

Intended for
M74 West Ltd

Date
January 2024

Project Number
1620015684

M74 WEST RENEWABLE ENERGY PARK EIA SCOPING REPORT

M74 West Renewable Energy Park

Project name **M74 West Renewable Energy Park**

Project no. **1620015684**

Recipient **M74 West Ltd**

Document type **EIA Scoping Report**

Version **7**

Date **January 2024**

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GLOSSARY AND ABBREVIATIONS

Abbreviation/Terminology	Expanded Term/Possible variables
the Applicant	Client/developer (M74 West Limited, a company wholly owned by Renewco Power Ltd).
the Proposed Development	The scheme, the development, the proposal, the development proposal, the proposed development scheme, the wind farm, the proposed wind farm ... etc. (M74 West Wind Farm).
the Site	The project site, the site, development area, red line boundary, the proposed wind farm site.
the EIA regulations	The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, as amended
scoped in	included in the proposed scope of the EIA
scoped out	excluded in the proposed scope of the EIA
AIL	Abnormal Indivisible Load
AM	Amplitude Modulation
AOD	Above Ordnance Datum
ATC	Automatic Traffic Count
ATC	Air Traffic Control
A-weighting	A frequency weighting designed to correlate measured sound levels with subjective human response. The human ear is frequency selective and our ears are most sensitive between 500 Hz to 6 kHz, particularly when compared with lower and higher frequencies. The A-weighting applies a frequency correction which reduces the effect of these low and high frequencies on the overall measured level in order to account for the subjective human response at these frequencies.
BESS	Battery Energy Storage System
BEIS	Department for Business, Energy & Industrial Strategy, formerly The Department of Energy & Climate Change
BGS	British Geological Survey
BoCC	Birds of Conservation Concern
BS	British Standard
CAA	Civil Aviation Authority
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecological and Environmental Management
CIfA	Chartered Institute for Archaeologists
CLVIA	Cumulative Landscape and Visual Impact Assessment
CRMS	Collision Risk Modelling
dB	decibel
DESNZ	Department for Energy Security and Net Zero, formerly the Department for Business, Energy and Industrial Strategy
DfT	UK Department for Transport
DME	Distance Measuring Equipment
DTM	Digital Terrain Modelling
ECU	Energy Consents Unit
EHP	Environmental Health Perspectives

Abbreviation/Terminology	Expanded Term/Possible variables
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EKA	Eskdalemuir Seismic Array
FRA	Flood Risk Assessment
GDL	Gardens and Designed Landscapes
GPP	Guidance for Pollution Prevention
GPS	Global Positioning System
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
HMP	Habitat Management Plan
HRA	Habitat Regulations Appraisal
IEA	Institute of Environmental Assessment
IEMA	Institute of Environmental Management and Assessment
km	kilometres
LA90	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
LFA	Low Flying Area
LUPS	Land Use Planning System
LVIA	Landscape and Visual Impact Assessment
M	metres
MoD	Ministry of Defence
MW	megawatts
NCN	National Cycle Network
ND3	National Development 3
NERL	NATS En Route
NHMRC	National Health and Medical Research Council of Australia
NNR	National Nature Reserve
NPF4	National Planning Policy Framework 4
NRHE	National Record for the Historic Environment
NSA	National Scenic Area
NSR	non-statutory register
NSR	noise-sensitive receptors
NVC	National Vegetation Classification
PAN	Planning Advice Note
PPG	Pollution Prevention Guidelines
PWS	Private Water Supply

Abbreviation/Terminology	Expanded Term/Possible variables
PV	Photovoltaic (Solar)
RSPB	Royal Society for the Protection of Birds
RVAA	Residential Visual Amenity Assessment
SAC	Special Area of Conservation
SDP	Statutory Development Plan
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 Control Area
VFR	Visual Flight Rules
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, as amended ('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

M74 West Limited ('the Applicant') is seeking consent to construct and operate the M74 West Renewable Energy Park ('the Proposed Development') on land ('the Site') located immediately north and north west of Abington, 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 around 24 wind turbine generators with a maximum tip height of 200 m and with a generation capacity of >50 Megawatts (MW). In addition, the Site will accommodate solar power generators, up to approximately 60 MW capacity, and a battery energy storage system (BESS) up to 50 MW capacity. The layout of the Proposed Development should be considered preliminary as it will evolve as 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 for solar generators, 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, borrow pits and equipment for wind measurement.

This report has been prepared by competent EIA experts at Ramboll UK Limited, with a select 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 Ltd
Cultural Heritage	CFA Archaeology
Ecology and Ornithology	MacArthur Green
Hydrology, Hydrogeology and Geology	Ramboll
Traffic and Transport	Pell Frischmann
Noise	TNEI
Aviation	Aviatica

Discipline	Organisation
Socio-Economics	BIGGAR Economics
Telecommunications	Ramboll
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"); 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" an EIA is required. In this case, the Applicant has volunteered to undertake an EIA rather than request a formal screening opinion.

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'); 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

M74 West Limited 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. Our team have developed and delivered wind, solar and battery energy storage systems (BESS) projects across the UK and internationally.

1.5 Programme

The Proposed Development has a confirmed grid connection, that anticipates the project will connect to the grid in October 2028. In order to develop in line with this connection date, the Applicant intends to submit an application for consent to Scottish Ministers in June 2024.

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 and email updates will strengthen traditional methods such as newsletters and printed advertisements.

In accordance with established good practice, the Applicant is planning to host two rounds of public consultation 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, including the operational Middle Muir Wind Farm to the west of the Site and Clyde Wind Farm to the south east of the Site.
- The Applicant considers that the Site can accommodate a renewable energy development whilst avoiding significant direct effects on areas designated for nature conservation.
- The Site has suitable access for both construction traffic and abnormal indivisible loads (AIL).
- The Site has high anticipated wind speeds based on available data.
- The Site has good access to the electricity transmission network.

2.2 Policy Considerations

2.2.1 Introduction

This following text 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 material considerations.

2.2.2 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 the development management process and procedures.

In 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 material 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).

2.2.3 Renewable Energy Policy: Overview

The Proposed Development relates to the generation of electricity from renewable energy sources and comes as a direct response to national planning and energy policy objectives. The Scottish Government has published a number of policy documents and has set its own 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 Scottish Government's declaration of a Climate Emergency (April 2019);
- The Scottish Climate Change Plan Update (2020);
- The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 and the legally binding net zero target for 2045 and interim targets for 2030 and 2040;
- The Scottish Government's 'Programme for Government' (2022);
- The Onshore Wind Policy Statement (December 2022); and
- The Draft Energy Strategy and Just Transition Plan (January 2023).

The EIAR will summarise the objectives of the UK and Scottish Governments in relation to encouraging increased deployment and application of renewable energy technologies, consistent with sustainable development policy principles and national and international obligations on climate change.

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.

2.2.4 National Planning Policy and Guidance

Section 13 of the Planning (Scotland) Act 2019 amends Section 24 of the Town and Country Planning (Scotland) Act 1997 Act (the '1997 Act') regarding the meaning of 'development plan'. This amendment confirms that the statutory Development Plan for an area consists of:

- The National Planning Framework (NPF4)¹; and
- Any Local Development Plan (LDP).

NPF4 introduces centralised development management policies which are 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; and
- Policy 7: Historic Assets and Places.

NPF4 will be the key policy consideration in the determination of the section 36 consent application for the Proposed Development, as part of the Development Plan.

2.2.5 Local Development Plan

The local planning policy context applicable to the Site and relevant to the EA process will be taken into account and will be described in the EIAR.

¹ Available at <https://www.gov.scot/publications/national-planning-framework-4/> [Accessed August 2023]

The Development Plan 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.

2.3 Site Description and Context

The 'Site' (defined by the red line boundary on Figure 1.1 (Appendix A) covers an area of approximately 1160 hectares (ha) and is located immediately north west of Abington and approximately 4.5 km south east of Douglas, in South Lanarkshire. The Site comprises a number of separate land parcels, which have each been given a reference letter A-G as shown on Figure 1.2 (Appendix A).

There are a number of residential properties located within the Site boundary and further residential settlements are located within 10 km of the red line boundary, concentrated particularly within the villages of Abington, Crawfordjohn, Roberton and Douglas.

The Site predominantly comprises open moorland, improved and semi-improved grassland, an area of forestry, and is intersected by the M74 motorway and B7078 local road. The landscape is typical of the wider location, with the Site positioned in the northern portion of the Southern Upland Hills, with Tinto Hill located approximately 8 km to the north. The Duneaton Water, a tributary of the River Clyde, passes through the eastern part of Site and forms part of the northern boundary. The River Clyde forms the eastern boundary. There are numerous existing wind farms within 15-20 km, including large developments such as Clyde and its extension to the east, and Andershaw and Middlemuir occupying the western part of the moorland area where the area of the Site identified for positioning wind turbines is located.

There are two statutory sites designated for nature conservation within 5 km of the Site: Red Moss Special Area of Conservation (SAC) and Red Moss Site of Special Scientific Interest (SSSI), both designated for raised bog. The Site boundary slightly overlaps with the Red Moss SAC (as shown in (Figure 3.5.1)); no development would be undertaken within this part of the Site.

One area of ancient woodland, Whitrae Wood, has been identified within the Site boundary, in parcel F of the Site. A single area of ancient woodland, Dod Wood is located between parcels A and G of the Site. Areas of ancient woodland within 5 km of the Site are numerous, with most of these concentrated to the south and north west.

There are six designated heritage assets (all of which are scheduled monuments) within the Site boundary, as well as two sites recorded in the HER classed as being of potential national importance. Ten listed buildings have been identified as being within 5 km of the Site: eight of Category B and two of Category C.

A number of watercourses run through the Site. Mill Burn is present at the north eastern boundary of parcel A of the Site and Black Burn is present at the southern boundary of parcels C and E of the Site. The smaller, eastern parcels of the Site drain in a generally easterly direction towards the Duneaton Water and River Clyde, which forms the eastern boundary of the Site. Duneaton Water forms the northern boundary of parcel H and eastern boundary of parcel A of the Site.

2.4 The Proposed Development

Details of the Proposed Development will not be finalised until much 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 would be as follows:

- around 24 wind turbines with a maximum tip height of 200 m and with a combined generation capacity of >50 MW. Coordinates for the indicative turbine layout are provided in Appendix B for the purposes of Scoping and statutory aviation consultant notification only;
- 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);
- underground power cables, generally laid in trenches alongside access tracks;
- onsite substation and control building;
- a permanent anemometer mast, including associated foundations and hardstanding;
- temporary construction compounds and laydown areas;
- solar power generators, up to approximately 60 MW capacity; and
- a BESS with up to 50 MW capacity.

In addition, the following ancillary works may be necessary:

- 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, hedgerow creation and riparian tree planting. An Outline Biodiversity Environmental Management Plan (OBEMP) would be developed for the operational phase and agreed with consultees.

A scoping turbine layout and the current areas of search for areas suitable for the solar generation area are presented in Figure 1.2. 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 type 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 will be applied to anticipate 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. Any aviation lighting scheme will be agreed with the Civil Aviation Authority (CAA) and other relevant consultees.

2.4.1 Site Access

A detailed access review is currently underway to confirm the access routes into the Site and it is expected that general construction traffic will access the Site via the M74, B7078 and A702. Access for AIL traffic is expected to be direct from the M74 for the part of the Site to the north of the M74, and from the B7078 and B740 for the remainder of the Site. Consultation with M6 Autolink², the motorway operator, is currently being progressed to confirm the most appropriate means of achieving deliveries direct from the M74.

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

Within the Site itself, the Proposed Development will be served by a network of both new and upgraded onsite 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. The layout of the access tracks will be determined based on the final turbine layout, technical and environmental constraints on site.

2.4.2 Grid Connection and Cabling

The grid connection itself will be subject to a separate consent under Section 37 of the Electricity Act 1989. The Proposed Development has a secured distribution voltage grid connection at the proposed Redshaw substation³ to be located to the north west of the Proposed Development. Connection is anticipated in October 2028. No decision has yet been made on how the connection would be delivered (e.g. overhead lines or underground cable).

It is anticipated that electric cabling connecting turbines and the control building would be laid 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 and effects, such as on-site ecology and ground conditions.

2.4.3 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 construction phasing.

An Outline Construction Environmental Management Plan (CEMP) 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.

2.4.4 Operation and Maintenance

The anticipated operational life of the Proposed Development is approximately 40 years although the Applicant does not seek a time-limited consent. A wind farm is typically visited up to four times a month by a maintenance crew, and the solar PV and 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 M6 Autolink operate the M74 motorway on behalf of the Scottish Government. Transport Scotland will be consulted via M6 Autolink on the details of the proposed temporary access directly off the motorway.

³ To increase the network capacity and accommodate new connections to the network a new substation near Redshaw, South Lanarkshire is proposed by SP Energy Networks. Further details of this project are available here: https://www.spenergynetworks.co.uk/pages/redshaw_the_proposal.aspx [accessed July 2023].

2.4.5 Decommissioning

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

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

Detailed decommissioning proposals would be established and agreed with relevant authorities prior to commencement of decommissioning activities. This would take cognisance of guidance available at the time.

2.4.6 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:

- Business development and growth;
- Skills and employability;
- Transition to net zero;
- Built and natural environment; and
- Sustainable and active travel.

The Applicant is working with a specialist company to explore innovative approaches to engaging on the Community Benefit package.

2.5 Design and Alternatives

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 and deliver mitigation of adverse effects by design as far as is practicable.

Following completion of the main baseline landscape and visual assessment, design objectives will be developed and used to evaluate a series of layout options. These layouts will be examined from key design viewpoints to assess and optimise the number, size and layout of the proposed wind turbines in relation to the landform of the Site and surrounds, as well as adjacent wind farm developments.

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 settings 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; and
- breeding birds, including raptors and waders (disturbance and collision risk).

The design optimisation process will be reported and illustrated in the EIAR.

3. SCOPE OF THE EIA

3.1 Summary of Scope of EIA

Introduction

The EIA regulations (regulation 4(3)) require consideration of the potential likely significant effects 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 flora (1) and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (2);
- 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 following specialist topic categories:

- landscape and visual amenity;
- cultural heritage;
- ecology;
- ornithology;
- hydrology, hydrogeology and geology;
- traffic and transport;
- noise;
- aviation and telecommunications;
- socio-economics;
- shadow flicker⁴; and
- climate change.

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 EIAR will set out the baseline, then assess and report on the likely significant effects, including, where applicable, direct, indirect, cumulative, short, medium and long-term, permanent and temporary, beneficial and adverse effects.

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 in the vicinity.

Cumulative effects are defined as those effects arising from the addition or combination of the Proposed Development to other proposed developments, or those arising from synergistic effects⁵ between factors.

⁴ Potential for generation of shadow flicker effects will be a design consideration and it is expected that potential for these effects can be avoided through the design process.

⁵ 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.

A planning application search will be conducted to identify approved (committed) developments using relevant planning portals, and the following schemes will be considered:

- Those within 45 km of the Site boundary;
- Onshore wind developments where turbines are greater than 50 m to tip height and more than one wind turbine proposed;
- Schemes under construction;
- Schemes which have been consented; and
- Schemes which have been submitted to the relevant authorities but not yet determined (subject to a cut-off point to allow assessments to be undertaken).

In addition, the following criteria will need to be met:

- The committed development has a construction and/or operational phase that is concurrent with the Proposed Development;
- The committed development shares 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 approved (committed) development and the Proposed Development; and
- The committed development has 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).

Topics to be Scoped Out

No significant effects are considered likely in respect to the following technical disciplines and accordingly these would be scoped out of the EIA:

- air quality;
- climate change⁶;
- population and human health⁷;
- risk of major accidents and/or disasters; and
- ice throw.

Section 4 of this report provide a review of the proposed technical issues to be considered as part of the EIA, and justification for scoping out those not considered to be significant.

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.

⁶ The Proposed Development's impact upon climate change will be considered across a number of disciplines in the EIAR, but no specific assessment will be provided.

⁷ Population and human health will be considered across a number of disciplines in the EIAR, but no specific assessment will be provided.

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. This section sets out the proposed methodology for the landscape and visual assessment (LVIA) which will include an assessment of cumulative effects. The LVIA will focus on potential significant effects and will identify impacts that can be scoped out of the assessment.

Consultation

Because of readily available information and existing knowledge of the area within the consultancy team, no consultation on landscape and visual matters has been undertaken with SLC or with NatureScot prior to submission of this scoping report.

As part of the on-going work to inform the landscape and visual assessment, a consultation exercise to obtain additional data and the views of statutory consultees on the selection of viewpoints and scope of the cumulative assessment will be undertaken with NatureScot and SLC.

3.3.2 Study Area

The Study Area to be adopted for the landscape and visual assessment was initially, and in accordance with common good practice, set at approximately 45 km from the outer edges of the Site. Subsequently a basic Zone of Theoretical Visibility (ZTV) analysis was prepared allowing some early analysis of the potential geographic range of landscape and visual effects. The ZTV in Figure 3.3.1 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, and it does not 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 maximum theoretical visibility.

The ZTV shows that the theoretical visibility will be substantially limited to within about 15 km from the Site, with the exception of more distant theoretical visibility to the north and from a small segment to the north east. In review of this ZTV, it is judged that significant landscape or visual effects at distances greater than 15 km are unlikely, and the LVIA study area has therefore been set at approximately 15 km from the Site.

There is extensive wind energy development with this part of southern Scotland. Consideration of both existing wind farms and proposed wind farms (cumulative effects) will be considered in the

LVIA. Key considerations will be the interaction of the Proposed Development with existing and other proposed developments, and the overall development pattern of wind farms within the study area. It is unlikely that significant cumulative effects due to the introduction of the Proposed Development will be identified at a range greater than 15 km, and it is proposed therefore that the CLVIA will focus on receptors within 15 km of the Proposed Development. Cumulative data collection will focus on schemes within approximately 25 km from the Proposed Development (to allow for views in opposite directions).

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 descriptions; and
- Citations for designated landscapes including National Scenic Areas (NSAs) and Special Landscape Areas.

The Site

The Site is located on either side of the M74 to the north west of Abington, including part of the Black Burn valley and Red Moss. At this point the M74 crosses moorland between the Douglas Valley to the north and the Clyde Valley to the south. There is higher ground on all sides although the landscape in this area comprises a large-scale bowl of high exposed moorland. Tinto to the north rises to 707 m Above Ordnance Datum (AOD), Tewsgill Hill to the south east is 569 m AOD, with the Southern Uplands hill range extending across the south and eastern part of the study area.

The Surrounding Landscape

The 45 km initial study area runs from Glasgow to Johnstonebridge south of Moffat, from Loch Doon by Dalmellington to Peebles. The ZTV however, illustrates that theoretical visibility would not cover all of this area and, as discussed above, the assessment will focus on a smaller study area where significant landscape and visual effects may occur. The 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 Lanark and Lesmahagow beyond the Douglas Water valley, and north eastwards it extends to Biggar.

There are numerous existing wind farms within 15-20 km of the Site, as shown on Figures 3.3.2-3.3.4, including large developments such as Clyde and its extension that spread across a wide area. Andershaw and Middlemuir occupy the western part of the moorland area in which the Proposed Development would be located. The Hagshaw Hill group (made up of several developments) is currently undergoing a strategic redesign to enable repowering with larger turbines. 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 landscape character types within the Site and study area are described in the 2019 NatureScot review of the landscape character of Scotland⁸, and illustrated on Figure 3.3.2.

The Site lies predominantly within the Plateau Moorlands – Glasgow & Clyde Valley (LCT 213), with the south western parts of the Site extending into small sections of four other LCTs: Upland River Valley – Glasgow & Clyde Valley (LCT 207), Broad Valley Upland (LCT 208), Upland Glen – Glasgow & Clyde Valley (LCT 209), and Southern Uplands – Glasgow & Clyde Valley (LCT 217). The turbines of the scoping layout would all be located within Plateau Moorlands (LCT 213), except the most south westerly turbine, which would be located just within Upland River Valley (LCT 207).

The LVIA will interrogate the ZTV for the finalised turbine layout and will assess effects on landscape character for LCTs within approximately 15 km of the Site that have theoretical visibility and likely landscape effects. LCTs to be included are as follows:

- The LCTs hosting the turbines:
 - Plateau Moorlands – Glasgow & Clyde Valley (LCT 213);
- other LCTs hosting other small parts of the Site:
 - Upland River Valley – Glasgow & Clyde Valley (LCT 207);
 - Broad Valley Upland (LCT 208);
 - Upland Glen – Glasgow & Clyde Valley (LCT 209);
 - Southern Uplands – Glasgow & Clyde Valley (LCT 217);
- Other nearby LCTs with more than limited theoretical visibility:
 - Rounded landmark Hills LCT 218); and
 - Plateau Farmlands – Glasgow & Clyde Valley (LCT 201).

Landscape Designations

Landscape designations within the study area are illustrated on Figure 3.3.3 and set out in Table 3.3.1.

The south western portion of the Site is located within South Lanarkshire’s Leadhills and Lowther Hills Special Landscape Area (SLA), although no turbines are proposed within this area.

Table 3.3.1 – Designated Landscapes

Designated Landscape	Approximate distance at nearest point	ZTV coverage and notes on inclusion in assessment
Leadhills and Lowther Hills SLA (South Lanarkshire)	Includes the south western part of the Site	Theoretical visibility – will be included in the LVIA
Upper Clyde Valley and Tinto SLA (South Lanarkshire)	Adjacent to the east	Theoretical visibility – will be included in the LVIA
Douglas Valley SLA (South Lanarkshire)	3 km to the north west	Theoretical visibility – will be included in the LVIA
Thornhill Uplands SLA (Dumfries & Galloway)	9 km to the south	Limited theoretical visibility; key qualities will not be affected – will not be included in the LVIA

⁸ NatureScot landscape character assessment are found at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

Designated Landscape	Approximate distance at nearest point	ZTV coverage and notes on inclusion in assessment
Middle Clyde Valley SLA (South Lanarkshire)	11 km to the north	Theoretical visibility – will be included in the LVIA
East Ayrshire SLA	12 km to the west	Limited theoretical visibility; key qualities will not be affected – will not be included in the LVIA
Tweedsmuir Uplands SLA (Scottish Borders)	14 km to the east	Limited theoretical visibility; key qualities will not be affected – will not be included in the LVIA
Upper Tweeddale National Scenic Area (NSA, Scottish Borders)	18 km to the east	Limited theoretical visibility at over 23km away; key qualities will not be affected – will not be included in the LVIA
Falls of Clyde inventory listed Gardens and Designed Landscape (GDL)	12 km to the north	Limited theoretical visibility and well-wooded landscape. Key qualities are unlikely to be affected – will not be included in the LVIA

There are no National Parks within the 45 km study area. The Site is not within or near any areas of Wild Land.

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;
- 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 indicates theoretical visibility at a number of settlements surrounding the Site. These include Abington, Robertson, Crawfordjohn within approximately 5 km, although it is noted that Douglas will have no theoretical visibility. Between 5-15 km, settlements within the ZTV include Lamington, Symington and Coulter (patchy coverage at the edge of the ZTV indicating limited visibility), Lesmahagow, Coalburn, Glespin and Leadhills (partial ZTV coverage). Lanark and Biggar are at the edge of the study area but have theoretical visibility. Crawford, Elvanfoot, Thankerton, Rigside and Wanlockhead are not within the ZTV.

Residential properties within approximately 2.5 km of the Site include properties along the B7078, those to the north of Crawford and to the north and north west of Abington, including properties along the A702.

Roads within the study area tend to follow valleys or passes, although a network of roads covers flatter land. The main routes from which theoretical visibility (see Figure 3.3.1) is identified include:

- M74 motorway from Glasgow to Carlisle (passes through the Site) and the B7078 which runs parallel to the motorway;
- A702 trunk road from the M74 at Abington to Biggar
- A73 from north of Abington to Robertson and past Symington to Lanark;
- B740 from the B7078 within the Site, though Crawfordjohn toward Sanquhar;
- B797 from Abington to Wanlockhead;
- A70 along the Douglas valley.

The rail route from Carstairs to Carlisle runs through the Clyde valley from Symington to Abington and Crawford before passing over the Beattock summit towards Moffat. The ZTV indicates theoretical visibility of the Proposed Development from the railway between Symington and Abington.

Recreational routes tend not to be limited to valleys, with the Southern Upland Way (SUW) long distance path crossing the hills of the southern part of the Study Area, closest to the Site on Duntercleugh Rig to the west of Wanlockhead, at approximately 11 km away. National Cycle Route 74 (NCN74) from Gretna to Glasgow runs parallel to the M74 along minor roads, passing though the Site along the B7078.

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 3.3.2 below and shown on Figure 3.3.4. 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 SUW and the Abington motorway services;
- Views from hilltops that are both popular with walkers and representative of designated landscapes, such as Tinto Hill, Culter Fell; and
- Longer distance views from key hilltops at the edges of the study area, such as Lowther Hill and Cairn Table.

Table 3.3.2 – Proposed Viewpoints

Viewpoint Title		Grid Reference		Approx. Distance (km) ⁹	Reason for selection
1	Devonburn Road	282750	639420	12.8	Slightly elevated above the M74 and representing the likely first view of the Proposed Development from the motorway southbound and also the local area around Devonburn.
2	B7078 Carlisle Road	283440	636710	11.8	Representing views from the B7078, NCN74 and the southbound M74.
3	M74 Southbound, B7078 near Parkhead	286440	629690	2.4	Slightly elevated above the M74 but representing views southbound as the motorway rises onto the moor from the Douglas valley. Also representing the B7078 and the NCN74

⁹ Approximate distance from the proposed viewpoint locations to the nearest turbine of the Scoping Layout.

Viewpoint Title		Grid Reference		Approx. Distance (km) ⁹	Reason for selection
4	M74 within the Site	289180	626920	1.5	Adjacent to the M74 within Site, representing the experience of passing through the Site
5	Abington Services	293150	624750	2.3	At M74 junction 13 by the service area, representing one of the first views northbound travellers may see. Also representing views from peripheral areas of Abington and the A702 and B7078
6	Castle Hill	294450	622280	6.7	Elevated location overlooking Abington, Crawford, M74, with views to other wind farms. Representing views from local hills
7	Crawfordjohn	287750	623675	2.4	On the B740 descending into Crawfordjohn, representing views from the settlement and the route
8	B740 Spango	283260	618991	8.3	At the South Lanarkshire / East Ayrshire boundary, represented early views from along this route
9	A702 near Hartside	295910	629245	5.4	Representing view from the A702, the railway, and from Robertson and the A73
10	B7055 Greenhill	292960	633035	5.9	On the minor road to the south of Tinto, representing local views from the north
11	Tinto Hill	295280	634375	8.5	A popular landmark hill with paths from different directions and a summit cairn.
12	Cairn Table	272450	624250	15.2	A popular landmark hill in East Ayrshire
13	Lowther Hill	288990	610810	15.5	A landmark hill over which the Southern Upland Way runs
14	Culter Fell	305280	629080	14.4	The highest hill to the east of the study area, on the South Lanarkshire / Scottish Borders boundary.
15	B7016 east of Biggar	306065	638790	18.6	Representing views from around Biggar

Cumulative

As noted above, there are existing wind farms within and around the Study Area, which will 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 various stages in the planning process. Given the ever-changing situation, cumulative data is not collated exhaustively at this time but will be prepared during the LVIA. Local authority planning portals and the Energy Consents Unit website will be used to identify proposed wind farms, and the final list will be agreed with statutory consultees to give as up-to-date a picture as possible.

3.3.4 Potential Significant Effects

Potential Significant Effects during 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 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 character areas; 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).

Potential Significant Effects during 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 areas;
- 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 residential 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.

Potential Significant Effects during Decommissioning

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

3.3.5 Assessment Methodology

The landscape and visual assessment will identify potential significant effects of the Proposed Development on the landscape resource and visual amenity, in accordance with 'Guidelines for Landscape and Visual Impact Assessment' ('GLVIA3'¹⁰). Other sources of guidance and references used in the assessment will be industry standards. The exact documents used will be set out in more detail in the EIAR. Local planning policy and guidance will also be reviewed in the EIAR.

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

¹⁰ Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment, 3rd Edition.

Desk Study and Field Surveys

Desk studies will be carried out to identify key landscape and visual receptors (in addition to the reviews set out above), and to identify the likely visibility of the Proposed Development based on ZTV mapping. Computer generated 3D models will 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 will be carried out including a visit to the Site, all viewpoints, and the wider area more generally to assess potential effects on landscape character areas and designated landscapes. Photography will 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.

Assessment of Landscape Effects

Effects on landscape character will 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 will be identified. The assessment will identify the magnitude and type of change to the landscape, with reference to its key characteristics as set out in the NatureScot LCT descriptions¹¹. The sensitivity of the landscape will also be taken into account, 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 will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered, to form a judgement regarding the overall 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, will identify the level of effect using four categories: major, moderate, minor, and negligible. Major and moderate effects will 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/motorist) or the 'activity' they are engaged in (sport, informal recreation, commuting) will help the assessment of sensitivity and lead to findings which can be considered representative. Assessment of the visual effects of the Proposed Development on receptors will be based on analysis of the ZTVs, field studies and assessment of representative viewpoints. Proposed viewpoints have been listed in Table 3.3.2 above. 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 will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These

¹¹ Scottish Natural Heritage (2019) Digital map-based national Landscape Character Assessment, (available at <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment>).

aspects will 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, will identify the level of effect using four categories: major, moderate, minor, and negligible. Major and moderate effects will be considered to be significant in the context of the EIA Regulations.

Aviation Lighting

In the interests of aviation safety, 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 will be carried out as part of the LVIA and included within the assessment.

The night-time context at viewpoint locations will 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 wider Study Area.

Night-time photomontages, using photographs taken shortly after dusk (with due consideration of safety of photographers), will be produced for two to 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 will be agreed with consultees, but may include:

- VP3 – M74 southbound at B7078 near Parkhead – as a location on the M74 approaching the Proposed Development from the north;
- VP7 - Crawfordjohn – as a location near a settlement with relatively close views of the Site; and/or
- VP9 - A702 near Hartside – as a location approaching the Proposed Development from along the Clyde valley north east of the Site.

It is not proposed to provide night time visualisations from hills or remote off-road locations for Health and Safety reasons, and because there are less likely to 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 will be considered in a 'Residential Visual Amenity Assessment', which typically considers effects on properties within 2 to 2.5 km of proposed turbine locations.

It is considered that a Residential Visual Amenity Assessment will be required as there are a number of residential properties within approximately 2-2.5 km of the Proposed Development. The Residential Visual Amenity Assessment will be carried out in accordance with the Landscape Institute guidance¹².

Visualisations

Visualisations and graphics used to support the assessment will include:

- ZTV maps analysing visibility of the proposed wind turbines to tip and hub heights as well as combined ZTV maps with other wind farms;
- Photographs of existing views from the selected viewpoints;

¹² Landscape Institute (2019) Residential Visual Amenity Assessment (RVAA). Technical Guidance Note 2/19.

- Wireline images to illustrate theoretical visibility of the Proposed Development;
- Photomontages to illustrate the predicted changes to views; and
- Night-time photomontages for two to three viewpoints to illustrate the appearance of aviation lighting after dark.

Visualisations will include cumulative schemes and will be produced in accordance with NatureScot guidance¹³.

Assessment of Cumulative Effects

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

The cumulative assessment (CLVIA) will consider the current pattern of wind farms across the wider landscape (to approximately 45 km) but will focus on closer wind farms and the relationship that the Proposed Development will have with them.

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

As noted above, the research to collect cumulative data will be undertaken using the SLC planning portal and ECU websites, and the scope of assessment and 'cumulative cut-off date' will be agreed with the Council and NatureScot to ensure the most up to date information available is included. Schemes at scoping stage within 10-15 km will be included in the CLVIA if sufficient data is available. More distant scoping proposals and schemes with turbines below 50 m to blade tip height will not be included in the assessment.

The CLVIA will be carried out in accordance with the principles contained in NatureScot guidance on cumulative assessment¹⁴. This methodology assesses different development scenarios with increasing levels of 'uncertainty'. Cumulative scenarios will 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;
- 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.

Observations on relationships with scoping stage sites will be made separately.

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

¹³ Scottish Natural Heritage (2017) Visual Representation of Wind Farms Guidance Version 2.2, February 2017.

¹⁴ SNH (2021). Guidance-Assessing the cumulative impact of onshore wind energy developments.

will 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 will 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 will 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 will be a review of the identified effects for landscape and visual receptors within those designated areas, and how the identified effects will affect the key qualities and reasons for designation. No separate assessment of effects on designated areas will 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:

- 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 will be identified for receptors based on fieldwork and will 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 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.
- Limitations to the cumulative assessment include the uncertainty of whether the proposed wind farms will be built in the future. This includes consented schemes that may or may not be built. The assessment will 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 will be set out in the EIAR.

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 study areas for the EIA, an initial appraisal of the baseline within those study areas and identifies additional surveys or studies required to confirm the baseline. The proposed approach to the desk-based assessment and field surveys required is set out and the methodology to be adopted for the assessment of effects is described.

3.4.2 Study Area

Two study areas will be used for the assessment:

- The Inner Study Area: the Site, as defined by the red line boundary, within which turbines, solar PV arrays, and associated infrastructure are proposed, 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.
- 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 (including those within the Inner Study Area) whose settings may be affected by the Proposed Development (including cumulative effects). The wider ZTV will also be assessed to identify any designated assets beyond 10 km that have settings that may be especially sensitive to the Proposed Development.

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 section 3.4.5 (Assessment Methodology).

Inner Study Area (Figure 3.4.1)

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 or Historic Battlefield.

There are six designated heritage assets (all of which are scheduled monuments) within the Inner Study Area. These are:

- Black Hill, fort 650 m NW of Craighead (SM 2606);
- Abington, motte & bailey 1600 m N of (SM 2609);
- Netherton, cairn 800 m SW of (SM 4513);
- Craighead, barrow and cairn 820 m NW of (SM 4517);
- Craighead, platform settlement 1200 m WNW of (SM 4485); and
- Thirstone, stone circle 1300 m NNW of (SM 5094).

In addition to these scheduled sites, there are two sites recorded in the HER that are classed as being of potential national importance:

- Crawfordjohn Mill / Black Hill Cairn (WoSASpin 10535); and
- Knock Leaven Cairn (WoSASpin 10554), which lies immediately adjacent to the site boundary.

There are three other, non-designated heritage assets within the Inner Study Area. These include settlement remains and evidence of prehistoric occupation (hut circles and platform settlements, burnt mounds, small cairns and cairnfields, associated cord-rig cultivation remains, and a possible Bronze Age cremation cemetery) along with evidence of post-medieval farming (farmsteads, enclosures and sheepfolds, lime kilns, and cultivation remains).

Outer Study Area (Figure 3.4.2)

There are 55 scheduled monuments within the Outer Study Area, including the six that are within the Inner Study Area. These monuments include prehistoric burial cairns and forts, where long-distance views and intervisibility with other monuments are an important aspect of their settings, settlement remains and associated features of prehistoric, medieval and post medieval date, and Roman military sites. Twenty-three of these scheduled monuments (seven of which, outside the Site boundary, are either burial cairns or forts) are within 5 km of the nearest turbine location.

There are also 79 HER NSR sites within the Outer Study Area. These include 15 probable prehistoric burial cairns and a prehistoric fort, each of which is likely to have long-distance views and intervisibility with other monuments as an important aspect of their setting. Eighteen of these NSR sites (six of which are probable prehistoric burial cairns) are within 5 km of the nearest turbine location.

Within the Outer Study Area there are 99 Listed Buildings (two of category A, 52 of Category B, and 45 of Category C). Of these, only eight are within 5 km of the indicative turbine locations: six of Category B and two of Category C.

There are two Conservation Areas within the Outer Study Area: Douglas and Lamington. Neither is within 5 km of the indicative turbine locations.

There are no Inventory Gardens and Designed Landscapes and no Historic Battlefields within the Outer Study Area.

3.4.4 Potential Significant Effects

The Proposed Development has the potential to directly or indirectly affect scheduled monuments and monuments classed in the HER as NSR sites, potentially of national importance, within the Inner Study Area (Site boundary). The Proposed Development also has potential to directly or indirectly affect non-designated heritage assets within the Inner Study Area (Site boundary).

- Direct impacts are likely to occur where the physical fabric of the asset is removed or damaged.
- Indirect impacts occur where the fabric of an asset, or buried archaeological remains, are removed or damaged as an indirect result of the proposal, such as may occur 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 Proposed Development also has potential to adversely affect the settings of designated heritage assets (and NSR sites) within the Outer Study Area (which includes the Inner Study Area) through change within their settings adversely affecting their cultural significance or adversely affecting visitors' ability to understand, appreciate or experience the sites and their settings.

3.4.5 Assessment Methodology

Guidance and Legislation

The assessment will be prepared following the advice and guidance in the following documents:

Legislation

- Ancient Monuments and Archaeological Areas Act 1979¹⁵.
- Planning (Listed Buildings and Conservation Areas (Scotland) Act 1997¹⁶ (as amended by Historic Environment (Amendment) (Scotland) Act 2011)¹⁷.
- Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013¹⁸.

¹⁵ HM Government (1979) Ancient Monuments and Archaeological Areas Act 1979 (reprinted 1996), HMSO, London, available at: http://www.legislation.gov.uk/ukpga/1979/46/pdfs/ukpga_19790046_en.pdf

¹⁶ HM Government (1997) Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997, HMSO, London, available at: http://www.legislation.gov.uk/ukpga/1997/9/pdfs/ukpga_19970009_en.pdf

¹⁷ Historic Environment (Amendment) (Scotland) Act 2011). Available at: <https://www.legislation.gov.uk/asp/2011/3/data.pdf>

¹⁸ HM Government (2013) The Town and Country Planning (Development Management Procedure) (Scotland) Regulations 2013 Available at: <https://www.legislation.gov.uk/ssi/2013/>

- Town and Country Planning (Environmental Impact Assessment) Regulations 2017¹⁹.

Planning Policies

- National Planning Framework (NPF 4) (Policy 7)²⁰.
- Historic Environment Policy for Scotland (HEPS) (HES 2019)²¹.
- South Lanarkshire Local Development Plan 2 (2021)²², including Supplementary Guidance.

Guidance

- Environmental Impact Assessment Handbook (SNH and HES 2018)²³.
- Standard and Guidance for Historic Environment Desk-Based Assessment (Chartered Institute for Archaeologists 2014, Updated October 2020)²⁴.
- Principles of Cultural Heritage Impact Assessment in the UK (IEMA, IHBC & CIfA 2021)²⁵.
- Designation Policy and Selection Guidance (HES 2019)²⁶.
- Managing Change in the Historic Environment: Setting (HES 2016)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.

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 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) Historic Environment Record (HER).
- Historic Environment Scotland's (HES) on-line GIS Spatial Data Warehouse³⁰.
- National Record of the Historic Environment (NRHE)³¹.

¹⁹ Scottish Government (2017) The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, Edinburgh, available at: http://www.legislation.gov.uk/ssi/2017/102/pdfs/ssi_20170102_en.pdf

²⁰ Scottish Government (2023) National Planning Framework for Scotland 4, Edinburgh, available at: <https://www.gov.scot/publications/national-planning-framework-4/>

²¹ HES (2019) Historic Environment Policy for Scotland (HEPS). Available at: <https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps/>

²² South Lanarkshire Local Development Plan 2 (2021). Available at: https://www.southlanarkshire.gov.uk/info/200145/planning_and_building_standards/39/development_plans/2

²³ SNH & Historic Environment Scotland (2018) 'Environmental Impact Assessment Handbook' (<https://www.nature.scot/sites/default/files/2018-05/Publication%202018%20-%20Environmental%20Impact%20Assessment%20Handbook%20V5.pdf>)

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/CIfAS%26GDBA_4.pdf

²⁵ IEMA (2021) 'Principles of Cultural Heritage Impact assessment in the UK', Lincoln, IEMA, IHBC & CIfA https://www.archaeologists.net/sites/default/files/j30361_iema_principlesofchia_v8.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 [online GIS downloader]. Available at: <http://portal.historicenvironment.scot/spatialdownloads>

³¹ Historic Environment Scotland, Canmore [online], available at: <http://pastmap.org.uk/>

- Historic maps held by National Library of Scotland³².
- Modern aerial photographic imagery available online.
- Historic Land-Use Assessment Data for Scotland (HLAMap)³³.
- Lidar data available through Scottish Remote Sensing Portal³⁴ (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 walk-over field survey within the Inner Study Area will be carried out with the following aims:

- to assess the present baseline condition of the heritage assets identified through the desk-based assessment.
- to 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.
- to assess the Inner Study Area for its potential to contain currently unrecorded, buried archaeological remains.

Identified sites will be recorded on pro-forma monument recording forms and by digital photography, and their positions (and where appropriate their extents) logged using a Global Positioning System (GPS). The survey data will be compiled in a GIS and used during the design iteration work. The results of the survey work will be provided to WoSAS, for inclusion in the HER following completion of the project.

Site visits to key heritage assets in the Outer Study Area will 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 blade tip height ZTV, 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). The assessment will take into account the value/ sensitivity of the heritage asset, and its setting, and the magnitude of the predicted impact.

- Direct 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 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

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 Portal, available at: <https://remotesensingdata.gov.scot/>

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 or allocated in a Local Development Plan.
- 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 (HES 2019)²⁶.

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 SNH/HES EIA Handbook (2018)²³ Appendix 1, paragraph 42 advises that:

"In the context of cultural heritage impact assessment, the receptors are the heritage assets and impacts will be considered in terms of the change in their cultural significance".

Historic Environment Scotland's guidance document, 'Managing Change in the Historic Environment: Setting' (HES 2016)²⁷, notes that:

"Setting can be important to the way in which historic structures or places are understood, appreciated and experienced. It can often be integral to a historic asset's cultural significance."

"Setting often extends beyond the property boundary or 'curtilage' of an individual historic asset into a broader landscape context".

The guidance also advises that:

"If proposed development is likely to affect the setting of a key historic asset, an objective written assessment should be prepared by the applicant to inform the decision-making process. The conclusions should take into account the significance of the asset and its setting and attempt to quantify the extent of any impact. The methodology and level of information should be tailored to the circumstances of each case".

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; and,
- 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/HES EIA Handbook (2018)²³ 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, the turbine blade tip and hub height 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, and Conservation Areas, 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 be included in the assessment.

Consideration will also be given to designated heritage assets beyond 10 km where long-distance views and intervisibility between monuments are an important aspect of their settings.

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 a significant effect on the setting of an asset is predicted as a result of change within its surroundings, using the approach outlined above, 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)²⁰. 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 its capacity to convey that significance to visitors, 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 developments that are under construction, those that are consented but not yet built and those that are currently at the application stage (and for which sufficient detail is available upon which to develop an assessment). Proposed developments at the scoping or pre-application stage will not be included in the assessment, as such proposals are not fully formed and may be subject to changes that cannot be foreseen. The schemes to be included in the cumulative impact assessment will be those identified through the LVIA consultations with SLC and NatureScot.

The assessment of cumulative effects on the settings of heritage assets from the Proposed Development in combination with pre-existing developments will be addressed in the course of

the assessment of effects of the Proposed Development alone, as pre-existing developments are part of the baseline environment.

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. The use of cumulative wireline visualisations will be used to aid the assessment.

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 solar PV area layout (and access track/ other infrastructure if relevant/ required).

- Designated sites: the proposed turbines/solar generators and infrastructure and a 5 km study area from the Site boundary.
- Protected species: the proposed turbines/solar generators and infrastructure and any species-specific buffers as necessary.
- Electrofishing surveys (completed in June 2023 by Clyde River fisheries trust): watercourses onsite 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.* 2021³⁵) study area.
- Habitats and potential Groundwater Dependent Terrestrial Ecosystems (GWDTE): the Proposed Development.
- Bat collisions: the proposed turbine locations, static bat data will be processed through Ecobat (Mammal Society 2017³⁶).
- Cumulative assessment (if required): the proposed turbines/solar generators and infrastructure and a 5 km study area 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 April and September 2023;
- a desk study to confirm the location and qualifying features of designated sites³⁷ and ancient woodland³⁸ within potential zones of influence of the Proposed Development.

³⁵ 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: 6 July 2023

³⁶ The Mammal Society (2017). Ecobat. Available at: <https://www.mammal.org.uk/2017/12/making-sense-of-clicks-and-squeaks-mammal-society-launches-ecobat/>. Accessed on: 19 July 2023.

³⁷ NatureScot Sitelink. Available at: <https://sitelink.nature.scot/home>. Accessed: 6 July 2023

³⁸ Ancient Woodland Inventory (Scotland). Available at: <https://www.spatialdata.gov.scot/geonetwork/srv/api/records/A091F945-F744-4C8F-95B3-A09E6EF6AE33>. Accessed July 2023.

- information from the National Biodiversity Network (NBN) Atlas (National Biodiversity Network Atlas Scotland, 2023³⁹) on ecological records within 5 km of the Site within the last 15 years (since 2008);
- information from the Carbon and Peatland Map 2016 (Scottish Government, 2023⁴⁰);
- Results of the peat probing survey (see section 3.7.5 below);
- information from the Deer Distribution Survey by the British Deer Society (British Deer Society, 2016⁴¹);
- information from the Glasgow Museum Biological Records Centre (GMBRC);
- information from the Saving Scotland's Red Squirrels website⁴² for red and grey squirrel sightings; and
- any ES, EIAR's 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 (July 2023) or will be completed by the end of September 2023.

- Electrofishing and fish habitat suitability surveys on watercourses within the Site (upstream and downstream), in line with guidance^{43, 44, 45} and undertaken by the Clyde River Foundation (CRF), were undertaken and completed in June 2023.
- Seasonal static bat detector (Anabat) surveys, 14 Anabat detectors have been deployed around the Site following NatureScot *et al.* (2021³⁵) guidelines, with the deployments beginning in April 2023 and due to be concluded in September 2023. The locations were selected based on an 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 (as per NatureScot *et al.* 2021³⁵).
- Protected species walkover survey will be undertaken in August 2023.
- National Vegetation Classification (NVC) surveys, incorporating Phase 1 Habitat and potential Groundwater Dependent Terrestrial Ecosystem (GWDTE) habitat characterisation will be undertaken in September 2023^{46,47}.

Designated Sites

There are two statutory sites designated for ecological features within 5 km of the Proposed Development: Red Moss Special Area of Conservation (SAC) and Red Moss Site of Special Scientific Interest (SSSI). These are listed in Table 3.5.1 and shown in Figure 3.5.1.

³⁹ National Biodiversity Network Atlas Scotland (2023). Available at: <https://scotland.nbnatlas.org/>. Accessed on: 6 July 2023

⁴⁰ Scottish Government (2023). Scotland's Soils. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10#. Accessed: 6 July 2023

⁴¹ British Deer Society (2016). *Deer Distribution Survey*. Available at: <https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/>. Accessed on: 6 July 2023

⁴² Scottish Squirrels (2023). Sightings of Red and Grey Squirrels across Scotland. Available at: <https://scottishsquirrels.org.uk/squirrel-sightings/>. Accessed on 6 July 2023.

⁴³ 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/>

⁴⁴ Marine Directorate (2018) Onshore Renewables Interactions. Available at: <https://www.gov.scot/publications/onshore-renewables-interactions/>

⁴⁵ 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 \(www.gov.scot\)](https://www.gov.scot/publications/freshwater-and-diadromous-fish-and-fisheries-associated-with-onshore-wind-farm-and-transmission-line-developments-generic-scoping-guidelines-gov.scot/www.gov.scot)

⁴⁶ Rodwell, J.S. (Ed), et al. (1991 – 2000). *British Plant Communities* (5 volumes). Cambridge University Press, Cambridge.

⁴⁷ Rodwell, J.S. (2006). *NVC Users' Handbook*. ISBN 978 1 86107 574 1.

Table 3.5.1: Designated Sites with Ecological Qualifying Features within 5 km of the Site

Designated Site	Qualifying Ecological Features	Condition of Feature (and Date Monitored)	Distance from Site (km)
Red Moss SAC	Active raised bog	Unfavourable Recovering (August 2015)	Within the Site
Red Moss SSSI	Raised bog	Unfavourable Recovering (August 2015)	Within the Site

The Site slightly overlaps with the Red Moss SAC (Figure 3.5.1) however it should be noted that it is not proposed to develop within the Red Moss SAC. From a desk-based review of the area surrounding the Red Moss SAC, there is potential for any development directly to the north east of the Red Moss SAC to impact the SAC as this area would drain into the Black Burn (which runs through the Red Moss SAC). Consequently, there is considered to be connectivity between the Red Moss SAC and the Site. Under the terms of the Habitats Regulations Appraisal⁴⁸ process, a likely significant effect on the SAC cannot be discounted at this stage, and further assessment will be required to determine whether there may be a significant effect on the integrity of the SAC. Effects on the Red Moss SSSI will be assessed as part of the EIA process.

Ancient Woodland

The Ancient Woodland Inventory (AWI)³⁸ shows there is one stand of ancient woodland, Whitrae Wood (Long Established of Plantation Origin) located within the eastern section of the Site. A single area of ancient woodland, Dod Wood is located outside of the Site, between the central and eastern sections of the Proposed Development. Areas of ancient woodland within 5 km of the Site are numerous, with most of these concentrated to the south and north west of the Site (Figure 3.5.1).

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 2008³⁹:

- Common pipistrelle (*Pipistrellus pipistrellus*)^{49 50};
- Soprano pipistrelle (*Pipistrellus pygmaeus*)^{49 50};
- Daubenton's bat (*Myotis daubentonii*)⁵⁰;
- Natterer's bat (*Myotis nattereri*)⁵⁰;
- Eurasian badger (*Meles meles*)⁵¹;
- Eurasian red squirrel (*Sciurus vulgaris*)⁵²; and
- Common lizard (*Zootoca vivipara*)⁵³.

The following invasive non-native species were also returned by these search parameters:

⁴⁸ NatureScot (2021) European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Available at:

⁴⁹ Licence: OGL. Open Government Licence (OGL) <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>.

Accessed: 6 July 2023. Records provided by NatureScot, accessed through NBN Atlas website.

⁵⁰ Licence: OGL. Open Government Licence (OGL) <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>.

Accessed: 6 July 2023. 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

⁵¹ Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) <https://creativecommons.org/licenses/by/4.0/>. Accessed on: 6 July 2023. Mammal Society (2023) Mammal Mapper App Sighting Records

⁵² Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) <https://creativecommons.org/licenses/by/4.0/>. Accessed on: 6 July 2023. Scottish Wildlife Trust (2023). The Scottish Squirrel Database. Occurrence dataset accessed through the NBNAtlas

⁵³ Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY) <https://creativecommons.org/licenses/by/4.0/>. Accessed on: 6 July 2023. Amphibian and Reptile Conservation and Biological Records Centre. (2023) Records verified via iRecord.

- Grey squirrel (*Sciurus carolinensis*)⁵²; and
- Signal crayfish (*Pacifastacus leniusculus*)⁵⁴.

No sightings of red or grey squirrels have been recorded on Saving Scotland's Red Squirrels⁴² within 5 km of the Site in the past 13 years.

The Deer Distribution Survey results⁴¹ showed that the following deer species are likely to be present or have previously been recorded in the wider area of the Site:

- fallow deer (*Dama dama*) (Unconfirmed in 2016, recorded in 2007 and/or 2011);
- red deer (*Cervus elaphus*) (Unconfirmed in 2016, recorded in 2007 and/or 2011); and
- roe deer (*Capreolus capreolus*) (reconfirmed in 2016, recorded in 2007 and/or 2011).

As per Figure 3.5.1, the Carbon Peatland Map 2016 shows a single area of Class 1⁵⁵ peatland located along the south western border of the Site. Two of the proposed turbine locations (T18 and T19) are located within the area mapped as Class 1 peatland. As per Figure 3.7.3, a large area of Class 3⁵⁶ peatland extends throughout the north western section of the Site, located mainly to the north of the B7078, with an area of Class 5⁵⁷ peatland to the south. The map suggests that the eastern section of the Site is dominated by an extensive area of Class 0⁵⁸ Mineral soil.

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
- risks of bats colliding with or suffering barotrauma from proximity to operational wind turbine blades.

⁵⁴ Licence: OGL. Open Government Licence (OGL) <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>.

Accessed: 6 July 2023. Records provided by Invasive non-native species records from SEWeb, accessed through NBN Atlas website.

⁵⁵ Class 1 – Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

⁵⁶ 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.

⁵⁷ 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.

⁵⁸ Class 0 – Mineral soil, peatland habitats are not typically found on such soils.

A summary of the features and impacts to be considered, and the phases for which they are likely to be 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 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 will 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 deer population and are scoped out of the assessment.
Designated sites	Yes	No	The Proposed Development extends into the eastern section of the Red Moss SAC. The design layout shows the location of turbines in relation to the SAC. Table 3.5.1 identifies the

Features	Scoped In		Justification
	Construction	Operation	
			<p>qualifying ecological features of the SAC which are likely to be affected by activities during the construction phase of the Proposed Development. As a result, likely significant effects from the Proposed Development cannot be ruled out, as such the Proposed Development will be subject to a Habitats Regulations Appraisal (HRA) under The Habitats Regulations.⁵⁹</p> <p>The Proposed Development extends into the northern section of the Red Moss SSSI. The Proposed Development is topographically and hydrologically connected to and extends into the northern section of the Red Moss SSSI. The close proximity of turbines 19 and 20 to the SSSI have the potential to result in adverse impacts during construction upon the qualifying ecological features of the designated site and are scoped into the assessment at this stage.</p> <p>Through the adoption of embedded mitigation (including the design and layout of the Site), it is considered that the qualifying ecological features of the SAC are unlikely to be affected by the operational activities of the Proposed Development.</p> <p>Taking into consideration the design and layout of the Proposed Development and its operational activities, impacts upon the SSSI are unlikely to occur and can be scoped out of the assessment at this stage.</p>
Migratory salmonids and resident fish	Yes	No	<p>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).</p> <p>Impacts on resident fish populations during construction cannot be scoped out until the ecological baseline surveys are complete and the presence and distribution species and suitable habitats relation to the planned infrastructure and activities associated with the Proposed Development are fully understood.</p> <p>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.</p>

⁵⁹ https://environment.ec.europa.eu/topics/nature-and-biodiversity/habitats-directive_en

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 a Construction Environmental Management Plan (CEMP) 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 carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ecologist would take place as part of the SPP, and an ECoW would be 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 of the Proposed Development. Based upon habitat surveys to be undertaken in 2023, biodiversity enhancement measures for the Site may include, but not be limited to, options such as peatland restoration, heathland restoration, grassland management, hedgerow creation and riparian tree planting.

Where unmitigated significant effects on IEFs are identified, additional measures to prevent and reduce these adverse impacts would be proposed, in order to conclude a non-significant residual impact.

3.5.5 Assessment Methodology

Legislation, Policy and Guidance

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

- European Union Council Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora (as amended) (Habitats Directive).
- 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").
- Environmental Impact Assessment Directive 85/337/EEC, as amended ("EIA Directive"), (as subsequently codified by Directive 2011/92/EU, and as amended by Directive 2014/52/EU).
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).
- Nature Conservation (Scotland) Act 2004 (as amended).
- Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003.
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended) ('The Habitats Regulations').
- The Protection of Badgers Act 1992.
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011.
- The Wildlife and Countryside Act 1981 (as amended).
- The Wildlife and Natural Environment (Scotland) Act 2011 (WANE).

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

- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018⁶⁰) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine (version 1.1). Chartered Institute of Ecology and Environmental Management, Winchester.
- Collins, J. (2016⁶¹) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition). Bat Conservation Trust. South Lanarkshire Council (2018) South Lanarkshire Biodiversity Strategy 2018-2022⁶².
- South Lanarkshire Council (2018) South Lanarkshire Biodiversity Strategy 2018-2022⁶³
- European Commission (2020) Guidance document on wind energy developments and EU nature legislation⁶⁴.
- JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012⁶⁵) UK Post-2010 Biodiversity Framework.
- Joint Nature Conservation Committee (JNCC) (2013⁶⁶) 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 2021³⁵). *Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation*.
- NatureScot (2020⁶⁷) General Pre-application and Scoping Advice to Developers of Onshore Wind Farms.
- Scottish Badgers (2018⁶⁸) *Surveying for Badgers: Good Practice Guidelines*. Version 1.
- Scottish Executive (2000⁶⁹) 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.

⁶⁰ CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.1*. Chartered Institute of Ecology and Environmental Management, Winchester.

⁶¹ Collins, J. (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition)*. Bat Conservation Trust.

⁶² South Lanarkshire Council (2018) South Lanarkshire Biodiversity Strategy 2018-2022. Available at:

https://www.southlanarkshire.gov.uk/downloads/200172/plans_and_policies

⁶³ South Lanarkshire Council (2018) South Lanarkshire Biodiversity Strategy 2018-2022. Available at:

https://www.southlanarkshire.gov.uk/downloads/200172/plans_and_policies

⁶⁴ 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: 6 July 2023

⁶⁵ 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: 6 July 2023

⁶⁶ 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-sssi/>. Accessed on: 6 July 2023

⁶⁷ NatureScot (2020). General Pre-application and Scoping Advice to Developers of Onshore Wind Farms.

⁶⁸ 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: 6 July 2023

⁶⁹ 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. Revised guidance updating Scottish Office Circular no. 6/1995. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/foi-eir-release/2020/01/foi-201900008726/documents/foi-201900008726-information-released-a/foi-201900008726-information-released-a/govscot%3Adocument/FOI%2B-%2B201900008726-%2B-%2BInformation%2Breleased%2B-%2BCircular%2B6-1995%2BNature%2BConservation%2B-%2B%2527The%2BHabitats%2Band%2BBirds%2BDirectives%2527%2B%2528Updated%2BJune%2B2000%2529..PDF>. Accessed on:

6 July 2023

- Scottish Environment Protection Agency (SEPA) (2017⁷⁰) Land Use Planning System Guidance Note 4 - Planning guidance on on-shore windfarm developments.
- SEPA (2017⁷¹) Land Use Planning System Guidance Note 31 - Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems.
- Scottish Government (2001⁷²). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements.
- Scottish Government (2006⁷³). European Protected Species – terms of guidance: Chief Planner letter.
- Scottish Government (2013⁷⁴) Scottish Biodiversity Strategy: It's in Your Hands (2004)/2020 Challenge for Scotland's Biodiversity.
- Scottish Government (2016⁷⁵) Draft Peatland and Energy Policy Statement.
- Scottish Government (2017a⁷⁶) Planning Advice Note 1/2013 - Environmental Impact Assessment, Revision 1.0.
- Scottish Government (2017b⁷⁷) Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.
- Scottish Government (2018⁷⁸) Climate Change Plan: Third Report on Policies and Proposals 2018-2032.
- Scottish Government (2020⁷⁹) Scottish biodiversity strategy post-2020: statement of intent.
- Scottish Government (2023⁸⁰) National Planning Framework 4.
- SNH (2015⁸¹) Scotland's National Peatland Plan.

⁷⁰ Scottish Environment Protection Agency (2017). Land Use Planning System Guidance Note 4 – Planning guidance on on-shore windfarm developments. Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf>. Accessed on: 6 July 2023

⁷¹ Scottish Environment Protection Agency (2017). Land Use Planning System Guidance Note 4 – Planning guidance on on-shore windfarm developments. Available at: <https://www.sepa.org.uk/media/136117/planning-guidance-on-on-shore-windfarms-developments.pdf>. Accessed on: 6 July 2023

⁷² 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: 6 July 2023

⁷³ 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: 6 July 2023

⁷⁴ 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 July 2023

⁷⁵ Scottish Government (2016). Draft Peatland and Energy Policy Statement. Available at: <https://www.gov.scot/publications/peatland-and-energy-draft-policy-statement/>. Accessed on: 6 July 2023

⁷⁶ 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 July 2023

⁷⁷ 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: 6 July 2023

⁷⁸ 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: 6 July 2023

⁷⁹ 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: 6 July 2023

⁸⁰ Scottish Government (2023) National Planning Framework 4. Available at: <https://www.gov.scot/publications/national-planning-framework-4/>. Accessed on: 6 July 2023

⁸¹ SNH (2015). Scotland's National Peatland Plan. Available at: <https://www.nature.scot/doc/scotlands-national-peatland-plan-working-our-future>. Accessed on: 6 July 2023

- SNH (2016a⁸²) Planning for Development: What to consider and include in deer assessments and management at development sites (Version 2).
- SNH (2016b⁸³) Planning for Development: What to consider and include in Habitat Management Plans. Version 2.
- SNH (2018a⁸⁴). Advising on carbon-rich soils, deep peat and priority peatland habitat in development management.
- SNH (2018b⁸⁵) Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.
- Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), HES, AEECoW (2019⁸⁶) Good Practice During Windfarm Construction (4th Edition).

Assessment Methodology

The EIAR will include an 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 (2018⁶⁰) 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 (2018⁶⁰) and SNH (2018b⁸⁵).

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;

⁸² 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: 6 July 2023

⁸³ 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: 6 July 2023

⁸⁴ SNH (2018a). Advising on carbon-rich soils, deep peat and priority peatland habitat in development management. Available at: Advising on carbon-rich soils, deep peat and priority peatland habitat in development management. Accessed on: 6 July 2023

⁸⁵ SNH (2018b). 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: 6 July 2023

⁸⁶ 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: 6 July 2023

- establishing the magnitude of the likely impact (both spatial and temporal) on each IEF;
- based on the above information, making a judgement 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 guidance⁴⁹. Where determined that a cumulative assessment is necessary, impacts will be assessed 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 Heritage Zone (NHZ) level. The scope of the cumulative assessment will be agreed in consultation with NatureScot.

Methodology for Assessing Likely Significant Effects on the Integrity of a Natura 2000 Site

As detailed in above, the Red Moss SAC overlaps with the Site and there is potential for connectivity to exist between the Proposed Development and the Red Moss SAC.

The method for assessing the significance of a likely effect on the integrity of a Natura 2000 site (in this case an SAC) is different from that employed for wider-countryside interests. This is via the Habitats Directive, which is transposed into domestic legislation by the Habitats Regulations. Regulation 48 indicates a number of steps to be taken by the competent authority before granting consent (referred to here as a 'Habitats Regulations Appraisal'). In order of application, these are:

- Step 1: consider whether the proposal is directly connected to or necessary for the management of the site (Regulation 48 (1b)).
- If not, Step 2: consider whether the proposal, alone or in combination, is likely to have a Likely Significant Effect on the site (Regulation 48 (1a)).
- If so, Step 3: make an Appropriate Assessment of the implications for the site in view of that site's conservation objectives (Regulation 48 (1)).
- Step 4: consider whether it can be ascertained that the proposal will not adversely affect the integrity of the site ("Integrity Test") having regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which the consent, permission or other authorisation should be given (Regulation 48 (5 & 6)). Relevant information can be considered at Step 2.

An assessment of the likely significant effects on the Red Moss SAC in relation to the Proposed Development will be presented in the ecology chapter of the EIAR. The results of baseline surveys and scientific conclusions presented in the chapter will be used to inform the appraisal process, and if required, allow the competent authority to conduct an Appropriate Assessment, if required.

3.6 Ornithology

3.6.1 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 ornithological features.

3.6.2 Study Area

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

- Designated sites: 20 km study area from the proposed turbines/solar generators and infrastructure (SNH 2016a⁸⁷).
- 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 using GIS Delaunay triangulation⁸⁸ from the proposed turbine locations to create a wind farm area which will then be buffered by 500 m (as per SNH 2017⁸⁹).
- Scarce⁹⁰ breeding birds: 2 km study area from the proposed turbines/solar generators and infrastructure (800 m for access tracks) (SNH 2017⁸⁹).
- Black grouse: 1.5 km study area from the proposed turbines/solar generators and infrastructure (750 m for access tracks) (SNH 2017⁸⁹).
- Breeding upland waders and wintering waders, raptors, owls and wildfowl – 500 m study area from the proposed turbines/solar generators and infrastructure.
- Cumulative assessment: as per SNH (2018a⁹¹), the Natural Heritage Zone (NHZ) 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 on the basis of the location of breeding activity.

3.6.3 Baseline Conditions

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

- Results of the ornithology surveys undertaken between September 2022 and August 2023.
- Information provided by the South Strathclyde Raptor Study Group (SSRSG) and/or Dumfries and Galloway Raptor Study Group (DGRSG) – data will be requested at the end of the 2023 breeding season.
- A desk study to inform the location and qualifying features of designated sites⁹² within potential zones of influence of the Proposed Development.

Baseline Surveys

The following surveys have been undertaken to date (July 2023) or will be completed by the end of August 2023. All surveys are undertaken in line with the appropriate guidance (SNH 2017⁸⁹, Hardey *et al.* 2013⁹³, Gilbert *et al.* 1998⁹⁴) and survey areas are detailed below. All survey areas were created using survey-specific buffers based on the Proposed Development boundary provided at the time of survey commencement as detailed below.

⁸⁷ Scottish Natural Heritage (2016a). Assessing connectivity with Special Protection Areas (SPAs).

⁸⁸ Delaunay triangulation is a form of mathematical/computational geometry where a given set of points (in this case the turbine locations) are all joined to create discrete triangles. Further information is available here: <https://uk.mathworks.com/help/matlab/math/delaunay-triangulation.html>

⁸⁹ Scottish Natural Heritage (2017). Recommended bird survey methods to inform impact assessment of onshore wind farms.

⁹⁰ 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.

⁹¹ Scottish Natural Heritage (2018a). Assessing the cumulative impacts of onshore wind farms on birds.

⁹² NatureScot Sitelink. Available at: <https://sitelink.nature.scot/home>. Accessed: July 2023

⁹³ 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.

⁹⁴ Gilbert, G., Gibbons, D. W. and Evans, J. (1998). Bird Monitoring Methods. RSPB, Sandy.

- Flight activity surveys (minimum of 36 hours per season as per SNH 2017⁸⁹): seven Vantage Point (VP) locations (Figure 3.6.1), September 2022 to March 2023, and four VP locations (Figure 3.6.2), March 2023 to August 2023.
- Scarce breeding bird surveys: 2 km survey area (buffered from the Site boundary), monthly from March to August 2023 (Figure 3.6.2).
- Black grouse surveys: 1.5 km survey area (buffered from the Site boundary), April and May 2023 (Figure 3.6.2).
- Breeding wader surveys: 500 m survey area (buffered from the Site boundary), monthly from April to July 2023 (Figure 3.6.2).
- Winter walkover surveys: 500 m survey area (buffered from the Site boundary), three visits between November 2022 and February 2023 (Figure 3.6.1).
- It is acknowledged that T23 and T24 are just outside the 2 km 2023 breeding season viewshed coverage (by approximately 50 m and 150 m respectively, Figure 3.6.2; note that T23 is covered by the 2022/2023 viewsheds but T24 remains outside the coverage, Figure 3.6.1). 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 two 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 would be sufficiently representative. The two turbines are located in similar habitat and on similar gradients to the remaining 22 turbines covered by the viewsheds (Figure 3.6.2). It is therefore likely that flight activity would be similar around the two 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.

Designated Sites

There are no statutory designations with ornithological features within the Proposed Development Site. One Special Protection Area (SPA) and three SSSIs with ornithological features are within 20 km of the Proposed Development as listed below and shown on Figure 3.6.3. Note that all distances are from the nearest points of the designation site boundary to the Site as shown on Figure 3.6.3.

- Muirkirk and North Lowther Uplands SPA (underpinned by North Lowther Uplands SSSI and Muirkirk Uplands SSSI), approximately 5.3 km from the Site and designated for non-breeding hen harrier and breeding hen harrier, golden plover, merlin, peregrine falcon and short-eared owl.
- Tweedsmuir Hills SSSI, approximately 17.9 km from the Site and designated for a breeding bird assemblage.

Based on the guidance from NatureScot (SNH 2016a⁸⁷) 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 Muirkirk and North Lowther Uplands SPA and the Proposed Development.

Ornithological Activity

Flight activity surveys between September 2022 and June 2023 recorded ten target species (curlew, golden plover, greylag goose, herring gull, lapwing, merlin, osprey, peregrine falcon, pink-footed goose and red kite), which may be included in the Collision Risk Model (CRM), depending on their location in relation to the final turbine layout.

Winter walkover surveys during the 2022/ 2023 non-breeding season recorded limited activity on the Site with occasional records of golden plover, greylag goose, merlin, peregrine falcon, red kite, short-eared owl and woodcock.

Scarce breeding bird surveys during the 2023 breeding season have confirmed breeding for red kite and peregrine falcon (within the 2 km survey area but outwith the Site) and identified a potential breeding attempt for short-eared owl (within the Site).

Breeding wader surveys during the 2023 breeding season have recorded likely breeding activity for common sandpiper, curlew, lapwing, oystercatcher, redshank, ringed plover and snipe within the 500 m survey area. Flocks of golden plover were also recorded in early April but were considered to be migratory non-breeding birds.

No black grouse were recorded during the 2023 breeding season surveys.

Review of the Baseline Survey Programme

When surveys commenced at the Site in September 2022, the parcels of land to the south of the B7078 (the area on which turbines 19 to 21 are located and the indicative PV area around Black Hill, see Figure 3.6.2 for reference) were yet to be included in the Proposed Development. Consequently, the winter walkover surveys undertaken during the 2022/ 2023 non-breeding season do not provide full coverage of the Site with a small area around Black Hill not covered by the survey area (Figure 3.6.1). This additional area of land was added around the start of the 2023 breeding season and the scarce breeding bird, black grouse and breeding wader survey areas were all buffered from the new combined Site (Figure 3.6.2).

Flight activity surveys during the 2022/ 2023 non-breeding season were undertaken from seven viewsheds (Figure 3.6.1). This was revised to the four viewsheds shown on Figure 3.6.2 for the start of the 2023 breeding season (March 2023) to focus coverage on the areas identified for the turbines.

Guidance from NatureScot (SNH 2017⁸⁹) 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. However, the Site is predominately comprised of species poor semi-improved and marshy grassland, grazed by sheep and cattle, with small, fragmented patches of heather moorland and overall the habitat within and surrounding the Site is considered to be of relatively low ornithological value. Consequently, the species composition and distribution recorded during the baseline surveys between September 2022 and August 2023 is considered to be representative of current bird activity.

Considering the relatively small size of the Site and the low ornithological sensitivity of the Site, one year of baseline surveys on the additional area (comprising the 2022/ 2023 non-breeding season and 2023 breeding season) is considered sufficient and representative to allow for a robust assessment on the potential impacts to ornithology. Confirmation of this approach is sought from NatureScot as part of this Scoping Report.

3.6.4 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, these construction and operational impacts will also be considered in a cumulative assessment.

Construction/ Decommissioning Impacts:

- temporary and permanent habitat loss/ alteration/ fragmentation associated with the Proposed Development infrastructure, including loss of nesting, lekking, roosting or foraging habitat; and
- visual and noise disturbance associated with construction activities.

Operational Impacts:

- displacement from nesting, lekking, roosting or foraging habitats around operational turbines and other permanent infrastructure, including barrier effects;
- risk of collisions with operational wind turbine blades or any other permanent infrastructure; and
- impacts relating to turbine lighting.

Scoped Out Features

On the basis of baseline data, experience from other relevant projects and policy guidance or standards (e.g., CIEEM 2018⁶⁰, SNH 2018b⁹⁵), the following species will be 'scoped out' since significant effects 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 Amber or Red-listed BoCC species), showing birds whose populations are at some risk either generally or in parts of their range.
- Passerine species, not generally considered to be at risk from wind farm developments (SNH 2017⁸⁹), 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 will be scoped out of the assessment.

Considering the review of designated sites within 20 km of the Proposed Development, there is considered to be no potential for a likely significant effect on the Muirkirk and North Lowther Uplands SPA (underpinned by North Lowther Uplands SSSI as well as Muirkirk Uplands SSSI) or Tweedsmuir Hills SSSI, as a result of the Proposed Development and it is proposed to scope these designated sites out of the assessment.

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 peregrine falcon, red kite, curlew and lapwing are likely to be the species considered as Important Ornithological Features (IOFs) and therefore scoped into the assessment.

Cumulative effects

An assessment of cumulative effects will be undertaken following published guidance (SNH 2018a⁹¹). Cumulative effects on each IOF relevant to the Proposed Development will be assessed in relation to other projects and activities subject to the EIA process within a relevant search area and their effects on a relevant reference population; for example, at an NHZ level for breeding species.

Potential Mitigation

Significant effects on birds will be avoided/ minimised where possible during the design process, based on the locations of known nest, roost and lek sites, key foraging areas, and likely sensitivities of IOFs. Good practice (SNH 2016c⁹⁶) during construction and operation of the

⁹⁵ Scottish Natural Heritage (2018b). Environmental Impact Assessment Handbook – Version 5: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment process in Scotland.

⁹⁶ Scottish Natural Heritage (2016c). Dealing with construction and birds.

Proposed Development will also be implemented (and the assessment undertaken on this basis). This would 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 adhere to the relevant wildlife legislation;
- 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 (BEMP) 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 will be proposed, in order to conclude a non-significant residual effect.

3.6.5 Assessment Methodology

Legislation, Policy and Guidance

The assessment will be undertaken in line with the following European legislation and guidance.

- Directive 2009/147/EC on the Conservation of Wild Birds⁹⁷ (the EU Birds Directive).
- Directive 92/43/EEC on Conservation of Natural Habitats and of Wild Fauna and Flora⁹⁸ (as amended) (the Habitats Directive).
- Environmental Impact Assessment Directive 2014/52/EU⁹⁹ (the EIA Directive).

The following national legislation, which has recently been amended as a consequence of EU exit (Scottish Government 2019¹⁰⁰, 2020¹⁰¹), is also considered as part of the ornithology assessment:

- The Wildlife and Countryside Act 1981¹⁰² (as amended).
- The Conservation (Natural Habitats &c.) Regulations 1994¹⁰³ (as amended) (The Habitats Regulations).
- The Nature Conservation (Scotland) Act 2004¹⁰⁴ (as amended).
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017¹⁰⁵ (the EIA Regulations).

⁹⁷ Directive 2009/147/EC of the European Parliament and of the Council. Available at: <https://www.legislation.gov.uk/eudr/2009/147/contents> (accessed July 2023)

⁹⁸ Scottish Government (1992). Council Directive 92/43/EEC. Available at: <https://www.legislation.gov.uk/eudr/1992/43/contents> (accessed July 2023)

⁹⁹ Scottish Government (2014). Directive 2014/52/EU of the European Parliament and of the Council. Available at: <https://www.legislation.gov.uk/eudr/2014/52> (accessed July 2023)

¹⁰⁰ 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> (accessed July 2023)

¹⁰¹ Scottish Government (2020). EU Exit: The Habitats Regulations in Scotland. Available at: <https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/> (accessed July 2023)

¹⁰² Scottish Government (1981). Wildlife and Countryside Act 1981. Available at: <https://www.legislation.gov.uk/ukpga/1981/69> (accessed July 2023)

¹⁰³ Scottish Government (1994) The Conservation (Natural Habitats, &c.) Regulations 1994. Available at: <https://www.legislation.gov.uk/uksi/1994/2716/contents> (accessed July 2023)

¹⁰⁴ Scottish Government (2004). Nature Conservation (Scotland) Act 2004. Available at: <https://www.legislation.gov.uk/asp/2004/6/contents> (Accessed July 2023)

¹⁰⁵ Scottish Government (2017). The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. Available at: <https://www.legislation.gov.uk/ssi/2017/101/contents> (accessed July 2023)

- Scottish Government (2000¹⁰⁶). Planning Advice Note 60: Planning for Natural Heritage.
- Scottish Government (2017¹⁰⁷). Planning Advice Note 1/2013-Environmental Impact Assessment, Revision 1.0.

The assessment will consider the relevant aspects of Scottish Planning Policy, Planning Advice Notes and other relevant guidance. Of relevance to ornithology are the following policies.

- UK Post-2010 Biodiversity Framework (2012¹⁰⁸).
- Scottish Biodiversity Strategy: It's in Your Hands (2004¹⁰⁹)/2020 Challenge for Scotland's Biodiversity (2013¹¹⁰).
- National Planning Framework 4 (NPF4) (February 2023¹¹¹);
- The Scottish Biodiversity List¹¹².
- Scottish Biodiversity Strategy to 2045: Tackling the Nature Emergency in Scotland (2023¹¹³), note that this is still in draft form with consultation taking place in Spring 2023.

Guidance on the following topics will also be considered.

- Environmental impact assessment: NatureScot (SNH 2016b¹¹⁴, 2018c¹¹⁵, 2018b⁹⁵, NatureScot 2020¹¹⁶), CIEEM (2018⁶⁰), SERAD (2000¹¹⁷).
- Designated sites: NatureScot (SNH 2016a⁸⁷), European Commission (2010¹¹⁸).
- Collision modelling: NatureScot (SNH 2000¹¹⁹, 2018d¹²⁰), Band *et al.* (2007¹²¹).
- Cumulative assessments: NatureScot (SNH 2018a⁹¹).
- Bird populations/species specific guidance: Stanbury *et al.* (2021¹²²), NatureScot (SNH 2014¹²³, 2017⁸⁹), Pearce-Higgins (2021¹²⁴).

¹⁰⁶ <https://www.gov.scot/publications/pan-60-natural-heritage/> (accessed July 2023)

¹⁰⁷ Scottish Government (2017). Planning Advice Note 1/2013 – Environmental Impact Assessment, Revision 1.0. Scottish Government, Edinburgh.

¹⁰⁸ JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012). UK Post-2010 Biodiversity Framework. JNCC, Peterborough.

¹⁰⁹ Scottish Executive (2004). Scottish Biodiversity: It's In Your Hands. Scottish Executive, Edinburgh.

¹¹⁰ The Scottish Government (2013). 2020 Challenge for Scotland's Biodiversity. The Scottish Government, Edinburgh.

¹¹¹ <https://www.gov.scot/publications/national-planning-framework-4/documents/> (accessed July 2023)

¹¹² <https://www.nature.scot/scotlands-biodiversity/scottish-biodiversity-strategy-and-cop15/scottish-biodiversity-list> (accessed July 2023)

¹¹³ <https://www.gov.scot/publications/scottish-biodiversity-strategy-2045-tackling-nature-emergency-scotland/> (accessed July 2023)

¹¹⁴ Scottish Natural Heritage (2016b). Environmental Statements and Annexes of Environmentally Sensitive Bird Information; Guidance for Developers, Consultants and Consultees. Version 2.

¹¹⁵ Scottish Natural Heritage (2018c). Assessing significance of impacts from onshore windfarms on birds out with designated areas. Version 2.

¹¹⁶ NatureScot (2020a). General pre-application and scoping advice for onshore wind farms.

¹¹⁷ 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.

¹¹⁸ European Commission (2010). Natura 2000 Guidance Document 'Wind Energy Developments and Natura 2000'. European Commission, Brussels.

¹¹⁹ Scottish Natural Heritage (2000). Windfarms and birds: calculating a theoretical collision risk assuming no avoidance action.

¹²⁰ Scottish Natural Heritage (2018d). Avoidance Rates for the onshore SNH Wind Farm Collision Model. Version 2.

Band, W., Madders, M., and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms. In: Janss, G., de Lucas, M. & Ferrer, M (eds.) Birds and Wind Farms. Quercus, Madrid. 259-275.

¹²¹ Band, W., Madders, M., and Whitfield, D.P. (2007). Developing field and analytical methods to assess avian collision risk at wind farms. In: Janss, G., de Lucas, M. & Ferrer, M (eds.) Birds and Wind Farms. Quercus, Madrid. 259-275.

¹²² Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D., and Win, I. (2021). Birds of Conservation Concern 5: The population status of birds in the UK, Channel Islands and Isle of Man and second ICUN Red List assessment of extinction risk for Great Britain. British Birds 114: 723-747.

¹²³ Scottish Natural Heritage (2014). Assessing impacts to pink-footed and greylag geese from small-scale wind farms in Scotland.

¹²⁴ Pearce-Higgins, J.W. (2021). Climate Change and the UK's Birds. British Trust for Ornithology Report, Thetford, Norfolk.

- Construction and birds: NatureScot (SNH 2016c¹²⁵).

Assessment Methodology

The assessment will consider the potential direct, indirect, and cumulative impacts that the construction and operation of the Proposed Development could have on IOFs, as per CIEEM 2018 guidance⁶⁰). The assessment will be supported by a technical appendix that will include details of survey methodologies, all survey data and outputs from any collision risk modelling.

The assessment will include the following elements:

- baseline conditions;
- scoping in/ out of ornithological features and impacts;
- assessment of potential impacts during construction, operational and decommissioning phases;
- mitigation;
- residual impacts;
- cumulative impact assessment; and
- summary of effects.

Impacts on IOFs will be assessed in relation to the species' reference population, conservation status, range and distribution. The assessment of potential impacts will follow guidelines published by CIEEM (2018⁶⁰) and NatureScot (SNH 2018b⁹⁵, 2018c¹¹⁵).

The assessment will involve the following process:

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

Where appropriate, the assessment will take into consideration specific measures of analysis, most likely collision risk modelling using the Band *et al.* (2007¹²¹) model.

3.7 Hydrology, Hydrogeology and Geology

3.7.1 Overview

This Section provides an overview of potential impacts to be addressed within the EIAR and the proposed method for the evaluation of effects in relation to hydrology, hydrogeology and soils and geology.

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

¹²⁵ Scottish Natural Heritage (2016c). Dealing with construction and birds.

3.7.2 Study Area

The study area, in respect of potential impacts on water resources, will include the Site extent 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 peat and carbon rich soils, considers land within the Site.

3.7.3 Baseline Conditions

Hydrology

Mill Burn is present at the north eastern boundary of parcel A of the Site and Black Burn is present at the southern boundary of parcels C and E of the Site. Both watercourses flow in a generally south easterly direction past the Site and discharge to Duneaton Water which forms the eastern boundary of parcels A and E near Black Hill. Further smaller tributaries of Mill Burn and Black Burn are present crossing the Site.

The smaller, eastern parcels of the Site drain in a generally easterly direction towards the River Clyde, which forms the far eastern boundary of the Site (parcel I). Duneaton Water forms the northern boundary of parcel H of the Site. It is noted that the smaller eastern parcels of the Site are bisected by significant road infrastructure (M74), and it is anticipated that catchments in this area are likely to be served by surface water drainage assets.

The Black Burn is assessed by SEPA to be of 'Good' overall condition under the Water Framework Directive classification scheme¹²⁶. Duneaton Water is assessed to be of Good overall condition and the stretch of the River Clyde closest to the Site (Portrail Water to Mouse Water) is assessed to be of Moderate overall condition. Mill Burn is not assessed under the WFD.

The surface water features in relation to the Site are shown on Figure 3.7.1 (Appendix A).

Flood Risk

SEPA Flood Risk maps¹²⁷ show that land in close proximity to Mill Burn, Black Burn, Duneaton 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 the watercourses identified above are within SEPA high risk flood areas.

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 (Appendix A).

Geology and Soils

According to the British Geological Survey's (BGS) 'Geology Viewer' website¹²⁸ (1:625,000), the superficial deposits underlying the Site predominantly comprise Devensian Till (Diamicton) with alluvium, gravel, sands and silts mapped along the River Clyde and burns. Peat is shown mapped in the central part of the Site to the west of White Rig. Areas of glaciofluvial sands and gravels are also shown to the south of Mill Burn in the northern part of the Site, and in smaller areas across the Site. The higher parts of the Site are shown as unmapped indicating that there are potentially no superficial deposits present.

¹²⁶ <https://www.sepa.org.uk/data-visualisation/water-environment-hub/> (Accessed July 2023)

¹²⁷ <https://www.sepa.org.uk/environment/water/flooding/flood-maps/> [Accessed: July 2023]

¹²⁸ <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/> (Accessed July 2023)

The underlying bedrock across most of the western part of the Site is mapped as the Auchtitench Sandstone Formation, comprising volcanoclastic conglomerate. The central part of the Site is mapped as the Marchburn Formation, comprising wackes, and the eastern part of the Site is mapped as the Kirkcolm Formation, again comprising wackes.

There are extant and disused quarries present at the Site which are understood to have been used for sand and gravel extraction (central area between the B7078 and M74, and north of the M74) and rock extraction (north westernmost part of the Site, north of the M74).

A review of the SNH Carbon Rich Soil and Deep Peat and Peatlands Habitat Map (2016)¹²⁹, an extract of which is shown on Figure 3.7.3 (Appendix A), confirms that areas of peat and organic material are present across the western parts of the Site. Most of the peat is shown as Class 3 or Class 5, however, there is a large area of Class 1 peat indicated to be located in the area to the south of the B7078 road ('nationally important carbon rich soils, deep peat and priority peatland habitat'). The majority of the western part of the Site is shown as comprising Class 3 peat with smaller areas of Class 5. The eastern part of the Site is shown as comprising mineral soils.

Water Resources

According to BGS 1:625 hydrogeological mapping¹³⁰, the northern area of the Site (forming approximately 40% of the total Site area) is underlain by an aquifer of the Lanark Group which is classified by the BGS as a Moderately productive aquifer. The south of the Site is underlain by an aquifer of the Kirkcolm Formation which is classified by the BGS as a Low productivity aquifer.

Ordnance survey mapping identifies that a number of properties are present within the study area. There is the potential that properties and commercial operations within the study area may rely on private water supplies (PWS). PWS registers are held by Local Planning Authorities and the presence of PWS within the study area shall be confirmed through a request for information to SLC.

GWDE

There is the potential that areas of the Site may be classified as potentially groundwater dependent, based on National Vegetation Classification habitat surveying. The presence of potential NVC communities would be established through ecological surveying and were such habitats identified, hydrological assessment would be carried out to determine the actual likelihood of groundwater dependency and the sensitivity of such habitats.

3.7.4 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 or 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;
- 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;

¹²⁹ <https://map.environment.gov.scot/sewebmap/> (Accessed July 2023)

¹³⁰ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> (Accessed July 2023)

- 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;
- The peat erosion potential of any peat disturbed may also be exacerbated as a consequence of localised drying of the peat and resultant oxidation;
- Excavation of soil and bedrock during the construction phase of the Proposed Development could cause localised disruption and interruption to groundwater flow. Interruption of 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 for loss/ disturbance to peat and carbon rich soils.

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 expected that the assessment of flood risk will form part of the EIA chapter, without the need for separate reporting, 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 as amended. 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, detailed flow rate calculations will not be carried out within the EIAR.

In the event that PWS at the Site are outwith a 250 m buffer of infrastructure and construction activity of the Proposed Development, there will be no requirement for a separate detailed risk assessment for PWS abstractions (in line with SEPA Land Use Planning System (LUPS) SEPA Guidance Notes 4 and 31¹³¹). If a very limited number of PWS are identified, a risk assessment of the PWS will be incorporated into the hydrology assessment within the EIAR.

According to the BGS digital map and Hydrogeological and Groundwater Vulnerability Maps of Scotland (1:625,000)¹³², the Site overlies a Moderately productive and a Low productivity aquifer. 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, in consultation with SEPA, it would be sought to scope out this assessment from the EIAR. The EIAR will provide a detailed assessment of potential effects the Proposed Development on surface water conditions supporting sensitive, non-groundwater dependent habitats.

¹³¹ LUPS-GU31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Version 3 (September 2017); GPP 4: Treatment and disposal of wastewater where there is no connection to the public foul sewer (November 2017).

¹³² BGS Map Viewer. Available online: <https://www.bgs.ac.uk/geological-data/map-viewers/> [last accessed, July 2023]

3.7.5 Assessment Methodology

Additional Baseline Information Collection

Consultation with SLC will be undertaken to confirm the location of PWS located within the vicinity of the Site. Consultation with Scottish Water and SLC 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 Guidance¹³³. This survey will provide information on crossing locations, Controlled Activities Regulations (CAR) requirements, channel dimensions and likely crossing types; and
- Peat probing will be undertaken in accordance with good practice guidance and relevant methodologies¹³⁴. This will include a coarse resolution grid across the developable area of the Site, based on a 100 m grid (subject to access). The peat depth data will then be used to inform the design of the Proposed Development.

If peat is confirmed, a higher resolution peat probing survey will be undertaken, to include other proposed infrastructure such as along proposed tracks (at 50 m intervals) and at 10 m crosshairs at turbine locations. The 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.

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:

¹³³ <https://www.sepa.org.uk/media/151036/wat-sg-25.pdf> (Last accessed July 2023)

¹³⁴ Scottish Government, Scottish Natural Heritage, SEPA (2017) Peatland Survey. Guidance on Developments on Peatland, on-line version only.

- Watercourse crossings description¹³⁵;
- GWDE construction impact review¹³⁶;
- Peat survey results;
- Peat landslide hazard and risk assessment;
- Outline Peat Management Plan¹³⁷;
- Borrow pit assessment; and
- Carbon Balance Report.

Cumulative Impacts

Potential cumulative environmental impacts to water, soils and geology 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.

3.8 Traffic and Transport

3.8.1 Overview

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

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 EIA.

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

- Transport Assessment Guidance (Transport Scotland, 2012)¹³⁸; and
- The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993)¹³⁹.

3.8.2 Study Area

The traffic, transport and access study area will be defined by the preferred abnormal load and general construction traffic routes to the Site.

General construction traffic will access the Site via the M74, A702, B740 and B7078. As such, the study area will include the M74 to the north and south of Junction 13, the A702 between Junction 13 at the A73 / A702 roundabout, the B7078 between Junction 13 and A70 and the unclassified Duneaton Road.

¹³⁵ 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/>

¹³⁶ LUPS-GU31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems, Version 3 (September 2017).

¹³⁷ 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

¹³⁸ Transport Scotland: Transport Assessment Guidance (2012)

¹³⁹ IEA: The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (1993))

Access for Abnormal Indivisible Load (AIL) traffic will be direct from the M74 and B7078, and early discussions with Transport Scotland have been held on the most appropriate form for the access from the M74 to be accommodated.

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 following links would be obtained:

- A702 north of Abington;
- M74 (from Transport Scotland sources); and
- B7078 northwest of Abington.

An Automatic Traffic Count (ATC) will also be undertaken on the Duneaton Road near the proposed Site access junction.

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, B7078 and Duneaton Road to inform the accident review for the immediate road study area.

3.8.4 Potential Significant Effects

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

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

3.8.5 Assessment Methodology

The Guidelines for the Environmental Assessment of Road Traffic (IEMA 1993)¹³⁹ sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:

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

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;
- 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 dock, Glasgow) through to the Site access junction to demonstrate that 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.

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 would be made immediately prior to decommissioning works proceeding.

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 30% increase in traffic flows). These traffic flows would be included into the baseline flows used within the assessment.

Planning proposals that are in scoping but do not have planning consent are not considered to be committed development and as such would not be included in the assessment.

3.9 Noise and Vibration

3.9.1 Overview

Noise will be emitted during the construction, operation, and decommissioning phases of the Proposed Development.

This Section provides a summary of the noise effects anticipated for each phase and, where appropriate, details the proposed assessment work.

3.9.2 Study Area

The Proposed Development is located in a rural location. There are a number of scattered residential properties around the Proposed Development with the closest properties being to the south and east of the indicative turbine locations (based on the scoping layout) (refer to Figure 1.2). The M74 bisects parcel A of the Site and is located between parcels G and H and between parcels F and K/J of the Site.

There are a number of operational wind farm developments near to the Proposed Development, including Middle Muir, Andershaw and Clyde Wind Farms. In addition, there are a number of proposed wind farm developments in the area including Bodinglee and Little Gala Wind Farms which are both currently in planning, and Priestgill which is consented but not yet built.

3.9.3 Baseline Conditions

The nearest noise-sensitive receptors (NSR) surrounding the Proposed Development will be considered within the noise assessment, as well as receptors located in proximity to cumulative wind farm developments, as required.

3.9.4 Potential Significant Effects

Where noise levels resulting from the construction, operation or decommissioning of the Proposed Development are likely to be above the relevant limit levels, there is the potential for significant effects to occur.

Careful site design which considers the potential for noise impacts to occur will be implemented throughout all stages of the design of the Proposed Development.

Issues Scoped Out

Vibration

Given the nature of construction activities proposed and the relative distances from residential receptors, the risk of ground borne vibration impacting on residential receptors is considered very low, as such it is not proposed that a vibration assessment be undertaken and that a vibration assessment is scoped out of the EIAR.

BESS and Solar PV Construction Noise

Construction noise effects associated with the BESS and solar PV elements of the Proposed Development are likely to be temporary in nature, with noise levels from construction activities

varying over time as activities and plant start, stop and move around the Site. Construction activities that would generate noise include site preparation, the laying of hardstanding and the installation of plant. The construction phase will be temporary with noise levels varying continually throughout this period. It is therefore not considered necessary to carry out specific construction noise assessment for the solar and BESS developments and they are proposed to be scoped out of the EIAR.

Decommissioning Noise

The potential noise impacts from the decommissioning phase will be no greater than those predicted during the construction phase (as decommissioning is effectively a reversal of the construction process). On that basis, it is not proposed to undertake an assessment of decommissioning noise and that this is proposed to be scoped out of the EIAR.

Low-Frequency Noise

In February 2023, WSP published 'A review of noise guidance for onshore wind turbines'¹⁴⁰ (the WSP / BEIS Report). The report, which was subsequently re-issued as Revision 4 in May 2023, was commissioned by the (former) UK Government Department for Business, Energy and Industrial Strategy (BEIS). The primary aim of the review was to make a recommendation on whether, in view of Government policies on noise and Net Zero, and available evidence, the existing guidance requires updating. Low-frequency noise and infrasound was considered in the WSP / BEIS report. The report considered a number of studies which investigated claimed links between adverse health symptoms and infrasound emissions from wind turbines. The report notes on page 114 that:

'It has been demonstrated in controlled experiments, including the involvement of participants self-reporting to be sensitive to wind turbine infrasound, that exposure to infrasound at levels representative of wind turbine immissions at dwellings is not associated with physiological or psychological health effects, whereas the expectation of effects from being exposed to wind turbine infrasound, and positive or negative messages influencing that expectation, can affect health symptom reporting.

Overall, the findings from the existing evidence base indicate that infrasound from wind turbines at typical exposure levels has no direct adverse effects on physical or mental health, and reported symptoms of ill-health are more likely to be psychogenic in origin.

It is expected that further evidence from ongoing studies into wind turbine infrasound effects will emerge soon, in particular from the NHMRC studies in Australia. However, based on the existing scientific evidence, it does appear probable that the above findings will not be contradicted by newer evidence.'

Since the publication of the report, the study that was granted funding by the National Health and Medical Research Council of Australia (NHMRC) was presented in the Environmental Health Perspectives (EHP) journal, which was published by the United States National Institute of Environmental Health. The study¹⁴¹ aimed to test the effect of exposure to 72 hours of infrasound (designed to simulate a wind turbine infrasound signature) exposure on human physiology, particularly sleep; it concluded that:

¹⁴⁰ WSP (2023). A Review of Noise Guidance for Onshore Wind Turbines [Online] Available at: Report for BEIS: *A review of noise guidance for onshore wind turbines* [Accessed: August 2023]

¹⁴¹ The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults. Available at The Health Effects of 72 Hours of Simulated Wind Turbine Infrasound: A Double-Blind Randomized Crossover Study in Noise-Sensitive, Healthy Adults - PMC (nih.gov)

'Our findings did not support the idea that infrasound causes WTS¹⁴². High level, but inaudible, infrasound did not appear to perturb any physiological or psychological measure tested in these study participants.'

It is therefore not considered necessary to carry out specific assessments of low frequency noise and infrasound and it is proposed that they should be scoped out of the EIAR.

Amplitude Modulation

In its simplest form, Amplitude Modulation (AM), by definition, is the regular variation in noise level of a given noise source. This variation (the modulation) occurs at a specific frequency, which, in the case of wind turbines, is defined by the rotational speed of the blades (i.e. it occurs at the rate at which the blades pass a fixed point (e.g. the tower)), known as Blade Passing Frequency.

The WSP / BEIS report discusses AM, and on page 116 states that:

'At present, it seems evident that reliable predictions of AM in the context of development planning and noise assessment guidance are unlikely to be practically feasible in the near future.'

At time of writing there is no agreed methodology which can be used to predict the occurrence of AM or an agreed methodology which can be used to determine whether the effects of AM, should it occur, are likely to be significant. On that basis it is proposed that amplitude modulation should be scoped out of the EIAR.

3.9.5 Assessment Methodology

Consultation with SLC's Environmental Health Department will be undertaken prior to commencement of the noise assessment in order to agree the assessment methodology, background noise monitoring locations and the approach to the cumulative assessment.

Construction Noise

A construction noise assessment will be undertaken to determine the potential noise impacts during the construction of the wind turbines and ancillary infrastructure for the Proposed Development. The construction noise assessment will be undertaken in accordance with BS5228-1:2009+A1:2014 '*Code of practice for noise and vibration control on construction and open sites - Noise*'¹⁴³. The assessment will consider the temporary noise effects of construction on the nearest identified NSRs. Specifically, the assessment will consider noise arising from the use of borrow pits, concrete batching, construction compounds and laydown areas, vehicle movements within and accessing the Site, and activities occurring at the base of the turbines.

Operational Wind Turbine Noise

The Scottish Government's Planning Advice Note PAN1/2011 '*Planning and Noise*'¹⁴⁴ refers to the '*Onshore Wind Turbines*' web-based document which in turn states that ETSU-R-97 '*The Assessment of Rating of Noise from Windfarms*'¹⁴⁵ should be used by Planning Authorities '*to assess and rate noise from wind energy developments until such time that an update is available.*' The web-based document also refers to the Institute of Acoustics (IOA) '*A Good Practice Guide to the*

142 WTS stands for Wind Turbine Syndrome which is a term for adverse human health effected related to the proximity of wind turbines.

143 BSI. (2014) *BS 5228-1:2009 (amended 2014) 'Code of practice for noise and vibration control on construction and open sites - Part 1: Noise'*.

144 Scottish Government. (2011) *Planning Advice Note 1/2011: Planning and Noise* [Online] Available at: Planning Advice Note 1/2011: planning and noise - gov.scot (www.gov.scot) (Accessed: May 2022]

145 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.

*Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*¹⁴⁶ (IOA GPG) as a source, which provides:

'significant support on technical issues to all users of the ETSU-R-97 method for rating and assessing wind turbine noise, and should be used by all IOA members and those undertaking assessments to ETSU-R-97. The Scottish Government accepts that the guide represents current industry good practice.'

As referred to above, the aim of the WSP / BEIS Report 'A review of noise guidance for onshore wind turbines' was to make a recommendation on whether, in view of Government policies on noise and Net Zero, and available evidence, the existing guidance requires updating. The report concluded that current guidance would benefit from further review and recommended updates in a number of areas.

At present, no official response has been issued by BEIS or any of the new UK Government departments that are being created to replace BEIS, therefore at present there has been no official Government response to the WSP / BEIS report. Therefore, in line with the recommendations contained within PAN1/2011¹⁴⁴, operational wind farm noise from the Proposed Development will be assessed in line with ETSU-R-97¹⁴⁵ and the IOA GPG¹⁴⁶.

ETSU-R-97 details a methodology for establishing noise limits for proposed wind farm developments and these limits should not be exceeded. ETSU-R-97 states that noise limits should be set relative to existing background noise levels at the nearest receptors and that these limits should reflect the variation in both turbine source noise and background noise with wind speed. Separate noise limits apply for quiet daytime and for night-time periods. Quiet daytime limits are chosen to protect a property's external amenity, and night-time limits are chosen to prevent sleep disturbance indoors, with windows open.

ETSU-R-97 recommends that wind farm noise for the quiet daytime periods should be limited to 5 dB(A)¹⁴⁷ above the prevailing background or a fixed minimum level within the range 35 - 40 dB LA90,10min, whichever is the higher. The precise choice of criterion level within the range 35 - 40 dB(A) depends on a number of factors, including the number of dwellings in the neighbourhood of the wind farm (relatively few dwellings suggest a figure towards the upper end), the effect of noise limits on the number of kWh generated (larger sites tend to suggest a higher figure) and the duration and level of exposure to any noise. These factors will be taken into account with justification for deriving suitable noise limits included in the noise assessment.

An exception to the setting of both the quiet daytime and night-time fixed minimum limit occurs where a property occupier has a financial involvement with the Proposed Development. In that case the fixed minimum limit can be increased to 45 dB LA90,10min or the prevailing background noise LA90 plus 5 dB, whichever is the greater for both the quiet daytime and night-time periods.

A background noise survey may not be required for situations where predicted wind turbine noise levels at the nearest noise sensitive properties is limited to an LA90,10min of 35dB(A) up to wind speeds of 10 m/s at 10 m, as the protection of the amenity of those properties can be controlled through a simplified noise condition as detailed in ETSU-R-97. ETSU-R-97 states that:

'For single turbines or wind farms with very large separation distances between the turbines and the nearest properties, a simplified noise condition may be suitable. If the noise is limited to an

¹⁴⁶ Institute of Acoustics (2013). *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise*.

¹⁴⁷ A logarithmic scale is used in noise level measurements because of this wide range. The scale used is the decibel (dB) scale which extends from 0 to 140 decibels (dB) corresponding to the intensity of the sound level. The correction factor is called 'A Weighting' and the resulting measurements are written as dB(A). The dB(A) is internationally accepted and has been found to correspond well with people's subjective reaction to noise.

L_{A90,10min} of 35dB(A) up to wind speeds of 10m/s at 10m height, then this condition alone would offer sufficient protection of amenity, and background noise surveys would be unnecessary.'

Where background noise levels are predicted to exceed the simplified noise criteria (or if cumulative noise has the potential to constrain development) then background noise monitoring will be undertaken at key representational noise monitoring locations around the study area for the Proposed Development. Noise limits will be set relative to existing background noise levels at the nearest receptors and these limits will reflect the variation in background noise with wind speed.

As noted above, there are a number of operational wind farms in the area which will need to be considered very carefully with regards to undertaking the baseline noise survey as contamination from the operational schemes could influence and invalidate measurements (ETSU-R-97 makes it clear that background noise levels should be determined in the absence of wind turbine noise).

Section 5.2.3 of the IOA GPG¹⁴⁵ provides four potential options for measuring suitable background noise levels where there are operational wind turbines in proximity to a given receptor and these are summarised as follows:

- Option 1 – switching off the existing wind farm during the background noise level survey (with associated significant cost implications);
- Option 2 – accounting for the contribution of the existing wind farm in the measurement data (e.g. directional filtering (only including background data when it is not influenced by the existing turbines (e.g. upwind of the receptor), but mindful of other extraneous noise sources (e.g. motorways), or subtracting a prediction of noise from the existing wind farm from the measured noise levels;
- Option 3 – utilising an agreed proxy location removed from the area acoustically affected by the existing wind farm/s; or
- Option 4 - utilising existing background noise level data as presented within the EIARs for the existing wind farm(s) (the suitability of the background noise level data should be established).

Detailed consultation will be undertaken with the Environmental Health Department at SLC at an early stage in order to discuss the most appropriate approach to determining appropriate background noise levels.

Where a survey is undertaken, equipment for measuring meteorological conditions will be installed at the Site for the duration of the noise assessment to collect wind speed and direction data at various heights. Depending on the monitoring equipment used, data will be either measured directly at hub height or data collected at two different heights will be used to determine the wind speed at turbine hub height in accordance with the guidance in the IOA GPG. A series of simultaneous ten-minute measurements will be taken by the wind monitoring equipment over a period of at least two weeks.

The noise assessment for the Proposed Development will be undertaken in three stages:

- Determine the 'Total ETSU-R-97 Noise Limits' which are applicable to the operation of all schemes in the area;
- Undertake a cumulative assessment (where required) to determine whether predictions from all cumulative schemes meet the 'Total ETSU-R-97 Noise Limits'; and
- Derive a set of Site-Specific Noise Limits (for the Proposed Development) and undertake predictions to determine whether the Proposed Development can operate within the Site Specific Noise Limits.

The guidance contained in the IOA GPG will be used to establish suitable Site-Specific Noise Limits which fully take account of the proportion of the Total ETSU-R-97 Noise Limits which has been

allocated too, and can realistically be used by, existing operational and consented wind farms/ turbines in the area.

The noise assessment will include predictions of likely wind turbine noise levels across a range of wind speeds to demonstrate compliance with the Total ETSU-R-97 and Site-Specific Noise Limits. A cumulative noise assessment will also be undertaken in order to consider the consented, operational and proposed (in planning) wind farms/ turbines within the vicinity of the Proposed Development. The assessment will be undertaken in accordance with ETSU-R-97 and the IOA GPG.

Solar PV and Battery Storage Noise

In respect to operational noise from non-wind developments, such as solar and battery energy storage sites, PAN 1/2011 refers to Assessment of Noise: Technical Advice Note (TAN)¹⁴⁸. The TAN identifies BS 4142:2014+A1:2019 '*Methods for Rating and Assessing Industrial and Commercial Sound*'¹⁴⁹ and BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*'¹⁵⁰ as appropriate methodologies for the assessment of environmental noise from proposed new developments or activities.

Noise from the operation of a solar farm is typically low level in nature and is generated from two primary sources; the inverters and the transformers. The number and size of the inverters varies depending on type of solar farm layout. The noise level output from both the transformers and the inverters can often be controlled through the appropriate positioning of the plant and the use of enclosures as required.

Noise from the operation of a BESS facility is generated from the use of multiple inverter units, transformers and battery cooling requirements. Noise output from BESS plant is likely to be higher in level than from solar farm plant, however, careful placement and mitigation measures can minimise noise impacts.

Depending on the final location of the solar PV array and the battery energy storage facility, an operational noise assessment may be required. Where necessary, an assessment will be undertaken in line with BS 4142:2014+A1:2019 and BS 8233:2014.

Cumulative Impacts

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

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.

3.10.2 Study Area

Study areas with the following radii from the Site boundary will be used to identify potentially affected aviation and defence facilities:

¹⁴⁸ Scottish Government, Planning Advice Note 1/2011: Planning and Noise - Assessment of noise: technical advice note

¹⁴⁹ British Standards Institute. Methods for Rating and Assessing Industrial and Commercial Sound. UK : BSI, 2014.

BS4142:2014 + A1:2019.

¹⁵⁰ British Standards Institute. Guidance on Sound Insulation and Noise Reduction for Buildings. UK : BSI, 2014.

BS8233:2014.

- 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 level (asl). Above that level is the Class D controlled airspace of the Scottish Terminal Control Area (TMA), under the control of the NATS En Route Prestwick Centre ('Scottish Control').

The uncontrolled airspace up to 5,500 feet asl is used by civil and military aircraft, mostly operating under the Visual Flight Rules (VFR). The airspace within the Scottish TMA over the Site is used by aircraft inbound to Glasgow Airport from the south and, at higher levels, en route traffic including transatlantic flights between Europe and North America.

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.

There are no licensed or certificated aerodromes or Meteorological Office radars within 30 km radius of the Site.

The Lowther Hill combined PSR and SSR and a Distance Measuring Equipment (DME) facility on Green Lowther are within 20 km radius of the Site.

An unlicensed airstrip is located at Stonehill, 6.5 km south west of the site boundary. The Site is also within 10 km of paragliding sites on Tinto Hill.

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 aeronautical radio transmitter/receiver sites within 10 km radius of the Site.

3.10.4 Potential Significant Effects

Initial assessment has determined that the NATS En Route radars at Lowther Hill, 12 km south of the Site, and Cumbernauld, 49 km north of the Site, have the potential to detect turbines on the Site. The line of sight at up to 200 m agl from all other PSRs within the study area is blocked by intervening terrain.

Turbines up to 200 m in height have the potential to pose a physical obstruction hazard to low flying military aircraft, requiring them to avoid the turbines horizontally and/or vertically.

Turbines up to 200 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.

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; CAP 670, the CAA guidance on Air Traffic

Services Safety Requirements; and CAP 785, the CAA guidance on instrument flight procedure design and safeguarding.

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 effects considered.

Effects on military low flying will be assessed by reviewing the location of the proposed turbines in relation to topography and other obstacles and avoidance features in the UK Military Low Flying System.

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 under the Air Navigation Order. An aeronautical study will be conducted of the potential for an alternative lighting scheme in which not every turbine is fitted with lights. This will be submitted to the CAA for approval.

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

The aviation assessment will not consider effects generated by the solar PV element of the proposed development, since there are no precedents for solar PV causing effects on aviation other than in the immediate vicinity of airfields and no international or UK policy or guidance requiring or advising consideration of effects of solar PV on en route air traffic.

3.11 Socio-economics

3.11.1 Overview

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. It is therefore proposed to scope socio-economics 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 report on socio-economics and tourism will be provided and submitted alongside the EIAR. 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 report will also consider whether the Proposed Development maximises net economic benefit, in the context of NPF4¹ Policy 11(c).

This Section describes what will be considered in the separate socio-economic and tourism report and the approach that will be taken.

3.11.2 Study Area

The study areas for the socio-economic assessment will be selected to meet the interests of key stakeholders and will be made of pre-defined administrative geographies. As such the socio-economic impact assessment will focus on the following study areas:

- South Lanarkshire;
- Scotland; and
- the UK.

The socio-economic baseline description will also include information for the electoral ward of the Site, Clydesdale East.

For the tourism assessment, the study area will be a 15 km radius of the Site boundary, consistent with previous research of the relationship of tourism and onshore wind developments.

3.11.3 Baseline Conditions

The baseline assessment will include a description of the current socio-economic and tourism baseline within the relevant study areas as noted above.

The population of South Lanarkshire was 322,600 in 2021 (5.9% of the Scottish total and 0.5% of the UK total), of which 63% were working age, lower than the figure for Scotland of 64% but similar to the UK average¹⁵¹. Between 2018 and 2043, the total population is projected to increase by 2.8%, compared to a 2.5% and 9.4% increase in Scotland and the UK, respectively¹⁵².

The proportion of the population that is economically active is higher in South Lanarkshire (82.4%), compared to Scotland (77.1%) and the UK (78.3%), while unemployment rate is 3.2% compared to 3.4% in Scotland and 3.6% in the UK as a whole.

The main sectors of employment are human, health and social work activities (18% of employment in South Lanarkshire compared to 15% in Scotland and 13% in the UK) and wholesale and retail trade (17% of employment compared to 14% in Scotland and the UK)¹⁵³. The share of employment in construction in South Lanarkshire is 9%, higher than the Scottish (6%) and the UK (5%) averages.

A smaller proportion of households in South Lanarkshire are considered fuel poor (22%) compared to Scotland as a whole (24%)¹⁵⁴. These figures are expected to have increased due to the increased energy prices during 2022.

In Clydesdale East (the electoral ward of the Proposed Development), around 8.8% of employment is in the sustainable tourism sector, which is higher than the proportion in South Lanarkshire (7.3%) and Scotland as a whole (8%)¹⁵⁵.

The socio-economic and tourism baseline will be expanded on in the standalone report through a review of publicly available data sources. This 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.

3.11.4 Potential Significant Effects

An economic impact analysis will be undertaken using the methodology developed by BiGGAR Economics¹⁵⁸ which has been used to assess over 150 onshore windfarms across the UK. The

¹⁵¹ ONS (2021) Population Estimates – Local Authority Based by five-year age band

¹⁵² National Records for Scotland and ONS (2021) Population Projections

¹⁵³ ONS (2021) Business Register and Employment Survey

¹⁵⁴ Scottish Government (2019) Scottish House Condition Survey 2017-2019

¹⁵⁵ ONS (2021) Business Register and Employment Survey

assessment will consider potential direct and indirect socio-economic impacts of each of the elements of the Proposed Development.

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.

The link between onshore wind energy developments and the tourism sector is a well-researched subject and the most recent research has found no significant link between the performance of the tourism economy and onshore wind development.

In 2021 this study was updated, and research identified 16 wind farms with a capacity of at least 10 MW that became operational between 2015 and 2019¹⁵⁶. Analysis of trends in tourism employment in the locality of these wind farms (15 km radius) found that 11 of the 16 areas had experienced more growth in tourism employment than for Scotland as a whole. For 13 of the 16 wind farms, trends in tourism employment in the locality had outperformed the local authority in which they were based. This work reflected an update of previous work undertaken by BiGGAR Economics in 2017 that considered 28 wind farms constructed between 2009 and 2015 and the trends in tourism employment in the areas local to these developments¹⁵⁷. The analysis found that there was no relationship between the development of onshore windfarms and tourism employment at the level of the Scottish economy, at the local authority level nor in the areas immediately surrounding wind farms developments.

Nevertheless, the tourism sector is an important contributor to the Scottish economy, including in the local area surrounding the Proposed Development (Clydesdale East electoral ward) where sustainable tourism sector accounts for 8.8% of the total employment, higher than the relative proportion in South Lanarkshire (7.3%) and Scotland (8%). Therefore, there is merit in considering whether the Proposed Development will have any effect on tourism behaviour and tourism economy. This assessment will consider the potential effects that the development could have on tourism following a more focused approach on impacts related to key tourist attractions and assets.

3.11.5 Assessment Methodology

Guidance and Legislation

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 sector¹⁵⁸, 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 and a subsequent update to this report published by RenewableUK in

¹⁵⁶ BiGGAR Economics. (2021). Wind Farms and Tourism Trends in Scotland: Evidence from 44 Wind Farms.

¹⁵⁷ BiGGAR Economics. (2017). Wind Farms and Tourism Trends in Scotland: A Research Report.

¹⁵⁸ BiGGAR Economics (2012) Onshore Wind: Direct & Wider Economic Impacts and BiGGAR Economics (2015) Onshore Wind: Direct and Wider Economic Benefits.

2015¹⁵⁹, 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.

It is important that the socio-economic and tourism assessment takes into account the relevant local and national policy objectives. The most relevant objectives for this are expected to be included in the following strategies:

- Scotland's National Strategy for Transformation¹⁶⁰;
- Scotland's National Performance Framework¹⁶¹;
- Scotland's Energy Strategy¹⁶²;
- Onshore Wind Policy Statement 2022¹⁶³;
- Scottish Tourism Alliance (2021), Scotland Outlook 2030¹⁶⁴; and
- South Lanarkshire Economic Strategy 2013-2023¹⁶⁵.

It is also essential to take into consideration for the assessment NPF4¹, the national spatial strategy for Scotland. The document considers:

- Scotland's spatial principles;
- National planning policy;
- National developments; and
- Regional priorities.

In the context of energy generation, Policy 11 is relevant to the socio-economic impact of the Proposed Development. Paragraph (c) 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).

¹⁵⁹ RenewableUK (2015), Onshore Wind: Economic Impacts in 2014. Available online:

https://cdn.ymaws.com/www.renewableuk.com/resource/resmgr/publications/reports/onshore_economic_benefits_re.pdf [Accessed August 2023]

¹⁶⁰ 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 August 2023]

¹⁶¹ Scottish Government (2023) National Performance Framework. Available at: <https://blogs.gov.scot/national-performance-framework/> [Accessed August 2023]

¹⁶² 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 August 2023]

¹⁶³ 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 August 2023]

¹⁶⁴ Scottish Tourism Alliance (2021), Scotland Outlook 2030. Available at: <https://scottishtourismalliance.co.uk/wp-content/uploads/2020/03/Scotland-Outlook-2030.pdf> [Accessed August 2023]

¹⁶⁵ South Lanarkshire Council (2013) South Lanarkshire Economic strategy 2013 -2023. Available at:

https://www.southlanarkshire.gov.uk/downloads/file/8508/south_lanarkshire_economic_strategy_2013_-2023 [Accessed August 2023]

Paragraph (d) of Policy 11 sets out a number of impacts that should be addressed during project design and mitigation, however, this list does not include tourism.

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.

Method of Assessment

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

- introduction, including scope of assessment and methodology;
- economic development and tourism strategic context;
- baseline socio-economic context;
- baseline tourism context;
- socio-economic assessment;
- tourism 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.

This will primarily be a desk-based study with consultation undertaken by the Applicant with the local community to further inform the baseline and inform any opportunities from the Proposed Development which arise therein.

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, 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.

Cumulative Impacts

The assessment will 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.

3.12 Telecommunications

3.12.1 Overview

Wind turbines can cause electromagnetic interference through physical and electrical interference which can affect television signals and communications equipment.

This section of the Scoping Report details the proposed methodology for assessing the effects of the Proposed Development upon existing telecommunications infrastructure.

3.12.2 Study Area

A search will be undertaken to identify all broadcast television and radio transmitters within a 30 km buffer of the Proposed Development, and a search for telecommunication links will be undertaken to a buffer of 2 km from the Site boundary. Together, these buffers will form the Study Area for the assessment.

3.12.3 Baseline Conditions

The Office of Communications (Ofcom) is responsible for the licensing of two-way radio transmitters and holds a register, the Spectrum Information Portal¹⁶⁶, of most microwave links.

The Ofcom Spectrum Information Portal identifies a number of fixed telecommunications links within 3 km of the Site boundary, mainly focused in and around Abington, with some of these links running through the Site.

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.

3.12.4 Potential Significant Effects

Wind turbines can cause electromagnetic interference through physical and electrical interference, which has the potential to be significant if not appropriately mitigated. 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.

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. Where this is not feasible suitable mitigation measures will be agreed with the system operators.

3.12.5 Assessment Methodology

Telecommunications links with the potential to be affected by the Proposed Development will be identified through a desk-based study via the Ofcom Spectrum Information Portal¹⁶⁶ and in consultation with relevant consultees, as described above.

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, mitigation measures will be agreed with the relevant operator(s).

¹⁶⁶ <https://www.ofcom.org.uk/spectrum/information/spectrum-information-system-sis/spectrum-information-portal>

3.13 Shadow Flicker

3.13.1 Overview

Under certain combinations of geographical position, times of day and year, the sun may pass behind the 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.

This Section of the Scoping Report details the proposed methodology for assessing the effects of shadow flicker from the Proposed Development.

3.13.2 Study Area

Scottish Government Onshore Wind Turbines: Planning Advice¹⁶⁷ 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.*" On this basis, the study area is limited to 10 rotor diameters and building within 130 degrees either side of north relative to the proposed turbines.

Once the final turbine layout and parameters have been selected, properties within the study area to be assessed within the EIAR for shadow flicker effects will be identified.

3.13.3 Baseline Conditions

A desk-based analysis confirms that based on the Scoping Layout, there are a number of dwellings potentially within 10 rotor diameters of the Proposed Development.

3.13.4 Potential Significant Effects

There is potential for significant effects of shadow flicker under certain combinations of geographical position, times of day and year, where the sun may pass behind a turbine rotor and cast a shadow over the window(s) of neighbouring buildings, which as the blades rotate causes the shadow to appear to flick on and off.

No formal guidance is available regarding what levels of shadow flicker may be considered acceptable in the UK. However, guidance from Northern Ireland¹⁶⁸ 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.*"

Based on the above and taking into account Scottish guidance for onshore wind¹⁶⁷ the EIAR assessment will consider, as a conservative approach, that shadow flicker should not exceed 30 hours per year or 30 minutes per day at all residential receptors within 10 rotor diameters of the Proposed Development.

Where moving shadows are cast over the ground, rather than through the windows of a building, this is known as 'shadow throw'. There are no guidelines to quantify the effect and no requirement to assess 'shadow throw'. Therefore, 'shadow throw' will not be considered in the assessment.

¹⁶⁷ Scottish Government. Web Based Renewables Advice 'Onshore Wind Turbines'. Scottish Government. [Online] 2014. <http://www.gov.scot/Topics/Built-Environment/planning/Policy/SubjectPolicies/Utilities/Delivering-heat-electricity/renewables-advice>. [accessed July 2023]

¹⁶⁸ Department of the Environment, Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy', 2009

3.13.5 Assessment Methodology

Proprietary software (either Resoft WindFarm or WindPro) will be used to identify the potential receptors susceptible to shadow flicker based on the turbine dimensions and orientations. Following this, a site survey will be undertaken to confirm the presence and use of buildings identified from desktop survey, identifying the presence of any new buildings that were not identified through the desk-based assessment. The survey will confirm the orientation of the buildings, the location of windows and the location of any features that may act to screen the buildings from shadow flicker.

Following the site visit shadow flicker modelling will be undertaken to provide details on the predicted frequency of occurrence of shadow flicker at each window location.

As noted above, there is no standard for the assessment of shadow flicker in Scotland and there are no guidelines with which to quantify what exposure levels would represent a significant versus not significant effect. In the absence of specific guidelines, the assessment will consider the guidance from Northern Ireland¹⁶⁸ which recommends that *"shadow flicker at neighbouring offices and dwellings within 500m should not exceed 30 hours per year or 30 minutes per day"*. For the purposes of this assessment, all residential properties within 10 rotor diameters of the turbine locations would be considered against this criterion, with properties meeting this criterion considered to be subject to significant effects.

Cumulative Impacts

A review of cumulative developments will 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 will be assessed accordingly in line with the methodology set out above.

3.14 Glint and Glare

3.14.1 Overview

Solar PV panels are designed to absorb light however no solar panel is 100% efficient. As such, solar panels reflect sunlight to varying degrees. Glint and glare arise from reflection of this light. Glint refers to a momentary flash of bright light which is witnessed by moderate to fast moving receptors whereas glare refers to a continuous source of bright light which is witnessed by a static or slow-moving receptors. Combined these are referred to as reflections. Guidance¹⁶⁹ states that there are four common types of receptors that can be significantly affected by glint and glare. These include:

- aviation infrastructure (including pilots and air traffic controllers);
- rail infrastructure (including train drivers);
- road users on surrounding roads, and
- residents in surrounding dwellings.

Impacts to aviation, rail and road infrastructure relate to safety while impacts to residents relate to residential amenity.

3.14.2 Study Area

Guidance¹⁷⁰ provides study areas for each of the four common receptors mentioned above. The study area for each receptor will be taken as follows:

¹⁶⁹ Pager Power, Solar Photovoltaic and Building Development – Glint and Glare Guidance (Fourth Edition), 2022

¹⁷⁰ *ibid.*

- dwellings within approximately 1 km of a proposed development that may have a view of the solar panels;
- national roads (i.e. UK A roads or motorways), or those with greater significance, within approximately 1 km of a proposed development that may have a view of the solar panels;
- railway lines within approximately 100 m of a proposed development that may have a view of the solar panels (train drivers, signals, crossings or vital railway infrastructure within 500 m of the solar panels); and
- aviation receptors out to 30 km from a proposed development.

3.14.3 Baseline Conditions

A desk-based analysis of the scoping layout confirms that a number of dwellings are located within 1 km of the indicative solar PV area, as is the M74 motorway, the A702 and B7078 roads. One railway line is located approximately 340 m east of the indicative solar PV area.

As described in section 3.10.3, there are no licensed or certificated aerodromes within 30 km radius of the Site; however, an unlicensed airstrip is located at Stonehill, 6.5 km south west of the Site. The Site is located within a specialist military low flying area, which may be activated for daytime Operational Low Flying down to heights of 100 feet above ground level (agl).

3.14.4 Potential Significant Effects

There is potential for significant effects from glint and glare where the sun may reflect off the solar PV panels and cause reflections that impact aviation, rail, road and residential receptors. The level that determines significance varies for each receptor type; however, the general criteria for glint and glare effects as presented in the Guidance¹⁷¹ are as follows:

- No impact – A solar reflection is not geometrically possible or will not be visible from the assessed receptor. No mitigation required;
- Low – A solar reflection is geometrically possible however any impact is considered to be small such that mitigation is not recommended e.g. intervening screening will limit the view of the reflecting solar panels significantly or the glare time per year is considered negligible. No mitigation recommended;
- Moderate – A solar reflection is geometrically possible and visible; however, it occurs under conditions that do not represent a worst-case scenario e.g. a solar reflection originates from a less sensitive location. Mitigation recommended; and
- High – A solar reflection is geometrically possible and visible under conditions that will produce a significant impact. Mitigation will be required if the proposed development is to proceed.

In EIA terms, it is considered that only effects determined as being high would constitute a significant effect.

3.14.5 Assessment Methodology

The proposed methodology for assessing glint and glare is as follows:

- define receptors and specific locations of receptors to be assessed in the geometric model: Receptors subject to potential reflection will be identified in line with the study areas listed in section 3.14.2. Following the identification of potential receptors, an appropriate location associated with that receptor will be selected for the assessment;

¹⁷¹ *ibid.*

- define the solar PV layout and specifications to be used to input in the geometric model: Determine the area and location of the solar PV to be used in the model input. Define the specification of the solar PV to be used in the model input;
- Run the geometric model: Once the receptors have been determined and the model inputs defined, the model will be run to determine whether the receptors are subject to reflection from the solar PV;
- determine whether existing screening reduces/ removes reflection: If the model shows a receptor will be affected by reflection from the solar PV existing screening will be checked to determine whether this reduces the amount of reflection on the receptor;
- determine whether remaining reflection presents a significant risk to safety, and
- if required, consider potential mitigation options such as additional screening to further reduce/ remove reflections.

4. TOPICS SCOPED OUT OF THE ASSESSMENT

4.1 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, visual amenity and shadow flicker. No other sources or pathways for effects on human health have been identified.

The potential for likely significant effects on "population" will be considered through the socio-economics, recreation and tourism assessment (as described above).

As such a separate human health impact assessment chapter will therefore not be presented in the EIAR.

Appropriate control measure to ensure potential effects on air and water quality are managed appropriately in the construction phase will be addressed through an outline CEMP included as a Technical Appendix to the EIAR.

4.2 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 2015¹⁷². 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.

4.3 Ice Throw

Standard mitigation for the risk of ice throw comprises off-site monitoring to enable the deactivation of turbines on sensing ice accumulation, as well as physical and visual warnings for both site personnel and third parties.

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

4.4 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 will 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.

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 appended to the EIAR.

¹⁷² Available at: <https://www.legislation.gov.uk/ukxi/2015/51/contents/made> [accessed July 2023].

The contributions of exhaust emissions (NO₂ and PM₁₀) from construction vehicles would likely be low, and orders of magnitude below current UK Air Quality Strategy Objectives¹⁷³.

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.

4.5 Climate Change

The Proposed Development itself will contribute to climate change mitigation through the production of renewable energy and a corresponding reduction in carbon emissions from other more carbon intensive generation sources.

However, it is acknowledged that the Proposed Development will still give rise to carbon emissions associated with its construction. Accordingly, a Carbon Balance assessment 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 Tool¹⁷⁴. 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 methodology¹⁷⁵ and will present the carbon emissions associated with 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).

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). Appropriate design mitigation measures will be implemented as necessary.

4.6 Eskdalemuir Seismic Array

The turbine positions identified within the Scoping Layout for the Proposed Development lie between approximately 41 km and 45 km from the Eskdalemuir Seismic Array (EKA) and as such operation 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 scoped out of the EIA.

A technical report demonstrating the anticipated performance of the Proposed Development in relation to the EKA will be provided as part of the EIA Report.

¹⁷³ Available at https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update_20230403.pdf [Accessed August 2023]

¹⁷⁴ Available at <http://informatics.sepa.org.uk/CarbonCalculator/> [Accessed July 2020]

¹⁷⁵ 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 July 2023]

5. 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 various organisations 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.	Candidate Turbine Type	Easting (X)	Northing (Y)
1	Siemens SG 6.6-155 122.5mHH	289226	628279
2	Siemens SG 6.6-155 122.5mHH	289657	628017
3	Siemens SG 6.6-155 122.5mHH	289999	627722
4	Siemens SG 6.6-155 122.5mHH	288602	627840
5	Siemens SG 6.6-155 122.5mHH	289004	627578
6	Siemens SG 6.6-155 122.5mHH	289398	627296
7	Siemens SG 6.6-155 122.5mHH	289907	627124
8	Siemens SG 6.6-155 122.5mHH	290499	627083
9	Siemens SG 6.6-155 122.5mHH	290953	627010
10	Siemens SG 6.6-155 122.5mHH	287981	627375
11	Siemens SG 6.6-155 122.5mHH	288382	627085
12	Siemens SG 6.6-155 122.5mHH	288776	626791
13	Siemens SG 6.6-155 122.5mHH	289269	626527
14	Siemens SG 6.6-155 122.5mHH	289725	626304
15	Siemens SG 6.6-155 122.5mHH	290344	626236
16	Siemens SG 6.6-155 122.5mHH	290911	626253
17	Siemens SG 6.6-155 122.5mHH	291303	626043
18	Siemens SG 6.6-155 122.5mHH	287610	626680
19	Siemens SG 6.6-155 122.5mHH	288002	626375
20	Siemens SG 6.6-155 122.5mHH	288535	626071
21	Siemens SG 6.6-155 122.5mHH	289292	625687
22	Siemens SG 6.6-155 122.5mHH	289930	625632
23	Siemens SG 6.6-155 122.5mHH	289398	625188
24	Siemens SG 6.6-155 122.5mHH	290102	625164