout, the layout of the BESS and ancillary infrastructure will be developed. Ancillary infrastructure will include a crane hardstanding at the base of each turbine, a substation, control building, external transformers, new access tracks and site entrances, temporary construction compounds and laydown areas and borrow pits.

This report has been prepared by competent EIA experts, with a team of technical specialists providing inputs covering all the relevant environmental disciplines as set out in **Table 1.1**.

Table 1.1: EIA Team

Discipline	Organisation
Lead EIA Consultant	Ramboll
Planning and Policy	David Bell Planning
Landscape and Visual Amenity	MVGLA
Cultural Heritage	CFA Archaeology
Ecology and Ornithology	MacArthur Green
Hydrology, Hydrogeology and Geology	Ramboll
Traffic and Transport	Pell Frischmann
Noise	Hoare Lea
Socio-Economics	BiGGAR Economics
Telecommunications	Ramboll

Discipline	Organisation
Shadow Flicker	Ramboll

1.2 Consenting Regime

It is anticipated that the Proposed Development would have an installed capacity of >50 MW. Therefore, an application for consent would be made to the Scottish Ministers under section 36 of the Electricity Act 1989. The Applicant would also seek deemed planning permission under section 57 of the Town and Country Planning (Scotland) Act 1997.

The Proposed Development is of a type listed in Schedule 2 of the EIA Regulations (item (1) *"a generating station"*); and on the basis that "*the development is likely to have significant effects on the environment by virtue of factors such as its nature, size or location*" it is considered that an EIA will be required. In this case, the Applicant has volunteered to undertake an EIA rather than request a formal screening opinion.

Further detail on the policy context and legislative framework relevant to the Proposed Development is contained in **Appendix C**.

1.3 Objectives

The specific objectives of this report are to:

- seek agreement on the potential likely significant effects associated with the Proposed Development, and confirm that all potential likely significant effects have been correctly included in the proposed scope of the EIA ('scoped in');
- seek agreement where non-significant effects have been excluded ('scoped out') from further consideration in the EIA process; and
- invite comment on the proposed approach to baseline data collection, prediction of environmental effects and the assessment of significance.

Unless consultees specifically request otherwise, all responses will be collated and presented as a technical appendix to the EIAR, as a record of the results of the scoping exercise.

1.4 The Applicant

Ravengill Energy Park Ltd is a wholly owned subsidiary of Renewco Power Limited. Renewco Power is a renewable energy developer focussed on developing utility-scale wind, solar and energy storage projects across Europe and the US. Renewco Power blends experienced entrepreneurial talent with commercial, operational and technical expertise across the clean energy and environmental sectors. The team have developed and delivered wind, solar and battery energy storage systems (BESS) projects across the UK and internationally.

1.5 Programme

The Applicant intends to submit an application for a section 36 consent and deemed planning permission to Scottish Ministers in Q1 2026.

1.6 Public Consultation

The Applicant is committed to conducting extensive community consultation and engagement throughout the development process. Online communication such as a project website will strengthen traditional methods such as updates to community councils and printed advertisements.

In accordance with established good practice, the Applicant is planning to host two rounds of public consultation, each including public exhibition events. The Applicant will also work with

local community groups and businesses to seek their ongoing feedback and for consideration in the design process. Written public comments will be documented and analysed, with any adjustments incorporated to the Proposed Development design noted in the application materials.

1.7 Structure of this Report

The remainder of this report is structured as follows:

- Section 2 provides a brief description of the nature and purpose of the development, typical construction activities and decommissioning proposals.
- Section 3 describes the baseline environment conditions, the likely significant environmental effects identified and proposed method for further data collection and evaluation of effects.
- Section 4 describes the effects that are considered not to be significant, and proposes that these be excluded from the EIA, providing a rationale in each case.
- Section 5 provides information on the process for making representations on the Scoping Report.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Site Selection

The Site for the Proposed Development is considered by the Applicant to be suitable for wind farm development for the following reasons:

- the Site is situated amidst a cluster of operational and proposed wind farm developments with the closest being Clyde Wind Farm (operational) to the east, Crookedstane Wind Farm (consented) to the east and Lion Hill Wind Farm (consented) to the south east;
- there is scope to deliver suitable access to the Site for both construction traffic and abnormal invisible loads (AIL) whilst minimising the potential for impacts on local road users;
- the Site has consistently high anticipated wind speeds, which will deliver excellent wind energy yields;
- the Applicant considers that the large-scale character of the landscape in and around the Site has good potential to accommodate large modern, commercial wind turbines; and
- the Site has good access to the electricity transmission network and a grid connection can be achieved in a reasonable timeframe.

2.2 Site Description and Context

The Site, covering an area of approximately 5,184 hectares (ha), is located north of Leadhills village, south of Abington village and west of the A74(M) motorway.

The Site predominantly comprises open moorland, improved grassland and semi-improved grassland, with areas of forestry located in the valleys, predominantly to the east of the B797. The Site terrain is undulating with multiple hills within the boundary such as Ravengill Dod (499 m), Great Hill (523 m) and Mid Hill (404 m). This landscape is typical of the wider location within the Southern Uplands.

There are multiple watercourses and waterbodies located within the Site, including tributaries of the River Clyde such as Glengonnar Water in the north, Snar Water in the west and Elvan Water in the south. The River Clyde runs along the eastern extents of the Site boundary.

The immediate vicinity of the Site is sparsely populated, with settlement largely confined to the valleys. Key settlements within the vicinity of the Site include the villages of Leadhills, Abington, Elvanfoot, Wanlockhead, and Crawfordjohn. Other residential properties are located sporadically in the vicinity of the Site, with three residential properties located within the Site boundary.

There is one statutory site designated for nature conservation within the Site boundary; the Raven Gill Site of Special Scientific Interest (SSSI) which is designated for geology - stratigraphy – Arenig-Llanvirn. No development would be undertaken with the SSSI. L

There are six designated heritage assets, all scheduled monuments, within the Site boundary, as well as eight sites recorded in the HER classed as being of potential national importance. Within 10 km of the Site boundary, there are 31 listed buildings, largely concentrated in the villages of Leadhills and Wanlockhead

Historically, areas of the Site were subject to lead and gold mining activity from the 16th-20th century and evidence of disused mines and mining-related assets are visible and adjacent to the Site.

There is extensive wind energy development within this part of southern Scotland and there are several wind farms at various stages in the consenting process and operational wind farms within the surrounding landscape of the Site including the operational Clyde Wind Farm to the east, and

the consented Priestgill to the northeast, Crookedstane Wind Farm to the east and Lion Hill Wind Farm to the southeast. Watchman Energy Park, at Scoping stage, is located to the southeast.

2.3 The Proposed Development

Details of the Proposed Development will not be finalised until later in the EIA process. The turbine layout will evolve in response to site survey information, environmental and technical constraints, stakeholder feedback, and feedback gathered through public engagement. To allow early engagement, the description of the Project provided herein is based on cautious maximum parameters, especially in relation to number and height of the wind turbines.

The main elements of the Proposed Development are anticipated to be as follows:

- approximately 32 wind turbines with a maximum tip height of 220 m and a combined generation capacity of >50 MW;
- permanent foundations supporting each wind turbine, and associated crane hardstanding at each wind turbine base;
- a series of new on-site access tracks with associated watercourse crossings (where the final layout dictates),which may include upgrade and/or relocation of existing access tracks across the site;
- underground power cables, generally laid in trenches alongside access tracks;
- onsite substation and control building;
- temporary construction compounds and laydown areas; and
- a BESS, including ancillary equipment and co-located with the on-site substation.

In addition, the following ancillary works are to be included in the final Proposed Development:

- extraction of rock from borrow pits;
- temporary on-site concrete batching plant;
- where necessary, off-site works to facilitate the delivery of abnormal loads (e.g. construction of over-run areas and temporary modifications to street furniture etc); and
- temporary anemometer masts for 3 to 6 months during the construction period for calibration purposes.

Biodiversity enhancement measures for the Site may include, but not be limited to, options such as peatland restoration, heathland restoration, grassland management, and riparian tree planting. An Outline Construction Environmental Management Plan (OCEMP), to be submitted as part of the EIAR, will detail how any adverse impacts on biodiversity would be managed during the construction stage. A Biodiversity Environmental Management Plan (BEMP) would be developed for the operational phase and agreed with consultees.

A scoping turbine layout is presented in **Figure 1.2 (Appendix A)** and the turbine coordinates are provided in **Appendix B**. The proposed turbines would be three bladed horizontal axis turbines with tapered tubular steel towers. The wind turbines would be installed on foundations, the detailed design of which will depend on the model of turbine procured and the specific ground conditions. A crane pad would also be required for each turbine and would consist of an area of hardstanding adjacent to the turbine.

A micro-siting allowance of 100 m for the turbines and other infrastructure would be proposed to deal with possible unfavourable site conditions or other construction constraints. These allowances will be clearly defined within the EIAR and assessed as appropriate.

The anticipated height of the wind turbines means there will be a statutory requirement for aviation lighting in accordance with Article 222 of the Air Navigation Order 2016[1]. Any aviation lighting scheme will be consulted upon with the Civil Aviation Authority (CAA) and other relevant consultees.

Energy storage in the form of a BESS is proposed for inclusion as part of the Proposed Development. The BESS would comprise a number of units with ancillary equipment such as inverters. The BESS would store excess power generated by the Proposed Development and release the power to the grid when the output from the Proposed Development falls due to decreased wind speed.

2.3.1 Site Access

A detailed access review is currently underway to confirm the preferred access routes into the Site and the optimal location for these. This review aims to identify suitable access points that use the public road network and avoid settlements as far as practicable, to minimise disturbance and potential for disruption. The current access points under consideration are shown on **Figure 1.2 (Appendix A)** and include the following:

- Access for AIL traffic to the northern and western clusters will likely be direct from the A74(M) motorway, with a crossing of the B797 to access the western cluster. Consultation with the motorway operator, will be progressed to confirm the most appropriate means of achieving deliveries direct from the M74.
- AIL deliveries for the southern cluster will likely be from the A702 (having exited the A74(M) at junction 14 (northbound).
- Construction traffic will likely use the A74(M), A 702 and B797.

Prior to submission of the application for consent, potential construction traffic routes will be fully assessed, considering both vehicle numbers and the delivery of AIL to the Site to ensure the most appropriate solution is developed.

The proposed access routes for general construction traffic and AIL will be clearly identified in the application submission.

Within the Site itself, the Proposed Development would be served by a network of both new and upgraded on-site access tracks to enable construction and maintenance once operational. Existing access tracks will be re-used where possible and any new access tracks will seek to minimise impacts on soils and peat. Where appropriate new tracks may replace existing tracks, in which case the existing track would be restored to avoid unnecessary proliferation of tracks across the Site. The layout of the access tracks will be determined based on the final turbine layout and the technical and environmental constraints on the Site.

2.3.2 Grid Connection and Cabling

The Proposed Development has a grid connection agreement in place that anticipates the project will connect to the grid at the Elvanfoot substation in 2036, though it is anticipated this could be brought forward under the connections reform processes currently being developed and implemented by the National Energy System Operator (NESO).

The consenting of the grid connection will be separately taken forward by the transmission system owner. The Proposed Development has a secured transmission voltage grid connection at the Elvanfoot substation to be located adjacent to the eastern Site boundary. Given the likely

[1] Available at: https://www.legislation.gov.uk/uksi/2016/765/contents [Accessed May 2026].

short distance that the grid connection would cover it is anticipated that the connection would be delivered via an underground cable).

It is anticipated that electric cabling connecting turbines and the control building and onsite substation would be laid primarily in trenches running alongside the access tracks, the layout of which would be determined by the final turbine layout and informed by consideration of relevant environmental receptors, such as on-site ecology and ground conditions. The location of the onsite substation and control building has not been confirmed and will be selected as part of the next stage of design.

2.3.3 Construction

Typical construction activities and work methods will be set out in the EIAR. Information will also be provided on an indicative construction programme, construction traffic generation and routeing, and construction phasing.

An Outline Construction Environmental Management Plan (OCEMP) will also be submitted as part of the EIAR which will contain details of appropriate environmental management measures, including pollution prevention measures (in line with Scottish Environment Protection Agency (SEPA)'s Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs)), and waste minimisation and management measures.

2.3.4 Operation and Maintenance

The anticipated operational life of the wind turbines that form a key part of the Proposed Development is approximately 40 years and the Applicant is intending to seek a 40-year consent.

A wind farm is typically visited up to four times a month by a maintenance crew, and the BESS would require maintenance at a similar frequency. There would also be a requirement for maintenance of the access tracks and other ancillary infrastructure during the operational period.

2.3.5 Decommissioning

Following the operational phase of the project, the Proposed Development would either be decommissioned or repowered. Where decommissioning is required, this is anticipated to involve:

- dismantling and removal of the turbines, met masts, site substation, BESS facility, and any other above ground infrastructure; and
- removal to at least 1 m below ground level of the turbine and met mast foundations.

Detailed decommissioning proposals would be submitted for approval by relevant authorities prior to commencement of decommissioning activities. This would take cognisance of guidance available at the time.

If the decision is taken to repower the project, any new consent would be applied for in line with the applicable regime in place at the time.

2.3.6 Community Benefits

As part of the Proposed Development the Applicant is committed to establishing a Community Benefit Fund which will be accessible to people, organisations, and businesses in local communities. The intention is to develop a suite of Community Benefit opportunities and pathways to access funds and support, around the following broad themes:

- Education and Skills
- Health and Well-Being
- Economy and Jobs

- Environment
- Culture and Heritage
- Facilities and Amenities
- Transport

The Applicant has an established working relationship with BizGive, a specialist company delivering innovative approaches to engaging on Community Benefit packages. The Applicant has developed a set of potential benefits for another project in the wider area and will build on the experience gained on that project to define a benefits package for the Proposed Development.

2.4 Design and Alternatives

The EIAR will include a chapter detailing and illustrating the design optimisation process followed and the reasonable alternatives considered in developing the wind farm layout and setting the physical parameters of the proposed turbines.

The Proposed Development design process will seek to establish a layout and turbine typology which take account of visibility from the surrounding environment and the key environmental constraints on-site and in the surrounding area, with the design also looking to deliver mitigation of adverse effects by design as far as is practicable.

The design iteration process will take account of other environmental and technical factors to establish the final layout for the Proposed Development. Key sensitivities which are likely to influence the design process include:

- key views from surrounding settlements, landmark hills and transport corridors;
- the setting of designated cultural heritage assets in the surrounding area;
- sensitive ecological habitats, including unmodified blanket bog, dry heath, marshy grassland and acid flushes;
- groundwater dependant ecological habitats;
- watercourses and associated fisheries, riverine mammals and invertebrates;
- private water supplies; and
- breeding birds, including raptors and waders (including disturbance and collision risk for these species).

3. SCOPE OF THE EIA

3.1 Summary of Scope of EIA

3.1.1 Introduction

The EIA Regulations (Regulation 4(2) and 4(3)) requires that the EIA identifies, describes and assesses significant effects of the proposed development on the following factors:

- population and human health;
- biodiversity, and in particular species and habitats protected under Council Directive 92/43/EEC on the conservation of natural habits and wild fauna and flora and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds;
- land, soil, water, air and climate; and
- material assets, cultural heritage and the landscape.

For renewable energy projects in the UK, identification of potential impacts and assessment of those impacts to determine whether or not significant effects are likely on the above-mentioned factors is usually provided under the specialist topic categories as shown in **Table 3.1**.

The inclusion of an individual specialist topic category in an EIA process, and reporting of that assessment in the EIAR, will depend on identification of a likelihood of a significant effect occurring. This is usually confirmed by the EIA scoping process. The proposed scope of the EIAR for the Proposed Development is summarised in **Table 3.1**. For those topics proposed to be scoped out further details and justification are included in Section 4 of this report. For many of the topics that are scoped out of full assessment in the EIA, information to support the appropriate consideration of these topics will be provided within the EIAR.

For topics that are scoped in to the EIA, the EIAR will set out the baseline, then assess and report on the likely significant effects, including, where applicable, direct, indirect, cumulative, secondary, short, medium and long-term, permanent and temporary, beneficial and adverse effects.

Table 3.1: Proposed Scope of EIAR

Topics to be scoped in	Topics to be scoped out
Landscape and Visual Amenity	Socio-Economics and Tourism
Cultural Heritage	Population and Human Health
Ecology	Major Accidents and Disasters
Ornithology	Ice Throw
Hydrology, Hydrogeology and Geology	Air Quality
Traffic and Transport	Climate Change
Noise and Vibration	Forestry
Aviation	Eskdalemuir Seismic Array
	Telecommunications
	Shadow Flicker

3.1.2 Cumulative Effects

The EIA Regulations require that, in assessing the effects of a particular development proposal, consideration is also given to the cumulative effects which might arise from the proposal in conjunction with other existing and/or approved development proposals.

Cumulative effects are defined as those effects arising from the addition or combination of the Proposed Development to other developments, or those arising from synergistic effects[2] between factors.

The assessment of cumulative effects from the Proposed Development in combination with existing developments will be addressed during the assessment of effects of the Proposed Development alone, as pre-existing developments are part of the baseline environment. Cumulative effects will be addressed under each topic chapter.

Characteristics and thresholds of cumulative schemes proposed to be considered as part of the assessment are set out in **Table 3.2**. Proposed developments at the scoping or pre-application stage will generally not be included in the assessment, as such proposals are not fully formed and may be subject to changes that cannot be foreseen. Any differences to this approach will be detailed in each technical assessment chapter.

Table 3.2: Cumulative Planning Application Search Characteristics and Thresholds

Cumulative Scheme Characteristics	Thresholds
It is proposed that the cumulative schemes to be considered would include onshore wind developments within 15 km of the Site3where a turbine or turbines are greater than 50 m tip height and where those schemes are: • under construction; • have a valid consent; or • have been submitted for scoping where they have a known timescale to planning submission and where they have a potential to play an important part in the cumulative effects.	It is proposed that all cumulative schemes for inclusion would: a) comprise a construction and/or operational phase that is concurrent with the Proposed Development; b) share common sensitive receptors/resources which are assessed and described in the supporting environmental documentation, and have the potential to be significantly affected by the combination of the proposed or approved (committed) development and the Proposed Development; and c) have sufficient environmental assessment information freely and publicly available to inform a cumulative effects assessment.

It should be noted that not all of the cumulative developments would necessarily have a cumulative effect in respect of any particular environmental topic and therefore each technical assessment will provide a full justification for the list of schemes considered in their respective assessments. As the cumulative baseline is constantly evolving, the schedule of cumulative schemes to be included in the assessment will be finalised following consultation with the relevant consultees and at the point of a finalised design is reached (approximately four months prior to submission).

3.2 Consultation

Consultation alongside the EIA process is critical to the development of a comprehensive and proportionate EIAR. The views of statutory and non-statutory consultees are important to ensure that the EIA from the outset focuses on specific issues where significant environmental effects are likely, and where further investigation is required.

[2] A synergistic effect is the result of two or more processes interacting together to produce an effect that is greater than the cumulative effect that those processes produce when used individually.

[3] It is noted that guidance includes for landscape and visual Study Areas of greater distances. However, early Zone of Theoretical Visibility (ZTV) analysis was prepared allowing analysis of the potential geographic range of landscape and visual effects, which afforded a more focussed Study Area for the Proposed Development based on likely significant effects (refer to Section 3.3 of this Scoping Report for further details).

The consultation, as an ongoing process, enables embedded and additional mitigation measures to be incorporated into the Proposed Development to limit adverse environmental effects and optimise environmental benefits. Early and ongoing engagement with consultees will be important to influence the design process of the Proposed Development by seeking an appropriate level of feedback from consultees, to ensure that comments are considered in the evolving design.

As part of the EIA process, consultation will be undertaken with a range of statutory and non-statutory consultees.

The Applicant intends to carry out community consultation, with two public exhibitions. The outcome of the consultation process will be compiled into a Pre-Application Consultation Report to accompany the application for consent, detailing the consultation undertaken and any changes made to the Proposed Development as a result of this consultation.

3.3 Landscape and Visual Amenity

3.3.1 Overview

The Landscape and Visual Amenity Chapter of the EIAR will consider the potential impacts of the Proposed Development on landscape and visual receptors during construction and operation, and evaluate whether these impacts result in potential significant effects. The chapter sets out the proposed approach to the Landscape and Visual Impact Assessment (LVIA), including consultation, Study Area, baseline conditions, and assessment methodology.

This Section of the Scoping Report is supported by the following figures:

- Figure 3.3.1 - Zone of Theoretical Visibility to 45 km;
- Figure 3.3.2 - Zone of Theoretical Visibility to 45 km at 1:1000,000 scale;
- Figure 3.3.3a - Cumulative Wind Farms within 25 km;
- Figure 3.3.3b - Cumulative Wind Farms within 25 km - List;
- Figure 3.3.4 - Zone of Theoretical Visibility with Landscape Character Types;
- Figure 3.3.5 – Zone of Theoretical Visibility with Viewpoints; and
- Figure 3.3.6 – Zone of Theoretical Visibility with Designated Landscapes.

Consultation to Date

Due to the availability of information and existing knowledge of the area within the LVIA team, no consultation on landscape and visual matters has been undertaken with South Lanarkshire Council or with NatureScot prior to submission of this scoping report.

As part of the on-going work to inform the LVIA, it is envisaged that a consultation exercise to obtain additional data and the views of statutory consultees would be necessary following receipt of the scoping opinion. A summary of the consultation process on landscape and visual matters would be included in the LVIA chapter.

3.3.2 Study Area

The Study Area to be adopted for the LVIA was initially set at approximately 45 km from the outer edges of the Site, in accordance with NatureScot guidance, which suggests that this is applicable for turbines of over 150 metres (m) to blade tip. Subsequently, a basic Zone of Theoretical Visibility (ZTV) analysis was prepared from the outermost turbines allowing some early analysis of the potential geographic range of potential landscape and visual effects. The ZTV (see Figures 3.3.1 and 3.3.2) shows areas from where any part (however small) of the turbines of the Proposed Development would theoretically be visible. It does not take account of

any screening or indicate how much of any turbine may be seen, i.e. whether visibility at any given point is of blade tips only or full turbines. This type of ZTV therefore represents the maximum theoretical visibility of the Proposed Development and is the worst case scenario.

The ZTV shows that theoretical visibility would be widespread within 5 km from the outermost turbines, thereafter, would reduce to along the M74 motorway corridor between Larkhall and Moffat, and upper slopes and ridgelines of the surrounding Southern Uplands, gradually reducing in extent beyond 10 km to summits and upper hill slopes facing the Site.

Following a review of the ZTV and fieldwork, the Study Area was reduced to allow reporting to focus on the extent of likely significant effects. The following sets out the Study Area for landscape and visual receptors, all distances are from the outermost turbines:

- Landscape character – 15 km;
- Visual receptors:
  - Routes and long distance footpaths – 25 km;
  - Settlements – 10 km;
  - Core Paths and Rights of Way – 5 km;
- Cumulative assessment (including cumulative data collection) – 25 km;
- Aviation lighting assessment – 20 km;
- Landscape designations – 15 km;
- Residential Visual Amenity Assessment – 2.5 km.

3.3.3 Baseline Conditions

Following identification of the Study Area, a preliminary review of the baseline conditions has been undertaken, and the findings are reported below.

The key sources of information to inform the baseline landscape and visual conditions of the Site and its surroundings are:

- Ordnance Survey and other leisure maps;
- Landscape Character Type (LCT) descriptions available from NatureScot[4];
- Landscape Character Assessment: Glasgow and Clyde Valley – Landscape Evolution and Influences (NatureScot, 2019)[5]
- South Lanarkshire Landscape Character Assessment (Ironside Farrar, 2010)[6];
- South Lanarkshire Landscape Designations (Ironside Farrar, 2010)[7]
- South Lanarkshire Landscape Capacity Study for Wind Energy (Ironside Farrar, 2016)[8] and
- Citations for designated landscapes available from NatureScot, Historic Environment Scotland (HES), and South Lanarkshire /Dumfries and Galloway Council.

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[4] NatureScot. (2019) Scottish Landscape Character Types Map and Descriptions. Available from: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions [Accessed May 2025]

[5] NatureScot. (2019) Landscape Character Assessment: Glasgow and Clyde Valley – Landscape Evolution and Influences. Available from: https://www.nature.scot/doc/landscape-character-assessment-glasgow-and-clyde-valley-landscape-evolution-and-influences [Accessed May 2025]

[6] Ironside Farrar. (2010) South Lanarkshire Landscape Character. Available from: https://www.southlanarkshire.gov.uk/downloads/file/4146/landscape_character_assessment_-_final_report_november_2010 [Accessed May 2025]

[7] Ironside Farrar. (2010) South Lanarkshire Designations. Available from: https://www.southlanarkshire.gov.uk/downloads/file/4147/landscape_designations_report_november_2010 [Accessed May 2025]

[8] Ironside Farrar. (2015) South Lanarkshire Landscape Capacity Study for Wind Energy. Available from: https://www.southlanarkshire.gov.uk/downloads/download/868/renewable_energy_supplementary_guidance [Accessed May 2025]

The Site

The Site covers approximately 5,184 hectares (ha) of the Southern Uplands north, northeast and northwest of the villages of Leadhills and Wanlockhead, and southwest of Abington (0.5 km at its closest point). The Site is in three distinct upland clusters:

- the first, the Western Cluster west of the B797 road includes turbines 1-8 on Brown Dod (489 m Above Ordnance Datum (AOD)), Rake Law (494 m AOD), and Hunt Law (535 m AOD);
- the second, Northern Cluster north of the B7040 road, and east of the B787, includes turbines 9–23 on Ravengill Dod (538 m AOD), Harryburn Brae (499 m AOD), Wellgrain Dodd (555 m AOD), and Peat Hill (458 m AOD); and
- the third, Southern Cluster is located to the south of the B7040 road comprising turbines 24–32 on Leadburn Rig (468 m AOD), Glen Ea's Hill (549 m AOD), Lousie Wood Law (618 m AOD), Great Law 523 m AOD, and Dun Law 677 m AOD.

All three areas comprise open moorland, some of which is used as pasture for sheep grazing and managed for game birds.

The Surrounding Landscape

The 45 km initial Study Area runs from Harthill in the north, to Dumfries in the south, Ettrickbridge in the east, and Coylton in the west. The ZTV however, illustrates that theoretical visibility would not cover all of this area, and as discussed previously, the assessment would focus on a smaller Study Area where significant landscape and visual effects may occur. The landscape Study Area, of approximately 15 km radius as identified above, includes the Southern Upland Hills between Culter Fell and the Tweedsmuir valley to Lowther Hill and Cairn Table. To the north it extends to Lesmahagow beyond the Douglas Water valley.

There are numerous existing wind farms within 25 km of the Site, as shown on Figure 3.3.3, including large developments as follows:

- Clyde and extension – 4.0 km to the east;
- Middlemuir – 7.8 km to the northwest;
- Hagshaw Cluster including Galawhistle, Douglas West, Dalquhandy, Nutberry and Cumberhead – 15.8 km to the northwest;
- Harestanes and Minnygap – 15.9 km to the southeast; and
- Sandy Knowe, Hare Hill, Whiteside and Sanquhar – 17.2 km to the southwest.

Consideration of the relationship between the Proposed Development and these wind farms will be a key aspect for both design of the scheme and assessment of landscape and visual effects.

Landscape Character

The LCTs within the Site and Study Area are described in the 2019 NatureScot review of the landscape character of Scotland[9] and illustrated on Figure 3.3.4.

The Site lies entirely within LCT 217 Southern Uplands – Glasgow & Clyde Valley where all of the proposed turbines would be located.

The extent of theoretical visibility within each LCT would be reviewed during the design evolution of the Proposed Development with the LVIA likely to include assessment of effects on landscape character of the following additional LCTs:

[9] NatureScot landscape character assessment are found at: https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

- Southern Uplands – Borders (LCT 95);
- Southern Uplands – Dumfries & Galloway (LCT 177);
- Southern Uplands with Forest – Glasgow & Clyde Valley (LCT 178);
- Upland River Valley – Glasgow & Clyde Valley (LCT 207);
- Broad Valley Upland (LCT 208);
- Upland Glen – Glasgow & Clyde Valley (LCT 209);
- Plateau Moorlands – Glasgow & Clyde Valley (LCT 213); and
- Rounded Landmark Hills (LCT 218);

Landscape Designations

Landscape designations within the 15 km Study Area are illustrated on Figure 3.3.6 as follows:

- Scot's Mining Company House Garden and Designed Landscape (GDL) – 1.5 km to the south;
- Leadhills and Lowther Hills Special Landscape Area (SLA) – the Proposed Development is located within the designation;
- Upper Clyde Valley SLA – 5.1 km to the north east; and
- Thornhill Uplands Regional Scenic Area (RSA) – 0.9 km to the south.

South Lanarkshire Council documentation that accompanies the Local Development Plan would be referred to when assessing the special qualities of the two SLAs in the LVIA.

It is proposed that landscape designations between 15 km to 45 km are not included in the detailed LVIA as it is not considered that the addition of the Proposed Development would result in a likely significant effect upon the special qualities of the designation 15 km from the Proposed Development.

Visual Amenity

Effects on views and visual amenity occur when the Proposed Development changes or influences the view or visual amenity as experienced by people. Visual amenity may be described as the overall visual experience from a given location, whilst a 'view' reflects a specific direction. People may invariably be engaged in different activities or have different perspectives and in recognition of these differences, it is common practice to refer to 'visual receptors' and these include:

- residents within settlements and of individual properties;
- people who travel through the area with potential views of the Proposed Development; and
- people engaged in recreational activities including walkers on hills, core paths and visitors to tourist destinations where the visual experience is likely to include a focus on the surrounding landscape.

Visual Receptors

The ZTV shown in Figures 3.3.1 and 3.3.2 indicates theoretical visibility at several settlements within the wider 45 km Study Area including Leadhills, Wanlockhead, Abington, Crawfordjohn, Crawford, Elvanfoot and several smaller settlements. We propose that the LVIA would concentrate on the effect on views from settlements within 10 km of the Site, where there is potential for significant effects to occur. Settlements that are not within the ZTV, and those beyond 10 km, would be scoped out of the LVIA.

Residential properties within approximately 2.5 km of the Site would be assessed separately in the RVAA which would be presented in an appendix and summarized in the LVIA chapter.

Roads within the Study Area tend to follow valleys or passes, although a network of roads cover flatter land. The main routes from which theoretical visibility is identified include but are not limited to:

- M74/A74(M) motorway from Glasgow to Carlisle (which passes adjacent to the northernmost point of the Site at its closest point);
- B797 road between the Clyde and Nith valleys (which passes through the Site and is approx.0.6 km from the proposed turbines at its closest point);
- B740 road which crosses the Crawick Pass through the Lowther Hills (which lies approx. 3.5 km to the northwest of the Site); and
- B7040 road between Leadhills and Elvanfoot (which passes through the Site and is approx.0.6 km from the proposed turbines at its closest point).
- A702 road from Abington to Carronbridge (which forms part of the east and south eastern boundary of the Site)

The West Coast Main Line rail route between Glasgow and London passes through the landscape 2.0 km to the east of the Site and broadly follows the M74 corridor south of Abington.

Recreational routes tend not to be limited to valleys, with the Annandale Way long distance path crossing the Southern Uplands 12.4 km to the southeast. The Southern Upland Way passes 3.9 km to the south of the Site across the tops of hills and through upland valleys and would be a key visual receptor assessed.

National Cycle Route 74 (NCN74) from Gretna to Glasgow runs parallel to the M74/A74(M) road to the east of the Site.

Proposed LVIA Viewpoints

Viewpoints proposed for the assessment of visual effects will be discussed with SLC and NatureScot; an initial list of locations is identified in Table 3.3.1 and shown on Figure 3.3.5. These include locations to represent:

- views from the local roads including those listed above;
- views from settlements close to the Proposed Development;
- views from key visitor locations within the surrounding landscape e.g. from the Southern Upland Way; and
- views from hilltops that are both popular with walkers and representative of designated landscapes, such as Tinto Hill, Hart Fell, and Lowther Hill.

Table 3.3.1: Preliminary Viewpoints

No.	Viewpoint Name	Grid Coordinates		Approx. Distance (km)	Visual Receptor Represented
1	Tinto Hill	295280	634350	15.1	Walkers
2	Culter Fell	305280	629080	15.6	Walkers
3	Castle Hill	294450	622280	3.4	Walkers
4	Crawfordjohn	287750	623675	5.8	Residents
5	Hart Fell	311344	613574	18.1	Walkers
6	Hods Hill	300477	609480	8.8	Walkers
7	Wintercleuch	296572	610020	5.6	Residents

No.	Viewpoint Name	Grid Coordinates		Approx. Distance (km)	Visual Receptor Represented
8	Lowther Hill	288990	610810	4.0	Walkers
9	Queensberry	298911	599747	15.3	Walkers
10	Leadhills	288667	615254	1.8	Residents
11	Upper Wanlockhead	287571	612711	4.0	Residents
12	Glengaber Hill	284377	613933	3.4	Walkers
13	B797 Road	289323	619703	1.6	Road users
14	Cairn Table	272450	624250	15.6	Walkers
15	Abington	292930	623091	3.6	Residents

Cumulative

There are existing wind farms within and around the Study Area, which would be considered as part of the baseline for the LVIA. With respect to potential cumulative landscape and visual effects with other proposed wind farms, there are numerous developments at varied stages in the planning process. Given the ever-changing situation, cumulative data is not collated exhaustively at this time but would be prepared during the LVIA. Local authority planning portals and the Energy Consents Unit website would be used to identify proposed wind farms, and the final list would be agreed with statutory consultees to give as up to date a picture as possible.

3.3.4 Potential Significant Effects

Construction

The landscape and visual effects that could arise as a result of the Proposed Development during construction are identified as follows:

- temporary effects on landscape character, primarily as a result of wind turbine installation during construction, with direct physical effects on the fabric on the landscape and on the character of the Site landscape relating to ground level structures, and indirect effects on the perceived effects on the character of the surrounding landscape; and
- temporary visual effects on views, primarily as a result of visibility of ground level activity and structures as well as wind turbine installation during construction, experienced by people (visual receptors).

Operation

The landscape and visual effects that could arise as a result of the Proposed Development during operation are identified as follows:

- long-term effects on landscape character, as a result of wind turbine operation and ground level structures, either affecting the pattern of elements that define the character or affecting the visual/ perceptual characteristics of landscape character;
- long-term visual effects as a result of the Proposed Development on nearby views, with effects as a result of wind turbine operation on wider views, experienced by people at places with visibility of different elements of the Proposed Development. This includes effects of aviation safety lighting after dark and effects on the visual aspects of residential amenity for properties close to the Site;

- cumulative effects of the Proposed Development in combination with consented and proposed wind farm schemes across the wider area, including combined, successive and sequential visibility; and
- implications of significant effects identified in or affecting designated landscapes, which may affect their special qualities and reasons for designation.

Decommissioning

The effects of the Proposed Development during decommissioning would be similar to those identified during construction but would reduce as decommissioning proceeds.

Matters and aspects to be Scoped out of the LVIA

To allow focusing of the assessment, the LVIA would identify where receptors are unlikely to be affected by the Proposed Development, either through having little or no theoretical visibility, or being distant from the Proposed Development, and those receptors would be scoped out of the LVIA. In addition to this, the scope of reporting would be further focused on those effects that are found to be significant or contribute to the meaningful discussion of landscape and visual effects of the Proposed Development.

The following elements (distance from the outer turbines) are likely to be scoped out of the LVIA on the basis of initial fieldwork and ZTV coverage:

- Effects on landscape character beyond approximately 15 km;
- Effects on views from viewpoints beyond approximately 25 km, although there would be locations where the Proposed Development would be visible at greater distances;
- Effects on views from routes beyond approximately 25 km;
- Effects on views from local paths (Core Paths and locally promoted paths) beyond approximately 5 km;
- Effects on views from settlements beyond approximately 10 km;
- Effects on designated landscapes beyond approximately 25 km;
- Cumulative effects with turbines of less than 50 m to blade tip; and
- Decommissioning effects, which are similar to, but in reverse of construction effects, reducing on completion.

No other potential receptors or impacts would be scoped out prior to the confirmation of the final layout, details on aviation lighting requirements and turbine tip height to be included in the Proposed Development.

3.3.5 Assessment Methodology

The most widely visible elements of the Proposed Development would be the wind turbines. Much of the LVIA would therefore, necessarily, consider primarily the visibility and effects of the turbines. However, the assessment of effects would consider all other elements of the Proposed Development.

The LVIA would identify potential significant effects of the Proposed Development on the landscape resource and visual amenity, in accordance with the principles contained in the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)[10].

Other sources of guidance and references used in the LVIA include:

[10] Landscape Institute., Institute of Environmental Management and Assessment. (2013) Guidelines for Landscape and Visual Impact Assessment, Third Edition. London. Routledge.

- Visual Representation of Wind Farms. Version 2.2 (Scottish Natural Heritage (Now NatureScot), 2017)[11];
- Technical Guidance Note 06/19 Visual representation of development proposals (Landscape Institute, 2019);
- Siting and Designing of Windfarms in the Landscape: Version 3a (SNH, 2017)[12];
- Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments (NatureScot, 2021)[13] ;
- Guidance on Aviation Lighting Impact Assessment (NatureScot, 2024)[14]; and
- Technical Guidance Note 2/19 Residential Visual Amenity Assessment (Landscape Institute, 2019)[15].

Desk Study and Field Surveys

Desk studies would be carried out to identify key landscape and visual receptors, and to identify the likely visibility of the Proposed Development based on ZTV mapping. Computer generated 3D models would be used to prepare draft wireline images to illustrate theoretical visibility, and to enable the confirmation and analysis of viewpoints for fieldwork and for detailed visualisation modelling through the production of wirelines and photomontages.

Fieldwork would be carried out including a visit to the Site, all viewpoints, and the wider area more generally to assess potential effects on landscape character and designated landscapes.

Photography would be undertaken for viewpoint locations, including photography at dusk for locations for which night-time photomontages are required to illustrate the effects of aviation lighting. Viewpoints to illustrate potential night-time effects would be agreed with statutory consultees once the lit turbines have been identified.

Assessment of Landscape Effects

Effects on landscape character would be considered in detail for LCTs within the Study Area, with ZTV mapping used as a means of identifying which LCTs require assessment. Predicted changes in both the physical landscape and landscape character would be identified. The assessment would identify the magnitude and type of change to the landscape, with reference to its key characteristics as set out in the NatureScot LCT descriptions. The sensitivity of the landscape would also be considered, acknowledging local sensitivity studies, and value placed on the landscape through designation, key or unique characteristics, as well as the presence of other consented and operational wind farms. The magnitude of the effect would be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects

[11] Scottish Natural Heritage. (2017) Visual Representation of Wind Farms. Available from: https://www.nature.scot/sites/default/files/2019-09/Guidance%20-%20Visual%20representation%20of%20wind%20farms%20-%20Feb%202017.pdf [Accessed February 2025]
[12] Scottish Natural Heritage. (2017) Siting and Designing Wind Farms in the Landscape, Guidance. Available from: https://www.nature.scot/sites/default/files/2017-11/Siting%20and%20designing%20windfarms%20in%20the%20landscape%20-%20version%203a.pdf [Accessed February 2025]
[13] NatureScot (2021) Assessing the Cumulative Landscape and Visual Impact of Onshore Developments. Available from: https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments [Accessed February 2025]
[14] NatureScot (2024) Guidance on Aviation Lighting Impact Assessment. Available from: https://www.nature.scot/doc/guidance-aviation-lighting-impact-assessment#_Appendix_4:_Supporting:~:text=1%C2%A0%C2%A0%C2%A0%C2%A0%C2%A0%C2%A0%C2%A0%20This%20appendix%20provides%20recommendations%20on%20supporting%20figures%20and%20visualisations%20which%20should%20accompany%20an%20Aviation%20Lighting%20Impact%20Assessment. [Accessed May 2025]
[15] Landscape Institute. (2019) Residential Visual Amenity Assessment (RVAA), Technical Guidance Note 02/19. Available from: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/03/tgn-02-2019-rvaa.pdf [Accessed February 2025]

would all be considered, to form a judgement regarding the overall effect and whether this is judged to be significant.

Significance of landscape effects, considering receptor sensitivity and the magnitude of change as set out above, would identify the level of effect using four categories: Major, Moderate, Minor, and Negligible. Major and Moderate landscape effects would be considered to be significant in the context of the EIA Regulations.

Assessment of Visual Effects

Visual effects are experienced by people at different locations around the Study Area, at static locations (for example from settlements or from selected viewpoints) and sequentially when travelling along routes. It is usually considered that grouping people related to 'status' (e.g. residents, visitors/ tourists/ motorists) or the 'activity' they are engaged in (sport, informal recreation, commuting) would help the assessment of sensitivity and lead to findings which can be considered representative. An assessment of the visual effects of the Proposed Development on receptors would be based on analysis of the ZTVs, field studies and assessment of representative viewpoints. Proposed viewpoints have been listed in Table 3.3.1. Some more distant key views may be provided with wirelines to illustrate potential visibility, even if no significant effects are likely to occur.

GLVIA3 states that the nature of visual receptors, commonly referred to as their 'sensitivity', should be assessed in terms of the susceptibility of the receptor to change in views/ visual amenity and the value attached to particular views. The magnitude of the effect would be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects would all be considered in forming a judgement regarding the overall effect and whether this is judged to be significant.

Significance of visual effects, considering receptor sensitivity and the magnitude of change as set out above, would identify the level of effect using four categories: Major, Moderate, Minor, and Negligible. Major and Moderate visual effects would be considered to be significant in the context of the EIA Regulations.

Aviation Lighting

In the interests of aviation safety, Civil Aviation Authority (CAA) guidance states that turbines over 150 m to tip height are required to incorporate visible lighting. An assessment of the visual effects of aviation lighting on the proposed wind turbines would be carried out as part of the LVIA and included within the assessment.

The night-time context at viewpoint locations would be described, with the related sensitivity and magnitude of change arising from the proposed aviation lighting drawn upon to assess the likely visual effects of aviation lighting and to provide general comment on the likely effects across the Study Area.

Night-time photomontages, using photographs taken shortly after dusk (with due consideration of safety of photographers), would be produced for three viewpoints to illustrate the potential appearance of aviation lights on turbines relative to the existing night-time baseline. The selection of viewpoints to be represented would be agreed with consultees on completion of a design freeze and upon agreement of the proposed scheme of aviation lighting.

It is not proposed to provide night-time visualisations from hills or remote off-road locations for Health and Safety reasons, and because it is less likely that there will be viewers in these locations after dark.

Residential Visual Amenity Assessment

Visual amenity is a component of 'residential amenity', which includes noise, shadow flicker etc., and is strictly a planning consideration relevant to residents at their properties. Changes in visual aspects of residential amenity would be considered in a 'Residential Visual Amenity Assessment' (RVAA) which typically considers effects on properties within 2 to 2.5 km of proposed turbine locations and would be required for this LVIA.

The RVAA would be carried out in accordance with the Landscape Institute guidance.

Visualisations

Visualisations and graphics used to support the assessment would include:

- ZTV maps analysing visibility of the Proposed Development to turbine tip and hub height as well as combined ZTV maps with other wind farms;
- Baseline photographs of existing views from the selected viewpoints;
- Wireline images to illustrate theoretical visibility of the Proposed Development;
- Photomontages to illustrate the predicted changes to views; and
- Night-time photomontages from three viewpoints to illustrate the appearance of aviation lighting after dark.

Wirelines would include cumulative schemes and would be produced in accordance with NatureScot guidance[16].

Assessment of Cumulative Effects

The LVIA would consider operational wind farms and those under construction as part of the existing baseline.

The CLVIA would consider the current pattern of wind farms across the wider landscape and include consented schemes and schemes at application stage.

The process for identifying wind farms to be considered in detail in the CLVIA would exclude wind turbines of less than 50 m to blade tip height. Data would be collected for wind farms within 45 km of the Proposed Development. The assessment of effects would focus on those with the potential to have significant cumulative relationships with the Proposed Development, which tend to be those within approximately 15-20 km of the Proposed Development. Based on professional judgement, key considerations would be the interaction of the Proposed Development with existing and other developments, and the overall pattern of wind farms within the Study Area. It is unlikely that significant cumulative effects due to the introduction of the Proposed Development would be identified at a range greater than 15 km, and it is proposed therefore that the CLVIA would focus on receptors within 15 km of the Proposed Development. Cumulative data collection would focus on schemes within approximately 25 km from the Proposed Development (to allow for views in opposite directions).

The CLVIA would assess the combined visual effects of the Proposed Development with other existing or reasonably foreseeable wind farms within the Study Area. The CLVIA would consider operational and consented schemes, and those which have undetermined applications or appeals. The CLVIA would seek to focus detailed assessment on the cumulative effects of the Proposed Development with other developments most likely to have cumulative relationships with the Development that result in significant effects.

As noted above, the research to collect cumulative data would be undertaken using the local council's planning portals and the Energy Consents Unit (ECU) websites. A 'cumulative cut-off

[16] Ibid

date' of 3 months prior to the Proposed Development submission is proposed to allow figures and assessment to be completed and to ensure that the most up to date information is illustrated. We propose that scoping schemes would not be included in the CLVIA due to their uncertainty of progressing to operational sites turbines below 50 m to blade tip height.

The CLVIA would be carried out in accordance with the principles contained in guidance on cumulative assessment[17]. This methodology assesses different development scenarios with increasing levels of 'uncertainty'. Cumulative scenarios would include:

- Existing scenario: this assesses the effects with all operational developments and those under construction present in the baseline and thus represents the LVIA;
- Consented Scenario: this scenario is somewhat speculative because it assumes that consented developments are also present in the landscape; and
- In-planning Scenario: this is the most speculative scenario because it assumes all undetermined applications, as well as all developments included in the earlier scenarios, are present in the landscape and therefore considers the effect of adding the Proposed Development into this landscape.

The intervisibility of the Proposed Development with other developments in the surrounding area would be explored by overlaying the ZTVs. Paired ZTVs would be prepared to illustrate the key relationships between the Development and other developments (or development groups) close to the Site. It is not proposed that exhaustive combined ZTVs would be produced, but rather that selected combinations would be used to illustrate key intervisibility relationships. Cumulative visual effects would be assessed through analysis of combined ZTVs, views from individual viewpoints and sequential views from routes.

The magnitude of additional cumulative change to views or landscape character is the additional influence the Proposed Development has on the views or character of the landscape, assuming the other developments are already present.

The cumulative assessment would consider the in-combination effects of emerging wind energy development patterns, and how the Proposed Development relates to these patterns and trends.

Designated Landscapes

The LVIA would review the baseline description and citations of designated landscapes within the ZTV and within the Study Area. Following the assessment of landscape and visual effects, there would be a review of the identified effects for landscape and visual receptors within those designated areas, and how the identified effects would affect the key qualities and reasons for designation. No separate assessment of effects on designated areas would be made, to avoid double counting.

Limitations and Assumptions

The assumptions and limitations that have been encountered during the production of this scoping report are as follows:

- Limitations to the LVIA include a reliance on bare-ground modelling for wireframes and ZTVs used in graphics, which does not take account of potential screening by buildings and vegetation. The theoretical visibility indicated by the bare-ground models is therefore an over-estimation of visibility. Actual visibility would be identified for receptors based on fieldwork and would also be illustrated in photomontages;
- It should be noted that illustrations and modelling cannot replace the need for site visits and can only be used to represent what people may see from the viewpoint. Whilst accuracy of

[17] Ibid

modelling is essential, modelling can only be as accurate as the data used and cannot be used to replace field visits. It is noted also that the movement of the turbines may render them more noticeable in the view than static photographs/ photomontages can portray; and

- Limitations to the cumulative assessment include the uncertainty of whether the proposed wind farms would be built in the future. This includes consented schemes that may or may not be built. The assessment would also rely on data available at the 'cut-off' date, and it should be noted that the locations and specifications of turbines may change for proposed and consented schemes before they are actually built, through redesign and/ or micro-siting.

Any further assumptions and limitations encountered during the assessment process would be set out in the EIAR.

3.3.6 Questions for Consultees

Table 3.3.2: Questions to Consultees (Landscape and Visual Amenity)

LVIA1	Are consultees in agreement with the proposed approach to consultation?
LVIA2	Are consultees in agreement with the proposed Study Areas for the assessment of landscape and visual receptors (including CLVIA)?
LVIA3	Are there any comments or suggestions in relation to the viewpoint locations proposed in Table 3.4.1?
LVIA4	Are there any comments on the approach to assessing the effects of turbine aviation lighting?
LVIA5	Are consultees in agreement that the assessment of the effects on landscape designations should focus on two RSAs located within 15 km of the Site?
LVIA6	Are there any comments or suggestions on the approach to cumulative landscape and visual assessment?
LVIA7	Are consultees in agreement with the proposed methodology to be applied to the LVIA?

3.4 Cultural Heritage

3.4.1 Overview

This section provides an overview of the archaeology and cultural heritage context for the Proposed Development. It sets out the proposed approach to the assessment of potential significant effects associated with the Proposed Development on archaeology and cultural heritage features.

3.4.2 Study Area

It is proposed that two Study Areas will be used for the cultural heritage assessment.

- The Inner Study Area - the Site, as defined by the red line boundary, will form the Study Area for the identification of heritage assets that could receive direct or indirect effects arising from the construction of the Proposed Development (shown on Figure 3.4.1 (Appendix A)).
- The Outer Study Area - a wider Study Area extending 10 km around the outermost finalised proposed turbine locations (and including the Inner Study Area) will be used for the identification of cultural heritage assets whose settings may be affected by the Proposed Development (including cumulative effects). These effects will be identified using the ZTVs (refer to section 3.3) which will also be assessed to identify any designated assets beyond this 10 km Study Area that have settings that may be especially sensitive to the Proposed Development (shown on Figure 3.4.2 (Appendix A)).

3.4.3 Baseline Conditions

An initial review of the baseline conditions is summarised below for the Inner Study Area and the Outer Study Area. Baseline conditions will be further reviewed and updated as described in the 'Assessment Methodology' of this section.

Inner Study Area

There are two designated heritage assets (both scheduled monuments), assets of national importance and high sensitivity, within the Inner Study Area:

- Waterhead, platform settlement 900m N of (SM 4714), and
- Glengeith, settlement, bastle house and field system (SM 4798).

In addition to these scheduled sites, there are four sites recorded in the Historic Environment Record (HER) that are classed as NSR sites of schedulable quality, being of potential national importance and high sensitivity, within the Inner Study Area:

- North Shortcleuch unenclosed platform settlement (WoSAS 10408),
- Hass Burnt Mound (WoSAS 12012),
- Scapcleuch Burn unenclosed platform settlement (WoSAS 12014), and
- Scapcleuch Burn unenclosed platform settlement (WoSAS 12015)

There are no Listed Buildings or Conservation Areas within the Inner Study Area, and no part of the Inner Study Area lies within an Inventory Garden and Designed Landscape (GDL) or Historic Battlefield.

There are 31 non-designated heritage assets recorded in the HER within the Inner Study Area (not including HER assets that are also parts of Scheduled Monuments or are non-statutory register (NSR) sites). These non-designated assets include:

- Prehistoric features such as platform settlements and burnt mounds;
- Medieval features include a possible chapel and burial ground and possible field clearance; and
- Post medieval assets, largely relating to mining activity associated with the lead mines and agrarian activity, including farmsteads, enclosures and field systems.

In addition to the non-designated assets recorded in the HER, 55 assets have been identified from a preliminary examination of historic mapping, lidar imagery and aerial photography. These assets are largely of medieval to modern date including areas of previous mining activity, sheepfolds, grouse butts and a disused railway. These assets are representative of the main uses of this landscape, industrial mining, agrarian sheep-farming and shooting estate. Preliminary consideration suggests that most of these assets are of local heritage value and of low sensitivity.

Outer Study Area

There are 67 scheduled monuments within the Outer Study Area (including the two scheduled monuments within the Inner Study Area); these are assets of heritage value at a national level and of high sensitivity. The Scheduled Monuments include prehistoric funerary, settlement and defensive sites, Roman forts and camps, medieval castles, industrial mines and an engine house.

There are 31 Listed Buildings within the Outer Study Area, two Category A Listed Buildings of heritage value at a national level and of high sensitivity, 16 Category B Listed Buildings of heritage value at a regional level and of medium sensitivity and 13 Category C Listed Buildings of

heritage value at a local level and of low sensitivity. The listed buildings are largely concentrated in the villages of Leadhills and Wanlockhead.

There is one Inventory Garden and Designed Landscape, Scot's Mining Company House (GDL00339), within the Outer Study Area, an asset of heritage value at a national level and of high sensitivity. This asset is located within the village of Leadhills.

There are two Conservation Areas within the Outer Study Area, Leadhills (CA 393) and Wanlockhead (CA 180), both assets of heritage value at a regional level and of medium sensitivity.

3.4.4 Potential Significant Effects

The Proposed Development has the potential to affect the scheduled monuments within the Inner Study Area (the Site) through direct or indirect construction impacts. The Proposed Development also has potential for direct or indirect construction impacts on non-designated heritage assets within the Inner Study Area (the Site).

- Direct construction impacts are likely to occur where the physical fabric of the asset is removed or damaged.
- Indirect construction impacts occur where the fabric of an asset, or buried archaeological remains, are removed or damaged as an indirect result of the proposal, for example as a result of changes to the hydrological regime within the Site boundary or through vibration or seismic activity associated with traffic movement or quarry blasting.

The construction and operation of the Proposed Development also has potential to affect the settings of designated heritage assets and NSR sites within the Inner and Outer Study Area through change within their settings adversely affecting their cultural significance or adversely affecting the ability to understand, appreciate or experience the sites and their settings.

3.4.5 Assessment Methodology

The cultural heritage assessment will be carried out in accordance with the following guidance with reference to relevant legislation, policy and guidance:

- The Ancient Monuments and Archaeological Areas Act 1979[18].
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997[19]
- National Planning Framework for Scotland 4 (NPF4) (2023)[20].
- Historic Environment Policy for Scotland (HEPS)[21]
- South Lanarkshire Local Development Plan2 (January 2021)[22]
- Code of Conduct: Professional Ethics in Archaeology (CIfA, 2014; revised 2021).
- SNH and HES Environmental Impact Assessment Handbook[23].

[18] https://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf
[19] https://www.legislation.gov.uk/ukpga/1997/9/contents
[20] Scottish Government (2023) National Planning Framework 4 https://www.gov.scot/publications/national-planning-framework-4/
[21] Scottish Government (2019) Historic Environment Policy Scotland Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/
[22] South Lanarkshire Council (2021) Local Development Plan 2, Available at: https://www.southlanarkshire.gov.uk/developmentplan2
[23] SNH & Historic Environment Scotland (2018) '*Environmental Impact Assessment Handbook'*. (https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0)

- Standard and Guidance for Historic Environment Desk-Based Assessment, Chartered Institute for Archaeologists (CIfA)[24].
- Principles of Cultural Heritage Impact Assessment in the UK[25].
- Designation Policy and Selection Guidance[26].
- Managing Change in the Historic Environment: Setting[27].
- Planning Advice Note 1/2013: Environmental Impact Assessment (PAN 1/2013)[28] .
- Planning Advice Note 2/2011: Planning and Archaeology (PAN 2/2011)[29] .

A detailed list of all relevant legislation, policy and guidance will be included win the EIAR.

Desk-based Assessment Method

A desk-based assessment will be conducted covering the Inner Study Area. The purpose will be to identify all known heritage assets, designated or otherwise, that could be directly affected by the Proposed Development, and to inform an assessment of the archaeological potential of the Site.

Sources to be consulted for the collation of data will include:

- South Lanarkshire Council (SLC) HER.
- HES's on-line GIS Spatial Data Warehouse[30].
- National Record of the Historic Environment[31] (NRHE).
- Historic maps held by National Library of Scotland[32] .
- Modern aerial photographic imagery available online.
- Historic Land-Use Assessment Data for Scotland[33] (HLAmap).
- Lidar data available through Scottish Remote Sensing Portal[34] (where available).
- Any existing geotechnical data, including peat survey data if available.
- Other readily accessible published sources, including any reports referenced in HER/NRHE records.

Field Survey Method

A targeted walk-over field survey within the Site will be carried out with the aim to:

- assess the present baseline condition of the heritage assets identified through the desk-based assessment,

[24] Chartered Institute for Archaeologists (2014, updated 2020] 'Standard and guidance for historic environment desk-based assessment', London, Chartered Institute for Archaeologists, available at: https://www.archaeologists.net/sites/default/files/2023-11/CIfA-SandG-DBA-2020.pdf
[25] IEMA (2021) 'Principles of Cultural Heritage Impact assessment in the UK', Lincoln, IEMA, IHBC & CIfA https://www.ihbc.org.uk/brighton2021/resources/Principles-of-CHIA-V2%5B4%5D.pdf
[26] HES (2019) Designation Policy and Selection Guidance, Edinburgh. Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=8d8bbaeb-ce5a-46c1-a558-aa2500ff7d3b
[27] Historic Environment Scotland (2016, updated 2020) 'Managing Change in the Historic Environment – Setting', Edinburgh (https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549)
[28] Scottish Government (2013) Planning Advice Note (PAN) 1/2013: Environmental Impact Assessment. Edinburgh, available at: https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/
[29] Scottish Government (2011) Planning Advice Note (PAN) 2/2011: Planning and Archaeology, Edinburgh, available at: https://www.gov.scot/publications/pan-2-2011-planning-archaeology/
[30] Historic Environment Scotland Spatial Data Warehouse. Available at: https://find.data.gov.scot/datasets/40702
[31] Historic Environment Scotland, Canmore [online]. Available at: https://canmore.org.uk/
[32] National Library of Scotland Map Library. Available at: https://maps.nls.uk/
[33] Historic Environment Scotland, Historic Land-Use Assessment for Scotland (HLAMap) [online]. Available at: http://hlamap.org.uk/
[34] Scottish Remote Sensing Porta. Available at: https://remotesensingdata.gov.scot/

- identify any further features of cultural heritage interest not detected from the desk-based assessment that could be directly or indirectly affected by the Proposed Development, and
- assess the Inner Study Area for its potential to contain currently unrecorded, buried archaeological remains.

Site visits to key heritage assets in the Outer Study Area will also be carried out, where necessary and in as far as access is possible, to assess the predicted effect of the Proposed Development on their settings. Site visits will include any assets specifically identified by consultees as requiring assessment and those identified through analysis of the ZTVs, where it is considered, based on professional judgement, that the effect on their settings could be significant.

Assessment Method

The effects of the Proposed Development on heritage assets will be assessed on the basis of their type (direct effects, indirect impacts, setting impacts, and cumulative impacts) and nature (adverse or beneficial). Effects can be permanent (lasting for a long time or forever), temporary (not lasting for very long) and / or reversible (can be changed back to what it was before). The assessment will take into account the value/ sensitivity of the heritage asset, and its setting, and the magnitude of the predicted impact.

- Direct (physical) impacts - occur where the physical fabric of the asset is removed or damaged, or where it is preserved or conserved, as a direct result of the Proposed Development. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Indirect (physical) impacts - occur where the fabric of an asset, or buried archaeological remains, is removed or damaged, or where it is preserved or conserved, as an indirect result of the Proposed Development even though the asset may lie some distance from it. Such impacts are most likely to occur during the construction phase and are most likely to be permanent.
- Setting impacts - these are generally direct and result from the Proposed Development 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. Such impacts are generally, but not exclusively, visual, occurring directly as a result of the appearance of the Proposed Development in the surroundings of the asset. However, they may relate to other senses or factors, such as noise, odour or emissions, or historical relationships that do not relate entirely to intervisibility, such as historic patterns of land-use and related historic features. Such impacts may occur at any stage of a Proposed Development's lifespan and may be permanent, reversible, or temporary.
- Cumulative impacts - can relate to the physical fabric or setting of assets. They may arise as a result of impact interactions, either of different impacts of the Proposed Development itself, or additive impacts resulting from incremental changes caused by the Proposed Development together with other projects already in the planning system.
- Adverse effects - are those that detract from or reduce cultural significance or special interest of heritage assets or their settings.
- Beneficial effects - are those that preserve, enhance or better reveal the cultural significance or special interest of heritage assets or their settings.

Assigning Sensitivity to Heritage Assets

Cultural heritage assets are assigned value/ importance through the designation process. Designation ensures that sites and places are recognised and protected by law through the planning system and other regulatory processes. The level of protection and how a site or place

is managed varies depending on the type of designation and the laws and policies that apply to it.

Criteria for Assessing the Significance of Effects

The magnitude of impact (adverse or beneficial) will be assessed in the categories high, medium, low, and negligible and, when combined with the sensitivity of the asset, inform an assessment of the significance of the effect (direct or indirect effects, or effect on setting).

Major and Moderate effects are considered to be 'significant' in the context of the EIA Regulations. Minor and Negligible effects are considered to be 'not significant'.

Assessment of Effects on Setting

The assessment will be in accordance with the guidance set out within the SNH and HES EIA Handbook[35] and Historic Environment Scotland's guidance document, 'Managing Change in the Historic Environment: Setting'[36]. This will ensure the assessment considers the context and setting of the identified heritage assets, as well as the potential change in cultural significance.

The guidance recommends that there are three stages in assessing the impact of a development on the setting of a historic asset or place.

- Stage 1: identify the historic assets that might be affected by the proposed development.
- Stage 2: define and analyse the setting by establishing how the surroundings contribute to the ways in which the historic asset or place is understood, appreciated and experienced.
- Stage 3: evaluate the potential impact of the proposed changes on the setting, and the extent to which any negative impacts can be mitigated.

The SNH and HES EIA Handbook[37] Appendix 1, paragraph 43 advises that:

"*When considering setting impacts, visual change should not be equated directly with adverse impact. Rather the impact should be assessed with reference to the degree that the proposal affects those aspects of setting that contribute to the asset's cultural significance*".

Following these recommendations, ZTVs for the Proposed Development will be used to identify those heritage assets from which there would be theoretical visibility of one or more of the proposed wind turbines, and the degree of theoretical visibility.

Scheduled Monuments, non-designated assets identified in HERs as 'potentially of schedulable quality' (NSR sites) where long-distance views and intervisibility are an important aspect of their settings, Category A and B Listed Buildings, Conservation Areas and Inventory Gardens and Designed Landscapes, where present within 10 km of the outermost turbines, will be included in the assessment. Category C Listed Buildings within 5 km of the outermost turbines will also be included in the assessment.

It is proposed that consideration will be given to designated heritage assets beyond 10 km where long-distance views and intervisibility between monuments are an important aspect of their settings.

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[35] SNH & Historic Environment Scotland (2018) 'Environmental Impact Assessment Handbook'. https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

[36] Historic Environment Scotland (2016, updated 2020) 'Managing Change in the Historic Environment – Setting', Edinburgh (https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549)

[37] SNH & Historic Environment Scotland (2018) 'Environmental Impact Assessment Handbook'. https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

Consideration will be given to designated heritage assets where there is no predicted visibility from the asset but where views of or across the asset are important factors contributing to its cultural significance. In such cases, consideration will be given to whether the Proposed Development could appear in the background to those views.

The sensitivity of the asset and the magnitude of the predicted impact are used to inform an assessment of the significance of the effect on setting as detailed above.

Where an effect on the setting of an asset is predicted as a result of change within its surroundings, an assessment will be made as to whether that effect would result in a significant adverse effect on the integrity of its setting (NPF 4 Policy 7(h)ii)[38]. For the purposes of the assessment, the integrity of the setting will be considered to be maintained if the setting's contribution to the cultural significance of the monument, and the ability to understand, appreciate and experience the setting of the asset, would not be compromised by the Proposed Development either alone or cumulatively.

Cumulative Assessment

The assessment of cumulative effects on heritage assets will be based upon consideration of the effects of the Proposed Development on the settings of assets with statutory designations and non-statutory designations within the Outer Study Area, in addition to the likely effects of other identified cumulative schemes. The identified cumulative schemes to be included in the cumulative impact assessment will be those identified through the LVIA consultations with SLC and Nature Scot.

The cumulative assessment will take into account the relative scale (i.e. size and number of turbines) of the identified developments, their distance from the affected assets, and the potential degree of visibility of the various developments from the assets under consideration. Cumulative visualisations will be used to aid the assessment.

Proposed Visualisation Viewpoints

Based on the scoping blade tip height ZTV (Figure 3.4.2) and given the distribution of designated assets within and surrounding the Proposed Development an initial list of eleven viewpoints are suggested at scoping stage as requiring visualisations to support the EIAR (Table 3.4.1). This is an initial list and given the scale of some of the designated assets the location of the viewpoint may need to be refined as the assessment progresses to ensure the visualisation is appropriately positioned.

Table 3.4.1: Proposed Cultural Heritage Visualisations Viewpoints

Designation Reference	Designation Title	BNG Coordinates
Assets within Inner Study Area		
SM 4714	Waterhead, platform settlement 900m N of	288909, 619034
SM 4798	Glengeith, settlement, bastle house and field system	294767, 616764
Assets within Outer Study Area		
SM 4296	North Shortcleugh, platform settlement 1500m E of	294313, 617538
SM 4516	North Shortcleuch, platform settlement 1000m E of	293792, 617512
SM 4641	Air Cleuch, cairns 1300m S of Glengeith	295300, 615565
SM 4646	Crookedstane, platform settlement 1300m W of	295235, 615130

[38] Scottish Government (2023) National Planning Framework for Scotland 4, Edinburgh, available at: https://www.gov.scot/publications/national-planning-framework-4/

Designation Reference	Designation Title	BNG Coordinates
SM 5385	Glenochar Burn, bastle house, post-medieval settlement and field system	294430, 613980
SM 5817	Leadhills, remains of lead mining and smelting	288143, 613993
SM 13677	Historic gold workings, Leadhills, South Lanarkshire	290738, 616263
CA 180	Wanlockhead Conservation Area	287499, 614748
CA 393	Leadhills Conservation Area	288499, 614748

3.4.6 Questions to Consultees

Table 3.4.2: Questions to Consultees (Cultural Heritage)

CH1	Is the proposed assessment methodology, including proposed Study Areas, accepted?
CH2	Do the consultees agree with the receptors and impacts proposed to be scoped out of the assessment?
CH3	Are there any additional assets beyond the proposed Study Areas where consultees consider significant effects woud be likely to occur?
CH4	Initial viewpoints for visualisations have been identified. Are there any additional assets or locations within or overlooking these assets from which consultees would like to see visualisations?

3.5 Ecology

3.5.1 Overview

This Section describes the baseline conditions, relevant guidance and legislation, proposed scope of assessment and methodology, proposed mitigation, and identifies potential impacts of the Proposed Development in relation to ecological features.

3.5.2 Study Area

The EIAR will incorporate the following study areas which will all be buffered from the finalised turbine and BESS layout (and access track/other infrastructure if relevant/required).

- Designated sites: the Site and a 5 km buffer from the Site boundary.
- Protected species: the proposed turbines/BESS and infrastructure and industry standard species-specific buffers as necessary.
- Electrofishing surveys (to be carried out by Clyde River Foundation): watercourses within the Site boundary and downstream as deemed relevant.
- Potential bat roost features: the proposed turbine locations and a 200 m plus turbine blade length buffer (as per NatureScot *et al.* 2021[39]).
- Habitats and potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) within the Site boundary.

[39] NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT), (2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation. Available at: https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation. Accessed on: 30 January 2025.

- Bat collisions: the proposed turbine locations; static bat data will be processed through Ecobat (Mammal Society 2017[40])[41].
- Cumulative assessment (if required): the Site and a 5 km buffer from the Site boundary.

3.5.3 Baseline Conditions

Baseline ecological conditions have been/will be established from the following sources:

- results of the ecological surveys undertaken between September and October 2024 (habitat / National Vegetation Classification; NVC), and planned/currently underway for March – September 2025 (additional habitat / NVC surveys, protected species, bats and fisheries);
- a desk study to confirm the location and qualifying features of designated sites[42] and ancient woodland[43] within potential zones of influence of the Proposed Development;
- information from the Carbon and Peatland Map 2016[44];
- information from the National Biodiversity Network (NBN) Atlas[45] on ecological records within 5 km of the Site within the last 15 years (since 2010);
- information from the Deer Distribution Survey by the British Deer Society[46];
- information from the Saving Scotland's Red Squirrels (SSRS) website[47] for red and grey squirrel sightings; and
- Environmental Statements (ES), Environmental Impact Assessment Reports (EIARs) or technical reports from other developments or proposed developments in the local area.

Baseline Surveys

The following baseline ecological surveys have been undertaken to date or will be completed by the end of September 2025:

- Electrofishing and fish habitat suitability surveys on watercourses within the Site (upstream and downstream) will be undertaken in line with guidance[48,49,50] by the Clyde River Foundation (CRF) in 2025.
- Seasonal static bat detector (Anabat) surveys commenced in April 2025 and will conclude in September 2025. The surveys will be conducted in line with NatureScot *et al.* [39] guidelines. Seventeen detectors will be deployed around the Site, with locations selected based on the

[40] The Mammal Society (2017). Ecobat. Available at: https://mammal.org.uk/blog/2017/12/making-sense-of-clicks-and-squeaks-mammal-society-launches-ecobat Accessed on: 30 January 2025.
[41] The Ecobat system is currently unavailable due to ongoing maintenance; if the system is available it will be used, but in the event that it is not up and running, alternative methodology will be used to assess bat activity levels, as agreed with NatureScot.
[42] NatureScot Sitelink. Available at: https://sitelink.nature.scot/home. Accessed: 30 January 2025.
[43] Ancient Woodland Inventory (Scotland). Available at: https://www.spatialdata.gov.scot/geonetwork/srv/api/records/A091F945-F744-4C8F-95B3-A09E6EF6AE33. Accessed 20 January 2025.
[44] Scottish Government (2023). Scotland's Soils. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10#. Accessed: 30 January 2025.
[45] National Biodiversity Network Atlas Scotland (2023). Available at: https://scotland.nbnatlas.org/. Accessed on: 30 January 2025.
[46] British Deer Society (2023). *Deer Distribution Survey*. Available at: https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/. Accessed on: 30 January 2025.
[47] Scottish Squirrels (2025). Sightings of Red and Grey Squirrels across Scotland. Available at: https://scottishsquirrels.org.uk/squirrel-sightings/. Accessed on: 30 January 2025.
[48] Marine Directorate (2021) Monitoring watercourses in relation to onshore wind farm developments: generic monitoring programme. Available at: https://www.gov.scot/publications/monitoring-watercourses-in-relation-to-onshore-wind-farm-developments-generic-monitoring-programme/. Accessed on: 30 January 2025.
[49] Marine Directorate (2018) Onshore Renewables Interactions. Available at: https://www.gov.scot/publications/onshore-renewables-interactions/ Accessed on: 30 January 2025.
[50] Marine Directorate (2021) Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines. Available at: Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines - gov.scot (www.gov.scot) Accessed on: 30 January 2025.

indicative layout provided at the time of survey commencement and positioned such as to cover the area in which the turbines are proposed to be located.

- Protected species walkover survey will be conducted between May and August 2025.
- National Vegetation Classification (NVC) surveys, incorporating Phase 1 Habitat and potential GWDTE habitat classification were undertaken between September and October 2024, in line with guidance[51,52]. Further NVC surveys will be undertaken in 2025 to ensure coverage of the Site.

Designated Sites

There are no statutory designations within the Site itself; however, there is one statutory site designated for ecology located within 5 km of the Site. It is listed in **Table 3.5.1** and shown in **Figure 3.5.1**.**Table 3.5.1 Designated Sites with Ecological Qualifying Features within 5 km of the Site**

Designated Site	Notified Natural Features	Condition of Feature (and Date Monitored)	Distance from Site (km)
North Lowther Upland SSSI	Biological: Upland habitats: Upland assemblage Assemblage of upland vegetation communities	Unfavourable Recovering (31 May 2015)	3.2 km to the west of the Site

Ancient Woodland

The Ancient Woodland Inventory (AWI)[44] shows there are no stands of ancient woodland located within the Site. However, there are several parcels of ancient woodland within 5 km of the Site, with the closest lying approximately 200 m from the Site. This parcel is an unnamed woodland recorded as Long-Established (plantation origin) and is separated from the Site at the closest point by the B797 road and Glengonnar Water (**Figure 3.5.1**).

One small area of ancient woodland of the same antiquity lies to the east of the Site. Bank Wood, designated as ancient woodland (of semi-natural origin), lies to the west of the Site, and is contiguous with several other parcels of ancient woodland which lie along Cog Burn. All other parcels of ancient woodland within 5 km of the Site lie to the north; the majority of these are recorded as Long-Established (plantation origin), with one small area of ancient woodland (of semi-natural origin) lies to the east of Abington.

Peatland

As per **Figure 3.7.6**, the Carbon Peatland Map 2016 shows multiple discrete areas of Class 1[53] peatland throughout the Site. Two proposed turbine locations (T3 and T6) are currently located

[51] Rodwell, J.S. (Ed), et al. (1991 – 2000). British Plant Communities (5 volumes). Cambridge University Press, Cambridge.
[52] Rodwell, J.S. (2006). NVC Users' Handbook. ISBN 978 1 86107 574 1.
[53] Class 1 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

within areas mapped as Class 1 peatland. There is no Class 2[54] peatland within the Site. The remainder of the Site is composed of a mixture of Class 5[55], Class 4[56], Class 3[57] and mineral soil.

Preliminary Desk Study

A search of the NBN Atlas showed that the following protected or notable species were recorded within 5 km of the Site, since 2010:

- adder (*Vipera berus*)[58];
- badger (*Meles meles*)[59];
- brown long-eared bat (*Plecotus auritus*)[60];
- common lizard (*Zootoca vivipara*)[58];
- common pipistrelle (*Pipistrellus pipistrellus*)[61];
- Daubenton's bat (*Myotis daubentonii*)[60],[61];
- mountain hare (*Lepus timidus*)[59];
- Natterer's bat (*Myotis nattereri*)[60],[61];
- red squirrel (*Sciurus vulgaris*)[62]; and
- soprano pipistrelle (*Pipistrellus pipistrellus*)[61].

Records of the invasive non-native species (INNS) grey squirrel (*Sciurus carolinensis*)[62] and signal crayfish (*Pacifastacus leniusculus*)[63] were also returned.

The results of the Deer Distribution Survey[47] suggests the likely presence of roe deer (*Capreolus capreolus*), Sika deer (*Cervus nippon*) and red deer (*Cervus elaphus*) within the Site or surrounding area.

Both red and grey squirrels have been sighted within 5 km of the Site (SSRS website)[48], which has information on sightings going back 15 years. Recorded sightings within 5 km of the Site are fairly sparse which is likely (in part) to be as a result of the rural nature of the area and subsequent lack of survey effort, but sightings in and around Moffat (15 km to the south-east of the Site) show a consistent mix of red and grey squirrels.

Surveys undertaken at neighbouring sites in 2023 and 2024 have recorded evidence of the following species:

- otter (*Lutra lutra*);

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[54] Class 2 - Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value and restoration potential

[55] Class 5 – 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.

[56] Class 4 – Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.

[57] Class 3 – Dominant vegetation cover is not priority peatland habitat but is associated with wet and acidic type. Occasional peatland habitats can be found. Most soils are carbon-rich soils, with some areas of deep peat.

[58] Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) https://creativecommons.org/licenses/by/4.0/. Accessed on: 4 February 2025. Amphibian and Reptile Conservation and Biological Records Centre (2025). Records verified via iRecord.

[59] Licence: Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) https://creativecommons.org/licenses/by/4.0/. Accessed on: 4 February 2025. Mammal Society (2025). Mammal Mapper App Sighting Records.

[60] Licence: OGL. Open Government Licence (OGL) https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/. Accessed: 4 February 2025. Bat Conservation Trust (2025). National Bat Monitoring Programme – Hibernation Survey. Occurrence dataset on the NBN Atlas.

[61] Licence: OGL. Open Government Licence (OGL) https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/. Accessed: 4 February 2025. Newson, S.E., Evans, H.E., Gillings, S., Jarrett, D. & Wilson, M.W. 2017. A survey of high risk bat species across southern Scotland. Scottish Natural Heritage Commissioned Report No. 1008

[62] Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) https://creativecommons.org/licenses/by/4.0/. Accessed on: 4 February 2025. Scottish Wildlife Trust (2025). The Scottish Squirrel Database. Occurrence dataset accessed through the NBN Atlas.

[63] Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) https://creativecommons.org/licenses/by/4.0/. Accessed on: 4 February 2025. Records provided by Invasive non-native species records from SEWeb, accessed through NBN Atlas website.

- water vole (*Arvicola amphibious*);
- mountain hare;
- common pipistrelle;
- soprano pipistrelle;
- Daubenton's bat;
- Natterer's bat;
- Noctule bat (*Nyctalus noctule*);
- Leislers bat (*N. leisleri*);
- Common lizard (*Zootoca vivipara*);
- Brown trout (*Salmo trutta*); and
- Signal crayfish.

The above surveys also recorded potential evidence of pine marten (*Martes martes*) on an adjacent Site.

3.5.4 Potential Significant Effects

The assessment will consider the potential impacts associated with construction, operation and decommissioning of the Proposed Development as detailed below. Where appropriate, the construction and operational impacts will also be considered in a cumulative assessment.

Construction/Decommissioning Impacts:

- temporary and permanent habitat loss/alteration/fragmentation/drainage associated with the Proposed Development infrastructure;
- pollution impacts on watercourses within the Site;
- loss of shelter, breeding or foraging habitat for protected species;
- displacement of deer;
- risk of injury or death to protected species from collisions with increased construction traffic; and
- visual and noise disturbance to protected species associated with construction activities.

Operational Impacts:

- displacement of protected species from shelter, breeding or foraging habitats around operational turbines and other permanent infrastructure, including barrier effects; and
- risk of bats colliding with or suffering barotrauma from proximity to operational wind turbine blades.

A summary of the features and impacts to be considered, and the phases for which it is proposed they are scoped in or out, are presented in **Table 3.5.2**. Decommissioning impacts are not included as they are assumed to be similar to those from construction.

Table 3.5.2 Summary of Features and Impacts for Ecology

Features	Scoped In		Justification
	Construction	Operation	
Protected species (including bats)	Yes	Yes	Protected species cannot be scoped out until the ecological baseline surveys are complete and the presence and distribution of ecological features in relation to the planned infrastructure and activities

Features	Scoped In		Justification
	Construction	Operation	
			associated with the Proposed Development are fully understood.
Habitats on Annex I to the Habitats Directive	Yes	Yes	Habitats on Annex I to the Habitats Directive cannot be scoped out until the ecological baseline surveys are complete and the presence and distribution of such habitats in relation to the planned infrastructure and activities associated with the Proposed Development are fully understood.
Habitats not on Annex I to the Habitats Directive and species not on Annex II to the Habitats Directive and habitats or species not protected by other legislation (e.g., The Wildlife and Countryside Act 1981 (as amended), the Nature Conservation (Scotland) Act 2004 or The Protection of Badgers Act).	No	No	On the basis of the results of the desk-based work undertaken to date, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, generally common and widely distributed habitats or species which do not fall within the categories listed in the feature column would be scoped out of the assessment.
Wild deer population	Yes	No	The desk-based study will collate relevant information on the deer populations in the locality to inform whether this should be scoped out at the construction phase or assessed further in the EIA report. It is considered that the operational activities of the Proposed Development are unlikely to result in an adverse impact upon the deer population and are scoped out of the assessment.
Designated sites	No	No	There are no statutory designations within the Site, but there are two statutory sites designated for ecology located within 5 km of the Site. North Lowther Uplands SSSI is located 3.2 km from the Site and Shiel Dod SSSI is located approximately 5 km from the Site. Neither SSSI is topographically or hydrologically connected to the Site. For these reasons, it is proposed that likely significant effects from the construction of the Proposed Development upon the designated sites are scoped out of the assessment at this stage. Through the adoption of embedded mitigation (including the design and layout of the Proposed Development), it is considered that designated sites are unlikely to be affected by the operational activities of the Proposed Development.

Features	Scoped In		Justification
	Construction	Operation	
Migratory salmonids	No	No	It is proposed that migratory salmonids are scoped out of the assessment. Migratory salmonids are not able to access the Site or local area due to impassable barriers much further downstream in the Clyde catchment (i.e. the Falls of Lanark).
Resident fish	Yes	No	Impacts on resident fish populations during construction cannot be scoped out until the ecological baseline surveys are complete and the presence and distribution of species and suitable habitats in relation to the planned infrastructure and activities are fully understood. The operational activities of the Proposed Development are unlikely to provide an adverse impact upon the resident fish populations and are scoped out of the assessment at this stage.

Potential Mitigation

Significant impacts on ecological features will be avoided or minimised where possible within the design process. Good practice during construction and operation of the Proposed Development will be implemented as standard (and the assessment undertaken on this basis). This would include the following:

- a Species Protection Plan (SPP) would be implemented as part of an Outline Construction Environmental Management Plan (OCEMP) or similar during the construction phase to ensure that all reasonable precautions are taken to adhere to the relevant wildlife legislation;
- pre- and during-construction surveys would be carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ecologist, as part of the SPP, and an ECoW present during the construction period;
- an Outline Biodiversity Enhancement Management Plan (OBEMP) would be developed for the operational phase and agreed with consultees, to mitigate or enhance habitat for Important Ecological Features (IEFs) and to provide wider biodiversity benefits; and
- a Biodiversity Net Gain (BNG) assessment would be undertaken for the Proposed Development. Based upon habitat surveys undertaken in 2024 and to be undertaken in 2025, biodiversity enhancement measures for the Site may include, but not be limited to, options such as peatland restoration, heathland restoration, grassland management, and riparian tree planting.

3.5.5 Assessment Methodology

Legislation, Policy and Guidance

The assessment will be undertaken in line with the following European and National Legislation:

- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[64];

[64] Scottish Government (2017d). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.legislation.gov.uk/ssi/2017/101/contents. Accessed on: 3 February 2025

- European Union Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('Habitats Directive');
- Environmental Impact Assessment Directive 85/337/EEC, as amended ('EIA Directive') (as subsequently codified by Directive 2011/92/EU, as amended by Directive 2014/52/EU);
- European Union Council Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy ('Water Framework Directive');
- The Electricity Act 1989;
- The Conservation (Natural Habitats &c.) Regulations 1994 ('the Habitats Regulations');
- The Conservation of Habitats and Species Regulations 2017 ('the 2017 Regulations');
- The Water Environment and Water Services (Scotland) Act 2003 (WEWS);
- Wildlife and Countryside Act 1981; and,
- Wildlife and Natural Environment (Scotland) Act 2011 (WANE);
- Nature Conservation (Scotland) Act 2004;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011;
- Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003;
- Protection of Badgers Act 1992.

The assessment will be carried out in accordance with the principles contained within the following policy documents:

- National Planning Framework 4 (NPF4[65]) (February 2023);
- Draft Planning Guidance: Biodiversity (November 2023);
- Joint Nature Conservation Committee (JNCC) and Department for Environment, Food and Rural Affairs (DEFRA) (2012). UK Post-2010 Biodiversity Framework.
- Scottish Executive (2004). Scottish Biodiversity Strategy: It's in Your Hands.
- Scottish Government (2000). Planning Advice Note (PAN)60: Planning for Natural Heritage;
- Draft Planning Guidance: Biodiversity[66];
- Scottish Government (2017b) Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017[67];
- Scottish Government (2022a[68]). Onshore Wind Policy Statement 2022;
- Scottish Biodiversity Strategy to 2045[69]. Tackling the Nature Emergency in Scotland; and

The assessment will be carried out in accordance with the following guidance:

- Chartered Institute for Ecology and Environmental Management (CIEEM) (2024)[70] Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.3);

[65] Scottish Government (2023) National Planning Framework 4. Available at:https://www.gov.scot/publications/national-planning-framework-4/. Accessed on: 3 February 2025
[66] Scottish Government (2000). Planning Advice Note (PAN) 60: Planning for Natural Heritage.
[67] Scottish Government (2017b). Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/. Accessed on: 3 February 2025
[68] Scottish Government (2022a). Onshore Wind Policy statement – available at Onshore wind: policy statement 2022 - gov.scot (www.gov.scot)
[69] Scottish Government (2022b). Scottish Biodiversity Strategy to 2045. Tackling the Nature Emergency in Scotland. Scottish Government, Edinburgh.
[70] CIEEM (2024*). 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.

- Collins, J. (2023[71]). Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition);
- European Commission (2020[72]) Guidance document on wind energy developments and EU nature legislation.
- JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012[73]) UK Post-2010 Biodiversity Framework.
- Joint Nature Conservation Committee (JNCC) (2013[74]) Guidelines for selection of biological Sites of Special Scientific Interest (SSSI).
- NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT) (2019, with minor updates 2021[75]). Bats and Onshore Wind Turbines - Survey, Assessment and Mitigation.
- NatureScot (2024[76]) General Pre-application and Scoping Advice to Developers of Onshore Wind Farms.
- Scottish Badgers (2018[77]) Surveying for Badgers: Good Practice Guidelines. Version 1.
- Scottish Executive (2000) Nature conservation: implementation in Scotland of EC Directives on the conservation of natural habitats and of wild flora and fauna and the conservation of wild birds ('The Habitats and Birds Directives'). Revised guidance updating Scottish Office Circular no. 6/1995;
- Scottish Environment Protection Agency (SEPA) (2024[78]) Guidance on Assessing the Impacts of Developments on Groundwater Terrestrial Ecosystems;
- Scottish Government (2001[79]). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements;
- Scottish Government (2006[80]). European Protected Species - terms of guidance: Chief Planner letter; and

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[71] Collins, J. (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th Edition*). Bat Conservation Trust.

[72] European Commission (2020). Guidance document on wind energy developments and EU nature legislation. Available at: https://ec.europa.eu/environment/nature/natura2000/management/docs/wind_farms_en.pdf. Accessed: 3 February 2025

[73] Joint Nature Conservation Committee and DEFRA (on behalf of the Four Counties' Biodiversity Group) (2012). UK Post-2010 Biodiversity Framework (July 2012). Available at: https://jncc.gov.uk/our-work/uk-post-2010-biodiversity-framework/. Accessed on: 3 February 2025

[74] Joint Nature Conservation Committee (2013). Guidelines for selection of biological Sites of Special Scientific Interest (SSSI). Available at: https://jncc.gov.uk/our-work/guidelines-for-selection-of-sssis/. Accessed on: 3 February 2025

[75] NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT) (2019, updated 2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation;

[76] NatureScot (2024). General Pre-application and Scoping Advice to Developers of Onshore Wind Farms. NatureScot pre-application guidance for onshore wind farms | NatureScot. Accessed on: 3 February 2025

[77] Scottish Badgers (2018). Surveying for Badgers: Good Practice Guidelines. Version 1. Available at: https://www.scottishbadgers.org.uk/wp-content/uploads/2020/12/Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf. Accessed on: 3 February 2025

[78] Scottish Environment Protection Agency (2024). Guidance on Assessing the Impacts of Developments on Groundwater Terrestrial Ecosystems. Available at:https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fa1yh0blq%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK . Accessed on: 3 February 2025

[79] Scottish Government (2001). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements. Available at: https://www.webarchive.org.uk/wayback/archive/20150220012946/http://www.gov.scot/Publications/2001/10/10122/File-1. Accessed on: 3 February 2025

[80] Scottish Government (2006). European Protected Species – terms of guidance: Chief Planner letter. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/correspondence/2006/05/european-protected-species-chief-planner-letter/documents/ec-directive-92_43_eec-conservation-natural-habitats-wild-flora-fauna-pdf/ec-directive-92_43_eec-conservation-natural-habitats-wild-flora-fauna-pdf/govscot%3Adocument/EC%2BDirective%2B92_43_EEC%2BOn%2Bthe%2BConservation%2Bof%2BNatural%2BHabitats%2Band%2Bof%2BWild%2BFlora%2Band%2BFauna.pdf Accessed on: 3 February 2025

- South Lanarkshire Council (2024) South Lanarkshire Biodiversity Strategy 2024 - 2030[81].
- Scottish Government (2013[82]) Scottish Biodiversity Strategy: It's in Your Hands (2004)/2020 Challenge for Scotland's Biodiversity.
- Scottish Government (2016[83]) Draft Peatland and Energy Policy Statement.
- Scottish Government (2017a[84]) Planning Advice Note 1/2013 - Environmental Impact Assessment, Revision 1.0.
- Scottish Government (2017b[85]) Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.
- Scottish Government (2018[86]) Climate Change Plan: Third Report on Policies and Proposals 2018-2032.
- Scottish Government (2020[87]) Scottish biodiversity strategy post-2020: statement of intent.
- SNH (2015[88]) Scotland's National Peatland Plan.
- SNH (2016a[89]) Planning for Development: What to consider and include in deer assessments and management at development sites (Version 2).
- SNH (2016b[90]) Planning for Development: What to consider and include in Habitat Management Plans. Version 2.
- NatureScot (2023[91]). Advising on carbon-rich soils, deep peat and priority peatland habitat in development management.
- SNH (2018[92]) Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.

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[81] South Lanarkshire Council (2024) South Lanarkshire Biodiversity Strategy 2024 - 2030. Available at: https://www.southlanarkshire.gov.uk/downloads/file/16574/biodiversity_strategy_2024_-_2030. Accessed on: 3 February 2025.

[82] Scottish Government (2013). Scottish Biodiversity Strategy: It's in Your Hands (2004)/2020 Challenge for Scotland's Biodiversity (2013). Available at: https://www.gov.scot/publications/scotlands-biodiversity---its-in-your-hands/. Accessed on: 6 May 2024

[83] Scottish Government (2016). Draft Peatland and Energy Policy Statement. Available at: https://www.gov.scot/publications/peatland-and-energy-draft-policy-statement/. Accessed on: 3 February 2025

[84] Scottish Government (2017a). Planning Advice Note 1/2013 – Environmental Impact Assessment, Revision 1.0. Available at: https://www.gov.scot/publications/planning-advice-note-1-2013-environmental-impact-assessment/. Accessed on: 6 May 2024

[85] Scottish Government (2017b). Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: https://www.gov.scot/publications/planning-circular-1-2017-environmental-impact-assessment-regulations-2017/. Accessed on: 3 February 2025

[86] Scottish Government (2018). Climate Change Plan: Third Report on Policies and Proposals 2018-2032. Available at: https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/. Accessed on: 3 February 2025

[87] Scottish Government (2020). Scottish biodiversity strategy post-2020: statement of intent. Available at: https://www.gov.scot/publications/scottish-biodiversity-strategy-post-2020-statement-intent/. Accessed on: 3 February 2025

[88] SNH (2015). Scotland's National Peatland Plan. Available at: https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future. Accessed on: 3 February 2025

[89] SNH (2016a). Planning for Development: What to consider and including in deer assessments and management at development sites (Version 2). Available at: https://www.nature.scot/doc/guidance-planning-development-what-consider-and-include-habitat-management-plans. Accessed on: 3 February 2025

[90] SNH (2016b). Planning for Development: What to considered and including in Habitat Management Plans. (Version 2). Available at: https://www.nature.scot/doc/guidance-planning-development-what-consider-and-include-habitat-management-plans. Accessed on: 3 February 2025

[91] NatureScot (2023). Advising on carbon-rich soils, deep peat and priority peatland habitat in development management. Available at: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management . Accessed on: 3 February 2025

[92] SNH (2018). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland. Scottish Natural Heritage. Available at: https://www.nature.scot/doc/handbook-environmental-impact-assessment-guidance-competent-authorities-consultees-and-others. Accessed on: 3 February 2025

- Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), HES, AEECoW (2019[93]) Good Practice During Windfarm Construction (4th Edition).
- Scottish Government (2021)[94]. Freshwater and diadromous fish and fisheries associated with onshore wind farm and transmission line developments: generic scoping guidelines.

Assessment Methodology

The EIAR will include and Ecological Impact Assessment (EcIA). This will consider the potential direct, indirect and cumulative impacts that the construction, operation and decommissioning of the Proposed Development could have on IEFs, as per CIEEM (2024[72]) guidance. The assessment will be supported by appendices that will include details of survey methodologies and all survey data.

The assessment will include the following elements:

- baseline conditions;
- scoping in/out of ecological features and impacts;
- assessment of potential impacts and effects on IEFs during construction and operational phases;
- cumulative effects;
- mitigation; and
- summary of significant residual effects.

Effects on IEFs will be assessed in relation to the species' reference population or habitat extent, conservation status, range and distribution. The assessment of potential effects will be informed by guidelines published by CIEEM (2024[72]) and Scottish Government (2017b[69]).

The assessment involves the following process:

- identifying potential impacts of the Proposed Development;
- considering the likelihood of occurrence of potential impacts;
- defining the nature conservation value (NCV) and conservation status of relevant populations for each IEF to determine overall sensitivity;
- establishing the magnitude of the likely impact (both spatial and temporal) on each IEF);
- making a judgement based on the above information as to whether or not the consequent potential effect would be significant with respect to the EIA Regulations;
- if a potential effect is determined to be significant, measures to avoid or reduce the significance of effects are considered;
- considering opportunities for enhancement where appropriate; and
- concluding residual potential effects after considering mitigation, compensation and enhancement.

An assessment of relevant cumulative impacts will be undertaken following published guidance[70]. Where it is determined that a cumulative assessment is necessary, impacts will be assessed in combination with other wind farm projects subject to the EIA process within 5 km, and their effects on a relevant reference population; for example, at a watercourse, watershed or Natural

[93] Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), HES, AEECoW (2019). Good Practice During Windfarm Construction (4th Edition). Available at: https://www.nature.scot/doc/guidance-good-practice-during-wind-farm-construction. Accessed on: 3 February 2025.
[94] https://www.gov.scot/publications/freshwater-and-diadromous-fish-and-fisheries-associated-with-onshore-wind-farm-and-transmission-line-developments-generic-scoping-guidelines/ [Accessed February 2025]

Heritage Zone (NHZ) level. The scope of the cumulative assessment will be agreed in consultation with NatureScot.

3.5.6 Questions for Consultees

Table 3.5.3: Questions to Consultees (Ecology)

ECO1	Are there any other relevant consultees who should be consulted, or other sources of information that should be considered?
ECO2	Do consultees agree that the suite of field surveys undertaken in 2024 and to be undertaken in 2025, in addition to a desk study are sufficient to inform a robust impact assessment?
ECO3	Do consultees agree that the methodology and scope of assessment is appropriate?
ECO4	Do you consultees agree that the evidence provided is suitable to scope out the need for a detailed Peat Condition Assessment, in accordance with NatureScot guidance?
ECO5	Do consultees agree with the features proposed to be scoped out from further assessment?

3.6 Ornithology

3.6.1 Overview

This section details the approach to baseline ornithological information gathering and the proposed scope and methodology of the assessment of potentially significant effects upon Important Ornithological Features (IOFs).

Potential impacts upon ornithology will be considered throughout the design process for the Proposed Development, and where possible will either be avoided completely through design or will be prevented/minimised via good practice embedded mitigation measures.

The EIAR Ornithology chapter will provide a summary of the baseline ornithological conditions and will detail all those measures required to avoid, minimise or offset any potentially significant adverse effects on IOFs. Furthermore, an outline of biodiversity enhancement opportunities will be provided in the Outline Biodiversity Environmental Management Plan (OBEMP; refer to Section 3.5, Ecology of the Scoping Report).

3.6.2 Study Area

The EIAR Ornithology chapter will consider the following ornithological Study Areas (note that the buffers will be created from the finalised design):

- Designated sites: 20 km Study Area (based on NatureScot guidance, SNH 2016a[95]) from the proposed turbines;
- Collision risk modelling: the results of the flight activity surveys will be used to inform collision risk modelling. A Collision Risk Analysis Area (CRAA) will be created by buffering proposed outer turbine locations by 500 m (as per SNH 2017[96]);
- Scarce[97] breeding birds: 2 km Study Area from the proposed turbines (800 m for access tracks) (SNH 2017[96]);

[95] SNH (2016a) Assessing connectivity with Special Protection Areas [Online]. Available at: https://www.nature.scot/doc/assessing-connectivity-special-protection-areas
[96] SNH (2017) Recommended bird survey methods to inform impact assessment of onshore Windfarms.
[97] Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the Development consists of any raptor and owl species listed on either Annex 1 or Schedule 1.

- Black grouse: 1.5 km Study Area from the proposed turbines (750 m for access tracks) (SNH 2017[96]);
- Breeding upland waders and wintering waders, raptors, owls and wildfowl – 500 m Study Area from the proposed turbines/access tracks (SNH 2017[96]); and
- Cumulative assessment: as per SNH (2018a[98]), the Natural Heritage Zone (NHZ, Wilson *et al.* 2015[99]) level is considered practical and appropriate for breeding species not connected to designated sites. The Site is on the boundary of NHZ 19 (Western Southern Uplands and Inner Solway) and NHZ 20 (Border Hills) and the appropriate NHZ will be selected on a species-by-species case based on the location of breeding activity.

3.6.3 Baseline Conditions

Baseline ornithology conditions have been/will be established from the following sources:

- NatureScot Sitelink[100];
- RSPB Scotland data unit;
- South Strathclyde Raptor Study Group (SSRSG) / Dumfries and Galloway Raptor Study Group (DGRSG); and
- South of Scotland Golden Eagle Partnership (SSGEP).

EIA documentation and/or operational monitoring data from relevant nearby wind farm developments together with peer-reviewed literature will also be referred to where relevant and made available and referenced within the EIAR.

Baseline Surveys

The following surveys have been undertaken to date (February 2025) or will be completed by the end of August 2025. All surveys are undertaken in line with the appropriate guidance (SNH 2017[96], Hardey *et al*. 2013[101], Gilbert *et al*. 1998[102]) and survey areas are detailed below. All survey areas were created using survey-specific buffers based on the Proposed Development provided at the time of survey commencement as detailed below.

Target species for surveys and recording were identified in accordance with NatureScot guidance (SNH 2017[96], 2018b[103]), knowledge of bird-habitat associations at the local and across Scotland and preliminary survey visits.

- Flight activity surveys (monthly from September 2023 to August 2025 allowing for coverage of the 2024 and 2025 breeding seasons and 2023/2024 and 2024/2025 non-breeding seasons; minimum of 36 hours per vantage point (VP) per season, as per SNH 2017[96]);
  - September 2023 to August 2024 – ten VP locations[104] (**Figure 3.6.1** and **Figure 3.6.2**);
  - September 2024 to August 2025 – 12 VP locations[105] (**Figure 3.6.3**);
- Scarce breeding bird surveys (2024 and 2025 breeding seasons, **Figure 3.6.4**);

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[98] Scottish Natural Heritage (2018a). Assessing the cumulative impacts of onshore wind farms on birds.
[99] Wilson, M. W., Austin, G. E., Gillings S., & Wernham, C. (2015). Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned report number SWBSG_1504. pp72.
[100] Available at: https://sitelink.nature.scot/home
[101] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. and Thompson, D. (2013). Raptors: a field guide for surveys and monitoring (3rd edition). The Stationery Office, Edinburgh.
[102] Gilbert, G., Gibbons, D. W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.
[103] Scottish Natural Heritage (2018b). Assessing significance of impacts from onshore windfarms on birds out with designated areas. Version 2.
[104] It should be noted that VP 6 was relocated (and became VP 12) early in the 2024 breeding season due to a potential hen harrier breeding attempt in proximity to the original VP 6 location.
[105] Two additional viewsheds were added (VPs 13 and 14) to extend viewshed coverage along the Dun Law to Louise Wood Law hill line at the south east extent of the site following the inclusion of another land parcel in September 2024.

- Black grouse surveys (2024 and 2025 breeding seasons, **Figure 3.6.4**);
- Breeding wader surveys (2024 and 2025 breeding seasons, **Figure 3.6.4**); and
- Winter walkover surveys (2023/2024 and 2024/2025 non-breeding seasons **Figure 3.6.4**).

When surveys commenced at the Site in September 2023, the parcel of land that forms the south east area of the Site (the area on which turbines 28 to 32 are situated (**Figure 3.6.3**)) was not included. This area was included at the start of the year 2 surveys in September 2024 and the viewsheds and survey areas were revised to include this area (**Figure 3.6.3** and **Figure 3.6.4**). Year 1 surveys did provide some coverage of this area with the black grouse and scarce breeding birds survey areas extending over this area (**Figure 3.6.4**).

Guidance from NatureScot (SNH 2017[96]) generally recommends a baseline survey programme of two years in order to ensure any interannual variation is recorded to allow for a robust assessment of effects on ornithology. This will be completed for the majority of the Site; however, it is proposed to only undertake one year of baseline surveys for the additional area added in September 2024. Considering the relatively small size of this additional area (in wind turbines are proposed) and the similarity of the habitats (and therefore similar bird distribution and abundance) present on this additional area to those present within the year 1 survey areas, one year of baseline surveys on the additional area (comprising the 2024/2025 non-breeding season and 2025 breeding season) is considered sufficient and representative to allow for a robust assessment on the potential impacts to ornithology. With regards to viewshed coverage, it is acknowledged that T28, T30, T31 and T32 are outwith the 2023/24 viewshed coverage/T28, T31 and T32 are outwith the 2024 viewshed coverage[106] (**Figure 3.6.1** and **Figure 3.6.2** respectively). Whether this would affect the robustness of the collision risk modelling depends on how similar the flight activity rates in the un-surveyed areas around these three turbine locations are to the flight activity rates recorded in the viewshed areas surveyed. In this case it is considered that the recorded flight activity rates in year 1 would be sufficiently representative as the three turbines are located in similar habitat and on similar gradients to the remaining 29 turbines covered by the viewsheds. It is therefore likely that flight activity would be similar around the three turbines as recorded across the Site. Therefore, the mean flight activity rates per unit area (hectare) used in the collision model inputs are considered to be appropriate and unlikely to result in inaccurate collision rates.

Confirmation of this approach is sought from NatureScot as part of this Scoping request.

Designated Sites

There are no statutory designations with ornithological features within the Site. However, the Site is within 20 km of one Special Protection Area (SPA) and three Sites of Scientific Special Interest (SSSIs) with ornithological features, as listed below and shown on **Figure 3.6.5** (note that all distances are from the nearest point of the designation site boundary to the nearest turbine).

- Muirkirk and North Lowther Uplands SPA (underpinned by the Murkirk Uplands SSSI and North Lowther Uplands SSSI), approximately 3.6 km from the Site and designated for non-breeding hen harrier, breeding golden plover, hen harrier, merlin, peregrine falcon, short-eared owl and a breeding bird assemblage[107]; and
- Tweedsmuir Hills SSSI, approximately 18.9 km from the Site and designated for a breeding bird assemblage[108].

[106] Note that T28, T31 and T32 are covered by the year 2 viewshed coverage, **Figure 3.6.3**.
[107] The citation lists red grouse, raven, dunlin, snipe, teal, curlew, redshank, whinchat and wheatear.
[108] Which includes red grouse, black grouse, golden plover, curlew, dunlin, common snipe, ring ouzel, whinchat, stonechat and wheatear. Several Schedule 1 species also use the site for foraging while breeding off-site, in winter or on passage.

Based on the guidance from NatureScot (SNH 2016a[95]) regarding connectivity with SPAs and the foraging ranges of hen harrier, peregrine falcon and short-eared owl (2 km), merlin (5 km) and golden plover (3 km), there is considered to be no connectivity between the Proposed Development and the hen harrier, peregrine falcon, short-eared owl or golden plover SPA populations. Due to the Site being within 5 km of the SPA, there is some potential for there to be connectivity between the Site and the SPA merlin population. However, on the basis of evidence gathered to date, it is likely that the assessment would conclude no adverse effects on integrity of the SPA for all species. Information to inform an Appropriate Assessment will be provided in the ornithology chapter.

Ornithological Activity

This section provides a summary of baseline studies that have been completed between September 2023 and January 2025. Full details of all baseline studies including ornithological survey methods and survey conditions will be presented within the EIAR and associated Technical Appendices. Information pertaining to the locations of breeding sites of birds listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) will be restricted to a Confidential Volume[109] of the EIAR in accordance with NatureScot guidance (SNH 2016b[110]).

Flight activity surveys to date (January 2025) have recorded 15 target species (black grouse, curlew, golden eagle, golden plover, goshawk, greylag goose, hen harrier, herring gull, lapwing, merlin, peregrine falcon, pink-footed goose, red kite, short-eared owl and whooper swan). This flight activity data may be included in the Collision Risk Model (CRM), depending on the flight location in relation to the final turbine layout.

Surveys during the 2024 breeding season identified the following confirmed/potential scarce breeding bird breeding activity.

- Red kite: one confirmed breeding location and an associated potential roost area (both over 500 m from the nearest proposed turbine location);
- Hen harrier: two potential breeding attempts identified (both over 500 m from the nearest proposed turbine location); and
- Short-eared owl: one potential breeding attempt identified.

Golden eagle, goshawk, merlin and peregrine falcon were also recorded but no evidence of breeding within the 2 km survey area was identified.

Breeding wader surveys during the 2024 breeding season recorded breeding activity for common sandpiper, curlew, golden plover, lapwing, oystercatcher, redshank, ringed plover and snipe within the 500 m survey area.

Limited black grouse activity has been recorded to date. A single black grouse was recorded on two occasions in March 2024 early during the 2024 breeding season surveys, but no subsequent black grouse were seen during the breeding season and no leks were found (despite targeted surveys).

Winter walkovers undertaken over the 2023/2024 non-breeding season identified that the open moorland habitats within the Site are unsuitable for foraging migratory swans and geese. Limited ornithology activity was recorded on the Site during the non-breeding season with occasional

[109] This Volume of the EIAR will not be made publicly available but will be provided to NatureScot and Royal Society for the Protection of Birds (RSPB) Scotland to inform their own appraisal of the Proposed Development.
[110] SNH (2016b). Environmental Statements and Annexes of environmentally sensitive bird information: Guidance for developers, consultants and consultees [Online]. Available at: https://www.nature.scot/doc/environmental-statements-and-annexes-environmentally-sensitive-bird-information.

records of golden plover, goshawk, hen harrier, lapwing, peregrine falcon, pink-footed goose (overflying the Site) and red kite.

3.6.4 Potential Significant Effects

The assessment will consider the potential for significant effects upon IOFs, during the construction, operation and decommissioning of the Proposed Development as set out below. Where appropriate, these construction/decommissioning and operational impacts will also be considered in a cumulative assessment.

Construction Impacts

During the construction of the Proposed Development, in the absence of specific mitigation, it is anticipated that potentially significant effects upon IOFs could arise from:

- nesting and foraging habitat loss, fragmentation or alteration associated with the Proposed Development infrastructure; and
- disturbance to and loss of nest sites, eggs and/ or dependent young.

In general, construction activities may be predicted to result in a temporary increase in noise, vibration and human presence within construction areas. This has the potential to displace breeding, foraging or roosting birds from the vicinity of construction areas for the duration of construction works.

Impacts would likely to be greatest during the breeding season (generally between March and August, depending upon the species), but are considerably variable between locations and species. The potential for disturbances to occur to breeding sites of specific species will therefore be assessed on the basis of best available species guidance, including Goodship and Furness (2022[111]) which will be referred to within the EIAR.

Overall construction disturbance would however, be considered temporary and would occur only when construction activities are taking place. Furthermore, construction would be not expected to take place across the whole of the Site at once but phased within smaller defined working areas across the Site.

Operational Impacts

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

The potential for disturbances to occur to specific species, will therefore be assessed on the basis of best available species guidance, including Goodship and Furness (2022[111]) and which will be referred to within the EIAR.

The operation of the Proposed Development also has the potential to result in the risk of collisions with operational wind turbine blades or any other permanent infrastructure. Where the

[111] Goodship, N. M., & Furness, R. W. (2022). Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283 [Online]. Available at: https://www.nature.scot/doc/naturescot-research-report-1283-disturbance-distances-review-updated-literature-review-disturbance.

level of flight activity data justifies it, the NatureScot collision risk model (Band *et al*. 2007[112], Band 2024[113]) will be used to provide an estimate of collision rates of target species.

Decommissioning Impacts

The potential for impacts upon IOFs resulting from the decommissioning are considered to be similar to those identified for the construction phase. Associated effects will therefore not be assessed exclusively within the EIAR but assessed with reference to construction phase effects.

Matters to be Scoped Out

On the basis of baseline data, experience from other relevant projects and policy guidance or standards (e.g., CIEEM 2022[114]; SNH 2018c[115], NatureScot 2024a[116]), it is proposed that the following species will be 'scoped out' since significant impacts are unlikely:

- Common and/or low conservation species not recognised in statute as requiring special conservation measures (i.e., not listed as Annex 1/ Schedule 1 species);
- Common and/or low conservation species not included in non-statutory lists (i.e., not listed as a Red-listed Birds of Conservation Concern species as per Stanbury *et al*., 2021[117]), showing birds whose populations are at some risk either generally or in parts of their range; and
- Passerine species, not generally considered to be at risk from wind farm developments (SNH 2017[96]), unless being particularly rare or vulnerable at a national level.

Subject to the results of the collision risk modelling, it is proposed that effects relating to any target species not identified to be breeding within the relevant Study Area would be scoped out of the assessment.

Following the review of designated sites containing ornithological features within 20 km of the Site (**section 3.6.3**), there is considered to be no connectivity between the Site and the following qualifying interests of the Muirkirk and North Lowther Uplands SPA: golden plover, hen harrier, peregrine falcon and short-eared owl. Impacts upon these species will therefore be considered as necessary against the species' wider countryside populations (e.g. Natural Heritage Zone (NHZ) populations as per Wilson *et al.* 2015[99]).

Baseline studies have not identified the importance of the Site for species susceptible to elevated risk of collision with lit turbines (as per NatureScot 2020[118]) and as such impacts upon ornithological features relating to turbine, or any other infrastructure, lighting where this is proposed would not be assessed within the EIAR.

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[112] Band, W., Madders, M. and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at Windfarms. In: de Lucas, M., Janss, G.F.E. and Ferrer, M. (eds.) Birds and Windfarms: Risk Assessment and Mitigation. Pp. 259-275. Quercus, Madrid.

[113] Band, W. 2024. Using a collision risk model to assess bird collision risks for onshore wind farms. NatureScot Research Report 909.

[114] CIEEM (2022) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. Chartered Institute of Ecology and Environmental Management (CIEEM), Winchester.

[115] Scottish Natural Heritage (2018c). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.

[116] NatureScot (November 2024a). General pre-application and scoping advice for onshore Windfarms. https://www.nature.scot/doc/naturescot-pre-application-guidance-onshore-wind-farms

[117] Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., & Win I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds, 114, pp. 723-747.

[118] NatureScot (2020). The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communications Towers and Other Structures. NatureScot Information Note [Online]. Available at: https://www.nature.scot/doc/information-note-effect-aviation-obstruction-lighting-birds-wind-turbines-communication-towers-and

Scoped In Features

Whilst it is not possible to definitively scope out/in specific target species from/to the assessment prior to undertaking collision modelling and a review of the ornithological baseline against the final design, considering the information available regarding the species assemblage and distribution at the Proposed Development and on the basis of professional experience, it is considered that curlew, lapwing, golden plover, golden eagle (in the wider context of the South Scotland Golden Eagle Project[119]), hen harrier and red kite are likely to be the species considered as IOFs and therefore scoped into the assessment. Opportunities to provide positive management for breeding/foraging waders, raptors and black grouse will also be identified within the Site and wider area as part of the Proposed Development, in consultation with relevant landowners and stakeholders as necessary.

Information to inform an Appropriate Assessment in relation to the Muirkirk and North Lowther Uplands and merlin will be provided in the ornithology chapter.

Approach to Mitigation

Significant effects on birds will be avoided/minimised where possible during the design process, based on the locations of any established nest, roost and lek sites (where identified in previous or remaining surveys), key foraging areas, likely sensitivities of species identified and the adoption of suitable bird disturbance distances, as set out in Goodship and Furness (2022[111]).

Good practice measures, as set out in NatureScot guidance (NatureScot 2024b[120]) during construction/ decommissioning and operation of the Proposed Development will also be implemented (and the assessment undertaken on this basis). This will include the following:

- A Bird Disturbance Management Plan (BDMP) would be implemented as part of a Construction Environmental Management Plan (CEMP) or similar during the construction phase, to ensure that all reasonable precautions are taken to enable legislative compliance with regards the protection afforded to wild birds;
- Pre- and during-construction surveys carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ornithologist would take place as part of the BDMP; and
- An outline Biodiversity Enhancement Management Plan (OBEMP) would be developed for the operational phase and agreed with consultees, to mitigate or enhance habitat for IOFs and to provide wider biodiversity improvements.

Where unmitigated significant effects on IOFs are identified, additional measures to prevent, reduce and where possible offset these adverse effects would be proposed.

3.6.5 Assessment Methodology

Legislation, Policy and Guidance

The following national legislation, which was amended as a consequence of EU exit (Scottish Government 2019[121], 2020[122]), is also considered as part of the ornithology assessment:

- The Wildlife and Countryside Act 1981;

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[119] https://www.goldeneaglessouthofscotland.co.uk/

[120] NatureScot (September 2024b). Dealing with construction and birds. https://www.nature.scot/doc/good-practice-during-wind-farm-construction

[121] Scottish Government (2019). The Town and Country Planning and Electricity Works (EU Exit) (Scotland) (Miscellaneous Amendments) Regulations 2019. Available at: https://www.legislation.gov.uk/ssi/2019/80/introduction/made

[122] Scottish Government (2020). EU Exit: The Habitats Regulations in Scotland. Available at: https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/

- The Conservation (Natural Habitats &c.) Regulations 1994 and the Conservation of Habitats and Species Regulations 2017 (hereafter the 'Habitat Regulations'));
- The Nature Conservation (Scotland) Act 2004;
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

This assessment will consider the following relevant aspects of Scottish Government Policy, Planning Advice Notes and other relevant documentation:

- National Planning Framework 4 (NPF4) (February 2023);
- The Scottish Biodiversity List;
- Draft Planning Guidance: Biodiversity. Scottish Government (2023);
- Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland (2023);
- Scottish Government (2000) Planning Advice Note 60: Planning for Natural Heritage;
- Scottish Government (2017) Planning Advice Note 1/2013-Environmental Impact Assessment, Revision 1.0;
- Onshore Wind Turbines: Planning Advice (May 2014);
- South Lanarkshire Council (2024) South Lanarkshire Biodiversity Strategy 2024-2030; and
- The Scottish Biodiversity List (2020).

Guidance on the following topics will also be considered:

- Environmental impact assessment: NatureScot (SNH 2016b[110], 2018b[103], 2018c[115]; NatureScot 2024a[116]), CIEEM (2022[114]), SERAD (2000[123]);
- Designated sites: NatureScot (SNH 2016a[95]);
- Collision modelling: NatureScot (SNH 2000[124], 2018d[125]), Band *et al*. (2007[112], 2024[113]);
- Cumulative assessments: NatureScot (SNH 2018a[98]);
- Bird populations/species specific guidance: Stanbury *et al*. (2021[117]), NatureScot (SNH 2017[96]), Wilson *et al.* (2015[99]), Pearce-Higgins (2021[126]); and
- Construction and birds: NatureScot (2024b[120]), Goodship & Furness (2022[111]).

Assessment Methodology

The assessment will be undertaken adopting an established approach to the assessment of onshore wind farm developments in Scotland, as recommended in NatureScot guidance (SNH 2018b[115]) and impact assessment guidance published by the Chartered Institute of Environmental and Ecological Management (CIEEM 2022[114]).

The assessment will consider in detail only those impacts upon IOFs considered sensitive to wind farm developments, as set out in Annex 1 of NatureScot guidance (SNH 2018b[103]), and upon which potentially significant effects may occur.

The assessment will consider the following three main potential impacts to birds:

- direct displacement/ habitat loss through wind farm construction;
- morality through collision with operational turbines/ other infrastructure; and,

[123] SERAD (Scottish Executive Rural Affairs Department) (2000). Habitats and Birds Directives, Nature Conservation; Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds ("the Habitats and Birds Directives"). Revised Guidance Updating Scottish Office Circular No 6/1995.
[124] Scottish Natural Heritage (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action.
[125] Scottish Natural Heritage (2018d). Avoidance Rates for the onshore SNH Windfarm Collision Model. Version 2.
[126] Pearce-Higgins, J.W. (2021). Climate Change and the UK's Birds. British Trust for Ornithology Report, Thetford, Norfolk.

- indirect displacement/ habitat loss through the avoidance of operational wind farm infrastructure.

The assessment will be supported by technical appendices and figures as appropriate and will include the following stages:

- description of the ornithological baseline;
- scoping in/ out of IOFs and associated impacts;
- identification and characterisation of potentially significant effects;
- outline of mitigation measures to avoid and reduce significant effects;
- assessment of the significance of any residual effects after such measures;
- identification of appropriate compensation measures to offset significant residual effects;
- identification of opportunities for enhancement; and
- where required, cumulative assessments.

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

Impacts upon IOFs will be assessed in relation to the species' relevant reference population, conservation status, range and distribution, based on best available evidence.

Cumulative Impacts

The assessment will include a cumulative impact assessment, in accordance with NatureScot guidance (SNH 2018a[98]) concerning the potential for significant:

- operational collision mortality risks; and
- operational displacement.

For cumulative assessments the NHZ level is considered practical and appropriate for breeding species not connected to designated sites and where sufficient information is available. In this case, the cumulative assessment for IOFs is proposed to be primarily undertaken at the NHZ 19 Western Southern Uplands and Inner Solway, within which the Site is located and where this is considered to provide a meaningful assessment. Where an alternative population level is considered more appropriate, e.g. a defined regional population, this will be set out with sufficient justification with the EIAR.

NatureScot will be consulted prior to the completion of the cumulative assessment for its record of cumulative impacts to ornithological features arising from onshore wind farm proposals at the NHZ scale.

3.6.6 Questions for Consultees

Table 3.6.1: Question to Consultees (Ornithology)

OR1	Do consultees agree that the desk study and the field surveys (September 2023 to August 2025) will provide sufficient data to inform a robust impact assessment?
OR2	Do consultees agree that, subject to further information becoming available from the field surveys and desk study, the scope of IOFs to be included in the assessment is appropriate, or at this stage, should any other species be included?
OR3	Do consultees agree that all designated sites, with the exception of the Muirkirk and North Lowther Uplands SPA in the context of breeding merlin, can be scoped out from detailed assessment within an Habitat Regulations Assessment (HRA) or EIA context, due to it not being likely that significant effects would arise?

OR1	Do consultees agree that the desk study and the field surveys (September 2023 to August 2025) will provide sufficient data to inform a robust impact assessment?
OR4	Do consultees agree with the proposal to scope out effects relating to lighting/decommissioning and ornithology?
OR5	Do consultees agree that the methodology and scope of the assessment is appropriate?
OR6	Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ornithology assessment?

3.7 Hydrology, Hydrogeology and Geology

3.7.1 Overview

This section outlines the preliminary hydrology, hydrogeology, and geology baseline applicable to the Site. It also provides an overview of potential impacts to be addressed within the EIAR and the proposed method for evaluation of effects in relation to hydrology, hydrogeology and geology.

The scope of the assessment is based on a high-level review of baseline information and findings, which will be confirmed through a review of additional data sources, site visits, and consultation with appropriate stakeholders.

3.7.2 Study Area

The Study Area, in respect of potential impacts on water resources, will include the Site plus a 2 km buffer. Additionally, the assessment will take into account potential hydrological downstream connectivity to areas extending beyond this buffer.

The Study Area, in respect of potential impacts on geological receptors including peat and carbon-rich soils, considers land within the Site itself, on the basis that whilst there is potential for connectivity with adjacent peatlands and soils, the effects are largely localised. However, this will be reviewed and updated, if necessary, during the assessment.

3.7.3 Baseline Conditions

Hydrology

Snar Water passes through the western portion of the Site, Glengonnar Water flows through the northern section of the Site, and Elvan Water/Shortcleuch Water passes through the eastern portion of the site.

The western side of the Site all drains generally to Snar Water or smaller tributaries, which flows onward to the north where it meets with Duneaton Water.

The northern area of the Site drains to Glengonnar Water which also flows in a northernly direction and eventually joins with the River Clyde. Glengonnar Water is located in the same valley as the B797 road which bisects the western and northern portions of the Site, and thus it is anticipated that this catchment is served by surface water drainage assets.

The eastern portion of the Site drains to the Elvan Water/Shortcleuch Water, which is central to the Site and flows eastward, and Portrail Water and the River Clyde which follow the eastern boundary of the Site flowing northward. Elvan Water/Shortcleuch Water sits in the same valley as the B7040 road which bisects the northern and eastern portions of the Site and is also anticipated to be served by surface water drainage assets.

Snar Water is assessed by SEPA to be of 'Good' overall condition under the Water Framework Directive classification scheme[127]. Glengonnar Water is assessed to be of Moderate overall condition. Elvan Water/Shortcleuch Water are assessed to be of Good overall condition. The Site is within the wider catchments of Duneaton Water and the River Clyde, which are assessed as Good and Moderate condition respectively.

The surface water features in relation to the Site are shown on **Figure 3.7.1**.

Flood Risk

SEPA Flood Risk maps[128] show that land in close proximity to Snar Water, Glengonnar Water, Elvan Water/Shortcleuch Water, and the River Clyde are within areas assessed to be at risk of flooding from rivers, including areas at a high risk of flooding (1 in 10 (10%) annual probability). Some marginal areas of the Site in connection to tributaries of the watercourses identified above are also within SEPA high risk flood areas. These areas are near to Glencaple in the north of the Site, South Shortcleugh which is centrally located on the Site, Glenochar which is along the eastern boundary of the Site, and Peden Burn in the south-east of the Site. Areas of the site assessed to be at risk of flooding from rivers are therefore in close proximity to watercourses themselves.

SEPA also publish Future Flood Maps which asses the Medium likelihood that by the 2080's an area may have a 0.5% annual probability of flooding. Snar Water, Glengonnar Water and Elvan Water/Shortcleuch Water within the Site all are shown to be within the future flood extents for this scenario. As with present day flood mapping, the future flood risk posed to the Site is concentrated around the watercourses and does not extend much further into the Site.

SEPA fluvial flood maps do not provide modelled flood extents for watercourses with a catchment area <10 km^2. Therefore, parts of the Site may still be at risk of flooding from the small watercourses not modelled by SEPA. SEPA mapping identifies some very limited areas of elevated surface water flood risk on the Site, the majority of which are within the flood risk areas identified above. Generally, the Site is at a very low risk of surface water flooding (less than a 1 in 1,000 (0.1%) annual probability).

*Flood risk in relation to the Site is shown on **Figure 3.7.2**. GWDTE*

National Vegetation Classification (NVC) habitat surveys may identify areas of the Site that support habitat that is classified as potentially groundwater dependent. The presence of NVC communities potentially representative of groundwater dependent terrestrial ecosystems (GWDTE) would be established through ecological surveying and where such habitats are identified, hydrological assessment would be carried out to determine the actual likelihood of groundwater dependency and the sensitivity of such habitats.

Geology and Soils

According to the British Geological Survey (BGS) Geology Map Viewer[129], the superficial geology underlying the Site predominantly comprises Devensian Till (Diamicton) and peat deposits. Small areas of Alluvium, comprising clay, silt, sand and gravel, are present in proximity to the burns and watercourses at the Site. There are also small areas of hummocky (moundy) glacial deposits (Diamicton). Large areas of the Site have no superficial deposits mapped. This is shown in **Figure 3.7.4**.

The underlying bedrock across the Site comprises Portpatrick Formation (Wacke) to the north of Leadhills, Kirkcolm Formation (Wacke) in the northwest portion, and Shinnel Formation (Wacke) in the southeast portion of the Site. There are small areas of Crawford Group (Chert) which is

[127] https://www.sepa.org.uk/data-visualisation/water-environment-hub/ (Accessed February 2025)
[128] https://www.sepa.org.uk/environment/water/flooding/flood-maps/ (Accessed: February 2025)
[129] BGS, 2025. BGS Geology Map Viewer. [Online] Available at: https://geologyviewer.bgs.ac.uk/?_ga=2.13362802.432518653.1737479126-890190900.1737479126

faulted, shown crossing the Site in a northeast to south westerly direction, and this comprises lava, chert, tuff and mudstone succession. This is shown in **Figure 3.7.5**.

A review of the NatureScot Carbon and Peatland 2016 map[130], an extract of which is shown on **Figure 3.7.6**, confirms the Site is predominantly overlain by 'Class 0' and 'Class 4' soils, which are defined as 'mineral soils' or 'mineral soils with some peat present' and do not typically support peatland habitats.

Large areas of 'Class 3' soils are found across the Site, which typically are carbon-rich soils, with some areas of deep peat. Multiple discreet areas of 'Class 1' peatland are also identified across the Site. Class 1 is nationally important carbon-rich peatland soils, deep peat and priority peatland habitat and likely to be of high conservation value. Smaller areas of 'Class 5' are also shown, defined as areas of peat soil where soil information takes precedence over vegetation data. No peatland habitat was previously recorded in these areas, which may also include areas of bare soil.

A Stage 1 peat depth survey has been undertaken in order to inform the scoping layout. The results of the peat survey show that peat depths across the majority of the Site are shallow with a depth of between 0 to 1 m, with some instances of slightly deeper peat of between 1 to 1.5 m depth. Isolated areas of deeper peat (up to 4.5 m depth) were identified in the area known as Peat Hill to the north of Turbine 15, to the northeast of South Shortcleugh, southeast of Harry Burn, and to the north of Bulmer Moss. The Stage 1 peat survey results are shown in Figure 3.7.7.

The Scotland's Environment Map online viewer[130] shows a Geological Conservation Review Site and Site of Special Scientific Interest (SSSI) located in the northeast portion of the Site known as Raven Gill, which has been designated for its geological importance and covers an area of 6.66 ha. This is shown in **Figure 3.7.5** in Appendix A. The designated area includes rocks and exposures of Arenig – Llanvirn age, representing the British geological record of Earth history from about 483 to 460 million years ago (Ma)[131]. No aspect of the Proposed Development would encroach within this area.

A review of aerial imagery[132] and online historical maps indicate that areas of the Site have been used for lead mining.

The Mining Remediation Authority Map Viewer[133] indicates that there are Abandoned Mines Catalogue sites present which are coal and other mineral abandonment plans, covering both surface and deep mining operations, which depict areas of coal and other mineral extraction and the point of entry into these workings located within or in proximity to the Site. Leadhills is identified as having several abandoned mines located around the village.

A mining risk assessment[134] has been undertaken, which identified that historically the Leadhills Estate was subject to lead (and more historically gold) mining activity with evidence of disused mines and mining assets extensive on parts of the Estate. Abandoned mines and their associated mining assets may represent potential sources of ground instability and soil and water contamination.

The main area of recorded mining activity in the locality is around the villages of Leadhills and Wanlockhead. The mines around these villages were rich in lead with extensive underground

[130] Scottish Government, 2025. Scottish Environment Web Map. [Online] Available at: https://map.environment.gov.scot/sewebmap/
[131] JNCC, 2025. Arenig-Llanvirn. [Online] Available at: https://data.jncc.gov.uk/data/bdd086fd-5c0f-450b-b00b-bb7f16a760b4/gcr-block-description-05-are-llv.pdf
[132] Google, 2025. Google Earth. [Online] Available at: https://earth.google.com/web/@51.13214917,-1.67830945,106.46210804a,2289.36496629d,35y,0h,0t,0r/data=CgRCAggBQgIIAEoNCP_____wEQAA
[133] Mining Remediation Authority, 2025. Map Viewer. [Online] Available at: https://datamine-cauk.hub.arcgis.com/
[134] Wardell Armstrong, 2022. Leadhills – Mining Desktop Study.

workings and were operated virtually continuously from the 17th Century to 1934. There were, however, mining activities undertaken in the surrounding hills from earlier periods. The earlier workings predate the legal requirement for the deposition of mine plans on the abandonment of a mine and, as such, records of mining activities are often lacking.

The presence of mining activities on and adjacent to the Site appears to be limited to the slate quarry at Glenochar and small-scale quarrying shown on the eastern slopes of Watchman Hill. Other historical mining may however have taken place.

Water Resources

According to BGS 1:625,000 hydrogeological mapping[135], almost the entirety of the Site is underlain by a Low productivity aquifer. The geological groups noted above all contribute to the low productivity classification. There is a very small portion of the western boundary that is classified as a High productivity aquifer of the Stewartry Group geology.

Private water supply (PWS) registers held by SLC indicate that there are four private water supplies located within the Site boundary. Additionally, further PWS are recorded outside of the Site boundary within the 2 km Study Area (**Figure 3.7.3**).

3.7.4 The Site is not located within a Scottish Water Drinking Water Protected Area (DWPA) for surface water, and is not in hydrological connection with a DWPA.Potential Significant Effects

Based on baseline conditions described above, it is anticipated that the following potentially significant effects could occur as a result of the Proposed Development:

- There is the potential to alter in-channel and overland flow regimes through excavations, disruption to artificial drains, exposure of bare earth or rock, alteration to field drains and the construction of watercourse crossings, which could result in changes to the hydrology and hydrogeology, and subsequently affect the condition of the peat at the Site;
- There is the potential to increase erosion and transport of sediment to watercourses as a result of constructing watercourse crossings, vegetation and soil stripping, excavations and dewatering activities. Potential effects include indirect effects on aquatic ecology, fluvial morphology and PWS;
- In the event that PWS are found to be in hydrological or hydrogeological connection to the Proposed Development, there is the potential that the quality or quantity of water supply could be affected. There is the potential for water supply at groundwater or surface water abstraction locations to be impacted;
- There is the potential to impact on receiving soils, groundwater and watercourse quality through the release of contaminated water and stored chemicals used on-site during construction works. Potential effects include those on water quality and indirect effects on aquatic ecology;
- There is potential to permanently alter or disrupt shallow groundwater flow, in particular through the construction of tracks, drainage measures and turbine foundations;
- Peat erosion potential of any peat disturbed may also be exacerbated as a consequence of localised drying of the peat and resultant oxidation, due to any alteration in surface water runoff flow paths;
- Potential for loss/disturbance to peat and carbon-rich soils as a result of the excavations for wind farm infrastructure, and construction activities;
- Excavation of soil and bedrock during the construction phase of the Proposed Development could cause localised disruption and interruption to groundwater flow. Interruption of

[135] https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ (Accessed February 2025)

groundwater flow would potentially reduce the supply of groundwater to GWDTE thereby causing an alteration/ change in the quality or quantity of and/ or the physical or biological characteristics of the GWDTE. Contamination of groundwater may also cause physical or chemical contamination to the GWDTE; and,

- Potential impacts on geological receptors and contaminated land during the excavations for wind farm infrastructure and construction activities as a consequence of mining activities in the area.

Issues Scoped Out

Based on a review of SEPA Flood Maps, it is noted that flood risk is highly unlikely to increase as a result of the Proposed Development, either through development taking place on areas considered to be at risk of flooding or through an increase in flood risk downstream. It is therefore proposed that the assessment of flood risk would form part of the EIA chapter, and no separate detailed technical reporting would be completed, including conceptual description of Sustainable Drainage System (SuDS) measures to be employed at the Site to ensure runoff rates from the Site are not increased.

A detailed assessment of potential flow rates at proposed watercourse crossing locations would be carried out by the contractor at the detailed design stage, such that all of the watercourse crossings identified for the Proposed Development would be designed in compliance with the requirements of The Water Environment (Controlled Activities) (Scotland) Regulations 2011. The design of watercourse crossings would also take account of the future 'with climate change' baseline and (to avoid altering the flow regime) would be sized for a 1:200 year plus climate change flood event. As such, while a schedule of watercourse crossings would be provided, detailed flow rate calculations would not be provided within the EIAR.

According to the BGS digital map and Hydrogeological and Groundwater Vulnerability Maps of Scotland (1:625,000), the Site predominantly overlies a Low productivity aquifer. There is a very small portion of the western boundary that is classified as a High productivity aquifer, associated with Stewartry Group bedrock geology. If it is identified that potentially groundwater dependent vegetation communities (as identified by ecological surveying and classification of NVC communities) are not supported by groundwater supplies, it would be sought to scope out this assessment from the EIAR prior to submission, in consultation with SEPA. The EIAR would provide a detailed assessment of potential effects of the Proposed Development on surface water conditions supporting sensitive, non-groundwater dependent habitats.

It is proposed that potential impacts on the operation of the Proposed Development on the basis of a geological standpoint would be scoped out of the EIAR on the basis that they are unlikely to give rise to significant effects.

3.7.5 Assessment Methodology

Additional Baseline Information Collection

Consultation with Scottish Water will be undertaken to confirm if there are public water supplies for potable water that are located within 2 km of the Site.

A Site walkover will be carried out to hydrologically characterise areas of proposed infrastructure. The Site walkover will incorporate:

- A review of locations of PWS, as identified by desktop assessment and inspection of any further potential PWS locations as noted during the walkover;
- Identification of smaller watercourses and hydrological features not identified through desktop assessment, where there is the potential for interaction with proposed infrastructure;

- Surveying of potential watercourse crossing locations in line with SEPA Guidance[136]. This survey will provide information on crossing locations, Controlled Activities Regulations (CAR) requirements, channel dimensions and likely crossing types; and

A higher resolution peat probing survey will be undertaken once the design of the Proposed Development has been advanced to include other proposed infrastructure, such as along proposed tracks, at 50 m intervals, and 10 m crosshairs at turbine locations. Further peat probing will ensure that all infrastructure locations have sufficient peat depth information to support relevant studies on peat instability, peat excavation and reuse, and carbon calculations.

A desk-top review of available information will also be undertaken to inform the baseline, including a review of peatland habitat data.

Method of Assessment

The assessment of the significance of hydrological and hydrogeological and soils and geology impacts will be undertaken by determining the sensitivity of the specific attribute and the magnitude of the impact upon the attribute. Impacts will be assessed for all phases of the Proposed Development. Following the determination of impacts, mitigation measures will be identified, and residual impacts identified.

It is anticipated that as the assessment of potential impacts would inform the design of the Proposed Development and best practice measures would be implemented during the construction, operation and decommissioning of the Proposed Development, that significant residual effects to the water and geological environment would be avoided. However, if potential significant residual effects to the water and geological environment are identified through the assessment process, suitable mitigation measures will be set out in the EIAR.

An outline CEMP will be included as a technical appendix to the EIAR which will include mitigation measures, environmental management requirements, outline method statements and environmental monitoring requirements.

The EIAR will consist of a baseline assessment (both desk-based and from fieldwork), the development of hydrological constraints, associated guidance and mitigation, and an assessment of the impacts. Distinct and separate reports shall be provided, suitable for incorporation as Technical Appendices to the EIAR (as appropriate) covering:

- PWS Assessment (if required)
- Watercourse crossings description[137];
- GWDTE construction impact review[138];
- Peat survey results;
- Peat landslide hazard and risk assessment;
- Outline Peat Management Plan[139]; and
- Carbon Balance Report, based on the Scottish Government Carbon Calculator.

[136] https://www.sepa.org.uk/media/151036/wat-sg-25.pdf (Last accessed May 2025)

[137] Assessment will be carried out in line with Scottish Government (2011, 2013, 2017) Water Environment (Controlled Activities) (Regulations) Scotland 2011 (CAR) and their further amendments of 2013 and 2017 Available at: https://www.sepa.org.uk/regulations/water/

[138] LUPS-GU31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Version 3 (September 2017).

[139] An outline Peat Management Plan will be prepared in accordance with SEPA guidance Developments on Peatland: Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and Minimisation of Waste, Version 1 (2012). Scottish Renewables & SEPA

Cumulative Impacts

Potential cumulative environmental impacts to water, soils and geological resources will be assessed where concurrent proposed wind farm sites or construction activity may be in hydrological connection with the Proposed Development, or water resource receptors. Where potential cumulative impacts are identified, the same criteria as used for assessment of the Proposed Development will be employed.

Questions to Consultees

Table 3.7.3.3 Questions to Consultees

HYD1	Is the proposed assessment methodology, including proposed Study Areas, accepted?
HYD2	Do consultees agree with the features proposed to be scoped out from further assessment?
HVD3	Do consultees agree with the approach taken for the proposed assessment of geology and soils, particularly with regard to impacts on peat and carbon-rich soils?

3.8 Traffic and Transport

3.8.1 Overview

This section provides an overview of the traffic and transport context for the Proposed Development and sets out the proposed approach to the assessment of potential effects associated with the Proposed Development on access, traffic and transport.

A Transport Assessment (TA) will be provided to review the impact of transport related matters associated with the Proposed Development. This will be appended to the EIAR and will be summarised into a traffic and transport chapter within the EIAR.

3.8.2 Study Area

The traffic, transport and access Study Area will be defined by the preferred AIL and general construction traffic routes to the Site.

The exact locations for the proposed site access junctions (for construction and AIL traffic) have yet to be finalised and as such, the proposed Study Area covers all potential access options.

General construction traffic will access the Site from the M74 corridor, with the Study Area covering the M74motorway to the north of Junction 13 and south of Junction 14. The A702 between Junction 14 through to Watermeetings, the B797 between Abington and Leadhills and the B7040 between Elvanfoot and Leadhills will form the general Study Area.

All road links within the Study Area would be considered, along with active travel routes and core path routes directly affected by construction traffic movements.

3.8.3 Baseline Conditions

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

Data for the M74 would be obtained from the Transport Scotland database, whilst new Automatic Traffic Count (ATC) survey data from the A702, B797 and B7040 would be obtained.

Future traffic flows will be factored from surveyed data using Low Growth factors estimated from National Road Traffic Forecasts.

Further traffic data would be obtained from Crashmap UK for the A702, B797 and B7040 to inform the accident review for the immediate road Study Area for a five year period.

3.8.4 Potential Significant Effects

Potential impacts that may arise during the assessment for users of the road and those residents along the delivery routes may include the following: severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation and road safety

The impacts on receptors within the Study Area will be reviewed during the construction phase, with a peak construction period assessment undertaken. This will review the maximum impact and presents a robust assessment of the effects of construction traffic on the local and trunk road networks.

The effects that will be considered will be based upon percentage increases in traffic flow and reviewed against the impacts noted above.

Issues Scoped Out

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

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

3.8.5 Assessment Methodology

Legislation, Policy and Guidance

The assessment will be carried out in accordance with the following guidance with reference to relevant legislation and policy:

- Transport Assessment Guidance (Transport Scotland, 2012)[140]; and
- Environmental Assessment of Traffic and Movement (IEMA, 2023)[141].

A detailed list of all relevant guidance, legislation and policy will be included in the EIAR.

Method of Assessment

The Environmental Assessment of Traffic and Movement (IEMA, 2023) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:

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

140 Transport Scotland (2012): Transport Assessment Guidance. Available at: https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf [Accessed May 2025]
141 IEMA (2023): Environmental Assessment of Traffic and Movement. Available at: https://www.iema.net/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/ [Accessed May 2025]

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

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

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

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

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

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

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

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

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

It is not anticipated that a formal TA will be required as these are not generally considered necessary for temporary construction works. Instead, a reduced scope TA would be provided. This will include a Route Survey Report for Abnormal Indivisible Loads (AIL).

Detailed swept path analysis will be undertaken for the main constraint points on the route from the port of entry (likely to be King George V Docks, Glasgow) through to the Site access junction to demonstrate that the turbine components can be delivered to Site and to identify any temporary road works which may be necessary.

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

Cumulative Impacts

A cumulative assessment will take place where a development has planning consent and would have a significant impact on the study network (i.e. over 10% increase in traffic flows). These traffic flows would be included into the baseline flows used within the assessment.

Planning proposals that are at application stage and do not have planning consent are not committed developments and as such would not be included in the cumulative assessment.

3.8.6 Questions to Consultees

Table 3.8.1: Questions to Consultees (Traffic and Transport)

TT1	Do consultees agree with the proposed Study Area?
TT2	Do consultees agree that operational and decommissioning impacts can be scoped out of the EIA?L

3.9 Noise and Vibration

3.9.1 Overview

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

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

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

3.9.2 Study Area

The assessment will consider noise sensitive residential locations in the vicinity of the Proposed Development. Specifically, ETSU-R-97[142] 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.

There are a number of operational wind farm developments near to the Proposed Development, including Clyde, Middle Muir and Andershaw wind farms. In addition, there are a number of proposed wind farm developments in the area including Priestgill, which is consented but not yet built, and M74 West, Daer and Rivox wind farms which are currently in planning.

The 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 as listed above.

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.

[142] 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.

3.9.3 Baseline Conditions

The Site is located in an area of low population density. The noise environment in the surrounding area is expected to be characterised in many cases by 'natural' sources, such as wind disturbed vegetation, birds and farm animals. In addition, road traffic noise will have a strong influence in some areas, in particular next to the M74 motorway to the northeast and east of the Site, and to a lesser extent the A702 road and local roads such as the B7040 and the B797, although this will tend to reduce at night.

The baseline environment will be assessed by measuring background noise levels as a function of 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'. ETSU-R-97 also requires that any such measurements are not significantly influenced by existing operational turbines, to prevent unreasonable cumulative increases. Reference will also be made, where relevant, to the baseline measurements previously made as part of the application for the neighbouring Clyde Wind Farm and Harryburn Wind Farm[143]. Seven previously measured historical baseline locations, surveyed in June 2016, are available and, in the absence of substantial changes in the background noise characteristics of the area since the time of survey, this historical data (acquired in consultation with the local authority and used in the Harryburn Wind Farm assessment) remains representative of the properties surveyed and was not influenced by noise from operational wind turbines.

The existing baseline data represents most of the properties in the area surrounding the Northern and Southern turbine clusters, however, some properties to the west that are close to the Western turbine cluster are not represented by the historical baseline data. It is anticipated that a baseline survey will therefore be required at two or more locations to the west of the Proposed Development to supplement the historical data and establish the background environment at the nearest noise sensitive receptors (NSR) to the west.

The exact measurement locations and survey methodology will be discussed with the Environmental Health Department of South Lanarkshire Council.

3.9.4 Potential Significant Effects

Construction

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

In assessing the impact of noise and vibration from construction activities, it is usual to accept that the associated works are of a temporary nature.

Any blasting, if used, for rock extraction at borrow pits may also create vibration and air overpressure which would be considered in the assessment if applicable.

There is also potential for construction traffic noise to impact on sensitive receptors in the area.

Operation

During their operation, wind farms have the potential to create noise effects through both aerodynamic noise and mechanical noise. Aerodynamic noise would be caused by the interaction of the turbine blades with the air. Mechanically generated noise would be caused by the operation of internal components, such as the gearbox and generator which are housed within

[143] The Scottish Government Energy Consent Unit - ECU Ref: EC00005277 – https://www.energyconsents.scot/ApplicationDetails.aspx?cr=EC00005277 – [Accessed: 19/02/2025]

the nacelle of the turbine. However, the level of mechanical noise radiated from current technology wind turbines is generally engineered to a low level.

Matters Scoped Out

Decommissioning is likely to result in less noise than during construction of the Proposed Development and similar management measures can be employed and therefore it is proposed that this can be scoped out.

It is recognised that vibration resulting from the operation of wind farms is imperceptible even at short distances of 25 metres or more from a turbine, and separation distances from all receptors to the proposed turbines are well in excess of this. It is therefore proposed to scope out the assessment of vibration produced during the operation of the Proposed Development.

With regards to infrasound and low frequency noise, the above-referenced online planning advice note, Onshore wind turbines, refers to a report for the UK Government which concluded that "*there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested*". The current recommendation is that ETSU-R-97 should continue to be used for the assessment and rating of operational noise from wind farms. It is therefore not proposed to undertake specific assessments of infrasound and low frequency noise, but the noise chapter will consider the latest supporting information on these subjects and the topic of wind turbine blade swish or Amplitude Modulation (AM).

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 it is proposed would also be scoped out.

3.9.5 Assessment Methodology

Legislation, Policy and Guidance

The noise assessment will be undertaken with reference to the following documents:

- Scottish Government (2022) - Onshore wind - policy statement 2022, December 2022.
- Scottish Government (2011) Planning Advice Note 1/2011: Planning & Noise.
- Scottish Government (updated 28 May 2014) Online Renewables Planning Advice, Onshore Wind Turbines (https://www.gov.scot/publications/onshore-wind-turbines-planning-advice).
- 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.
- M. Cand, R. Davis, C. Jordan, M. Hayes, R. Perkins (2013). A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise, Institute of Acoustics.
- Bowdler et al (2016) Wind farms cumulative impact assessment, Institute of Acoustics Noise Bulletin Vol. 41 No. 1, Jan/Feb 2016.
- The South Lanarkshire Council, Local Development Plan 2 Volume 1 (LDP), April 2021 incorporating Supporting Planning Guidance (SPG) Renewable energy, January 2021.
- British Standards Institute (2019) BS 4142:2014+A:2019 'Method for rating and assessing industrial and commercial sound.'
- 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.'
- 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.'
- Scottish Government (1996) Planning Advice Note 50: 'Controlling the Environmental Effects of Surface Mineral Workings.'

- British Standards institute (2008) BS 6472 2:2008: 'Guide to evaluation of human exposure to vibration in buildings - Part 2: Blast-induced vibration.'
- HMSO Department of Transport (1988) 'Calculation of Road Traffic Noise'.
- 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.

NPF4 requires consideration of potential noise impacts for developments such as this but provides no specific advice on noise. Planning Advice Note PAN1/2011 provides general advice on preventing and limiting the adverse effects of noise without prejudicing economic development. It refers to noise associated with both construction activities and operational wind farms.

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

Good practice in the application of the ETSU-R-97 methodology will be referenced, as set out in Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 (IOA GPG). This includes guidance on the assessment of cumulative operational noise impacts from wind farms, and on this point, further guidance set out in a 2016 article in the Institute of Acoustics Noise Bulletin will also be considered.

Continued use of ETSU-R-97 was confirmed in the Scottish Government Onshore wind policy statement 2022 which confirms "ETSU-R-97 provides the framework for the measurement of wind turbine noise, and all applicants are required to follow the framework and use it to assess and rate noise from wind energy developments". Furthermore, the policy statement recognises the IOA GPG "as a useful tool which developers can use in conjunction with ETSU-R-97".

The South Lanarkshire Council LDP states that the council takes a positive approach to accommodating wind developments and refers to the Scottish guidance for onshore wind farms for the detailed assessment of the development and consideration against the full range of environmental, community, and cumulative impacts. The addendum SPG for Renewable Energy refers to the guidance provided in ETSU-R-97, that during the daytime the noise limit should be set between 35 dB(A) and 40 dB(A) L_{A90} or 5 dB above prevailing background, whichever is greater, as stated in ESU-R-97. The expectations of The South Lanarkshire Council would be considered within the noise assessment.

PAN1/2011 and the Technical Advice Note accompanying PAN1/2011 provide further advice on construction noise and refers in particular to British Standard BS 5228.

Assessment Methodology

Construction

The assessment of potential impacts due to noise emissions during construction would be undertaken in accordance with the BS 5228 British Standard guidance 'Code of practice for noise and vibration control on construction and open sites.' Predictions of construction noise would 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 1/2011: 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 standard considers construction vibration, and this would also be referenced.

The impact of traffic noise along the Site access routes would be assessed on the basis of the methodology within BS 5228-1, and the 'Calculation of Road Traffic Noise' publication, where appropriate.

Operation

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

- Identify the nearest noise sensitive receptors.
- Determine the quiet 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.
- 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.
- The good practice guidance referenced above (IOA GPG) will be taken into account, including advice on baseline survey, wind shear calculations, and noise prediction methodology.

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 in the area, including existing, consented and wind development applications in planning, must be assessed relative to these limits.

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 regards to cumulative impacts, will also be discussed with SLC.

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).

Noise from operation of the proposed substation 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 2 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.

Sensitivity of Receptors

All residential properties will be considered to be of high sensitivity to noise.

Magnitude of Impact

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 3.9.1 below presents the criteria for impact significance from construction noise effects.

Table 3.9.1: Impact Significance Criteria for Construction Noise

Impact Significance	Definition
Major	Construction noise is generally greater than 75 dB $L_{Aeq,T}$ 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.
Moderate	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.
Slight	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 55dB $L_{Aeq,T}$, with periods of up to 65 dB $L_{Aeq,T}$ lasting not more than 4 weeks in any 12 month period.

For construction traffic, the criteria set out in the Design Manual for Roads and Bridges are also likely to be referenced. Construction noise management procedures will also be determined.

For operational noise from the 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 in section 3.9.5), including consideration of cumulative noise levels.

The magnitude of potential impacts from noise from operation of the substation/battery storage, unless considered negligible due to large separation distances, will be assessed using the guidance from BS 4142 and professional judgement.

Significance of Effect

For construction noise and operational noise from the substation/battery storage, 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.

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.

Cumulative Impacts

Cumulative wind farm developments (existing, consented, or in planning) within 10 km of the Proposed Development will be considered within the cumulative operational noise assessment; however, it may be possible to scope out some developments within that area if predicted noise levels at the nearest NSRs are low.

3.9.6 Questions for Consultees

Table 3.9.2: Questions to Consultees (Noise and Vibration)

NV1	Are the consultees happy with the suggested approach for the noise assessment, including elements scoped in and out?
NV2	Are consultees content for the assessment to reference previous background noise data acquired around the Site?

3.10 Aviation

3.10.1 Overview

Wind turbines have the potential to affect the performance of radars used for air traffic control, air defence and meteorological forecasting and of aeronautical radio navigation aids. They can also present an obstacle hazard to aircraft flying at low altitude. They may affect the specified minimum altitudes for aircraft using instrument flight procedures (IFPs) at airports.

This section sets out the proposed approach to the assessment of potential effects on aviation and radar during the construction and operation of the Proposed Development.

3.10.2 Study Area

It is proposed that Study Areas with the following radii from the Site boundary will be used to identify potentially affected aviation and defence facilities:

- 125 km radius for air traffic control (ATC) and air defence primary surveillance radars (PSRs);
- 60 km radius for IFPs at licensed or certificated aerodromes;
- 30 km radius for licensed and certificated aerodromes and Meteorological Office radars;
- 20 km radius for aeronautical radio navigation aids and secondary surveillance radars (SSRs);
- 15 km radius for unlicensed aerodromes and launching sites and specialist military low flying areas; and
- 10 km radius for aeronautical radio transmitter/receiver sites.

3.10.3 Baseline Conditions

The airspace above the Site is uncontrolled (Class G) from ground level up to 5,500 feet above sea mean level (asml). Above that level is the Class D controlled airspace of the Scottish Terminal Manoeuvring Area (TMA), under the control of the NATS En Route (NERL) Prestwick Centre. The key distinguishing feature between controlled airspace and uncontrolled airspace is that pilots require ATC clearance to enter controlled airspace and whilst in it must comply with ATC instructions.

The Site is located to the north – north-east of and within 20 km of the NERL PSR/SSR at Lowther Hill and NERL's air-ground-air (AGA) communications infrastructure at Lowther Hill. A Distance Measuring Equipment (DME) facility on Green Lowther is also within 20 km radius of the Site.

The Site is within the IFP assessment areas for Edinburgh and Prestwick Airports and may be within the assessment area for future IFPs at Glasgow Airport.The Site is in the MoD's Eskdalemuir Seismic Array 50 km Consultation Zone.

The Site is located within a specialist military low flying area known as Low Flying Area 20(T), which may be activated for daytime Operational Low Flying down to heights of 100 feet above

ground level (agl). For military low flying at night, the Site is within Allocated Region 2B which covers the western parts of central and southern Scotland.

There are no Meteorological Office radars within 30 km of the Site. Consequently, it is proposed that this consideration may be scoped out.

3.10.4 Potential Significant Effects

Preliminary radar modelling indicates that the Site's turbines would be fully in radar line of sight of NERL's PSR at Lowther Hill, and NATS PSR at Cumbernauld (58 km north of the Site). Preliminary radar modelling also indicates that two turbines, T30 and T31, may be in radar line of sight of Glasgow Prestwick Airport's PSR. This preliminary radar modelling indicates that the Site would not be in radar line of sight of any of the other PSR within the study area (NERL's Great Dun Fell PSR, Kincardine PSR, Edinburgh Airport PSR, MoD Dead Water Fell PSR and MoD Berry Hill PSR).

The turbines would also be within NERL's safeguarding consultation zone for the Lowther Hill SSR and AGA infrastructure.

Turbines up to 220 m in height have the potential to pose a physical obstruction hazard to low flying aircraft, requiring them to avoid the turbines horizontally and/or vertically.

Turbines within 60 km of airports have the potential to impact the Minimum Surveillance Altitude (MSA) of the airport. However, preliminary MSA analysis indicates that none of the Site's turbines would impact the MSA of Glasgow Prestwick Airport nor either the MSA of Glasgow Airport. All the Site's turbines would be beyond the MSA plus buffer of Edinburgh Airport.

Turbines up to 220 m in height have the potential to pose a physical obstruction hazard and downwind turbulence effects to paragliders and hang-gliders operating from established sites on Tinto Hill, although the Site is over 14 km from Tinto Hill. CAP764 guidance indicates that turbulence effects from turbines should decay within 8-12 rotor diameters downwind of the turbine. Assuming a rotor diameter of 155 m for the Site's turbines, turbulence impacts should decay within 2 km of the Site. This Site is also outwith the 10 km consultation zone recommended by the CAA for any charted glider launch site.

With regards to the MoD's Eskdalemuir Seismic Array, the Applicant acknowledges that the finite seismic noise capacity of the Array and the Proposed Development's impact will need to be addressed.

3.10.5 Assessment Methodology

The aviation assessment will be conducted in accordance with CAP 764, the Civil Aviation Authority (CAA) policy and guidance on wind turbines[144]; and CAP 670, the CAA guidance on Air Traffic Services Safety Requirements[145].

Radar line of sight assessment will be conducted using proprietary software and digital terrain data with an appropriate resolution. For any radars found to have line of sight to the proposed turbines, an operational impact assessment will be carried out and options for mitigating any detrimental effects on the relevant aviation stakeholder's ATC service considered.

Further analysis will be conducted with respect to any potential impacts on NERL's SSR at Lowther Hill and its AGA infrastructure at Lowther Hill, including considering the impacts on the

[144] Civil Aviation Authority (2016). CAA Policy and Guidelines on Wind Turbines: CAP 764. Available at: https://www.caa.co.uk/publication/download/14561 [Accessed May 2025].
[145] Civil Aviation Authority (2019). Air Traffic Services Safety Requirements: CAP 670. Available at: https://www.caa.co.uk/publication/download/17362 [Accessed May 2025].

ATC service provided by NERL using this infrastructure, and options for mitigating any detrimental effects on NERL's ATC service considered.

Effects on paragliding/hang gliding activity at Tinto Hill will be assessed by reviewing the location of the proposed turbines in relation to topography, other obstacles and terrain features used for soaring.

The proposed turbines will exceed 150 m in height and will therefore be subject to mandatory requirements for obstacle lighting in accordance with Article 222 of the Air Navigation Order 2016[1]. An aeronautical study will be conducted of the potential for an alternative lighting scheme in which not every turbine is fitted with lights. Any aviation lighting scheme will be consulted upon with the CAA and other relevant consultees. MoD compliant infra-red lighting will also be included in the lighting configuration. The Site's turbines will be notified to the CAA under the Air Navigation Order for civil and military charting.

With regards to the Eskdalemuir Seismic Array, the Applicant notes the work of DESNZ, the MoD and the Scottish Government on this topic as outline in the Clean Power 2030 Action Plan, published by the UK Government in December 2024.

Consultations will be carried out with NERL; the MoD; the CAA; Glasgow, Edinburgh and Glasgow Prestwick Airports; and the Lanarkshire and Lothian Soaring Club.

3.10.6 Questions for Consultees

Table 3.10.1: Questions to Consultees (Aviation)

AV1	Do consultees agree with the methods proposed to determine the aviation baseline?
AV2	Do consultees agree with the aviation assets / issues proposed to be scoped into the assessment?
AV3	Do consultees agree with the aviation assets / issues proposed to be scoped out of the assessment?

4. TOPICS PROPOSED TO BE SCOPED OUT OF THE EIA

4.1 Socio-Economics and Tourism

Socio-economic and tourism assessments of onshore windfarms over the last decade have found no adverse effects assessed as significant in terms of the EIA Regulations and there is no reason to expect significant effects for the Proposed Development which would require formal consideration in the EIA process.

It is therefore proposed to scope socio-economics, recreation and tourism out of the EIA Report.

However, it is recognised that socio-economic and tourism issues will be of interest to stakeholders and local authorities and so a separate Socio-Economics and Tourism Report will be provided to accompany the Application. This will include consideration of local tourism activity, direct effects such as employment generation and any indirect or induced effects from the Proposed Development.

The Socio-Economic and Tourism Report will focus on the following Study Areas:

- Socio-economics - South Lanarkshire and the UK, with a focus on the electoral ward of the Site, Clydesdale East.
- Tourism - 15 km radius of the Site, consistent with previous research of the relationship of tourism and onshore wind developments.

The socio-economics and tourism assessment would primarily be a desk-based study with consultation undertaken with the local community to further inform the baseline and inform any opportunities from the Proposed Development which arise therein.

The socio-economic and strategic baseline within the relevant Study Areas will be characterised in the report through a review of publicly available data sources, and will include:

- the population characteristics of the local area, including local and national demographic trends;
- fuel poverty statistics set within a national context;
- employment and economic activity in the local area within the context of the national economy;
- wage levels in the local area compared to the national levels;
- the industrial structure of the local economy compared to the national level; and
- the role of the tourism sector in the local economy.

The report will take into account the relevant local and national policy objectives for socio-economics and tourism, which are expected to be included in the following strategies:

- Scotland's National Strategy for Transformation[146];
- Scotland's National Performance Framework[147];

[146] Scottish Government (2022) Scotland's National Strategy for Economic Transformation. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2022/03/scotlands-national-strategy-economic-transformation/documents/delivering-economic-prosperity/delivering-economic-prosperity/govscot%3Adocument/delivering-economic-prosperity.pdf [Accessed January 2025]

[147] Scottish Government (2023) National Performance Framework. Available at: https://blogs.gov.scot/national-performance-framework/ [Accessed January 2025]

- Scotland's Energy Strategy[148];
- Onshore Wind Sector Deal for Scotland[149]
- Onshore Wind Policy Statement 2022[150];
- Scottish Tourism Alliance (2021), Scotland Outlook 2030[151]; and
- South Lanarkshire Economic Strategy 2022-2027[152].

The report will also consider whether the Proposed Development maximises net economic benefit, in the context of NPF4 Policy 11(c) which states that *"development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities*". The analysis will reach the conclusion on whether the project maximises the net economic impact in the context of this NPF4 Policy 11(c).

Whilst NPF4 includes no requirement to consider tourism when considering net economic impact or in the project design and mitigation process, relevant employment statistics show that in Clydesdale East the employment in the sustainable tourism sector accounts for a higher percentage of total employment in the area (8.8%) compared to Scotland (8%). This indicates the importance of tourism in the local area surrounding the Proposed Development and it is recognised that local stakeholders may be interested in the potential impact. Thus, a tourism assessment will be included in the socio-economic report.

The potential socio-economic effects that will be considered are:

- temporary effects on the identified Study Areas due to expenditure during the construction phase;
- permanent effects on the identified Study Areas due to expenditure associated with the on-going operation and maintenance of the Proposed Development;
- permanent effects on the local economy as a result of any additional public expenditure that could be supported by the additional tax revenue that would be generated by the Proposed Development during the operational phase; and
- permanent effects on the local economy that could be supported by any community funding that might be provided by the Applicant during the operational phase.

This assessment will also consider the potential effects that the development could have on tourism following a more focused approach on impacts related to key tourist attractions and recreation assets.

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[148] Scottish Government (2023) Draft Energy Strategy and Just Transition Plan. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/01/draft-energy-strategy-transition-plan/documents/draft-energy-strategy-transition-plan/draft-energy-strategy-transition-plan/govscot%3Adocument/draft-energy-strategy-transition-plan.pdf [Accessed January 2025]

[149] Scottish government (2023) Available at: https://www.gov.scot/publications/onshore-wind-sector-deal-scotland/documents/ [Accessed February 2025]

[150] Scottish Government (2022) Onshore Wind Policy Statement 2022. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2022/12/onshore-wind-policy-statement-2022/documents/onshore-wind-policy-statement-2022/onshore-wind-policy-statement-2022/govscot%3Adocument/onshore-wind-policy-statement-2022.pdf [Accessed January 2025]

[151] Scottish Tourism Alliance (2021), Scotland Outlook 2030. Available at: https://scottishtourismalliance.co.uk/wp-content/uploads/2020/03/Scotland-Outlook-2030.pdf [Accessed January 2025]

[152] South Lanarkshire Council (2022) South Lanarkshire Economic strategy 2022 -2027. Available at: https://southlanarkshire.cmis.uk.com/southlanarkshire/Document.ashx?czJKcaeAi5tUFL1DTL2UE4zNRBcoShgo=Z9JpVXraH6xk60ouBdJyW2RQlL%2FeSc7xaq0UKjKnS41Aa7WVOh8oig==&rUzwRPf+Z3zd4E7Ikn8Lyw===pwRE6AGJFLDNlh225F5QMaQWCtPHwdhUfCZ%2FLUQzgA2uL5jNRG4jdQ==&mCTIbCubSFfXsDGW9IXnlg===hFflUdN3100=&kCx1AnS9%2FpWZQ40DXFvdEw===hFflUdN3100=&uJovDxwdjMPoYv+AJvYtyA===ctNJFf55vVA=&FgPlIEJYlotS+YGoBi5olA===NHdURQburHA=&d9Qjj0ag1Pd993jsyOJqFvmyB7X0CSQK=ctNJFf55vVA=&WGewmoAfeNR9xqBux0r1Q8Za60lavYmz=ctNJFf55vVA=&WGewmoAfeNQ16B2MHuCpMRKZMwaG1PaO=ctNJFf55vVA= [Accessed February 2025]

There is no specific legislation or guidance available on the methods that should be used to assess the socio-economic impacts of the Proposed Development. The proposed method will however be based on established best practice, including that used in UK Government and industry reports on the sector. This assessment will draw from two studies by BiGGAR Economics on the UK onshore wind energy sector[153], a report published by RenewableUK and the Department for Energy and Climate Change (DECC) in 2012 on the direct and wider economic benefits of the onshore wind sector to the UK economy, as well as more recent industry data on the onshore wind sector and its supply chain, including evidence from South Lanarkshire.

There is also no formal legislation or guidance on the methods that should be used to assess the effects that wind farm development may have on tourism interests. The proposed method will consider specific attractions or tourism facilities to assess if there could be any effects from the Proposed Development.

The assessment will also consider the extent to which nearby wind farms may have cumulative socio-economic effects, for example increasing the capacity of the local supply chain or contributing to community development in the area.

It is anticipated that the contents of the socio-economic assessment chapter will include:

- introduction, including scope of assessment and methodology;
- economic development and tourism strategic context;
- baseline socio-economic context;
- baseline tourism and recreation context;
- socio-economic assessment;
- tourism and recreation impact assessment;
- proposed measures and actions to maximise local economic and community impacts;
- proposed measures and actions to mitigate any harmful effects (if required); and
- summary of findings and conclusion.

In order to assess the magnitude of socio-economic impacts, the level of activity/ employment supported during the construction and operation phases will be estimated.

Government and industry reports will be used to determine the expected capital and operational expenditure associated with the Proposed Development, as well as the breakdown of expenditure by different contracts (e.g. turbine, balance of plant). An assumption will then be made based on the share of each type of contract that can be secured regionally and nationally. This increase in turnover will then be used to estimate the economic impact associated with the Proposed Development.

The method to assess the socio-economic effects will be based on industry best practice and will consider the share of contracts that can be secured in each Study Area, and the level of employment that can be supported as a result.

In order to assess effects on tourism and recreation, the features that make the local area distinctive and attractive will be identified and the potential impact of the Proposed Development on those key features will then be assessed.

[153] BiGGAR Economics (2012) Onshore Wind: Direct & Wider Economic Impacts and BiGGAR Economics (2015) Onshore Wind: Direct and Wider Economic Benefits.

4.2 Population and Human Health

The EIA will consider human health in terms of amenity through the assessment of potential likely significant effects associated with water supplies, noise, traffic and visual amenity. No other sources or pathways for effects on human health have been identified.

The potential for any effects on "population" will be considered through the Socio-Economic and Tourism Report which will accompany the Application (as described above).

Appropriate control measures to ensure potential construction effects on air, noise and water quality are managed appropriately will be addressed through an outline CEMP which will be included as a technical appendix to the EIAR. A similar decommissioning management plan would be prepared for the decommissioning phase in line with the relevant guidance requirements at that time.

As such, it is proposed that a separate human health impact assessment chapter will therefore not be presented in the EIAR.

4.3 Risk of Major Accidents and/or Disasters

The construction, operation and decommissioning of the Proposed Development would be undertaken under relevant health and safety regulations including the requirements of the Construction (Design and Management) Regulations 2015[154]. A risk assessment process will be followed by the Principal Designer during the design stage, which will ensure that all potential risks are identified at an early stage and appropriate mitigation is implemented.

The risk of a major accident or disaster occurring as a result of the Proposed Development is therefore considered to be low. During the operation, routine maintenance inspections would be completed in order to ensure compliance.

Accordingly, it is proposed to scope out an assessment of major accidents and disasters from the EIAR.

It should however be noted that, if required, a peat landslide risk assessment will be undertaken and included as a Technical Appendix to the EIAR.

4.4 Ice Throw and Ice Fall

Modern wind turbines are designed to operate such that either ice does not accumulate on blades (through heating of blades during periods of weather where ice accumulation is possible), or if there is ice accumulation the turbine will automatically shut down (sensors on the blades detect ice accumulation and trigger shutdown) and so potential for ice throw from blades is avoided by design. Ice fall from turbines may occur and p Physical and visual warnings for both site personnel and third parties are also used to alert people to the risk of ice fall in the immediate area under the turbines.

In line with current guidance a permanent warning sign at the Site entrance is proposed to alert the public to potential ice fall. No detailed assessment is proposed as part of the EIAR.

4.5 Air Quality

The Proposed Development is not considered likely to give rise to significant impacts on air quality. The main activities that could have potential impacts would be limited to construction works (e.g. dust from soil stripping and earthworks, from excavation, potentially including occasional blasting, and from vehicles running over unsurfaced ground) and exhaust emissions from fixed and mobile construction plant and construction vehicles.

[154] Available at: https://www.legislation.gov.uk/uksi/2015/51/contents/made [accessed January 2025].

Construction works would be localised, short term, intermittent and controllable through the application of good construction practice. Fixed and mobile plant would be limited in size and number and would operate for short periods. Measures to manage air quality during construction, such as dust management, will be included in the outline CEMP to be included as a technical appendix to the EIAR.

The contributions of exhaust emissions (NO_2 and PM_{10}) from construction vehicles would likely be low, and orders of magnitude below current UK Air Quality Strategy Objectives[155].

Once operational, the only source of emissions would be from occasional maintenance vehicles, and accordingly any impacts would be negligible.

Therefore, it is proposed that the EIA will not address air quality impacts.

4.6 Climate Change

4.6.1 Carbon Emissions

The Proposed Development itself will contribute positively to helping Scotland (and the UK) meet its target for carbon reduction through the production of low carbon renewable energy and replacement of generating capacity that would otherwise be delivered by more carbon intensive generation sources.

However, it is acknowledged that the Proposed Development will still give rise to carbon emissions associated with its construction. A transparent account of carbon emissions for the Proposed Development throughout its lifecycle will be provided in the form of a Carbon Balance assessment, which will be prepared and submitted as a Technical Appendix to the EIAR. The report will include a calculation of the expected carbon savings over the lifetime of the Proposed Development and will be presented using the latest version of the Scottish Government's Carbon Calculator Tool[156]. This remains the suitable standardised tool for use in relation to net carbon saving calculations for wind farm developments across the UK.

The assessment will be undertaken in accordance with the Scottish Government's recommended methodology[157] and will present the carbon emissions associated with construction materials and the wind turbines themselves, including ground conditions, access preparations, foundation excavations, materials used on-site, the transportation of materials and components to Site, and any other carbon loss (e.g. through the degradation of peat / peaty soils).

4.6.2 Climate Resilience

The vulnerability of the Proposed Development to climate change will be considered as part of the detailed design process, which will consider the potential consequences of climate change (e.g. increased flood risk potential and more extreme weather conditions).

The Proposed Development's response to climate resilience risks will be provided in the introductory chapters of the EIAR and description of the Proposed Development. Consideration will be given to proposed mitigation measures (both inherent and additional) to ensure the Proposed Development is resilient to a changing climate.

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[155] Available at https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf [Accessed January 2025]
[156] Available at https://informatics.sepa.org.uk/CarbonCalculator/index.jsp [Accessed January 2025]
[157] Nayak et. al., (2010) Scottish 'Calculating Carbon Savings from Wind Farms on Scottish Peatlands – A New Approach'. Available at: https://www.gov.scot/publications/calculating-carbon-savings-wind-farms-scottish-peat-lands-new-approach/ [accessed January 2025]

With adoption of a climate resilient design and the assessment of key environmental risks associated with climate change (e.g. flood risk) as an integral part of the 'scoped in' environmental topics, it is proposed to scope out an assessment of climate resilience from the EIAR.

4.7 Forestry

According to the Scottish Government's National Scale Land Capability for Forestry Map[158], much of the Site is located on areas classified as Forestry Land F6: *Land with very limited flexibility for the growth and management of tree crops,* with smaller sections located on areas classified as Forestry Land F5: *Land with limited flexibility for the growth and management of tree crops*. There is a small area of commercial forestry located in the northwest of the Site.

It is anticipated that no areas of sensitive woodland or commercial forestry plantation would be affected by the Proposed Development. Therefore, there will be no requirement for the development of forestry felling and re-stocking proposals in accordance with The Scottish Government's Control of Woodland Removal Policy[159]. Any woodland re-planting on-site could be subject to future management control options (e.g. felling, coppicing, etc.) to prevent such woodland from affecting the performance of the Proposed Development.

4.8 Eskdalemuir Seismic Array

The Site is located between 30 km and 40 km northwest of the Eskdalemuir Seismic Array (EKA) and as such operation of the wind farm is anticipated to be subject to a Seismic Impact Limit (SIL).

The design of the Proposed Development will need to ensure that the SIL can be met.

Initial calculation of the anticipated likely seismic impact of a representative candidate turbine at an early layout has been undertaken. This has confirmed that it is anticipated that a wind farm can be delivered at the Site within an established SIL, on the assumption that an appropriate seismic budget allocation can be made available to the Proposed Development.

As such it is not anticipated that the Proposed Development would have a significant effect on the operation of the EKA and impacts on the EKA are proposed to be scoped out of the EIA.

It is proposed that a technical report demonstrating the anticipated performance of the Proposed Development in relation to the EKA will be provided as a technical appendix to the EIAR.

4.9 Telecommunications

Wind turbines can cause electromagnetic interference through physical and electrical interference which can affect television signals and communications equipment. Physical interference can cut across electromagnetic signals resulting in ghosting effect which largely affects television signals and radar. Electrical interference arises as a result of the operation of the generator within the nacelle of the turbine and can affect communication equipment in proximity to the turbines.

The Office of Communications (Ofcom) is responsible for the licencing of two-way radio transmitters and holds a register, the Spectrum Information Portal[160], of most microwave links. The Ofcom Spectrum Information Portal identifies a number of fixed telecommunication links within 3 km of the Site boundary, mainly focussed on Green Lowther hill, Abington (Craighead Hill) and Elvanfoot (Ladies Cairn), with some of these links running through the Site.

[158] Available at https://map.environment.gov.scot/Soil_maps [accessed January 2025]
[159] Available at https://www.forestry.gov.scot/publications/285-the-scottish-government-s-policy-on-control-of-woodland-removal
[160] Available at https://www.ofcom.org.uk/spectrum/information/spectrum-information-system-sis/spectrum-information-portal

Consultation with system operators, including Atkins, BT, EE, Joint Radio Company (JRC), O2 and Vodafone, will be undertaken in order to understand the Proposed Development's potential to cause electromagnetic interference with their assets.

Where possible, any potential effects on radio-communication links and television will be mitigated at the turbine layout design stage by the use of exclusion zones around any link paths. The paths of any links through the Site will be plotted and appropriate safeguarding buffers will be calculated. These buffers will be fed into the design process of the Proposed Development, with the primary aim of preventing effects by siting turbine infrastructure outwith the respective safeguarding areas. Should turbines be proposed to be sited within the identified safeguarding areas, a technical report would be prepared and included as a Technical Appendix to the EIAR, and mitigation measures would subsequently be agreed with the relevant operator(s).

4.10 Shadow Flicker

Under certain combinations of geographical position, times of day and year, the sun may pass behind a wind turbine rotor and cast a shadow over the windows of neighbouring buildings. When the blades rotate and the shadow passes a window, to a person within that room, the shadow appears to flick on and off; this effect is known as 'shadow flicker'. This effect occurs only within buildings where the flicker appears through a window aperture and in the UK typically occurs only in buildings within 130 degrees either side of north relative to a turbine.

Scottish Government Onshore Wind Turbines: Planning Advice[161] states that "where separation is provided between wind turbines and nearby dwellings (as a general rule 10 rotor diameters), 'shadow flicker' should not be a problem." A desk-based analysis confirms that, based on the scoping layout, there are up to 17 dwellings located within 10 rotor diameters and 130 degrees either side of north of the Proposed Development.

No formal guidance is available regarding what levels of shadow flicker may be considered acceptable in the UK. However, guidance from Northern Ireland states that: "It is recommended that shadow flicker at neighbouring offices and dwellings within 500 m should not exceed 30 hours per year or 30 minutes per day".

As part of the EIA process, shadow flicker modelling will be undertaken to provide details on the predicted frequency of occurrence of shadow flicker at each window location at each of the residential properties identified within 10 rotor diameters of the turbine locations. At this stage, it is anticipated that, if required, mitigation solutions would be available such that no significant effects are considered likely. As such, it is proposed that this topic would be addressed via a technical report included as a Technical Appendix to the EIAR, which would set out details of the predicted shadow flicker effects at relevant properties and, where necessary, appropriate mitigation.

A review of cumulative developments will also be undertaken during the EIA process to identify any wind energy developments (either operational, consented or subject to a current planning application) with the potential for cumulative shadow flicker effects; any such developments would be assessed accordingly in line with the methodology set out above.

[161] Scottish Government. Web Based Renewables Advice 'Onshore Wind Turbines'. Scottish Government. [Online] 2014. https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/ [accessed January 2025]

5. SUMMARY OF TOPICS SCOPED IN AND SCOPED OUT

As explained in Chapters 3 and 4 above, a number of topics are considered to be not significant, and it is proposed they will be scoped out from further consideration within the EIA process. Table 5.1 below lists each topic and the elements scoped in and out from further assessment.

Table 5.1: Summary of Topics and Elements / Features Scoped In and Scoped Out

Topic	Elements /Features	
	Scoped In	**Scoped Out**
Landscape and Visual Amenity	✓	• Effects on landscape character beyond approximately 15 km; • Effects on views from viewpoints beyond approximately 25 km, although there would be locations where the Proposed Development would be visible at greater distances; • Effects on views from routes beyond approximately 25 km; • Effects on views from local paths (Core Paths and locally promoted paths) beyond approximately 5 km; • Effects on views from settlements beyond approximately 10 km; • Effects on designated landscapes beyond approximately 25 km; • Cumulative effects with turbines of less than 50 m to blade tip; and • Decommissioning effects.
Cultural Heritage	✓	• Conservation Areas; • Listed Buildings; • Historic Battlefields; • Inventory Garden and Designed Landscape (GDL); and • Designated heritage assets that lie outside of the zone of theoretical visibility (ZTV) for the Proposed Development.
Ecology	✓	• Habitats not on Annex I to the Habitats Directive and species not on Annex II to the Habitats Directive and habitats or species not protected by other legislation (e.g., The Wildlife and Countryside Act 1981 (as amended), the Nature Conservation (Scotland) Act 2004 or The Protection of Badgers Act); • Wild deer population during operation; • Designated sites; • Migratory salmonids; and • Resident fish (operational stage)
Ornithology	✓	• Common and/or low conservation species not recognised in statute as requiring special conservation measures; • Common and/or low conservation species not included in non-statutory lists;

Topic	Elements /Features	
	Scoped In	**Scoped Out**
		• Passerine species, unless being particularly rare or vulnerable at a national level; • Subject to the results of the collision risk modelling, effects relating to any target species not identified to be breeding within the relevant Study Area t; • The following qualifying interests of the Muirkirk and North Lowther Uplands SPA: golden plover, hen harrier, peregrine falcon and short-eared owl; and • Impacts relating to turbine or infrastructure lighting.
Hydrology, Hydrogeology and Geology	✓	• Flood risk; • Detailed flow rate calculations; • Potential GWDTE habitats that are not supported by groundwater supplies; and • Geology during operation.
Traffic and Transport	✓	• Operational traffic • Decommissioning traffic
Noise and Vibration	✓	• Decommissioning noise • Operational stage vibration • Infrasound and low frequency noise • Noise from operational traffic
Aviation	✓	• Meteorological Office radars
Socio-Economics and Tourism	×	✓
Population and Human Health	×	✓
Risks of Major Accidents and/or Disasters	×	✓
Ice Throw and Ice Fall	×	✓
Air Quality	×	✓
Climate Change	×	✓
Forestry	×	✓
Eskdalemuir Seismic Array	×	✓
Telecommunications	×	✓
Shadow Flicker	×	✓

6. NEXT STEPS

This report is provided to support a request under Regulation 12 of the EIA Regulations for a 'Scoping Opinion' regarding the information to be provided within the EIAR which will accompany the Application.

Informing its opinion, the Scottish Ministers will seek the views of statutory consultees and other public bodies with an interest in the Proposed Development, inviting comments on the proposed scope of and approach to the EIA proposed herein.

APPENDIX A
FIGURES

APPENDIX B
SCOPING LAYOUT COORDINATES

Table B.1: Scoping Layout Turbine Coordinates		
Turbine No.	**Easting (X)**	**Northing (Y)**
1	287818	618876
2	288227	618468
3	286849	618133
4	287226	617738
5	287709	617214
6	286364	617049
7	286722	616588
8	287073	616142
9	291906	619614
10	292761	619274
11	293346	618944
12	292418	618728
13	292825	618355
14	291231	619163
15	291257	618660
16	291728	618374
17	292208	617823
18	290781	618106
19	291226	617800
20	291648	617338
21	290157	618004
22	290494	617403
23	291010	616998
24	292331	616223
25	291904	615736
26	291300	615191
27	290928	614577
28	293345	615301
29	292862	614836
30	291699	613988
31	292040	613466
32	293271	614553

APPENDIX C
LEGISLATIVE AND POLICY CONTEXT

LEGISLATIVE AND POLICY CONTEXT

Introduction

This section describes the statutory framework within which the application will be submitted and outlines relevant policy and guidance documents that will be taken into consideration to help inform the design of the Proposed Development.

The EIAR will set out the relevant policies that have been considered as part of the assessments undertaken throughout the EIA. A separate Planning Statement will provide a detailed appraisal of the Proposed Development against the relevant Development Plan policies, national planning and energy policy and other relevant considerations.

The Statutory Framework

The Proposed Development will have an installed capacity of over 50 MW and as such will require consent from the Scottish Ministers under the Electricity Act 1989 (the 'Electricity Act'). In such cases the Local Planning Authority is a statutory consultee in respect of the application.

For an application under Section 36 of the Electricity Act, the Development Plan does not have primacy in the decision-making process.

The provisions of Schedule 9 of the Electricity Act are relevant to the assessment of the Proposed Development as these set out a number of features to which regard must be had by the Scottish Ministers in reaching their decision on an application and such features are most appropriately addressed as part of the EIA process.

The Scottish Ministers will determine the application having regard to the statutory duties in Schedule 9 of the Electricity Act, so far as relevant, and any other relevant considerations, one of which will be the relevant aspects of the statutory Development Plan (as defined within sections 2.2.4 and 2.2.5 below).

Reforms are proposed to the Electricity Act and these were published in the Planning and Infrastructure Bill on 11 March 2025. The Bill is currently at the Committee stage in the Parliamentary process. If the Bill is enacted, the relevant new provisions would come into force in due course.

Renewable Energy Policy: Overview

The Proposed Development relates to the generation of electricity from renewable energy sources and represents a direct response to national planning and energy policy objectives. The Scottish Government have published a number of policy documents and have set legally binding emission reduction targets. The most relevant policy, legislative documents and more recent policy statements published by the Scottish Government include:

- The Scottish Energy Strategy (December 2017);
- The Climate Change (Scotland) Act 2009 and The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (as amended) which contain the legally binding net zero target for 2045 as well as interim targets;
- The Onshore Wind Policy Statement (December 2022);
- The Draft Energy Strategy and Just Transition Plan (January 2023); and
- The Green Industrial Strategy (2024).

The Planning Statement will address the legislative provisions and policy objectives of the UK and Scottish Governments in relation to emissions reduction and encouraging increased deployment and application of renewable energy technologies, consistent with sustainable development policy principles and national and international obligations on climate change.

The Proposed Development would make a contribution to the attainment of emissions reduction, renewable energy and electricity targets at both the Scottish and UK levels. Detailed reference to the renewable energy policy framework will be provided in the Planning Statement.

National Planning Policy and Guidance

Section 24 of the Town and Country Planning (Scotland) Act 1997 (the '1997 Act') provides that the statutory Development Plan for an area consists of:

- the National Planning Framework (NPF4)[162];
- any Local Development Plan (LDP); and
- any supplementary guidance issued in connection with an LDP.

NPF4 introduced development management policies to be applied Scotland wide and also provides guidance to Planning Authorities with regard to the content and preparation of LDPs.

NPF4 continues the approach set out in NPF3 of identifying national developments. Proposed National Development 3 (ND3) is entitled 'Strategic Renewable Electricity Generation and Transmission Infrastructure'. Strategic Renewable Electricity Generation and Transmission Infrastructure includes renewable energy developments of over 50 MW in installed capacity. The Proposed Development would therefore have national development status. The principal policy of NPF4 used in the assessment of wind energy developments is Policy 11: Energy. Other policies that may apply include:

- Policy 1: Tackling the climate and nature crisis;
- Policy 3: Biodiversity;
- Policy 4: Natural places;
- Policy 5: Soils;
- Policy 7: Historic assets and places; and
- Policy 22: Flood risk and water management.

NPF4 will one of the key policy considerations in the determination of the application for the Proposed Development.

Local Development Plan

The local planning policy framework applicable to the Site and relevant to the EIA process will be taken into account and will be described in the EIAR and the Planning Statement.

The LDP for the site includes the South Lanarkshire Local Development Plan 2 (LDP2) (adopted 9th April 2021) and associated non-statutory Supporting Planning Guidance (SPG).

The LDP2 documentation includes two Volumes as follows:

- LDP2 Volume 1: which contains a Vision and Strategy and development management policies; and
- LDP2 Volume 2: which contains additional policies and furthermore detailed criteria against which development proposals are to be considered.

[162] Available at https://www.gov.scot/publications/national-planning-framework-4/ [Accessed May 2025]