Environmental Impact Assessment Scoping Report

West Scales Energy Park

West Scales Windfarm Limited
58 Morrison Street, Edinburgh, Midlothian, Scotland EH3 8BP

Prepared by:

SLR Consulting Limited

Office 6.01, Clockwise Offices, Savoy Tower, 77
Renfrew Street, Glasgow, G2 3BZ

SLR Project No.: 428.013321.00001

19 March 2025

Revision: 01

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	19 March 2025	E Quinn	A Smith	

Basis of Report

This document has been prepared by SLR Consulting Limited (SLR) with reasonable skill, care and diligence, and taking account of the timescales and resources devoted to it by agreement with West Scales Windfarm Limited (the Client) as part or all of the services it has been appointed by the Client to carry out. It is subject to the terms and conditions of that appointment.

SLR shall not be liable for the use of or reliance on any information, advice, recommendations and opinions in this document for any purpose by any person other than the Client. Reliance may be granted to a third party only in the event that SLR and the third party have executed a reliance agreement or collateral warranty.

Information reported herein may be based on the interpretation of public domain data collected by SLR, and/or information supplied by the Client and/or its other advisors and associates. These data have been accepted in good faith as being accurate and valid.

The copyright and intellectual property in all drawings, reports, specifications, bills of quantities, calculations and other information set out in this report remain vested in SLR unless the terms of appointment state otherwise.

This document may contain information of a specialised and/or highly technical nature and the Client is advised to seek clarification on any elements which may be unclear to it.

Information, advice, recommendations and opinions in this document should only be relied upon in the context of the whole document and any documents referenced explicitly herein and should then only be used within the context of the appointment.

Table of Contents

Appendices

Acronyms and Abbreviations

AIL	Abnormal Indivisible Load
AOD	Above Ordnance Datum
AWI	Ancient Woodland Inventory
BES	Biodiversity Enhancement Strategy
BESS	Battery Energy Storage System
BGS	British Geological Survey
BoCC	Birds of Conservation Concern
CEMP	Construction Environment Management Plan
CRM	Collision Risk Modelling
CTMP	Construction Traffic Management Plan
DAS	Design and Access Statement
DRP	Decommission and Restoration Plan
D&GC	Dumfries and Galloway Council
ECU	Energy Consents Unit
EIA	Environmental Impact Assessment
EWE	Eurowind Energy Limited
GDL	Gardens and Designed Landscapes
GIS	Geographic Information System
HGV	Heavy Goods Vehicle
HMP	Habitat Management Plan
IEMA	Institute of Environmental Management and Assessment
LCT	Landscape Character Type
LDP	Local Development Plan
LLA	Local Landscape Area
LVIA	Landscape and Visual Impact Assessment
MBBS	Moorland Breeding Bird Survey
MW	Megawatt
MWh	Megawatt Hour
NCI	Nature Conservation Importance
NHZ	Natural Heritage Zone
NSA	National Scenic Area
NPF4	National Planning Framework 4
OS	Ordnance Survey
PV	Photovoltaic
RLB	Red Line Boundary
RSPB	Royal Society for the Protection of Birds

SAC	Special Area of Conservation
SLR	SLR Consulting Limited
SLA	Special Landscape Area
SM	Scheduled Monument
SNH	Scottish Natural Heritage (now NatureScot)
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
VP	Vantage Point
WLA	Wild Land Area
ZTV	Zone of Theoretical Visibility

1.0 Introduction

1.1 Overview

West Scales Windfarm Limited (the applicant), a wholly owned entity of Eurowind Energy Limited, intends to apply to Dumfries and Galloway Council (D&GC) for planning permission to develop and operate a renewable energy development, on land (The Site) at West Scales Farm, approximately 3km west of Gretna, Dumfries and Galloway. The Site is located entirely within the administrative boundary of D&GC and is centred, approximately, on National Grid Reference (NGR) NY 26918 67706 (**Figure 1** – **Appendix 01**).

It is anticipated that the proposed renewable energy development would comprise up to four wind turbines (up to 230m blade tip height), a Solar Photovoltaic (PV) array covering up to 44ha, and potentially a Battery Energy Storage System (BESS). Associated infrastructure including internal transformers, crane hardstandings, upgraded and new access tracks, cabling, borrow pits and a single substation with control building would be included as part of the proposed renewable energy development. The proposed development would be called West Scales Energy Park, and is from here on referred to as 'the proposed development'.

It is the intention to submit an application for planning permission under the Town and Country Planning (Scotland) Act 1997 (as amended). It is anticipated that the proposed development would have a generation capacity exceeding 20MW but less than 50MW and therefore would be classed as a Major development[1] under the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009.

SLR Consulting Limited (SLR) has been appointed to undertake an Environmental Impact Assessment (EIA) Scoping study and prepare this Scoping Report to accompany a request to D&GC to adopt a Scoping Opinion under Regulation 17 of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).

The findings of the EIA process will be used to inform the final design of the proposed development and assess its predicted environmental effects. The results of the EIA will be presented in an EIA Report that will be submitted with the planning application made to D&GC.

1.2 Purpose of Scoping Report

Undertaking an EIA Scoping Study is regarded as good practice[2] and is considered to be an important step in EIA as it allows all parties involved in the process to agree on key environmental issues relevant to the proposed development and to agree on the methodology used for their assessment. The scoping stage seeks to engage the determining authority (in this case the Local Planning Authority – D&GC) and other stakeholders at an early stage in the planning process; and ensures that key considerations, based on local understanding, are identified.

The specific aims of this Scoping Report are to:

- Identify the technical subject areas that may be subject to significant environmental effects as a result of the proposed development proceeding, and which therefore require further study;

[1] Regulation 2(1) – 4 Electricity Generation of the Schedule Major Developments, Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009

[2] Scottish Natural Heritage (SNH) and Historic Environment Scotland (HES) (2018) Environmental Impact Assessment Handbook Version 5

- Identify the technical subject areas that are unlikely to be subject to significant environmental effects and can be scoped out from further study;
- Provide a basis for the consultation process to agree the scope and content of the EIA with the Local Planning Authority;
- Provide a basis for agreeing methodologies for undertaking required studies with the Local Planning Authority, based upon currently available baseline data, site characteristics and best practice in individual technical disciplines; and
- Provide all statutory consultees and stakeholders with an opportunity to comment on the proposed development at an early stage.

In making its formal Scoping Opinion, under Regulation 17(4)(a) of the EIA Regulations, the Local Planning Authority must consult with a number of consultees and incorporate their views within the Scoping Opinion.

Upon receipt of the Scoping Opinion, the applicant will continue the EIA process that will lead to the preparation of an EIA Report, paying due cognisance to the findings and responses received.

1.3 Notice of Intention

The applicant, Eurowind Energy Limited, hereby gives D&GC notice in writing that it intends to make a planning application (as detailed above), and to accompany such an application with an EIA Report.

This notice, made pursuant to Regulation 17 of the EIA Regulations, includes information necessary to identify the location, the nature and purpose of the proposed development, and indicates the main environmental consequences to which the prospective applicant proposes to refer to in its EIA.

1.4 The Applicant

West Scales Windfarm Limited (the applicant) is a wholly owned entity of Eurowind Energy Limited. Eurowind Energy Limited is one of Europe's leading renewable energy companies. With a head office in Hobro, Denmark, EWE employs approximately 640 staff across 16 countries. EWE is 50% owned by Holdings Aps and 50% by Norlys. Norlys is Denmark's largest integrated energy and telecom group with more than 700,000 shareholders and 2,500 employees.

Eurowind Energy Limited develop, construct, and operate wind, solar photovoltaic and 'Power to X' assets across Europe and in the USA. As of November 2024, Eurowind Energy Limited owned 1,050MW of operational renewable assets and held under asset management a portfolio of 2,200MW. The Company has a growing development pipeline of 28,000MW which is anticipated to deliver over 320MW per year into ownership and 580MW into asset management over the next few years. Currently the business is adding one new Country per year to its development business and is on target to meet a 2025 target of 2,000 operational MW in ownership and 4,000MW in asset management.

Eurowind Energy Limited employs an experienced UK team based in Glasgow that was established in 2021. Eurowind Energy Limited UK has one operational wind farm and one consented 16MW solar farm at Howpark, in the Scottish Borders and a growing development portfolio of over 1GW (including the Uisenis Wind Farm (Isle of Lewis) application to the Energy Consents Unit in 2023).

1.5 SLR Consulting Limited

SLR is a Registered Environmental Impact Assessor and Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the EIA Quality Mark (http://www.iema.net/qmark). SLR is also a member of the Association of Geotechnical and

Geoenvironmental Specialists, and a Landscape Institute (LI) Registered Practice.

The company has significant experience and expertise in the preparation of planning applications and undertaking EIA for a wide variety of projects. SLR's environmental specialists have the skills and relevant competency, expertise and qualifications to undertake EIA for the proposed development.

Further information on SLR can be found on its corporate website at www.slrconsulting.com

1.6 Project Team

SLR have been commissioned by Eurowind Energy Limited to undertake EIA Scoping for the proposed development, with input from the following specialist consultants:

- 'Ecology Consulting Limited' in relation to Ornithology;
- 'BIGGAR Economics Limited' in relation to Socio-economic, Recreation, Tourism and Land Use; and
- 'Wind Farm Aviation Safeguarding Limited' in relation to Aviation.

1.7 Report Structure

Following this introductory section, the remainder of this Scoping Report comprises the following sections:

- Section 2.0: Site and Surroundings:
  - describes the location, setting and physical characteristics of the Site and describes baseline features in and around the Site;
- Section 3.0: Proposed Development:
  - provides an outline of the proposed development;
- Section 4.0: Scoping the EIA:
  - provides detail on the approach to scoping the EIA, sets out the process of Scoping consultation and describes the specialist studies that will be undertaken to assess the impact of the proposed development on the environment, and a reasoning why certain aspects have been scoped out of the EIA;
- Section 5.0: Planning Policy and Guidance:
  - identifies the development plan and provides a list of policy and guidance to be considered;
- Section 6.0 – 14.0: Specialist environmental studies that are proposed to be undertaken:
  - describes the specialist environmental studies that are proposed to be undertaken, to assess the potential significant effects of the proposed development on the environment and where relevant notes those aspects to be scoped out of assessment;
- Section 15.0: Other Issues:

  - describes the other issues which have been considered during the preparation of this Scoping Report for which no standalone chapter is proposed in the EIA Report or which it is proposed to scope out of the EIA Report.

- Section 16.0: Schedule of Commitments:
  - summarises what information will be contained within the Schedule of Commitments Chapter of the EIA Report;
- Section 17.0: Invitation to Comment:
  - provides contact details for responding to or discussing any matters contained within this report in greater detail prior to responding to the scoping exercise.
- Section 18.0: Closure

2.0 Site and Surroundings

2.1 The Site

For the purposes of the Scoping Report, the area within the red line application boundary is defined as 'the Site' (see **Figure 1** and **Figure 2**). The Site is approximately 120ha in size.

The Site, centred on NGR NY 26918 67706, is located at West Scales Farm, immediately north of the A75 as it passes between Gretna in the east and Annan in the west. The Site is located wholly within the D&GC administrative area.

There are several small field drains that pass through the Site, however there are no streams or rivers. The topography of the Site is generally quite flat, with a gradual increase in above ordnance datum (AOD) height moving from the south the north of the Site (see **Figure 3**).

The Site is currently predominantly utilised for agriculture - both pastoral and arable. Some of the Site is comprised of native woodland (particularly in the south and the north west of the Site) and hedgerows.

With regards to agricultural land classification[3], the Site is made up of Class 3.1 ('Land capable of producing consistently high yields of a narrow range of crops and / or moderate yields of a wider range'), and Class 6.3 ('Land capable of use as rough grazings with low quality plants'). The bands of Class 6.3 soils are associated with the southern, western and northern extents of the Site. The bands of Class 3.1 soils are associated with the central part of the Site. See **Figure 4** for more detail.

There are no core paths within the Site.

There are no statutory environmental designations within the Site.

West Scales Cottage, West Scales Farm and Red Wood House, are currently located within the Site boundary. These properties are financially involved with the proposed development. **Figure 5** shows the nearby residential properties.

2.1.1 Planning History

A planning application (Reference number: 14/P/4/0538) for a wind farm comprising five wind turbines up to 131m blade tip height, was submitted to D&GC in December 2014. This wind farm had a similar footprint to the West Scales Energy Park proposed development.

The planning application (Reference number: 14/P/4/0538) was withdrawn in November 2015, with the applicant (Airvolution Energy Limited) stating the decision was being taken following *"recent government announcements and the uncertainty relating to the current Energy Bill"*.

2.2 The Site Surrounding Area

The Site is located approximately 1km north east of the settlement of Eastriggs, approximately 3km west of Gretna, approximately 5km east of Annan, and approximately 2km south of Kirkpatrick-Fleming.

There are several residential properties within 1km of the Site (in all directions), the closest being West Scales Bungalow, immediately east of the Site boundary. West Scales Bungalow is financially involved with the proposed development. See **Figure 5**.

[3] Scotland's Soils (2024): https://soils.environment.gov.scot/maps/capability-maps/national-scale-land-capability-for-agriculture/

The Scotland – England Border is located approximately 5km to the east of the Site at its nearest point on land, and approximately 2km to the south east at its nearest point at sea (the Solway Firth). Cumberland Council is the nearest English local authority to the Site. See **Figure 6** for more detail.

Nutberry Moss Peat Works is located to the immediate north and west of the Site, where peat extraction works have been ongoing for many years. The Nutberry Moss Peat Works was refused planning permission in 2021, to extend its operating lifetime from 23 November 2024 to 23 November 2029 (planning reference number: 20/0660/S42). Therefore, it is assumed that peat extraction work has now ceased. See **Figure 7** for more detail.

The A75 passes immediately south of the Site, on an east-west alignment between Gretna in the east and Annan in the west. The railway line between Annan and Gretna Green stations passes on a similar alignment to the A75, approximately 320m to the south of the Site at its nearest point. See **Figure 7** for more detail.

There are two rivers, to the east and west of the Site, in relatively close proximity. These are the Kirtle Water and the Dornock Burn. The Kirtle Water runs north east to south east and is located approximately 1.5km north east of the Site at its closest point. The watercourse has an overall 'Poor' SEPA classification[4] and discharges into the Solway Firth via the River Esk near Redkirk. The Dornock Burn is a heavily-modified watercourse flowing approximately 1km west of the Site at its closest point. The watercourse has an overall 'Moderate' SEPA classification and also discharges into the Solway Firth.

There are no core paths in close proximity to the Site (within 1km). 'Browhouses to Redkirk point' core path (GRET/248/1) is the closest core path to the Site and is located approximately 2km to the south east. The majority of other core paths within 5km of the Site are located east around Gretna, and west around Eastriggs and Annan.

The former Chapelcross Nuclear Power Station (currently undergoing decommissioning) lies approximately 4.5km north west of the Site. A masterplan to turn the site into a 'green energy hub' has been proposed by the Nuclear Decommissioning Authority, and Nuclear Restoration Services[5]. See **Figure 7** for more detail.

A large-scale former MoD munitions factory (HM Factory, Gretna), and subsequently a munitions storage depot (munitions storage ceased in 2010) is located approximately 1.5km south of the Site. The area is now utilised for storage of rolling stock from the nearby railway line. See **Figure 7** for more detail.

The Site is located approximately 38km from the Eskdalemuir Seismic Array, and as such is within the 50km consultation zone for that facility. See **Figure 8** for more detail.

Ofcom's 'Spectrum Information Portal' indicates that there is one fixed telecommunication links within 500m of the Site. See **Figure 9** for more detail.

Scottish Ministers, in July 2024, made a statutory proposal to establish a new National Park in the Galloway area. Public consultation on the proposals was launched in November 2024 and will run until mid-February 2025. NatureScot are due to submit and publish a report on their findings and recommendations to Scottish Ministers, by the end of April 2025.

Landscape designations out to 45km are shown on **Figure 17**. The Landscape designations within 20km are as follows:

[4] SEPA Water Environment Hub: https://informatics.sepa.org.uk/WaterClassificationHub/

[5] Nuclear Decommissioning Authority, and Nuclear Restoration Services (2024): https://www.gov.uk/government/news/masterplan-released-for-chapelcross-green-energy-hub

- Solway Coast Area of Outstanding Natural Beauty (AoNB), located approximately 3km south east of the Site at its nearest point. This is an England-specific designation;
- Kinmount Garden and Designed Landscape (GDL), located approximately 10km west of the Site at its nearest point;
- Solway Coast Regional Scenic Area (RSA), located approximately 11km west of the Site at its nearest point;
- Langholm Hills RSA, located approximately 14km north east of the Site at its nearest point;
- Nith Estuary National Scenic Area (NSA), located approximately 15.5km west of the Site at its nearest point;
- Torthorwald Ridge RSA, located approximately 16km north west of the Site at its nearest point;
- Rickerby Park Registered Park and Garden (RP&G), located approximately 16km south east of the Site at its nearest point;
- Dalston Road Cemetery RP&G, located approximately 17km south east of the Site at its nearest point;

Within 10km of the proposed development turbines there are a total of 483 designated cultural heritage assets. In total, this is comprised of one World Heritage Site, 429 Listed Buildings, 53 Scheduled Monuments, and one Conservation Area. **Figure 21** shows cultural heritage designations out to 10km.

There are six ecological (including ornithological) designations within 5km of the Site. **Figure 19** shows ecological designations out to 10km. The designations within 5km of the Site are as follows:

- Upper Solway Flats and Marshes Site of Special Scientific Interest (SSSI), located approximately 2km south of the Site at its nearest point;
- Solway Firth Special Protection Area (SPA), located approximately 2km south of the Site at its nearest point;
- Solway Firth Special Area of Conservation (SAC), located approximately 2km south of the Site at its nearest point;
- Upper Solway Flats and Marshes Ramsar, located approximately 2km south of the Site at its nearest point; and
- Raeburn Flow SSSI, located approximately 3km north east of the Site; and
- Raeburn Flow SAC, located approximately 3km north east of the Site.

2.3 Cumulative Context

Table 2-1 details the ‘operational’, ‘consented’, and ‘in planning’ wind farms within 15km of the Site.

Table 2-1: Cumulative Wind Farm Development

Wind Farm Name	Status	Specifications
Beck Burn	Operational	9 turbines up to 126.5m blade tip height
Hallburn	Operational	6 turbines up to 126.5m blade tip height
Sollwaybank	Operational	15 turbines up to 126.5m blade tip height
Minsca	Operational	16 turbines up to 120m blade tip height
Todhills Blackford	Operational	1 turbine up to 67.5m blade tip height
Tempest Tower	Operational	1 turbine up to 54.7m blade tip height
Midtown Farm	Operational	1 turbine up to 74m blade tip height
Bloch	In Planning	21 turbines up to 230m blade tip height
Callisterhall	In Planning	7 turbines up to 200m blade tip height

Table 2-2 details the ‘operational’, ‘consented’ and ‘in planning’ solar farms within 10km of the Site.

Table 2-2: Cumulative Solar Farm Development

Solar Farm	Status	Specifications
Jockstown Solar Farm	Consented	37.9MW

Cumulative wind farm sites and solar farm site, out to 45km and 10km respectively, in relation to the proposed development are shown on **Figure 14**.

3.0 Proposed Development

3.1 Design Considerations

Some early stage design work has been undertaken for the proposed development. This initial design work has focused largely on the following constraints: watercourses; woodland; topography; and required turbine separation distances. Some early consideration of landscape and visual context, and cultural heritage assets, has also been undertaken. The final design that will be presented in the EIA Report will be informed by ongoing design studies, stakeholder feedback as well as ongoing baseline data collection.

Figure 10 shows the watercourses, woodland, nearby residential properties, and topography.

3.2 Scoping Layout

Taking into account the constraints outlined in Section 3.1, the current proposed layout comprises four turbines of up to 230m to tip height, and a potential 'developable area' for a solar PV array (see **Figure 11**). It is not currently known where the onsite substation compound, including the battery storage units will be located.

The design objectives for the Site will be refined and used to evaluate further layout iterations which will continue to take account of a range of environmental and technical considerations where feasible, to create a final optimised layout.

It is not expected that a new layout (within the current Site boundary) would alter the scope of, or approach to the EIA and therefore the scoping process is taking place in parallel to the design review (we would welcome the design input of D&GC via the EIA Scoping Opinion and potential post Scoping design meetings). The design optimisation and iteration process from initial feasibility through to the final design will be reported and illustrated in the EIA Report and Design and Access Statement (DAS).

3.3 Proposed Development

It is currently anticipated that the proposed development would consist of up to four wind turbines with a blade tip height of up to 230m, and a solar PV array covering up to 44ha (see **Figure 11**). The incorporation of BESS into the proposed development is also being considered, however a location within the Site for this technology has yet to be identified. The associated infrastructure would include the following components:

- Up to four wind turbines (up to 230m to blade tip height);
- Bi-facial solar photovoltaic (PV) panels mounted on metal frames, covering up to 44ha;
- A network of onsite access tracks and drainage;
- Crane hardstandings adjacent to each turbine;
- Foundations supporting each turbine;
- Power cables linking the turbines and solar PV panels, laid in trenches underground;
- One permanent and one temporary anemometry mast;
- Up to two borrow pit search areas;
- A substation compound including a control building (potentially include BESS); and
- Up to two temporary site construction compounds.

The BESS being considered for the Site would be for load shifting rather than for import / export to the grid.

Table 3-1 shows the current proposed turbine coordinates for the layout shown in **Figure 11** (please note these coordinates are based on the current layout which will be refined through the EIA process).

Table 3-1: Scoping Layout Turbine Coordinates

Turbine ID	Easting	Northing	Tip Height
1	326889	568053	230m
2	326954	567397	230m
3	326521	567485	230m
4	326302	568010	230m

Based upon the proposed maximum turbine tip height, it is anticipated that the installed nominal capacity of each turbine will be approximately 7.2MW, giving a total generation capacity from the wind farm element of the proposed development of up to 28.8MW. The estimated generation capacity from the solar PV farm element of the proposed development would be up to 20MW. The combined total generation capacity of the proposed development is therefore expected to be up to 48.8MW.

Based on conservative estimates, it is anticipated that the proposed development would produce approximately 187,500MWh of renewable electricity per annum (based on a site specific capacity factor of 40% for wind and 10% for solar), sufficient to meet the needs equivalent to approximately 57,000 UK homes[6] and offset approximately 81,500 tonnes of CO_2 per annum[6].

3.3.1 Wind Turbines

A candidate wind turbine manufacturer and 'maximum parameter' model would be selected for each technical and environmental discipline for the purposes of the EIA. A competitive procurement process would be undertaken, should consent be forthcoming and prior to construction, to select the turbine that would be installed onsite, within the maximum assessed parameters.

The specification of the wind turbine would be a typical horizontal axis design, comprising of three rotor blades, a hub and a nacelle. The tower would be tubular and tapered in design and finished in a light grey semi-matt colour. Each wind turbine would be served by its own electrical transformer.

3.3.2 Solar PV Array

It is anticipated that the indicative solar PV area (shown on **Figure 11**) could accommodate up to 50,000 tracking solar PV panels/modules set out in rows (known as strings), and ground mounted up to 4.5m above ground level (at their most vertical).

The solar PV array would be comprised of the following main components:

- Solar PV Pannels (up to 50,000);
- Inverters placed at the end of the solar PV strings as required;
- String combiner boxes to combine multiple strings of solar PV panels;

[6] https://www.renewableuk.com/energypulse/ukwed/

- Transformer stations adjacent to the solar PV array; and
- Underground and cable tray cabling to connect the solar PV panels, inverters and transformers to the onsite substation compound.

There would be up to approximately 50,000 tracking solar PV panels/modules across the Site which would reach approximately 4.5m above ground level at their most vertical edge, at peak tracker rotation only. Normal operating height would be in the range of 3m-3.5m above ground level at their most vertical edge for the majority of the day.

There would be gaps of approximately 3-6m between each solar PV row depending on topography.

There would be minimal disturbance to the ground as a result of the installing of the solar PV panels. The solar panels would be mounted on a frame made of galvanized steel or aluminium, which would be fixed into the ground by posts centred up to 6m apart. Each string of panels would be mounted on a rack comprising metal poles anchored to the ground using pile driven foundations. The piling depth for solar panel frame support legs would be approximately up to 3m, although the actual depth required would depend on the ground conditions and weather speed and direction - as wind dictates the anticipated force on the panels.

The anticipated security measures for the solar PV array part of the proposed development include approximately 10 pole mounted CCTV cameras (3m height) and perimeter security fencing around the array and proposed transformers.

Fencing would likely comprise plain wire interior and barbed wire at height, interlinked with wooden batons (75 x 38 x1600mm) and end posts (150 x 150 x 2100mm). Vehicle access gates (approximately 4.5m x 1.5m) and a pedestrian access gate would allow entry into the Site.

It is not expected that permanent lighting would be included within the proposed development, and would only be required for infrequent operational maintenance at certain times of the year.

3.3.3 Battery Energy Storage System

Inclusion of a BESS is being considered as part of the proposed development. The BESS would comprise a number of containerised units (each with the appearance of a standard metal ISO/shipping container) to house the battery units. The batteries would most likely be Lithium-ion. The footprint of any potential battery storage is not confirmed at this stage, however, would likely be within the footprint of the wider substation compound.

The BESS being considered for the Site would be for load shifting rather than for import / export to the grid.

3.3.4 Cabling, Substation and Grid Connection

The wind turbines will be linked to an onsite substation via high voltage underground cables placed in trenches which would generally follow the route of the onsite tracks (dimensions to be determined by the ground conditions but typically 0.5m x 1m deep). Where trenching alongside onsite tracks is not feasible, the turbines would connect to the substation via underground cables across open ground with electrical marker posts used to identify their locations. The underground cables routed from the base of the wind turbines would be brought together via a substation at a location still to be determined. The detailed construction methods, layout of cables and contents of the onsite substation compound would be provided within the outline Construction Environmental Management Plan (CEMP) which would form part of the EIA Report.

The precise route of cabling from the onsite substation to the national grid connection point has not yet been determined and would be subject to a separate application, and therefore is outwith the remit of this Scoping Report.

3.3.5 Access

The Site is currently accessed via West Scales Farm and via a gated access from the A75. The A75 is a trunk road and hence under the control of Transport Scotland but the other roads around the proposed development are under the control of D&GC.

A previous planning application for five wind turbines on the Site (14/P/4/0538), which was withdrawn prior to determination, envisaged that the existing access to the Site from the A75 would be improved to meet then-current design standards and used as an access to that proposed development. The junction was envisaged as a 'left-in, left-out' arrangement and Transport Scotland had no objection to that proposal, subject to conditions.

This access was to be used only during construction and one of Transport Scotland's suggested conditions was that the access was to be closed following completion of the construction of the development. All vehicle access to the development thereafter was to be taken from the local road network.

The left-in, left-out arrangement meant that vehicles approaching the development from the east would have had to drive past the development, leave the A75 at its junction with the B6357, then use the C43A road to rejoin the A75 heading eastwards. Vehicles wishing to leave the development and head to the west would have had to initially leave the development heading eastwards along the A75, then leave the A75 at its junction with the B7076 to rejoin the A75 heading westwards. These routes are shown in **Figure 12**.

It is currently anticipated that vehicles to and from the proposed development (other than those Abnormal Indivisible Load Vehicles (AILVs) delivering components) would use the same arrangements as described above. Hence the proposed development is currently expected to include a left in, left out access onto the A75 in the vicinity of the existing access.

Movements of AILVs would be required to deliver some of the turbine components and potentially some of the BESS components. The port at which these components would arrive in the UK is not yet known, but the following ports are being considered:

- King George V Dock, Glasgow;
- Port of Liverpool;
- Port of Blyth; and
- Cairnryan, near Stranraer.

An Abnormal Load Route Assessment (ALRA) will be undertaken to inform the EIA Report. Should AILVs need to approach the Site from the east along the A75, then it is expected that they would be permitted to turn right from the A75 directly into the Site and would not be required to route as shown in **Figure 12**.

Access to the Site once operational would be from the local road network and the access from the A75 would revert to use by agricultural vehicles only. The access from the A75 would, however, be used by any AILVs that were required to deliver replacement components during the operation of the proposed development.

3.4 Construction Works

The duration of construction works would be approximately 16 months.

3.5 Energy Park Lifecycle and Decommissioning

It is anticipated that the proposed development would have an operational life of up to 40 years. At the end of the operational life, the proposed development would be decommissioned, or an application may be submitted to extend the life of the energy park or to repower the Site. The decommissioning period would take up to a year.

The ultimate decommissioning approach would be agreed with the planning authority and other appropriate regulatory authorities in line with best practice guidance and requirements of time. This would be done through the preparation and agreement of a Decommissioning and Restoration Plan (DRP). Financial provision for the decommissioning would be provided for. Over the period of operation of the energy park it is recognised that there are likely to be changes in legislation and guidance, environmental designations, the status / condition of sensitive environmental receptors and stakeholder objectives that may affect decommissioning and restoration methodologies. The detailed DRP would reflect the scientific ideas and best practice current at the time of decommissioning and restoration.

With this in mind, it is anticipated that the potential effects associated with the construction phase of the proposed development can be considered to be representative of reasonable worst-case decommissioning effects. Therefore, no separate assessment of decommissioning effects is proposed in the EIA Report.

4.0 Scoping the EIA

The EIA Directive (2014/52/EU) was transposed into the current EIA Regulations[7] on 16 May 2017. The EIA will be undertaken in accordance with the EIA Regulations, Circular 01/2017 (Scottish Government, 2017)[8], the best practice guidelines of the Institute of Environmental Management and Assessment (Guidelines for Environmental Impact Assessment) published in 2004 and the Scottish Natural Heritage (SNH) (now NatureScot) handbook on EIA 2018[9].

The principal purpose of the EIA will be to assess in a systematic manner the potential significant environmental effects of the proposed development. Throughout the process of undertaking the EIA, the results obtained will be used in an iterative manner to influence the design of the proposed development, in order that any significant, detrimental environmental effects can be designed out (embedded mitigation), minimised or negated completely through the careful design and approach to mitigation.

4.1 Approach to Scoping

This Scoping Study has been based upon both site survey and desk-based work.

The desk-based appraisal includes consideration of datasets from a variety of sources including Ordnance Survey (OS) mapping, the Development Plan, information on the proposed development supplied by Eurowind Energy Limited, and application documents (including environmental assessments) submitted for nearby wind farm schemes. The desk-based appraisal has been complemented by the use of Geographic Information System (GIS) technology to collate and identify potential environmental receptors and environmental designations that may be affected by the proposed development. The GIS datasets comprise details of ecologically important sites, sites of archaeological and / or cultural heritage importance, landscape designations and other important receptors (houses, watercourses etc). The potential receptors and designated sites that have been identified are shown on **Figures 3 to 9**, and **17, 19** and **21**.

The findings of desk-based and GIS work have been augmented by some Site reconnaissance and survey work, as well as discussion with some consultees. Site work has included nearly two years of bird surveys (ongoing until Spring 2025).

A programme of peat probing is set to commence in early 2025, in order to understand peat depths across the Site and to inform the Site design and the EIA.

Surveys for UKHab, National Vegetation Classification (NVC), bats, and protected mammals will commence in Spring 2025.

4.2 Potential Environmental Effects

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

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

[7] The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

[8] Planning Circular 1/2017: Environmental Impact Assessment regulations.

[9] Scottish Natural Heritage (now NatureScot), ‘Environmental Impact Assessment Handbook’, Version 5 (April 2018) - https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/environmental-impact-assessment

(3) The factors are —

(a) population and human health;

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

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

(d) material assets, cultural heritage and the landscape

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

Previous experience of other wind farm and solar farm development sites, combined with the EIA requirements, pre-scoping consultation, the knowledge of the Scoping Boundary Site and possible effects of the proposed development, has led to the identification of the following topics for consideration in the EIA. A summary of known baseline conditions of relevance, predicted effects, any outline mitigation measures that can be recommended at this stage and the proposed scope for the EIA is provided for each of the following topic areas in Chapters 6 to 15:

- Landscape and Visual;
- Ecology;
- Ornithology;
- Hydrology, Hydrogeology and Soils;
- Archaeology and Cultural Heritage;
- Noise and Vibration;
- Site Access, Traffic and Transport;
- Aviation;
- Socio-economics, Tourism, Recreation and Land Use; and
- Other Environmental Issues

For each topic that is identified as requiring further study, a detailed technical assessment will be carried out in accordance with the scope and methodology agreed with relevant consultees. Each technical assessment will be carried out by an appropriately qualified consultant to prevailing technical and professional standards and reported in a dedicated EIA Report Chapter.

The technical assessments will provide a detailed assessment of potential impacts, identification of mitigation measures and description of the significance of residual effects (those remaining after the mitigation measures have been implemented). The EIA will identify direct and indirect effects, positive (beneficial) and negative (adverse) effects, and seek to identify, as far as possible, the duration of such effects, whether short term, long term, permanent, temporary, periodic, etc. during the construction, operational and decommissioning phases of the proposed development. The results of each technical assessment will be reported in the EIA Report and will be accompanied by technical appendices and illustrative material where reasonable. A Non-Technical Summary (NTS) will be produced.

4.3 Consultation

Consultation is an important part of the EIA process and will be reported within the EIA Report and supporting documentation, including a Pre-Application Consultation (PAC) Report.

The applicant is committed to promoting dialogue with statutory and non-statutory consultees and local communities, seeking to engage with all those with an interest in the proposed development to provide transparency during the EIA process.

4.3.1 Scoping Consultation

This Scoping Report is issued to Dumfries and Galloway Council, who will then consult with key consultees and stakeholders before forming its Scoping Opinion. It is anticipated that the agencies and bodies to be consulted will include those listed in **Appendix 02**; this list is not exhaustive, and other agencies will be consulted during the EIA as and when required.

The purpose of the consultation is to identify:

- Key local issues and concerns;
- Issues of environmental importance that may be affected by the proposed development and need to be considered in an EIA;
- Existing information that will be of assistance in the assessment of the environmental effects; and
- The need for further consultation.

4.3.2 Public Consultation

In line with the Town and Country Planning (Pre-Application Consultation) (Scotland) Amendment Regulations 2021, a minimum of two rounds of ‘in-person’ public exhibitions will be held throughout 2025 (with a minimum of two weeks between each event).

The first exhibition will be an opportunity for the public to learn about the proposed development through information panels and visualisations. Discussion and feedback on the proposed development will be encouraged; and where received, will be taken into account in the development of the design and of the EIA. The second exhibition will provide the public with an update on progress and show the nearly finalised wind farm design, provide an update on the EIA, and further information on community benefits and submission timescales.

Initial informal discussion with the community councils and development trusts in the vicinity of the project will be undertaken.

5.0 Planning and Policy Guidance

The Town and Country Planning (Scotland) Act 1997 (the Act), as amended, requires that in determining applications for planning permission a Planning Authority must determine that application in accordance with the Development Plan, unless material considerations indicate otherwise. In the EIA Report, a planning policy chapter will set out the national and local policy context.

Furthermore, a Planning Statement will accompany the planning application and will consider the balance of effects of the proposed development as set out in the EIA, in the context of Development Plan policy and other material considerations.

5.1 The Development Plan

The proposed development lies wholly within the administrative area of Dumfries and Galloway Council.

Section 13 of the Planning (Scotland) Act 2019 (the 2019 Act) amends Section 24 of the Act regarding the meaning of the statutory development plan, such that for the purposes of the Act, the development plan for an area is taken to consist of the provisions of:

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

The statutory Development Plan therefore comprises: National Planning Framework 4 (2023) (NPF4); the Dumfries and Galloway Local Development Plan 2 (2019) (LDP2)[10]; and a suite of supplementary guidance, including 'Wind Energy Development: Development Management Considerations'[11] (2020).

A key provision of the 2019 Act is that in the event of any incompatibility between the NPF4 and a LDP then whichever of them is the later in date will prevail. That includes matters where a LDP is silent on an issue that is provided for in NPF4.

Under the provisions of Section 25 of the Act, the Development Plan forms the primary basis upon which any future application will be determined and will be the primary material consideration in the determination of the application.

5.1.1 National Planning Framework 4 (NPF4)

The National Spatial Strategy: Delivering of Sustainable Places

Part 1 of NPF4 sets out the Spatial Strategy for Scotland to 2045 based on six spatial principles which are to influence all plans and decisions. The introductory text to the Spatial Strategy starts by stating (page 3):

"*The world is facing unprecedented challenges. The global climate emergency means that we need to reduce greenhouse gas emissions and adapt to the future impacts of climate change*."

The principles are stated as playing a key role in delivering the United Nations Sustainable Development Goals and the Scottish Government's National Performance Framework.

[10] Dumfries and Galloway Council, Local Development Plan 2 (2019): https://new.dumgal.gov.uk/sites/default/files/2024-07/Adopted_LDP2_OCTOBER_2019_web_version.pdf

[11] Dumfries and Galloway Council, Wind Energy Development Supplementary Guidance (2012): https://new.dumgal.gov.uk/sites/default/files/2024-08/Wind_Energy_SG_Final_PDF_February_2020_Version.pdf

The Spatial Strategy is aimed at supporting the delivery of:

- *'Sustainable Places': "where we reduce emissions, restore and better connect biodiversity";*
- *'Liveable Places': "where we can all live better, healthier lives"; and*
- *'Productive Places': "where we have a greener, fairer and more inclusive wellbeing economy".*

Page 6 of NPF4 addresses the delivery of sustainable places. The proposed development would help to deliver sustainable places. Reference is made to the consequences of Scotland's changing climate, and it states, inter alia:

"Scotland's Climate Change Plan, backed by legislation, has set our approach to achieving net zero emissions by 2045, and we must make significant progress towards this by 2030….Scotland's Energy Strategy will set a new agenda for the energy sector in anticipation of continuing innovation and investment."

The National Spatial Strategy in relation to 'sustainable places' is described (page 7) as follows:

"Scotland's future places will be net zero, nature-positive places that are designed to reduce emissions and adapt to the impacts of climate change, whilst protecting, recovering and restoring our environment.

Meeting our climate ambition will require a rapid transformation across all sectors of our economy and society. This means ensuring the right development happens in the right place.

Every decision on our future development must contribute to making Scotland a more sustainable place. We will encourage low and zero carbon design and energy efficiency, development that is accessible by sustainable travel, and expansion of renewable energy generation."

National Planning Policy

Part two of NPF4 sets out the National Planning Policy against which any future proposal will be tested and used to determine a future planning application.

The relevant national planning policies under sustainable places are:

- Policy 1 (Tackling the climate and nature crises);
- Policy 2 (Climate Mitigation and Adaptation);
- Policy 3 (Biodiversity);
- Policy 4 (Natural Places);
- Policy 5 (Soils);
- Policy 6 (Forestry, Woodland and Trees);
- Policy 7 (Historic Assets and Places); and
- Policy 11 (Energy).

A summary for each of these is provided below with the exception of Policy 11 which is provided in full as it sets out support for onshore wind development. The policy provides support for the principle of the proposed development subject to all other relevant policies being satisfied.

Policy 1 (Tackling the climate and nature crises)

Policy 1 states that: *"when considering all development proposals significant weight will be given to the global climate and nature crises".*

Policy 2 (Climate mitigation and adaptation)

Policy 2 seeks to encourage, promote and facilitate development that minimises emissions and adapts to the current and future impacts of climate change.

Policy 3 (Biodiversity)

Policy 3 seeks to protect biodiversity, reverse biodiversity loss, deliver beneficial effects from development and strengthen nature networks with an outcome of ensuring biodiversity is enhanced and better connected.

Policy 4 (Natural places)

Policy 4 seeks to protect, restore and enhance natural assets making best use of nature-based solutions.

Policy 5 (Soils)

Policy 5 seeks to protect carbon-rich soils, restore peatlands and minimise disturbance to soils from development.

Policy 6 (Forestry, woodland and trees)

Policy 6 seeks to protect and expand forests, woodland and trees.

Policy 7 (Historic assets and places)

Policy 7 seeks to protect and enhance historic assets and places.

Policy 11 (Energy)

The Policy intent is:

"To encourage, promote and facilitate all forms of renewable energy development onshore and offshore.

This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies including hydrogen and carbon capture utilisations and storage (CCUS)".

The desired outcome of this policy is stated as an "Expansion of renewable, low carbon and zero emissions technologies".

LDPs are directed to seek to realise their area's full potential for electricity and heat from renewable, low carbon and zero emissions sources by identifying a range of opportunities for energy development.

Policy 11 states:

"a) development proposals for all forms of renewable, low carbon and zero emissions technologies will be supported. These include:

i. Wind farms including repowering, extending, expanding and extending the life of existing wind farms.

ii. Enabling works such as grid transmission and distribution infrastructure;

iii. Energy storage such as battery storage and pumped storage hydro;

vi. Small scale renewable energy generation technology;

v. Solar arrays;

vi. Proposals associated with negative emissions technologies and carbon capture; and

vii. Proposals including co-location of these technologies.

b) development proposals for wind farms in National Park and National Scenic Areas will not be supported.

c) 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.

d) development proposals that impact on international or national designations will be assessed in relation to Policy 4.

e) in addition, project design and mitigation will demonstrate how the following impacts are addressed:

i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker;

ii. significant landscape and visual impacts, recognising that some impacts are to be expected from some forms of renewable energy. Where impacts are localised and /or appropriate design mitigation has been applied, they will generally be considered to be acceptable.

iii. public access, including impact on long distance walking and cycling routes and scenic routes;

iv. impacts on aviation and defence interests including seismological recording;

v. impacts on telecommunications and broadcasting installations, particularly ensuring that transmission links are not compromised;

vi. impacts on road traffic and on adjacent trunk roads, including during construction;

vii. impacts on historic environment;

vii effects on hydrology, the water environment and flood risk;

ix biodiversity including impacts on birds;

x impacts on trees, woods and forests;

xi proposals for the decommissioning of developments, including ancillary infrastructure, and site restoration;

xii the quality of site restoration plans including the measures in place to safeguard or guarantee availability of finances to effectively implement those plans; and

xiii cumulative impacts.

In considering these impacts, significant weight will be placed on the contribution of the proposal to renewable energy generation targets and on greenhouse gas emissions reduction targets.

Grid capacity should not constrain renewable energy development, it is for developers to agree connections to the grid with the relevant network operator. In the case of proposals for grid infrastructure, consideration should be given to underground connections where possible.

f) consents for development proposals may be time limited. Areas identified for wind farms are, however, expected to be suitable for use in perpetuity."

5.2 The Local Development Plan

The local development plan is the Dumfries and Galloway Local Development Plan 2 (2019) (LDP2). It is supported by a suite of supplementary guidance.

The following are considered the most relevant LDP2 policies to the proposed development.

- Policy IN1: Renewable Energy;
- Policy IN2: Wind Energy;
- Policy IN7: Flooding and Development;
- Policy IN8: Surface Water Drainage and Sustainable Drainage Systems (SuDS);
- Policy IN11: Telecommunications;
- Policy OP1: Development Considerations;
- Policy OP2: Design Quality and Placemaking;
- Policy ED2: Business Development & Diversification of Rural Areas;
- Policy ED9: Tourism;
- Policy HE1: Listed Buildings;
- Policy HE2: Conservation Areas;
- Policy HE3: Archaeology;
- Policy HE4: Archaeologically Sensitive Areas;
- Policy HE5: Hadrian's Wall;
- Policy HE6: Gardens and Designated Landscapes;
- Policy HE7: Historic Battlefields;
- Policy NE1: National Scenic Areas;
- Policy NE2: Regional Scenic Areas;
- Policy NE4: Sites of Internation Importance for Biodiversity;
- Policy NE5: Species of International Importance;
- Policy NE6: Sites of National Importance for Biodiversity and Geodiversity;
- Policy NE7: Forestry and Woodland;
- Policy NE8: Trees and Development;
- Policy NE11: Supporting the Water Environment;
- Policy NE12: Protection of Water Margins;
- Policy NE13: Agricultural Soil;
- Policy NE14: Carbon Rich Soil;
- Policy NE15: Protection and Restoration of Peat Deposits as Carbon Sinks;
- Policy T1: Transport Infrastructure; and
- Policy T2: Location of Development / Accessibility.

5.2.1 Supplementary Guidance

The following supplementary guidance is relevant to the proposed development:

- Dumfries and Galloway Council, Local Development Plan, Supplementary Guidance; 'Wind Energy Development: Development Management Considerations';
- Dumfries and Galloway Council, Local Development Plan, Supplementary Guidance; 'Wind Energy Development: Development Management Considerations – Appendix C Wind Farm Landscape Capacity Study';
- Dumfries and Galloway Council, Local Development Plan, Supplementary Guidance; 'Historic Built Environment'; and
- Dumfries and Galloway Council, Local Development Plan, Supplementary Guidance; 'Trees and Development'.

6.0 Landscape and Visual

6.1 Introduction

This section of the Scoping Report sets out the proposed methodology and approach to be applied in the production of the Landscape and Visual Impact Assessment (LVIA) for the proposed development. It also presents the suggested scope of the LVIA in terms of those landscape and visual receptors to be scoped in and scoped out of the assessment process. Justification of the suggested scope is presented through a preliminary assessment of the relevant receptors in respect of their potential to be significantly affected by the proposed development.

The purpose of the LVIA is to identify and record the potential significant effects that the proposed development may have on the landscape and visual resource, taking into account effects on the landscape elements of the Site; the landscape character of the Site and surrounding area; areas that have been designated for their scenic or landscape-related qualities; Wild Land Areas and views from various locations such as settlements, routes, hilltops and other sensitive locations. The potential cumulative effects that may arise from the addition of the proposed development to other wind farms will also be considered.

The LVIA will consider the potential effects of the proposed development during the following development stages:

- Construction of the proposed development; and
- Operation of the proposed development.

Effects arising from the process of decommissioning are scoped out since they are of a similar nature to construction issues, but of a smaller scale and shorter duration. However, the results of decommissioning (i.e. the removal of the wind farm) will be taken into account in assessing on-going and operational effects where appropriate.

In this (Landscape and Visual) section of the Scoping Report, where distances are referenced in relation to the proposed development, these refer to the distance from the nearest turbine, based upon current positions shown on **Figure 11.**

6.1.1 Legislation, Policy and Guidance

The following guidance documents will be considered in carrying out this assessment:

- The Scottish Government (2023). National Planning Framework 4;
- Dumfries and Galloway Council (2019). Local Development Plan 2;
- Dumfries and Galloway Council (2020). Dumfries & Galloway Wind Farm Landscape Capacity Study;
- Dumfries and Galloway Council (2024). Dumfries and Galloway Wind Energy Landscape Sensitivity Study (Consultation Draft);
- Landscape Institute and IEMA (2013). Guidelines for Landscape and Visual Impact Assessment. Third Edition (‘GLVIA3’);
- Landscape Institute (2024). Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3);
- NatureScot (2017). Visual Representation of Wind Farms. Version 2.2;
- NatureScot (2021). Guidance - Assessing the cumulative landscape and visual impact of onshore wind energy developments;
- NatureScot (2017). Siting and Designing of Windfarms in the Landscape: Version 3a;

- NatureScot (2018). Guidance for Assessing the Effects on Special Landscape Qualities (Working Draft 11);
- Landscape Institute (2019). Technical Guidance Note 2/19 Residential Visual Amenity Assessment;
- NatureScot (2024). Guidance on Aviation Lighting Impact Assessment;
- Landscape Institute (2011). Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment; and
- Landscape Institute (2019). Visual representation of development proposals. Technical Guidance Note 06/19.

6.2 Environmental Baseline and Potential Sources of Impact

6.2.1 Proposed Study Area

In accordance with guidance[12] the Study Area for the LVIA of the proposed development will cover a radius of 45km from the nearest turbine, as shown in **Figure 13**. This is generally the maximum radius within which a significant landscape and / or visual effect could arise given the height of the turbines that are being considered. Furthermore, significant landscape and visual effects arising from other components of the West Scales Energy Park, including the Solar PV array (and potentially BESS), would be more contained, and as such the 45km radius would ensure that these are also captured in the LVIA.

Following a review of the Zone of Theoretical Visibility (ZTV) (**Figure 15**) for the proposed development, a Detailed Study Area with a shorter radius of 20km will be appropriate to identify any potential significant landscape effects. Further justification for this shorter radius is provided later in this section of the Scoping Report.

6.2.2 Site Context

The Site is located approximately 2km north east of Eastriggs, between the settlements of Gretna and Annan within the Solway Basin, near the mouth of the River Esk, in Dumfries and Galloway, Scotland. It comprises an area of farmland with a gentle gradient generally rising from the south to the north, which is adjacent to Nutberry Moss to the west, the A75 to the south, a minor road to the east, and the B6357 to the north. Areas of woodland punctuate the local landscape providing some visual containment to the Site from sections of the surrounding roads and properties. Residential and farm buildings are also located intermittently along the surrounding road network, and electricity transmission lines also traverse the landscape to the north and south of the Site.

In relation to the Site's surroundings, the Solway Basin covers a broad area either side of the Solway Firth, extending into England across north west Cumbria, encompassing the settlements of Wigton and Carlisle to the south and south east respectively, Longtown and Gretna to the east, and Annan to the west. The landscape, particularly to the south, is flat and open, which contributes to its vast underlying scale that is only moderated at a local level by the varying landcover of the landscape. There are some important route corridors that utilise this flat landscape, including the M6/M74 to the east, north east and south east of the Site, which connects England and Scotland, the A75 to the south, east and west, which connects Gretna and Dumfries, and the A7 to the east, north east and south east, which connects Carlisle and Edinburgh.

[12] NatureScot. (2017) Visual Representation of Wind Farms. Version 2.2

The Solway Firth widens to the south west of the Study Area. The Scottish and English coastlines associated with much of these south western edges of the Firth are covered by nationally important landscape designations, including the Solway Coast National Landscape (NL), the Nith Estuary National Scenic Area (NSA), and the East Stewartry Coast NSA. The Firth provides a relatively simple backdrop from the majority of these areas, with the exception of the more distant waters on the edge of the Study Area encompassing Robin Rigg Offshore Wind Farm.

Beyond the Solway Basin, the landscape gradually rises into the foothills of the Langholm hills to the north, the Northumbrian hills containing Kielder Water to the east, the North Pennines to the south east, and the Cumbrian Mountains to the south. Long range views to these various hill ranges can often be appreciated from the Solway Basin, due to its flat, expansive character. Large parts of the Cumbrian and Northumbrian hills are included within the Lake District and Northumberland National Parks.

6.2.3 Landscape Character

The landscape of the Site is defined differently by NatureScot's National Landscape Character Assessment (2019) ('NatureScot's LCA') and the DGC's appraisal contained in their Wind Farm Landscape Capacity Study (2020) ('the DGLCS'). The Site is defined by NatureScot's LCA as part of a unit of 'Coastal Flats - Dumfries & Galloway' (158) Landscape Character Type (LCT).

The key characteristics of the Coastal Flats - Dumfries & Galloway LCT according to the NatureScot LCA include its:

- *"Coastal flats are generally extremely flat and low lying, although the coastal plain and coastal parkland have some gentle undulations.*
- *More varied topography in the Nith Estuary.*
- *Exposed with long views over the flats, as they merge with the Solway waters out to sea and distant views of opposite coastline.*
- *A more intimate feel to coastal parkland enhanced by the minor road network, abundant trees and the generally well-managed appearance.*
- *Large to medium sized fields of improved pasture, more lush in parkland areas, with some arable cultivation. Fields enclosed by hedgerows or fences, or a combination of both, although sheep grazed salt marsh is traditionally unenclosed.*
- *Predominantly rural character with generally sparse, isolated settlements and occasional caravan/camping parks, contrasting with occasionally larger towns such as Annan.*
- *Policy landscapes around large houses and farmsteads in coastal parkland.*
- *Varied tree cover, with generally few woodlands or shelterbelts, except in coastal parkland where trees and small woodlands create intimacy. Some coastal moss areas contain large dominating coniferous forests, creating dark green bands on the skyline (others are being restored to moss moorland).*
- *Wet vegetation in areas of coastal moss*
- *Telegraph poles, power lines and farm structures are very evident as they break the flat horizon in flat estuarine areas.*
- *Major communication routes for road, rail and power lines on coastal plain.*
- *Man-made drainage features on coastal parkland.*
- *Open network of small burns dissecting merse areas."*

Contrastingly, the DGLCS defines the Site as part of the Coastal Plateau LCT (14) - see **Figure 16a-b.** A more recent Dumfries and Galloway Wind Energy Landscape Sensitivity Study (2024) ('the DGLSS') is currently the subject of public consultation, and consequently if a final version is published prior to the submission of the application, this more recent document will be considered in the LVIA.

NatureScot advise that "*Where there are topic-specific landscape capacity or sensitivity studies, they would take precedence for informing that development type, e.g. windfarms*". Where coverage allows, the LCT units in the relevant D&GC study will therefore form the basis of the character assessment that will be undertaken in the LVIA. Where parts of the Study Area are not covered by the DGLCS or DGLSS, the LVIA will also be informed by the Scottish Borders 'Update of Wind Energy Landscape Capacity and Cumulative Impact Study' (2016) ('the SBLCS'), the Cumbria Landscape Character Classification ('the CLCC'), the Lake District National Park Landscape Character Assessment ('the LDNPLCA'), and the Northumberland Landscape Character Assessment ('the NLCA'). The relevant landscape character types contained in the Study Area are illustrated on **Figure 16a-b.**

Given the topography of the local landscape and the scale of the proposed development, significant effects on landscape character are likely to be contained within the Solway Basin and some of its surrounding foothills. The LVIA will therefore include an assessment of the effects of the proposed development on the LCTs within a 20km Detailed Study Area.

6.2.4 Landscape Designations

The Site itself is not subject to any local or national landscape designations intended to protect its landscape quality or scenery. A number of areas within 45km of the proposed development have been attributed a landscape planning designation. **Figure 17** shows these landscape designations with the blade tip ZTV overlain. The designations include nationally important National Parks, NSAs, and NL, as well a number of Gardens and Designed Landscapes (GDLs) and Parks and Gardens (PG) that have been designated by Historic Environment Scotland (HES) and English Heritage respectively. There are also a number of locally important Regional (or Special) Landscape Areas (RSAs (or SLAs)) that have been designated through the relevant Council's Local Development Plan. The Hadrian's Wall World Heritage Site (WHS) also encompasses a large part of the wider Study Area.

In the preliminary appraisal set out in **Table 6-1,** the potential effects of the proposed development are considered in respect of all landscape designations. This considers the separation distance between the landscape designation and the proposed development, and whether the landscape designation would be subject to theoretical visibility of the proposed development, having regard to the preliminary ZTV. Thereafter, it is assessed in the final column whether or not these landscape designations should be scoped in or out of the assessment. It should be noted that changes to the layout during the detailed design process may materially alter the potential for significant effects, and therefore the scope of some aspects of the assessment may be reconsidered at a later date.

It is proposed that the designations located in grey shaded boxes in **Table 6-1** will be assessed further within the LVIA, and all other designations are scoped out of the LVIA. D&GC and NatureScot's agreement to this list is sought through this scoping exercise in order to enable the LVIA to be focused on key considerations.

Table 6-1 Preliminary Appraisal of Potential Effects on Landscape Designations

Designation	Approx. distance to nearest turbine (km)	Theoretical visibility?	Needs detailed assessment within the LVIA?
Solway Coast NL	3.6km	Yes	Yes. There is widespread theoretical visibility predicted across the northern unit of this NL. The coastline to the north of the NL forms part of its wider setting and there may therefore be potential for significant effects to arise.
Frontiers of the Roman Empire (Hadrian's Wall) WHS	5.0km	Yes	Yes. While the proposed development is unlikely to significantly affect the attributes that contribute to the Outstanding Universal Value of the WHS, there is potential for significant visual effects to arise from the closest sections of Hadrian's Wall, where theoretical visibility is predicted to occur.
Kinmount GDL	11.1km	Yes	Yes. There is relatively widespread theoretical visibility predicted across eastern and western parts of the GDL, and some limited theoretical visibility predicted around the more formal parts of the GDL.
Solway Coast RSA	11.7km	Yes	Yes, some patches of widespread theoretical visibility predicted across the closest eastern parts of the RSA, and some central parts of the RSA that possess an eastern aspect facing the proposed development.
Langholm Hills RSA	14.4km	Yes	No. There is some intermittent theoretical visibility across southern parts and elevated summits of the RSA at distances of between 14-35km. However, the proposed development would be situated within a distinctly separate landscape context, beyond the M74 corridor and the settlement of Gretna. The proposed development is also situated within a part of the surrounding landscape that is not referenced in the RSA description as forming an important part of the RSA's setting.
Torthorwald Ridge RSA	16.3km	Yes	No. There is some intermittent theoretical visibility predicted at distances of over 16km. However, the proposed development would be situated within a distinctly separate landscape context, beyond the settlement of Annan. The proposed development is also situated within a part of the surrounding landscape that is not referenced in the RSA description as

Designation	Approx. distance to nearest turbine (km)	Theoretical visibility?	Needs detailed assessment within the LVIA?
			forming an important part of the RSA's setting.
Rickerby Park PG	16.7km	Yes	No. Two very minor areas of theoretical visibility on the western and eastern edges of the Park. Given the potential screening from intervening woodland and buildings, it is concluded that there is no potential for significant effects to arise.
Nith Estuary NSA	16.8km	Yes	Yes, there is widespread theoretical visibility across southern and eastern parts of the NSA, and more intermittent theoretical visibility predicted across western parts of the NSA. While the proposed development does not have potential to affect the Special Landscape Quality (SLQ) relating '*The view out to the Cumbrian Fells*', it could have an effect on the perception of '*The interplay of natural and cultural landscapes*' where theoretical visibility of the turbines is predicted.
Dalston Road Cemetery PG	17.5km	Yes	No. Two small areas of theoretical visibility on the southern and northern parts of the cemetery. Given the potential screening from intervening buildings and woodland, it is concluded that there is no potential for significant effects to arise.
Corby Castle PG	23.6km	Yes	No. Some areas of theoretical visibility across the central, eastern and northern parts of the Castle's designed landscape. Given the distance from the proposed development and the potential screening from intervening woodland, it is concluded that there is no potential for significant effects to arise.
Lake District National Park/ The English Lake District WHS	26.3km	Yes	No. Some intermittent areas of theoretical visibility predicted across the northern parts of the Park, but the proposed development would be situated within a distinctly separate part of the surrounding landscape due to its location to the north of the Solway Firth. The proposed development would be viewed within the broader context of closer, large-scale development associated with the settlement of Carlisle and various other settlements within the Solway Basin. It is therefore concluded that there is no potential for significant effects to arise on the National Park.

Designation	Approx. distance to nearest turbine (km)	Theoretical visibility?	Needs detailed assessment within the LVIA?
Arbigland GDL	28.3km	Yes	No. Widespread theoretical visibility across much of the GDL, with the exception of its core and some of its western edges. The setting of the GDL is influenced primarily by the sea and the views that can be experienced across the Solway Firth to the Lake District. As a consequence, it is concluded that the proposed development, situated at distances of over 28km to the east, would not impinge on these key characteristics of the GDL.
North Pennines NL	29.0km		No. Some intermittent theoretical visibility predicted across the north western edges of the NL at distances greater than 29km. The proposed development would be situated in a distinctly separate landscape context, beyond the settlement of Carlisle and the various transport corridors that service the surrounding area. As a consequence, it is concluded that there is no potential for significant effects to arise upon the NL.
Raehills GDL	30.9km	No	No. There is no potential for significant effects.
Terregles Ridge RSA	31.2km	Yes	No. There is limited distant theoretical visibility across the elevated parts of the RSA at distances over 31km. There is no potential for significant effects upon the RSA's special qualities.
East Stewartry Coast NSA	33.2km	Yes	No. There is some theoretical visibility predicted, primarily across the sea, but the area has a weak association with the landscape of the Site, and therefore at distances of over 33km significant effects would not arise.
Cowhill Tower GDL	34.2km	No	No. There is no potential for significant effects.
Dalswinton GDL	35.1km	No	No. There is no potential for significant effects.
Hutton-in-the-Forest PG	35.8km	Yes	No. There is some small areas of theoretical visibility located across the south west of the designed landscape. However, at distances of over 36km from the proposed development, there is no potential for significant effects to arise.
Northumberland National Park	36.3km	Yes	No. Some limited theoretical visibility of the proposed development is predicted across some relatively localised areas of

Designation	Approx. distance to nearest turbine (km)	Theoretical visibility?	Needs detailed assessment within the LVIA?
			the closest south western parts of the Park, north of Haltwhistle, at distances of over 36km from the proposed development. It is concluded that there is no potential for significant effects to arise due to the combination of distance from the proposed development, and the extent of development located between the potentially affected areas and the proposed development.
Moffat Hills RSA	36.8km	Yes	No. Some extremely limited theoretical visibility predicted at distances of over 37km from the proposed development. There is no potential for significant effects.
Thornhill Uplands RSA	39.4km	Yes	No. Some extremely limited theoretical visibility predicted at distances of over 39km from the proposed development. There is no potential for significant effects.
Leadhills and the Lowther Hills SLA	44.3km	Yes	No. Some extremely limited theoretical visibility predicted at distances of over 44km from the proposed development. There is no potential for significant effects.
Dalemain PG	44.9km	No	No. There is no potential for significant effects.

The findings of this preliminary appraisal are that the special qualities of one WHS, one NSA, one NL, one RSA, and the qualifying features of one GDL have the potential to be significantly affected by the proposed development and, therefore, require a detailed assessment. All other nationally and locally designated landscapes, do not have the potential to be significantly affected owing to either no theoretical visibility, low levels of theoretical visibility and / or limited extents of theoretical visibility, substantial separation distances and / or limited association between the designated landscape and the Site of the proposed development. In summary, the following designated landscapes will be included in the detailed assessment of the LVIA:

- Frontiers of the Roman Empire (Hadrian's Wall) WHS;
- Nith Estuary NSA;
- Solway Coast NL;
- Solway Coast RSA; and
- Kinmount GDL.

The detailed assessment in the LVIA will consider the special qualities of these national and local landscape designations in order to address the tests provided by Policy 4 of National Planning Framework 4 (‘NPF4’) and Policy NE2: Regional Scenic Areas of D&GC’s LDP2. It will also take into account the policy protection afforded to those nationally and locally

designated landscapes located in England, including National Planning Policy Framework (2024).

6.2.5 Wild Land

Wild Land Areas (WLA) mapped by NatureScot encompass Scotland's most extensive areas of high wildness. Policy 4 of NPF4 (Scottish Government, 2023) outlines criteria that needs to be satisfied by development proposals in WLAs:

"Development proposals in areas identified as wild land in the NatureScot Wild Land Areas map will only be supported where the proposal:

i. will support meeting renewable energy targets; or,

ii. is for small scale development directly linked to a rural business or croft, or is required to support a fragile community in a rural area.

All such proposals must be accompanied by a wild land impact assessment which sets out how design, siting, or other mitigation measures have been and will be used to minimise significant impacts on the qualities of the wild land, as well as any management and monitoring arrangements where appropriate. Buffer zones around wild land will not be applied, and effects of development outwith wild land areas will not be a significant consideration."

It is therefore of particular relevance to note that the proposed development is not located within a WLA, and therefore its effects on WLAs in the Study Area will not be a significant consideration to be weighed by the decision maker in the overall planning balance. However, in order to apply a precautionary approach, and due to the often indistinct nature of the boundaries, it may still be deemed necessary by NatureScot to determine whether the nature of any effects from developments located along the fringes of WLAs are worthy of consideration by the decision maker.

There is only one WLA located within 45km of the proposed development, as shown in conjunction with the scoping layout ZTV in **Figure 17**. Talla-Hart Fell WLA is located just over 44km from the proposed development, and consequently it is considered that even when taking a precautionary approach, the effects of the proposed development on the perception of wildness due to the large separation distance would not merit significant consideration by the decision maker. As a result, it is proposed that WLAs are scoped out from detailed assessment in the LVIA.

6.2.6 Visual Receptors and Visual Amenity

The LVIA will undertake an assessment of the likely visual effects of the proposed development by considering its wider effects on visual amenity in particular in relation to principal visual receptors (shown on **Figure 18a-b**), including settlements, roads, railway lines, national cycling routes, walking routes, and a selection of viewpoints (shown on **Figure 15** and listed in **Table 6-2**). In accordance with the EIA Regulations, this assessment will focus on identifying those visual receptors that have the potential to be significantly impacted by the proposed development.

6.2.7 Proposed LVIA Viewpoints

A preliminary representative viewpoint list is presented in **Table 6-2**. The locations of the viewpoints are shown on **Figure 15**. The preliminary list has been informed by the LVIA for the previous wind farm application at the Site (14/P/4/0538), which was withdrawn in November 2015. This should allow for a direct comparison between visual and cumulative effects to be made between the previous and current proposal.

The viewpoints represent sensitive visual receptors in the Study Area, which have potential to be significantly affected. The selection of the viewpoints also considers the representation of the landscape receptors within which they are located, as well as the representation of the surrounding cumulative context, with both these considerations helping to inform the wider assessment. Collectively, the aim is to achieve a distribution of viewpoints from different directions and distances across the Study Area, albeit ensuring that the closer range receptors with the greatest potential to be significantly affected, are fully represented. Comments on the proposed viewpoint locations are invited as part of this request for a Scoping Opinion.

Table 6-2: Primary Viewpoints

ID	Viewpoint name	Grid ref. (Preliminary)		Dist. nearest turbine (km)	Visual receptors represented
1	B721, near Rigg	327884	566422	1.3	Road users
2	Eastriggs (from edge of settlement)	325456	566203	1.7	Road users
3	Kirkpatrick Fleming (from B7076)	327054	570716	2.7	Residents and road users
4	Creca (from southern edge of settlement)	323114	570020	3.8	Residents
5	Coastal Path (junction of Core Paths 530 & 315)	322190	565202	5.0	Recreational walkers
6	Gretna (from Old Smithy Visitor Car Park)	332095	568601	5.1	Visitors
7	Start of Hadrian's Wall Path, Bowness-on-Solway	322536	562955	6.1	Residents and recreational walkers
8	Annan (Watchill)	320430	566131	6.2	Road users and residents
9	Eaglesfield	322707	574094	7.1	Road users and residents
10	Boustead Hill	329491	559345	8.4	Road users and residents
11	King Edward I Monument	332569	560940	8.5	Visitors
12	Longtown Bridge	337808	568858	10.9	Road users and residents
13	Whita Hill (Malcolm Monument)	337930	584706	19.9	Recreational walkers
14	Criffel	295709	561858	31.3	Recreational walkers

Visualisations and figures will be produced to NatureScot's standards, as set out in 'Visual Representation of Wind farms: Version 2.2' (February, 2017). In line with NatureScot guidance, photomontages illustrating the proposed wind turbines will be prepared for viewpoints within a 20km radius of the outermost turbines associated with the proposed development. Photomontages of the solar PV array (and any BESS element) will also be prepared for viewpoints within a 5km radius of the proposed development.

6.2.8 Residential Properties

The need for, and scope of, a Residential Visual Amenity Assessment (RVAA) will be reviewed during the initial assessment stages of the LVIA and agreed with consultees. It is

currently envisaged that an RVAA will be required, and in accordance with the relevant Landscape Institute guidance, it is likely that a preliminary study area of approximately 1.5km to 2km radius will be appropriate in order to begin identifying properties to include in the assessment.

6.2.9 Aviation Lighting

A key factor in the development of turbines at or greater than 150m in height is the likely requirement for them to have visible red, medium intensity (2,000 candela) lights fitted to the turbine nacelles in accordance with International Civil Aviation Organization (ICAO) and Civil Aviation Authority (CAA) guidance, to ensure civil aviation safety at night. The details of the lighting requirements for the development are currently being defined along with potential mitigation measures.

If required, a night-time impact assessment section and visualisations illustrating turbine lighting at night will be prepared, for inclusion in the LVIA. The hub height ZTV will be used to identify where there would be direct line of sight of the lights from the surrounding area. SLR has undertaken night-time lighting assessments and visualisations for several other wind farm projects in the UK, and together with the recently published guidance produced by NatureScot, this will inform the approach to assessment of turbine lighting and the basis of our professional judgement about the level of effect arising from the proposed lighting.

In order to inform this assessment, photographs will be taken from three of the readily accessible viewpoints at dusk (photographs to be taken 30 minutes after the period of civil twilight) and SLR will prepare visualisations to represent the effects of lighting on these views. It is proposed that the following three viewpoints be used to represent the effects of night-time lighting:

- Viewpoint 3: Kirkpatrick Fleming (from B7076);
- Viewpoint 7: Start of Hadrian's Wall Path, Bowness-on-Solway; and
- Viewpoint 8: Annan (Watchill).

These viewpoints have been selected to represent the effects on road-users and residents in the local area who would be most likely to be affected. Night-time visualisations will be prepared in accordance with NatureScot's recently published Guidance on Aviation Lighting Impact Assessment (2024).

6.2.10 Cumulative Wind Energy Development

The assessment of cumulative effects describes the effects arising from the addition of the proposed development to a cumulative baseline of operational, under construction, consented and application stage wind farms. This assessment will include supporting graphics such as cumulative ZTVs and cumulative wirelines.

Figure 14 shows the operational, under construction, consented and application stage wind farms within the 45km study area of the proposed development. A detailed review of the cumulative sites within the LVIA study area will be undertaken as part of the LVIA and the potential for significant cumulative effect interactions determined. Stakeholders, including D&GC, will be consulted over the final list of sites to be considered within the detailed cumulative assessment. The cumulative assessment will include only those wind farms with the potential to contribute to significant cumulative effects arising from the addition of the proposed development. Operational and under construction wind farms will be considered as part of the baseline conditions in the LVIA, with the cumulative effects assessment focusing on the contribution of the proposed development to effects arising, in addition to consented and application stage projects.

In accordance with NatureScot and Scottish Government guidance it is not usual to assess scoping stage sites unless they are of particular relevance to the proposed development, where sufficient detail is available to inform the assessment, and where they are likely to come forward to application.

6.2.11 Key Sensitivities

The following key sensitivities will form the focus of the LVIA:

- Potential impacts on the landscape of the Site;
- Potential effects on landscape character, in particular LCT units within a 20km radius of the proposed development;
- Potential effects on the special qualities of the Nith Estuary NSA, Solway Coast NL, and Solway Coast RSA;
- Potential effects on aspects of the visual setting which contribute to the outstanding universal value of the Frontiers of the Roman Empire (Hadrian's Wall) WHS;
- Potential effects on the setting of the Kinmount GDL;
- Potential effects on the principal visual receptors within the Study Area, including those experienced by receptors located at settlements, roads and recreational routes within the immediate context of the proposed development;
- Potential cumulative landscape and visual effects, in particular with other wind farm developments within 45km of the proposed development;
- The visual amenity experienced at residential properties within 2km of the proposed development; and
- Potential effects associated with the visibility of the proposed development at night due to aviation lighting.

6.3 Method of Assessment and Reporting

6.3.1 Categories of Effects

The LVIA is intended to determine the effects that the proposed development will have on the landscape and visual resource. For the purpose of assessment, the potential effects on the landscape and visual resource are grouped into eight categories:

- **Physical effects:** physical effects are restricted to the area within the Site and are the direct effects on the existing fabric of the Site. This category of effects is made up of landscape elements, which are the components of the landscape such as rough grassland and moorland that may be directly and physically affected by the proposed development;
- **Effects on landscape character:** landscape character is the distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape and the way that this pattern is perceived. Effects on landscape character arise either through the introduction of new elements that physically alter this pattern of elements or through visibility of the proposed development that may alter the way in which the pattern of elements is perceived. This category of effects is made up of landscape character receptors, which fall into two groups; landscape character areas and landscape-related designated areas;
- **Effects on the special qualities of NSAs/ NLs and RSAs/ SLAs:** an assessment is carried out to cover the potential for significant effects on the landscape's special qualities;

- **Effects on wild land**: the assessment of the effects on the wild land qualities of the Wild Land Areas through consideration of the impacts on the physical attributes and perceptual responses identified;
- **Effects on views:** the assessment of the effects on views is an assessment of how the introduction of the proposed development will affect views throughout the study area. The assessment of effects on views is carried out in relation to representative viewpoints and principal visual receptors;
- **Effects on views from properties:** Residential Visual Amenity Assessment (RVAA) is carried out for properties within 2km of the turbine envelope, in line with Landscape Institute (LI) technical guidance;
- **Effects of Turbine Lighting:** should visible aviation lighting be required, a night time visual impact assessment is prepared to assess the potential visual impact of the turbine lights; and
- **Cumulative effects:** cumulative effects arise where the study areas for two or more wind farms overlap so that both of the wind farms are experienced at a proximity where they may have a greater incremental effect, or where wind farms may combine to have a sequential effect. In accordance with guidance, the LVIA assesses the effect arising from the addition of the proposed development to the cumulative situation.

6.3.2 Assessment Approach

The objective of the LVIA is to predict the likely significant effects on the landscape and visual resource. In line with the EIA Regulations, the LVIA effects are assessed to be either significant or not significant.

The significance of effects is assessed through a combination of two considerations: the sensitivity of the landscape or visual receptor and the magnitude of change that will result from the addition of the proposed development.

The geographic extent over which the landscape and visual effects will be experienced is also assessed, which is distinct from the size or scale of effect. This evaluation is not combined in the assessment of the level of magnitude but instead is used in determining the extent in which a particular magnitude of change is experienced and the extent of the significant and non-significant effects. The extent of the effects will vary depending on the specific nature of the proposed development and is principally assessed through analysis of the geographical extent of visibility of the proposed development across the landscape or principal visual receptor.

The duration and reversibility of effects on views are based on the period over which the proposed development is likely to exist, and the extent to which the proposed development will be removed, and its effects reversed at the end of that period. Duration and reversibility are not incorporated into the overall magnitude of change and may be stated separately in relation to the assessed effects.

The ‘nature of effects’ relates to whether the effects of the proposed development are adverse, neutral or beneficial. Guidance provided in GLVIA3 states that ‘thought must be given to whether the likely significant landscape and visual effects are judged to be positive (beneficial) or negative (adverse) in their consequences for landscape or for views and visual amenity’ but does not provide an indication as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and reasoned professional opinion.

SLR generally adopts a precautionary approach which assumes that significant landscape and visual effects from commercial wind energy development will be weighed on the

negative side of the planning balance, although positive or neutral effects may arise in certain situations.

6.3.3 Baseline Survey Methodology

6.3.3.1 Desk Study

The assessment is initiated through a desk study of the Site and the Study Area. This study identifies aspects of the landscape and visual resource that may need to be considered in the landscape and visual assessment, including landscape-related planning designations (i.e. National Scenic Areas), landscape character typology, Wild Land Areas, operational and potential cumulative wind farms, and views from routes (including roads, railway lines, National Cycle Routes, long-distance walking routes and recreational sailing routes), and settlements.

The desk study also utilises Geographic Information System (GIS) and Resoft Windfarm software to explore the potential visibility of the proposed development. The resultant ZTV diagrams and wirelines provide an indication of which landscape and visual receptors are likely to be key in the assessment.

6.3.3.2 Field Survey

Field surveys are carried out throughout the Study Area, although the focus is on the areas shown on the ZTV to gain theoretical visibility of the proposed development. The baseline field survey has four broad stages:

- A preliminary familiarisation around the Study Area in order to visit the aspects of the landscape and visual resource that have been identified through the desk study and verify their existence and importance. Important features and characteristics that have not become apparent through the desk study are also identified, and particularly sensitive receptors are noted in order to inform the design process.
- A visit onto the Site, in order to establish the potential of the Site for the proposed development and to identify the most suitable areas for development in landscape and visual terms, along with any constraints that may restrict the developable area.
- Further field survey around the Study Area, concurrent with the design process for the proposed development, to identify those receptors that are likely to be particularly important in the assessment and inform the layout design, possible turbine height, and the extent of the proposed development.
- The identification of representative viewpoints to include in the landscape and visual assessment, including a wide range of receptors, landscape character, and directions and distances from the proposed development.

6.3.4 Methodology for the Assessment of Effects

The LVIA will follow SLR's methodology devised specifically for the assessment of wind farm developments, and which generally accords with 'Guidelines for Landscape and Visual Impact Assessment: Third Edition'[13] ('GLVIA3'), the key source of guidance for LVIA. The methodology will be provided in full in the LVIA.

[13] Landscape Institute and Institute of Environmental Management and Assessment. (2013) Guidelines for Landscape and Visual Impact Assessment: Third Edition

The objective of the assessment of the proposed development is to predict the likely significant effects on the landscape and visual resource. In accordance with the EIA Regulations, the LVIA effects are assessed to be either significant or not significant.

The significance of effects is assessed through a combination of two considerations; the sensitivity of the landscape receptor or view and the magnitude of change that will result as a consequence of the addition of the proposed development.

6.3.4.1 Sensitivity of Receptors

The sensitivity of the baseline conditions, including the importance of environmental features on or near to the proposed development or the sensitivity of potentially affected receptors, will be assessed in line with best practice guidance, legislation, statutory designations and / or professional judgement.

It is established by considering the value of the receptor and its susceptibility to change.

Resource / Receptor Value

For the landscape resource this is related to the value that is attached to different landscapes by society. A landscape may be valued by different people for different reasons. For visual receptors this relates to the recognition attached to a particular view (for example in relation to heritage assets or through planning designations) and indicators of value attached to views by visitors (for example through appearances in guidebooks or on tourist maps and the provision of facilities such as car parking and interpretation). For the purposes of the LVIA a receptor value is classified on a four-point scale of: negligible, low, medium, and high.

Susceptibility to Change

For landscape receptors this means the ability to accommodate the proposed development without undue consequences for the maintenance of the baseline situation and/or achievement of landscape planning policies and strategies.

For visual receptors this engages consideration of the susceptibility of the occupation or activity of people experiencing the view and the extent to which their attention or interest may therefore be focused on the views and visual amenity they experience.

For the purposes of this LVIA, susceptibility to change is classified on a three-point scale of: low, medium, and high.

6.3.4.2 Magnitude of Change

This is gauged by appraising the type and amount of change predicted to occur in relation to the landscape or visual receptor. Factors influencing the magnitude of change include: size, scale and nature of change; geographical extent; and duration and reversibility of effect.

For the purposes of the LVIA, magnitude of change is classified on a six-point scale of: negligible, small, medium-low, medium, medium-high and high.

6.3.4.3 Significance of Effect

The sensitivity of the landscape and visual receptor and the magnitude of change that will result from the addition of the proposed development will be used as a guide, in addition to professional judgement, to predict the significance of the likely effects.

Table 6-3 summarises guideline criteria for assessing the significance of effects.

Table 6-3: Sensitivity and Magnitude of Change

		Magnitude of Change					
		High	**Medium-High**	**Medium**	**Medium-Low**	**Low**	**Negligible/ No Change**
Sensitivity	**High**	Major Significant	Major Significant	Major/ moderate Significant	Moderate Significant or Not Significant	Moderate/ minor Not Significant	Minor Not Significant
	Medium-High	Major Significant	Major/ moderate Significant	Major/ Moderate Significant	Moderate Significant or Not Significant	Moderate/ minor Not Significant	Minor Not Significant
	Medium	Major/ moderate Significant	Major/ Moderate Significant	Moderate Significant or Not Significant	Moderate/ minor Not Significant	Minor Not Significant	Minor Not Significant
	Medium-Low	Moderate Significant or Not Significant	Moderate Significant or Not Significant	Moderate/ minor Not Significant	Minor Not Significant	Minor Not Significant	Negligible Not Significant
	Low	Moderate Significant or Not Significant	Moderate/ minor Not Significant	Minor Not Significant	Minor Not Significant	Negligible Not Significant	Negligible Not Significant

Effects within the dark grey boxes in the matrix are deemed to be significant with either a Major or Major / Moderate level of effect. Effects within the light grey boxes may be significant or not significant depending on the specific relevant factors that arise at a particular landscape or visual receptor and here the level of effect is Moderate. Effects within the white boxes are deemed to be not significant at either a Moderate / Minor, Minor or Negligible level. In accordance with GLVIA3, experienced professional judgement is applied to the assessment of all effects and reasoned justification is presented in respect of the findings where the level of effect is assessed as Moderate.

A significant effect occurs where the proposed development will provide a defining influence on a landscape element, landscape character receptor or view, albeit that it may be one of a number of defining characteristics. A not significant effect occurs where the effect of the proposed development is not material, and the baseline characteristics of the landscape element, landscape character receptor, view or visual receptor continue to provide the definitive influence. In this instance, the proposed development may have an influence, but this influence will not be definitive.

6.4 Consultation

No consultation has been undertaken to date, but it is envisaged that it may be necessary for correspondence with NatureScot and D&GC following receipt of the Scoping Opinion. Details of all relevant correspondence will be included in the LVIA that will accompany the application for the proposed development.

6.5 Matters Scoped Out

The LVIA will include an assessment of effects on the landscape and visual receptors that are summarised in Sections 6.2.7 to 6.2.11, during the proposed development's construction and operational stages. Based on the current layout, it is proposed that all other landscape and visual receptors are scoped out of the LVIA.

Effects arising from the process of decommissioning are also scoped out since they are of a similar nature to construction issues, but of a smaller scale and shorter duration.

6.6 Questions to Consultees

The following are questions to consultees:

- Do you have any comments on the proposed methodology?
- Are you in agreement with the proposed Study Areas?
- Are you in agreement that the assessment of the effects on landscape designations should focus on those areas which are highlighted as being relevant to the LVIA in **Table 6-1**?
- Are you in agreement that Wild Land Areas in the Study Area can be scoped out of the LVIA?
- Do you have any comments or suggestions in relation to the preliminary viewpoint locations listed in **Table 6-2**?
- Do you have any comments on the approach to assessing the effects of turbine lighting?
- Do you have any comments or suggestions on the approach to cumulative landscape and visual assessment?

7.0 Ecology

7.1 Introduction

This section of the Scoping Report considers the scope of work required to assess potential significant effects associated with ecology (habitats and non-avian animal species), during the construction and operational phases of the proposed development. Ornithological effects are considered separately (see Section 8).

7.1.1 Legislation, Policy and Guidance

The ecological assessment will follow guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Additionally, the following legislation, policy and guidance will be taken into consideration:

- The Wildlife and Countryside Act 1981, as amended in Scotland;
- The Nature Conservation (Scotland) Act 2004;
- The Conservation (Natural Habitats &c) Regulations 1994 (as amended in Scotland) (the Habitats Regulations);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- Protection of Badgers Act 1992;
- National Planning Framework for Scotland 4 (NPF4) Policy 3;
- Scottish Government (2023) Biodiversity: draft planning guidance
- NatureScot (2024a) General pre-application and scoping advice for onshore wind farms;
- NatureScot (2022) General pre-application and scoping advice for solar farms;
- NatureScot et al. (2021) Bats and onshore wind turbines – survey, assessment and mitigation; and
- NatureScot (2020) Scottish Biodiversity List (SBL).

7.2 Environmental Baseline and Potential Sources of Impact

7.2.1 Summary of Desk Study Findings to Date

An initial desk-based study was undertaken in December 2024. Desk study data were obtained from those data sources considered to provide the highest quality, most relevant data, including NatureScot SiteLink (NatureScot, 2025), South West Scotland Environmental Information Centre (SWSEIC), the ancient woodland inventory (NatureScot, 2000).

7.2.1.1 Designated Sites

There are five statutory designated sites within 5km of the application boundary that are designated primarily for their non-avian ecological features, including two Sites of Special Scientific Interest (SSSI)s, two Special Areas of Conservation (SAC)s and one Ramsar Site. These are detailed in **Table 7-1** (see **Figure 19** for Designated Site locations).

Table 7-1: Statutory Designated Sites within 5km

Site Name	Designation	Distance (km) and direction from Site	Reasons for Designation (non-avian)
Raeburn Flow	SAC	2.7 north east	Active raised bog, degraded raised bog
	SSSI		Raised bog
Upper Solway Flats and Marshes	Ramsar	3.4 south	Natterjack toad *Epidalea calamita*
	SSSI		Coastal geomorphology of Scotland, mineralogy of Scotland, mudflats, natterjack toad, saltmarsh, sand dunes, shingle, vascular plant assemblage
Solway Firth	SAC	3.4 south	Atlantic salt meadows, coastal shingle vegetation outside the reach of waves, dune grassland, estuaries, glasswort and other annuals colonising mud and sand, intertidal mudflats and sandflats, reefs, river lamprey *Lampetra fluviatilis,* sea lamprey *Petromyzon marinus*, subtidal sandbanks

7.2.1.2 Non-Statutory Designated Sites

No non-statutory designated sites are present within 2km of the Site.

7.2.1.3 Carbon and Peatland Map

According to the Carbon and Peatland Map (Scotland Soils, 2016), there are some areas of the Site that have small areas of ‘Class 1’ peatland which are nationally important carbon rich soils with deep peat and priority peatland habitat, and areas of ‘Class 5’ peatland which are areas of peatland soil but with no peatland habitats recorded.

The majority of the Site has no peatland present according to the Carbon and Peatland Map.

7.2.1.4 Ancient Woodland

A search of the Ancient Woodland Inventory (NatureScot, 2000) returned four areas of ancient woodland within 2km of the Site boundary, all areas are categorised as long-established (of plantation origin). These are detailed below in **Table 7-2**.

Table 7-2: Ancient Woodland Inventory Sites within 2km

Ancient Woodland Name [ID]	Distance (km) and direction from Site	Category
Redroad Wood [7543]	0.8 south east	Long-Established (of plantation origin)
Unnamed [7566]	1.9 south west	Long-Established (of plantation origin)
Unnamed [7877]	1.5 north west	Long-Established (of plantation origin)

Ancient Woodland Name [ID]	Distance (km) and direction from Site	Category
Scales Wood [7986]	1.8 east	Long-Established (of plantation origin)

7.2.1.5 Protected and Notable Species

Existing records of legally protected and otherwise notable (listed on SBL) species from within 2km (10km for bats) of the application boundary and across a 15 year period [2010-2025] were collected from SWSEIC as part of the desk study data search.

Two notable invertebrate species (small heath *Coenonympha pamphilus* and wall *Lasiommata megera*) have been recorded within 2km of the application boundary, both are listed on the SBL.

A total of at least eight bat species have been recorded within 10km of the application boundary, all of which are protected under the Habitats Regulations:

- *Chiroptera* sp.;
- *Myotis* sp.;
- whiskered/Brandt's (*Myotis mystacinus/brandtii*);
- Daubenton's (*Myotis daubentonii*);
- *Nyctalus* sp.;
- noctule (*Nyctalus noctule*);
- common pipistrelle (*Pipistrellus pipistrellus*);
- soprano pipistrelle (*Pipistrellus pygmaeus*); and
- brown Long-eared (*Plecotus auritus*).

The closest roost record returned was a common pipistrelle roost approximately 2.14km from the Site, additionally, there were records of both a brown long-eared and a soprano pipistrelle maternity roost approximately 8km from the Site.

7.2.1.6 Other Species Records

The results of the 2023 Deer Distribution Survey (The British Deer Society, n.d) indicate the presence of the following deer species in the area surrounding the Site:

- Roe deer *Capreolus capreolus* (recorded in 2007, 2011, 2016 and 2023); and
- Red deer *Cervus elaphus* (recorded in 2007, 2011, 2016 and 2023).

A total of two records of roe deer (from 2014) within 2km of the application boundary were provided by SWSEIC.

7.2.1.7 Invasive Non-Native Species

The data search returned one record of grey squirrel *Sciurus carolinensis* within the 2km buffer, which is listed under Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended).

7.2.2 Potential Sources of Impacts

7.2.2.1 Construction

During construction of the proposed development, in the absence of mitigation, it is anticipated that impacts may arise from:

- Habitat loss or damage (permanent and temporary) or fragmentation due to construction of infrastructure, including drainage impact to bog habitats and other water sensitive habitats;
- Possible spread or introduction of invasive non-native species due to movement of contaminated soils;
- Possible changes to groundwater flows affecting groundwater dependent terrestrial ecosystems (GWDTEs);
- Disturbance to, displacement or mortality of protected or notable fauna due to vehicular traffic, operating plant and the presence of construction workers; and

sedimentation or other pollution of watercourses from construction activities and vehicular traffic.

7.2.2.2 Operation

During operation of the proposed development, in the absence of mitigation, it is anticipated that impacts may arise from:

- Disturbance, displacement or mortality of fauna due to vehicular traffic, presence of site operatives and turbine operation;
- Environmental incidents and accidents (e.g. spillages); and
- Moving turbine blades leading to mortality due to collision or barotrauma (bats only).

7.3 Method of Assessment and Reporting

7.3.1 Additional Desk Study

In addition to the desk study already completed (see Section 7.2.1), a review of relevant ecological data for wind farm developments within 10km (as detailed on **Figure 14**) and other developments within 2km will be undertaken, notably that provided for the following developments:

- Airvolution Energy (2014) West Scales Farm Wind Turbines; and
- EDF Renewables (2011) Beck Burn Wind Farm.

7.3.2 Field Surveys

The following field surveys will be undertaken in 2025:

- UK Habitat Classification survey (UKHab) and National Vegetation Classification (NVC) survey;
- Protected mammals survey;
- Habitat suitability index (HSI) survey for great crested newt (GCN);
- Ground level tree roost assessment (GLTA) for bats;
- activity surveys; and

- Fish habitat walkover.

Given no records of reptiles were returned from the initial data search, it is unlikely that reptiles are present on site. Therefore, no reptile surveys are proposed at this time. Rather, a check for reptiles and/or suitable reptile habitat will be conducted during the habitat survey.

It is anticipated that the watercourses on Site are all small and unlikely to contain habitat suitable to support fish, therefore electrofishing surveys are not proposed at this time. Should the results of the fish habitat walkover suggest that electrofishing may be necessary, this will be undertaken.

It is proposed to scope out at-height bat activity surveys as the Site is not densely forested and bat activity recorded at ground level is less likely to vary significantly from activity at rotor swept height in open areas than in forestry settings (Naturescot *et al*, 2021).

Further details regarding each survey proposed are provided in Section 7.3.3. The results of each survey will be reported in full within baseline survey reports, which will form Technical Appendices to the EIA Report.

7.3.3 Field Survey Methodologies

7.3.3.1 UKHab and NVC

The habitat surveys will be undertaken within the application boundary, plus, where accessible, a 250m buffer. Historically initial habitat surveys have been undertaken following Phase 1 methodology (JNCC, 2010). Phase 1 survey is now being replaced with a more modern survey method, UKHab (Butcher *et al*, 2023), which is better for identifying priority habitats. UKHab surveys will be completed to a minimum detail of Level 4.

NVC surveys will be undertaken in conjunction with UKHab surveys and map in detail any potentially important semi-natural vegetation communities on Site to allow identification of potential Groundwater Dependent Terrestrial Ecosystems (GWDTE) and other sensitive habitats. Methods will follow guidance in the NVC users handbook (Rodwell, 2006), focusing on potentially important natural/semi-natural habitats only, i.e. excluding commercial forestry, recently clear-felled areas, improved grassland, arable and any other artificial habitats.

7.3.3.2 GCN HSI

HSI surveys for habitat suitable to support GCN will be undertaken in conjunction with the protected mammals survey using methodologies developed in the ARG Advice Note (2010). The HSI survey will assess all waterbodies within the Site and a 500m buffer (access permitting) for their suitability to support GCN.

The results of the HSI survey will determine the requirement for more detailed GCN surveys, such as eDNA surveys to test for presence. Should eDNA surveys be required, these will be undertaken between mid April and June in line with guidance (NatureScot, 2024b).

7.3.3.3 Bat Surveys

Ground Level Tree Assessment

A GLTA survey will be undertaken in line with Bat Conservation Trust (BCT) guidelines (Collins, 2023) to identify any potential bat roosts and habitats suitable for roosting, foraging and commuting bats, particularly those close to turbine locations. NatureScot *et al*. guidance (2021) indicates that surveys for potential bat roosts that could support maternity roosts and significant hibernation and/or swarming sites should be undertaken within 200m+ rotor radius of turbines. The GLTA will be undertaken the Site and any areas that lie within 250m of proposed turbine locations (where accessible).

Bat Activity Survey

Bat activity surveys will be undertaken to identify the level of bat activity at key locations within the Site to inform the layout design and the impact assessment.

Surveys will follow current NatureScot *et al*. guidance (2021), which specifies the use of full spectrum bat detectors. Full spectrum SM4 static detectors will be used for the collection of acoustic bat activity data.

The detectors will be deployed with the aim of providing at least the minimum of 10 nights of data in suitable weather conditions each season, spring (April-May), summer (June-mid-August), autumn (mid-August – October). Detectors will be deployed for a minimum of 15 nights per season to maximise the chances of obtaining 10 nights of suitable data per season.

NatureScot *et al*. guidance requires one detector per turbine for sites with ten or less turbines. As the proposed development comprises four turbines, four detectors will be deployed.

Detectors will be places at likely turbine locations and will aim to cover the full range of habitat in which turbines may be positioned within the Site to give a representative indication of bat activity in different locations and habitat types.

Data will be analysed using Kaleidoscope Pro software with manual checking by an experienced bat ecologist. The Ecobat tool will be utilised to compare results of the activity surveys with other sites to give a measure of relative bat activity within the Site compared to other sites in the area. Please note that the EcoBat tool is currently not available however it is hoped that the tool will be available at some point in 2025.

Weather data will be obtained from either an onsite meteorological mast or a local weather station.

7.3.3.4 Fish Habitat Walkover

A fish habitat walkover will be undertaken to assess the watercourses present on site for habitat suitable to support fish following the Hendry and Cragg-Hine methodology (1997). During the walkover, notes will be taken on the suitability of each watercourse for fish species. Target notes will be taken on: key river characteristics for each watercourse/tributary including average depth and width, variation in substrate, bankside vegetation, gradient and rough percentages of broad fish habitat types e.g. riffle, glide, pool, run, potential spawning areas of salmonids or lamprey, potential barriers to fish movements (e.g. waterfalls, inappropriately seated culverts) and potential sites for habitat enhancement for fish.

The results for the fish habitat walkover will determine the requirement for further species-specific surveys including freshwater pearl mussel or other aquatic macroinvertebrate surveys or electrofishing surveys. As noted previously, at this stage, it is not anticipated that further surveys will be required based on the size and nature of watercourses within the Site.

7.3.4 Ecological Impact Assessment

The ecological impact assessment will be based on current CIEEM (2018) guidance and will draw on other, more specific guidance as appropriate.

The impact assessment process would involve the following steps:

- Identifying important ecological features, i.e. features of sufficient value and/or features subject to legal protection, for which detailed assessment is necessary;
- Identifying and characterising potential impacts on important features;

- Assessment of the significance of effects will be based on the assumption that standard mitigation measures, in line with standard construction good practice measures, will be embedded as part of the scheme;
- Incorporating additional measures to avoid and mitigate (reduce) potentially significant effects (if required);
- Identifying appropriate compensation for potentially significant residual effects (if required);
- Identifying proposals for ecological enhancement; and
- Cumulative impact assessment along with other wind farm developments within 10km, and other developments within 2km and/or the same hydrological catchment (operational and planned).

7.4 Consultation

There has been no consultation with statutory and non-statutory bodies to date in relation to ecology and the proposed development. However, consultation will be undertaken following receipt of scoping responses and prior to submission of the EIA Report, as required.

7.5 Matters Scoped Out

Given the distances between the Site and the designated sites listed in **Table 7-1**, lack of connection and the reasons for their designation, it is unlikely that the proposed development would result in any significant adverse effects on the qualities for which the areas have been designated for. Therefore, it is proposed to scope impacts on statutory and non-statutory designated sites out of the EIA.

Given the distances and lack of connection between the Site and areas of ancient woodland listed in **Table 7-2**, it is unlikely that the proposed development would result in any significant adverse effects and therefore it is proposed to scope impacts on ancient woodland out of the EIA.

Wild deer are understood not to be present, at the Site, in significant numbers given only two records were returned within the last 15 years. Therefore, it is proposed to scope impacts on deer out of the EIA. A draft Deer Management Statement is deemed not to be required.

7.6 Approach to Mitigation, Compensation and Enhancement

Mitigation, compensation and enhancements will be developed, in consultation with key stakeholders (if required) and drawing on evidence from others schemes and relevant publications, as appropriate. Design mitigation, where possible, would be incorporated, by the involvement of the lead ecologist in the scheme design process. This may involve, for example, the avoidance of areas of important habitats or instigation of buffer zones around notable features. Construction mitigation may involve restrictions on the timing of construction work in certain areas and use of an Ecological Clerk of Works (ECoW). Compensation and biodiversity enhancement, in line with the requirements of NPF4 Policy 3, is expected to be secured through the development and agreement of a Habitat Management Plan (HMP). Post-construction monitoring would be proposed only where necessary, i.e. surveys which are essential to measure specific impacts or to assess the success of proposed habitat restoration or management.

7.7 Questions to Consultees

The following are questions to consultees:

- Do consultees confirm they are satisfied with the approach detailed in this ecology section of the Scoping Report?
- Do consultees confirm that the proposed scope of survey work is appropriate?
- Do consultees confirm that they are satisfied with the proposed method of assessment?
- Do consultees confirm that they are satisfied with the matters scoped out of further assessment?

7.8 References and Standard Guidance

Amphibian and Reptile Group (2010). Advice Note 5: Great Crested Newt Habitat Suitability Index.

Butcher, B., Carey, P., Edmonds, R., Norton, L., Treweek, J. 2023. The UK Habitat Classification User Manual Version 2.01.

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

Collins, J (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6.

Dean M., Strachan, R., Gow, D. and Andrews, R. (2016). The water vole mitigation handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society London.

Gurnell, J., Lurz, P., McDonald, R., Pepper, H. (2009). Practical Techniques for Surveying and Monitoring Squirrels. Forestry Commission Scotland, Edinburgh

Harris, S, Cresswell, P and Jeffries, D. (1989). Surveying Badgers (Volume 9, Occasional Publication). Mammal Society.

Hendry, K. & Cragg-Hine, D. (1997). Restoration of Riverine salmon habitats. Fisheries Technical Manual 4, Environment Agency, Bristol.

JNCC (2010) Handbook for Phase 1 habitat survey: A technique for environmental audit. ISBN: 978-0-86139-636-8.

Lenton, EJ, Chanin, PRF and Jeffries, DJ. (1980). Otter Survey of England 1977-1979. Nature Conservancy Council, London.

NatureScot (2000) Ancient Woodland Inventory https://www.nature.scot/doc/guide-understanding-scottish-ancient-woodland-inventory-awi [Accessed January 2025]

NatureScot, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Ecotricity Ltd., the University of Exeter and Bat Conservation Trust (2021). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

NatureScot (2022) General pre-application and scoping advice for solar farms

NatureScot. (2024a). General pre-application and scoping advice for onshore wind farms: General pre-application and scoping advice for onshore wind farms

NatureScot (2024b) Standing advice for planning consultations – Great Crested Newts

NatureScot (2025) https://sitelink.nature.scot/map [Accessed January 2025]

Rodwell, J.S, (2006), NVC Users' Handbook, 68 pages, ISBN 978 1 86107 574 1.

Scotland's Soils Part of Scotland’s Environment. [Online] Scotland's Soils - soil maps (environment.gov.scot). Available at: Carbon and Peatland Map 2016 https://map.environment.gov.scot/Soil_maps/?layer=10 [Accessed January 2025]

Scottish Government (2013) Scottish Government Scottish Biodiversity List SBL [online] Available at: http://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL [Accessed in January 2025].

Strachan R. (2002). Mammal detective. Whittet Books Ltd

The British Deer Society (n.d.). Deer Distribution Survey. [online] The British Deer Society. Available at: https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/ [Accessed January 2025]

Velander, K. A. (1983) Pine Marten Survey of Scotland, England and Wales 1982 – 1983. The Vincent Wildlife Trust, London.

8.0 Ornithology

8.1 Introduction

This Section sets out the proposed approach to assess the potential effects of the proposed development on ornithology during its construction and operation.

8.1.1 Legislation, Policy and Guidance

The ornithological assessment followed the guidance produced by Scottish Natural Heritage (SNH) (now NatureScot (NS)) (SNH 2017). Additionally, the following documents were taken into account:

- The Wildlife and Countryside Act 1981, as amended;
- European Union (EU) Council Directive 79/409/EEC and 2009/147/EC on the Conservation of Wild Birds (the 'Birds Directive');
- EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the 'Habitats Directive');
- The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004 (as amended), which translates the Birds and Habitats Directives into Scottish Law;
- The Conservation of Habitats and Species Regulations 2017;
- Environmental Impact Assessment Directive 85/337/EEC (the EIA Directive);
- The Nature Conservation (Scotland) Act 2004;
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended);
- National Planning Framework 4 (NPF4) – sets out the spatial principles, regional priorities, national developments and national planning policy;
- Planning Advice Note (PAN) 1/2013 – Environmental Impact Assessment (Scottish Government 2013);
- PAN 51: Planning, Environmental Protection and Regulation (Scottish Government, revised 2006);
- PAN 60: Planning for Natural Heritage (Scottish Government 2000);
- Scottish Executive Circular 6/1995 EIR release (as amended June 2000). Information request and response under the Environmental Information (Scotland) Regulations 2004;
- Planning Circular 1/2017; Environmental Impact Assessment Regulations. Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (Scottish Government, 2017);
- 'Managing Natura 2000 Sites' (European Communities 2000);
- Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater and Coastal (CIEEM 2018);

- Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH 2017);
- Developing field and analytical methods to assess avian collision risk at wind farms (Band et al. 2007);
- NatureScot guidance on using an updated collision risk model to assess bird collision risk at onshore wind farms (Band 2024).
- Avoidance rates for the onshore SNH collision risk model (SNH 2018a);
- Assessing the significance of impacts from onshore windfarms on birds outwith designated areas: version 2 (SNH 2018b);
- Assessing the cumulative impact of onshore wind energy developments (SNH 2018c);
- Assessing connectivity with Special Protection Areas (SPAs) (SNH 2016a);
- Environmental Statements and Annexes of Environmentally Sensitive Bird Information Guidance for Developers, Consultants and Consultees. Version 2 (SNH 2016b);
- Good Practice during Wind Farm Construction (Scottish Renewables et al. 2019);
- Birds of Conservation Concern (BoCC) 5: the Population Status of Birds in the United Kingdom, Channel Islands and the Isle of Man (Stanbury et al. 2021);
- The UK Post-2010 Biodiversity Framework; and
- The Scottish Biodiversity List (SBL) (NatureScot 2020: https://www.nature.scot/doc/scottish-biodiversity-list).

8.2 Environmental Baseline and Potential Sources of Impact

The core ornithological study area includes the Site plus a 500m buffer. The desk study considered a wider buffer; 5km for nationally important sites and 20km for internationally important sites. Additional field surveys were carried out to a wider 2km buffer for key species including breeding raptors and owls.

8.2.1 Statutory Protected Sites

There are **seven** statutory designated nature conservation sites in the search area around the proposed development (5km for nationally important Sites of Special Scientific Interests (SSSI) and 20km for internationally important European Protected Special Protection Areas (SPA) and Ramsar Sites):

- **Solway Firth SPA –** 2km south from the Site – large estuarine/marine site designated for its non-breeding bird assemblage including internationally important numbers of red-throated diver, whooper swans, barnacle geese, golden plover, ringed plover and bar-tailed godwit; nationally important numbers of shelduck, teal, shoveler, goldeneye, grey plover, sanderling, dunlin, turnstone, common scoter, goosander, lapwing, cormorant, black-headed gull, common gull and herring gull; and migratory species including pink-footed geese, pintail, scaup, oystercatcher, knot, curlew and redshank.
- **Solway Firth SAC** – 2km south from the Site – designated for its river lamprey and sea lamprey populations and the following habitats: dune grassland, estuaries, glasswort and other annuals colonising mud and sand, intertidal mudflats and sandflats, reefs and subtidal sandbanks.

- **Upper Solway Flats and Marshes SSSI/Ramsar** – 2km south from the Site (and largely synonymous with the Solway Firth SPA) – notified for its breeding bird assemblage, nationally important wintering populations of oystercatcher, sanderling, knot, curlew, redshank, turnstone, golden plover, ringed plover, grey plover, bar-tailed godwit, and dunlin and internationally important wintering numbers of barnacle goose, pink-footed goose, shelduck, and whooper swan.
- **Raeburn Flow SSSI/SAC** – 3.8km north east from the Site – notified for its raised bogs but not for any ornithological interest features.
- **South Solway Mosses SAC** – 6km south west from the Site – designated for its estuarine raised bogs but not for any ornithological features.
- **River Eden SAC** – 9.3km south east from the Site – designated for its rich aquatic flora, alluvial forests, fish fauna and otters, but no ornithological features.
- **Langholm, Newcastleton Hills SPA** – 17.9km north east from the Site – upland moorland designated for its breeding hen harrier population (SPA), its upland breeding bird assemblage, upland habitats and geological interest (SSSI). The Site lies well outside the core range of 2km for hen harrier, making any effect on this SPA unlikely, but this will be further informed by analysis of the baseline site survey data.
- **Solway Mosses North SAC** – 19.7km west from the Site – designated for its raised bog but not for any ornithological features.

8.2.2 Wintering Bird Baseline

The wintering bird surveys during the first of the two baseline survey years (in 2023-24) found a range of wintering bird populations of conservation importance. Key wintering bird populations recorded included:

- **Whooper swan** – a herd of up to 30 whooper swans was recorded regularly on the farmland to the east of the proposed development Site from late November onwards (1-3 km from the initial proposed wind turbine locations). None were seen on the ground within the Site itself, and there were only occasional flights over. The peak count (30) represents 11% of the SPA population of 268.
- **Pink-footed goose** – this species fed regularly in the wider survey area, though not within the proposed development Site (the nearest feeding flock was recorded 700 m from the proposed wind turbine location). Large numbers over-flew the Site, mainly when moving between inland feeding areas and night roosts on the Solway Firth. The peak count (2,100) represents 18% of the SPA population of 11,508.
- **Golden plover** – occasional records of this species were scattered across the survey area, including a flock of 5 within the proposed development Site on 1/12/23. There were also occasional flocks seen overflying during the VP surveys. The peak count (30) represents 0.5% of the SPA population of 6,169.
- **Lapwing** – were recorded more regularly, with a peak count of 222. They were seen across the survey area, but not on the ground within the proposed development Site, and there were only occasional over-flights. The peak count (222) represents 3.8% of the SPA population of 5,851.
- **Curlew** – were mainly found to the south of the proposed development Site. No flights were recorded during the VP survey. The peak count (57) represents 2.5% of the SPA population of 2,251.
- **Common gull** – this species was abundant across most of the survey area, though it was found in lower numbers within and near the proposed development Site (peak 10 within the Site). Large numbers over-flew the Site, mainly when moving between

inland feeding areas and night roosts on the Solway Firth. The peak count (2,443) represents 60% of the SPA population of 4,074. However, the WeBS SPA count is likely a substantial underestimate, as it does not specifically cover the dawn/dusk period when the gulls would be using the SPA (rather than foraging on surrounding agricultural land). Nonetheless, the survey area is important for this species.

- **Herring gull** –were also widely distributed across the survey area (peak 115), with only one record from within the proposed development Site (two birds on 24/1/24). The peak count represents 4.3% of the SPA population of 2,700 (though as for common gull, the SPA population is likely to be an underestimate).
- **Black-headed gull** – this species was widely distributed across the survey area but again with only a single record on the ground within the proposed development Site (two on 15/12/23). They were frequently seen over-flying. The peak count (388) represents 5.4% of the SPA population of 7,120 (though as for common gull and herring gull, the SPA population is likely to be an underestimate).

Lastly, there were two additional records of another Solway Firth SPA species, **barnacle goose**, during the surveys, but these were only seen just outside the survey area. Two flocks were seen on 22/11/23, 200 2.8 km and 750 3.4km south east from the nearest proposed turbine. There was no evidence that the survey area was important to this species.

8.2.3 Breeding Bird Baseline

The 2023 and 2024 breeding bird surveys found that the survey area supports a range of lowland breeding species and a regionally important assemblage. Two high-value species were found breeding within the core survey area: **quail** (a single pair on the north eastern edge of the survey area in 2024) and **barn owl** (a single pair in 2023).

Fifteen breeding species were classed as medium conservation value: **lapwing, curlew, skylark, tree pipit, dunnock, song thrush, grasshopper warbler, starling, house sparrow, tree sparrow, linnet, lesser redpoll, bullfinch, yellowhammer** and **reed bunting**. All were classed as medium value because of their listing on the UK Biodiversity Action Plan priority species. They are mostly species that have declined widely across Britain but are still common and widespread.

Non-breeding birds seen during these surveys included two very high-value species, **whooper swan** and **pink-footed goose** (Solway Firth SPA qualifying species); six high-value species (**little egret, goshawk, red kite, peregrine, golden plover** and **whimbrel**, all EU Annex 1/Wildlife and Countryside Act Schedule 1 species); and three medium-value (**herring gull**, a UK BAP priority species, and **common gull** and **black-headed gull**, seen in regionally important numbers).

8.2.4 Potential Sources of Impact

The key issues for the assessment of potential ornithological effects relating to the proposed development were identified as the following (after SNH 2018b):

- Direct loss of bird habitat through construction of infrastructure;
- Disturbance of birds during construction and operation (including displacement of flight activity through barrier effects);
- Mortality of birds through collision with turbine blades or towers during operation; and
- Cumulative effects of operational disturbance and collision mortality, on the national and Natural Heritage Zone (NHZ) populations of key target species.

8.3 Method of Assessment and Reporting

8.3.1 Baseline Data Collection

A comprehensive range of bird surveys is being undertaken at this Site. Specific surveys for the proposed development are being undertaken (2023/24 and 2024/25 winters plus and 2023 and 2024 breeding seasons), to give two full years of baseline bird data, in line with the current NatureScot survey guidance (SNH 2017).

Vantage Point (VP) Surveys (year-round)

These surveys are being carried out to determine flight activity within the proposed wind farm Site to assess collision risk. The VP surveys will quantify the bird numbers that could potentially be at risk of collision (including roost flight observations at dawn/dusk). All flight lines of target species are being mapped, and the flight height of each flock recorded.

A single VP is being used, which gives sufficient coverage of the survey area. The computer-generated viewshed is shown in **Figure 20**. The following surveys are being undertaken:

Breeding season:

- 2023 and 2024 – April to August – 36 hours, plus an additional 6 hours in April and May to cover goose migration (including specifically targetting barnacle goose spring migration).

Autumn/Winter:

- 2023-24 – September to March – 72 hours/VP (including additional goose flight surveys); and
- 2024-25 – November to March – 48 hours/VP (including additional goose flight surveys)

Breeding Bird Surveys

The core breeding bird walkover survey follows the standard Brown and Shepherd (1993) moorland survey method but with two additional visits as recommended in NatureScot guidance (SNH 2017). These surveys cover the proposed development Site plus a 500 m buffer, where access is possible.

- 2023 – four visits, April to July; and
- 2024 – four visits, April to July.

All bird locations and behaviour are being mapped to a 1:10,000 scale, using the standard British Trust for Ornithology (BTO) Common Birds Census notation. All species are being recorded. In addition, the survey effort per unit area is being standardised to make the surveys as repeatable as possible, recording systematically for approximately 2 hours per km^2. A route is chosen to ensure that the entire study area is covered to within about 100m of the observer, where access is possible. The survey route is being plotted onto the survey map as it is carried out.

The surveys are avoiding strong winds, heavy rain, fog and low cloud. Birds are located by walking, listening and scanning by eye and with binoculars. Standard BTO notation is being used to record the birds' activities; singing, calling, carrying nest material, nests or young found, repetitively alarmed adults, disturbance displaying, carrying food or in territorial dispute.

Raptor and Owl Breeding Surveys

As the survey area may be used by a range of scarce raptors, species-specific surveys were undertaken during April-August 2023 and 2024. Surveys were undertaken within the proposed wind farm Site and a 2km buffer zone where access is possible and potentially suitable breeding habitat for these species is present. This included surveys for hen harrier, osprey, goshawk, red kite, peregrine, merlin, short-eared owl and barn owl, following the standard methodologies given in Gilbert et al. (1998) and Hardey *et al.* (2013).

Winter Field and Waterfowl Distribution Surveys

Whilst the VP surveys provide information on key species' flight activity over the Site outside the breeding season, additional survey work is being undertaken to provide further information on any important bird populations using the area during the winter. This comprises surveys of the wintering birds within the proposed development Site and a 2km buffer. This includes surveys at dawn and dusk to check the area specifically for roosting hen harriers and other important raptors, and covering all possible habitats that could be used by wintering waterfowl (including pink-footed geese, greylag geese and whooper swans) as feeding/roosting Sites (to give contextual information about where goose and swan feeding flocks were located, and possible linkage to SPAs). The Site lies within the potential SPA connectivity distance from the Solway Firth SPA (for which pink-footed geese and whooper swan are a qualifying feature) (Mitchell 2012, SNH 2016a).

These surveys are being carried out as follows:

- 2023-24 – twice-monthly surveys, September to March; and
- 2024-25 – twice-monthly surveys, September to March.

Desk Study

The ornithological assessment will include a full desk study detailing the designated Sites that could be affected by the development (as set out above), and available bird records from consultees including NatureScot, Royal Society for the Protection of Birds (RSPB), the Dumfries and Galloway Raptor Study Group and South-west Scotland Environmental Information Centre.

Assessment of Effects

The assessment will include a full evaluation of the ornithological importance of the Site's bird populations and identification of any particularly sensitive areas. Collision risk will be estimated for bird species of conservation importance regularly over-flying the proposed wind farm Site (based on the results of the vantage point surveys). This will be calculated using a standard modelling process, applying NatureScot-recommended avoidance rates. Possible disturbance effects will be assessed by determining the bird populations of importance within the wind farm area and its surrounds (based on the field surveys and any additional information available), and by reference to the current literature on bird-wind farm interactions. The assessment will be carried out with reference to the assessment methodologies produced by NatureScot (SNH 2018b) for the wider countryside, and the Chartered Institute for Ecological and Environmental Management (2018).

The sensitivity (conservation importance; as defined in **Table 8-1**) of the receptors present in the study area will be identified, then the magnitude of the possible effect on those receptors determined (as described in **Table 8-2**).

Table 8-1: Value (conservation importance) of bird species

Conservation Value	Definition
Very High	Cited interest of SPAs, SACs and SSSIs. Cited means mentioned in the citation text for those protected sites as a species for which the Site is designated (SPAs/SACs) or notified (SSSIs).
High	Other species that contribute to the integrity of an SPA or SSSI. A local population of more than 1% of the national population of a species. Any ecologically sensitive species, e.g. large birds of prey or rare birds (<300 breeding pairs in the UK). EU Birds Directive Annex 1, EU Habitats Directive priority habitat/species and/or Wildlife and Countryside Act (W&C Act) Schedule 1 species (if not covered above). Other specially protected species.
Medium	Regionally important population of a species, either because of population size or distributional context. UK BAP priority species (if not covered above).
Low	Any other species of conservation interest, e.g. species listed on the Birds of Conservation Concern not covered above.
Negligible	Green-listed species (Stanbury *et al*. 2021) of favourable conservation status.

Table 8-2: Definition of terms relating to the magnitude of change

Magnitude	Definition
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that post development character/ composition/ attributes will be fundamentally changed and may be lost from the Site altogether. Guide: >80% of population/habitat lost.
High	Major alteration to key elements/ features of the baseline (pre-development) conditions such that post development character/composition/attributes will be fundamentally changed. Guide: 20-80% of population/habitat lost.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/ composition/ attributes of baseline will be partially changed. Guide: 5-20% of population/habitat lost.
Low	Minor shift away from baseline conditions. Change arising from the loss/ alteration will be discernible but underlying character/ composition/ attributes of baseline condition will be similar to pre-development circumstances/patterns.

Magnitude	Definition
	Guide: 1-5% of population/habitat lost.
Negligible	Very slight change from baseline condition. Change barely distinguishable, approximating to the "no change" situation. Guide: <1% of population/habitat lost.

The combined assessment of the magnitude of an impact and the sensitivity of the receptor will be used to determine whether or not an adverse impact is significant. These two criteria have been cross-tabulated to assess the overall significance of that impact (**Table 8-3**). This gives a guide as to the determination of significance, though a final assessment should still be subject to professional judgment.

Table 8-3 is the matrix of magnitude of impact and conservation value used to test the significance of ornithological impacts. The significance category of each combination is shown in each cell. Shaded cells indicate potentially significant impacts in terms of the EIA Regulations.

Table 8-3: Magnitude of Impact and Conservation Value Matrix

MAGNITUDE	CONSERVATION VALUE				
		Very high	**High**	**Medium**	**Low**
	Very high	Very high	Very high	High	Medium
	High	Very high	Very high	Medium	Low
	Medium	Very high	High	Low	Very low
	Low	Medium	Low	Low	Very low
	Negligible	Low	Very low	Very low	Very low

The interpretation of these significance categories is as follows:

- **Very low** and **low** are not normally of concern, though normal design care should be exercised to minimise adverse effects;
- **Very high** and **high** represent adverse effects on bird populations which are regarded as significant for the purposes of EIA; and
- **Medium** represents a potentially significant adverse effect on which professional judgment has to be made, though mitigation would typically reduce it below the significance threshold.

The NatureScot (SNH 2018b) wider countryside assessment guidance defines the key significance test as follows: "An impact should be judged as of concern where it would adversely affect the favourable conservation status of a species, or stop a recovering species from reaching favourable conservation status, at international or national level or regionally." It notes that the key baseline population against which the assessment should be made for breeding birds is the SNH NHZ population. The Site lies within the 'West Southern Uplands and Inner Solway' (NHZ19) NatureScot Natural Heritage Zone.

As the survey area supports species specially protected species Schedule 1 of the 1981 Wildlife and Countryside Act, information on the breeding sites and associated flight activity of the species listed on that Schedule will only be provided in a Confidential Appendix. It is important that their breeding locations are kept confidential to minimise the risk of persecution and disturbance. Following NatureScot guidance, the amount of information contained in that Appendix will be kept to a minimum, but will include any data that indicate breeding locations. The assessment of the effects that the proposed development may have

on these species will be included in the main EIA Report ornithology chapter report (but without identifying nesting locations).

Cumulative Assessment

A cumulative ornithological assessment will be undertaken following the NatureScot (SNH 2018c) guidance on 'Assessing Significance of Impacts from Onshore Windfarms on Birds Outwith Designated Areas', considering impacts on the favourable conservation status of key species within the relevant Natural Heritage Zone.

8.4 Consultation

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

- NatureScot;
- Dumfries and Galloway Raptor Study Group;
- South-west Scotland Environmental Information Centre; and
- RSPB.

8.5 Matters Scoped Out

No ornithological issues have been scoped out from this assessment, though, following NatureScot (SNH 2018b) guidance, the assessment will focus on the key species likely to be affected by the proposed development. Key species are being defined using the following criteria:

- Species listed on Annex 1 of the EU Birds Directive;
- Species listed on Schedule 1 of the 1981 Wildlife & Countryside Act;
- Species identified by SNH 2018b as 'Priority bird species for assessment when considering the development of onshore wind farms in Scotland'. These include (a) species that are widespread across Scotland which utilise habitats or have flight behaviours that may be adversely affected by a wind farm, and (b) as 'restricted range' species; and
- Red-listed species on the Birds of Conservation Concern list.

8.6 Approach to Mitigation

Ornithological sensitivities will be taken into account as hard constraints when developing the development layout design, with the adoption of appropriate buffers. A range of ornithological mitigation measures are likely to be required, primarily for the construction phase to reduce impacts on breeding birds. These will include the production of a Construction Method Statement to the satisfaction of NatureScot and other relevant stakeholders, timing of works to avoid more sensitive areas/times, and the development and implementation of a Breeding Bird Protection Plan (BBPP) to ensure that no Schedule 1 species are disturbed during the breeding season and protect other nesting birds.

8.7 Questions to Consultees

The following are questions to consultees:

- The above surveys have been scoped to ensure that a robust and complete set of baseline ecological data is collected for the proposed development. Please can the consultees confirm if the survey and assessment methodologies are appropriate for the Site and in relation to the proposed development?

8.8 References and Standard Guidance

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 and Ferrer, M (eds.) Birds and Wind Farms. Quercus, Madrid.

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

Brown, A. F., and K. B. Shepherd. 1993. A method for censusing upland breeding waders. Bird Study 40:189-195.

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

Gilbert, G., D. W. Gibbons, and J. Evans. 1998. Bird Monitoring Methods: a manual of techniques for key UK species. RSPB /BTO/WWT/JNCC/ITE/The Seabird Group.

Hardey, J., H. Q. P. Crick, C. V. Wernham, H. T. Riley, B. Etheridge, and D. B. A. Thompson. 2013. Raptors: a field guide to survey and monitoring. The Stationary Office Ltd, Edinburgh. Second Third Edition

Mitchell, C. 2012. Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland. 1881, Wildfowl & Wetlands Trust / Scottish Natural Heritage Report, Slimbridge.

Scottish Natural Heritage. 2016a. Assessing Connectivity with Special Protection Areas (SPAs) - Version 3. Vol. Version 3. SNH Guidance.

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

Scottish Natural Heritage. 2017. Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH Guidance.

Scottish Natural Heritage. 2018a. Avoidance Rates for the onshore SNH Wind Farm Collision Risk Model. SNH.

Scottish Natural Heritage. 2018b. Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas. SNH.

Scottish Natural Heritage. 2018c. Assessing the cumulative impacts of onshore wind farms on birds. Guidance. SNH.

Scottish Renewables. 2019. Good Practice during Wind Farm Construction. V4.

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

9.0 Geology, Hydrology, Hydrogeology and Soils

9.1 Introduction

This Section outlines the proposed scope of the EIA Report to assess the potential significant effects from the proposed development on geology, hydrology, hydrogeology and soils (including peat).

9.1.1 Legislation, Policy and Guidance

The assessment will be undertaken in line with current legislation, planning policy, and guidance, including:

9.1.1.1 Legislation

- European Union (EU) Water Framework Directive (2000/60/European Commission (EC);
- EU Drinking Water Directive (98/83/EC);
- The Water Environment and Water Services (WEWS)(Scotland) Act 2003 (WEWS Act);
- The Environment Act 1995;
- Environment Protection Act 1990;
- The Flood Risk Management (Scotland) Act 2009;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (Controlled Activities Regulations (CAR)) (as amended);
- The Water Supply (Water Quality) (Scotland) Regulations, 2001;
- Private Water Supplies (Scotland) Regulations 2006;
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017; and
- The Electricity Act 1989.

9.1.1.2 Planning Policy

- National Planning Policy Framework 4 (NPF4) adopted by Scottish Government on 13 February 2023. Specifically, Policy 2 (Climate Mitigation and Adaptation), Policy 5 (Soils), Policy 20 (Blue and Green Infrastructure), and Policy 22 (Flood Risk and Water Management); and
- Dumfries and Galloway Local Development Plan 2 adopted on 3 October 2019. Specifically, Policy NE11 (Supporting the Water Environment) Policy NE12 (Protection of Water Margins), Policy NE14 (Carbon Rich Soils), Policy NE15 (Protection and Restoration of Peat Deposits as Carbon Sinks), Policy IN7 (Flooding and Development), and Policy IN8 (Surface Water Drainage and Sustainable Drainage Systems (SuDS).

9.1.1.3 Guidance

Planning Advice Notes (PANs) published by the Scottish Government;

- SEPA and NetRegs Pollution Prevention Guidelines (PPG) and replacement Guidance for Pollution Prevention (GPP);

- Construction Industry Research and Information Association (CIRIA) publications;
- SEPA Publications;
- Scottish Government, Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2017);
- Forestry Commission, Guidelines for the Risk Management of Peat Slips on the Construction of Low Volume/Low Cost Roads on Peat (2006);
- Department of Environment, Food and Rural Affairs (DEFRA) Construction Code of Practice for the Sustainable Use of Soils on constructions Sites (2011); and
- DEFRA Good Practice Guide for Handling Soils (Ministry of Agriculture, Fisheries and Food (MAFF) 2000).

9.2 Environmental Baseline and Potential Sources of Impact

The soils, geology and hydrological conditions at Site are already well understood as they were assessed in support of a previous planning application for a wind farm at the Site (see Section 2.1.1). Where relevant, reference to previous studies are made in the Sections that follow.

It is noted that with respect to soils, geology and the water environment, SEPA did not object to the previous planning application for a wind farm.

9.2.1 Geology and Hydrogeology

The Site is shown by British Geological Survey (BGS) to be underlain by sandstone bedrock geology of the St Bees Sandstone Member, which is a sedimentary rock of fluvial origin.

The overlying superficial geology is shown by BGS mapping to comprise mainly diamicton of the Gretna Till Formation; a sedimentary deposit which is glaciogenic in origin. BGS mapping indicates that several glacial meltwater channels present at the Site, aligned from a central ridge towards the south of the Site, and from the west to the middle of the Site. The southern area of the Site, and the western and northern boundaries of the Site, are shown to comprise peat.

The sandstone aquifer beneath the Site is characterised by BGS as a highly productive aquifer with significant intergranular flow.

All of Scotland’s groundwater bodies have been designated as a Drinking Water Protected Area (DWPA). The Site is located within the Annan Groundwater DWPA (Water Body ID 150623) which is currently (2023) classified as Good overall status.

9.2.2 Soils and Peat

National soil mapping for Scotland indicates that most of the Site is underlain by brown earths derived from Permian and Carboniferous sandstones and shales; the northern and south western extents of the Site are indicated to be underlain by dystrophic basin peat.

The former Nutberry Moss Peat Works is located to the immediate north and west of the Site, and from where peat extraction works had occurred for many years. The area is locally distinctive with extensive areas of bare black peat. However, peat extraction work has now ceased; the works was permitted only until 23 November 2024. The peat surrounding the Site has been artificially drained by a herringbone network of ditches to enable the peat extraction.

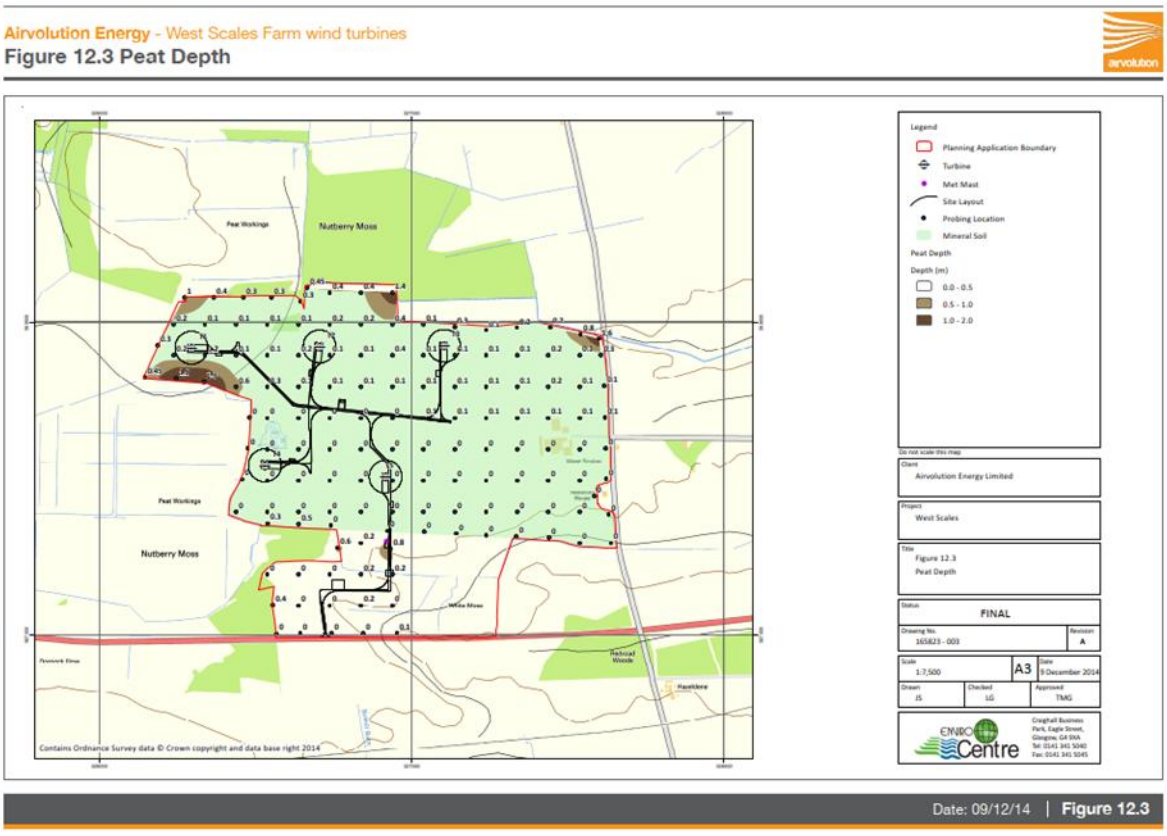
Peatland classification mapping indicates that the brown earths beneath the site are mineral soils (Class 0), which is not considered to represent peatland habitats. Areas of peat to the north and west of the Site are categorised as Class 5, whereby no peatland habitat is

recorded but soils are carbon-rich. However, a large area to the south of the Site, associated with White Moss, and peripheral areas to the north and west, associated with Nutberry Moss, are categorised as Class 1, nationally important carbon-rich soils, with potential deep peat and priority peatland habitat.

Phase 1 peat depth surveys completed by EnviroCentre Ltd in September 2014 at Site confirmed very little peat present within the site boundary. Typically soils of a depth of 0.1 – 0.2m were recorded with areas of deeper soil / peat up to 1.9m recorded on the northern and western Site boundary adjacent to Nutberry Moss with a localised peat depth of 0.8m recorded in the southern area of the Site.

Image 9-1 shows the results of the peat depth probing completed by EnviroCentre Ltd in September 2014. **Image 9-1** is from a Figure presented in the Environmental Statement that supported the previous planning application for a wind farm at the Site.

Image 9-1 – 2014 Site Peat Depth Data



It is proposed, as part of this current EIA (for the proposed development), to verify the 2014 peat depth data and where necessary undertake Phase II peat depth probing.

9.2.3 Groundwater Dependent Terrestrial Ecosystems (GWDTE)

National Vegetation Classification (NVC) data collated in 2014 by EnviroCentre Ltd indicates that NVC community's indicative of highly and moderately groundwater dependent ecosystems may be present within the Site. An updated NVC survey will be completed as part of this Application and areas of potential GWDTE screened for and assessed in accordance with current SEPA guidance.

9.2.4 Hydrology and Designated Sites

In 2024, the Site and surrounding area received an annual rainfall of circa. 1,100mm.

The Site is entirely located within the Gretna Coastal catchment. Most of the Site falls within the surface water sub catchment of Kirtle Water, except the north west of the Site which drains through the western area of Nutberry Moss towards Dornoch Burn. Kirtle Water (Water Body ID: 10666) is (2023) classified with a Poor overall status, whilst Dornoch Burn (Water Body ID: 10665) is (2023) classified with Moderate ecological potential and overall status.

The north of the Site falls towards a network of man-made drainage ditches associated with Nutberry Moss, and includes a drain located along the northern boundary of the Site and falls in an easterly direction towards the Kirtle Water. The south of the Site falls towards a watercourse within White Moss which drains east through the southern part of the Site and along the south eastern boundary to the Kirtle Water. The existing man-made drains are likely to form hydraulic boundaries between the Site and the adjacent peatlands.

There are no designated Surface Water Drinking Water Protected Areas downstream of the Site.

Previous consultation between EnviroCentre Limited and D&GC in 2014 confirmed four private water supplies (PWS) within 1km of the Site, one of which was located within the Site at West Scales; a disused borehole abstraction which was used for agricultural use. To ensure a contemporary assessment is prepared PWS data will be obtained from D&GC during consultation for the EIA and verified by a site visit.

SEPA flood mapping indicates the Site is not at risk of flooding from rivers or the sea. River flooding is shown as a risk to land to the east of the Site, associated with the floodplain of Kirtle Water. Small areas of discrete surface water flooding are indicated across the south of the Site, associated with localised topographic depressions. A larger area of surface water flood risk is shown to the west of the Site, associated with marshy grasslands. Flood risk, therefore, is not a development constraint.

Review of NatureScot's SiteLink indicates that there are no designated sites within 500m of the Site. The nearest designated sites are the Upper Solway Flats and Marshes, which has RAMSAR and Special Site of Scientific Interest (SSSI) status, and Solway Firth, which has Special Area of Conservation (SAC) and Special Protection Area (SPA) status. Both sites are located over 2km downstream of the Site at the closest point.

9.2.5 Potential Sources of Impact

Without mitigation or adherence to best practice, impacts on soils (inc. peat), geology, hydrogeology, and hydrology could occur during the construction and operational phases of the proposed development. A summary of the potential effects on ground conditions and the water environment resulting from construction, and operation of a wind and solar farm is provided below. These will be considered in the EIA Report.

9.2.5.1 Potential Impacts During Construction

The following potential impacts during the construction phase will be considered in the EIA Report:

- Disturbance and loss of carbon rich soils and peat deposits;
- Ground instability (including peat slide risk if present);
- Impacts on surface water and groundwater quality from pollution from fuel, oil, concrete or other hazardous substances;
- Discharge of sediment-laden runoff to drainage system and watercourses;
- Increased flood risk to areas downstream of the Site during construction through increased surface runoff;

- Changes in groundwater levels, or saturation of peat deposits, from dewatering excavations;
- Potential change of groundwater flow paths and contribution to areas of peat and GWDTEs;
- Disturbance of watercourse bed and banks from the construction of culverts;
- Potential adverse impacts to public and private water supplies; and
- Disturbance and or pollution resulting from borrow pit formation and use.

9.2.5.2 Potential Impacts During Operation

The following potential impacts during the operational phase will be considered in the EIA Report:

- Increased runoff rates and flood risk, resulting from increases in areas of tracks and hard standing at turbines;
- Changes in natural surface water drainage patterns (which may affect water contribution to areas of peat and GWDTE);
- Changes to groundwater levels and groundwater movement;
- Longer term impacts on abstractions for water supplies, particularly any supplies dependent on groundwater; and
- Pollution impacts on surface water quality from maintenance work.

9.3 Method of Assessment and Reporting

The potential effects from the proposed development on geology, hydrogeology, soils (including peat), and hydrology will be assessed by completing a desk study and field investigation followed by an impact assessment, the processes of which are detailed below.

9.3.1 Study Area

The geological, hydrological and hydrogeological study area will extend to 500m from the Site boundary. The study area for peat and soils will be within the Site boundary. The cumulative effects study area will extend to 5km from the Site boundary.

9.3.2 Desk Study

An initial desk study will be undertaken to determine and confirm the baseline characteristics by reviewing available information relating to soils and peat, geology, hydrology, and hydrogeology such as groundwater resources, licensed and unlicensed groundwater and surface water abstractions, public and private water supplies, surface water flows, flooding, rainfall data, water quality and soil data. This will include review of published geological maps, Ordnance Survey maps, aerial photographs, and site-specific data such as available peat probing data, NVC data, digital terrain models (slope plans) and geological literature.

The desk study will identify sensitive features which may potentially be affected by the proposed development and will confirm the geological, hydrogeological, soils, and hydrological environment.

9.3.3 Field Surveys

The hydrological assessment specialists will liaise closely with the project ecology and geology/geotechnical specialists to ensure that appropriate information is gathered to allow a comprehensive impact assessment to be completed.

A detailed site visit and walkover survey will be undertaken, to:

- Verify the information collected in support of the previous planning application and during the desk and baseline study;
- Identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- Visit any identified GWDTE (in consultation with the project ecologists);
- Obtain private water supply information from D&GC and visit any public and private water supplies within the study area that might be affected by the proposed development to confirm details of the location of the abstraction, its type and use, as required;
- Prepare a schedule of potential watercourse crossings (where required);
- Assess the site geomorphology and conduct both Phase I and, if required, Phase II peat depth probing; and
- Inspect rock exposures, establish by probing an estimate overburden thicknesses (a probe is pushed vertically into the ground to refusal and the depth is recorded).

The desk study and field surveys will be used to identify potential development constraints and be used as part of the design of the proposed development.

Once the desk study is completed and sensitive soil and peat, geological and water features are confirmed an EIA Report will be prepared to assess the potential effects on soils and peat, geology hydrology and hydrogeology as a result of the construction and operation of the proposed development.

Having regard to the nature of the proposed development and key baseline characteristics, at this early stage it is considered that the assessment would include:

- Potential effects on adjacent priority peatland;
- Potential effects on the hydrological regime, including water quality, flow and drainage;
- Assessment of potential effects on water users and water sources;
- In consultation with the project geologists and ecologists, assessment of potential effects on water (including groundwater) dependant habitats, including peat habitat and GWDTE, if confirmed; and
- Assessment of potential flood risk and drainage during construction and operation, including any proposed watercourse crossings.

9.3.4 Assessment of Effects

The purpose of this assessment will be to:

- Identify any areas susceptible to peat slide, using peat thickness and DTM data to analyse slopes;
- Assist in the micrositing of turbines, solar PV arrays, BESS, tracks and associated infrastructure in areas of no peat or shallow peat and in the least hydrogeologically and hydrologically sensitive areas by applying buffer zones around watercourses, GWDTE and PWS, and other hydrological features;
- Assess potential effects on soils, peat and geology;
- Determine what the likely effects of the proposed development are on the hydrological regime, including water quality, flow and drainage;

- Assess potential effects on water (including groundwater) dependent habitats;
- Determine suitable mitigation measures to prevent significant hydrological and hydrogeological effects; and
- Develop an acceptable code for working on the Site that will adopt best practice procedures, effective management and control of on-site activities to reduce or offset any detrimental effects on the geological, hydrogeological, soils, and hydrological environment.

It is anticipated the EIA Report would include the following technical appendices:

- Outline Peat Management Plan (PMP);
- Peatland Condition Assessment;
- Carbon Calculator Assessment; and
- Borrow Pit Appraisal.

A qualitative risk assessment methodology will be used to assess the significance of the potential effects. Two factors will be considered: the sensitivity of the receiving environment and the potential magnitude should that potential impact occur.

This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the proposed development. This approach also allows effort to be focused on reducing risk where the greatest benefit may result.

The sensitivity of the receiving environment (i.e. the baseline quality of the receiving environment as well as its ability to absorb the effect without perceptible change) and the magnitude of change will each be considered through a set of pre-defined criteria.

The sensitivity of the receiving environment together with the magnitude of change defines the significance of the effect, which will be categorised into level of significance.

A review of other existing and proposed developments near the proposed development will be undertaken and potential impacts on geology, hydrogeology, soils (including peat), and hydrology will be assessed to identify cumulative impacts. With regard to the proposed development, it is considered that mitigation measures will be proposed that will have a neutral effect or provide betterment compared to baseline conditions. It is not considered that there will be any significant residual or cumulative impact to report.

9.3.5 Mitigation

The proposed development will undergo design iterations and evolution in response to constraints identified as part of the baseline studies and field studies so as to avoid and/or minimise potential effects on receptors where possible.

For example, it is expected that the following potential mitigation measures will be included in the design of the proposed development:

- A buffer of up to 50m will be applied to watercourses shown on 1:25,000 scale mapping;
- Site-specific peat probing will be undertaken in accordance with current best practice guidance to allow a contemporary Outline PMP to be prepared;
- A carbon rich soils and PMP will be prepared to show how the integrity of soil and peat will be safeguarded; and
- Impacts on private water supply sources and areas of GWDTE will be avoided.

9.3.6 Peat Management Plan (PMP)

A Phase 1 peat survey will be undertaken to confirm the extents of carbon rich soils and peat within the proposed development area.

If avoidance of peat and carbon rich soils cannot be avoided and development on peat and/ or carbon rich soils is required a Stage 1 PMP will be prepared as a supporting technical appendix in line with NPF4 and SEPA Regulatory Position Statement: Developments on Peat (2012) and NatureScot Good Practice Guidance on Wind Farm Construction[14]. The Waste Framework Directive (WFD) 2008/98/EC, transposed into National Law under The Waste Management Licensing (Scotland) Regulations 2011, sets out a requirement to apply a waste hierarchy.

In terms of this project, this hierarchy should be considered as follows:

- Prevent excavation;
- Reduce volumes of peat excavated; and
- Reuse excavated peat in a manner to which it is suited.

The objective of the PMP is to demonstrate to SEPA and other relevant parties that: the extent and characteristics of peat at the application site have been investigated; excavations in peat have been minimised wherever possible through design iterations and adoption of appropriate design and mitigation hierarchy ; and that excavation and subsequent management of peat, including an estimation of quantities, has been considered as part of the EIA.

The following works will be completed:

- A detailed description of the in-situ peat characteristics at the application site and the expected nature and classification (in accordance with von Post Classification or similar) of excavated peat;
- Details of the construction activities that are likely to generate peat;
- Peat depths within the Site will be presented using a 100m grid where access is possible and a 10m grid at proposed infrastructure locations (the probing will also provide information of the substrate below the peat);
- The thickness of the peat will be established by probing and the underlying sub-strata confirmed by inspection of watercourses;
- The investigation will consider turbine locations, solar PV arrays, access routes, compounds (including substation) and borrow pits for signs of existing or potential peat instability;
- Augering of a representative selection of peat probe locations will be undertaken and the proportion of acrotelmic and catotelmic peat recorded; and
- Output from the field survey will comprise a record of investigation locations and summary of peat depths and augering results.

As a minimum, the following sources of information will be referenced, and the relevant data utilised in developing the PMP:

- Relevant chapters of the EIA Report (including general principles of peat management);

[14] NatureScot (July 2024), Good Practice During Wind Farm Construction. https://www.nature.scot/doc/good-practice-during-wind-farm-construction

- Site survey data (topographical, peat probing and coring survey data);
- Site layout and other design drawings (cut and floated track layout etc);
- Borrow pit/engineering geology assessment report;
- Ecological assessment (National Vegetation Classification (NVC) maps to determine vegetation type and condition, von Post field observations, erosion state, etc.); and
- Hydrological assessment, such as information on peat hydrological controls (e.g., grips, forestry drainage, peat pipes, hags and gullies, erosion state, etc).

9.3.7 Peatland Condition Assessment

If development is proposed on areas of peatland a targeted field assessment will be completed using Phase 1 Desk Study to characterise and classify peatland conditions across the Site, guided by the principles within the NatureScot Peatland Condition Assessment guidelines, Welsh rapid assessment protocol, NatureScot Research Report 1308, IUCN UK Peatland Programme Eyes on the Bog and Peatland Code Field Protocol ensuring it is policy and remote sensing compatible and future proof. The peatland condition assessment will provide a baseline condition assessment that can be used to demonstrate that peat avoidance and impact mitigation is at the core of the proposed development design.

This includes:

- vegetation, distribution of key indicator species (plant functional type) are commonly used to evidence condition, although NVC classes give an approximate distribution, a more detailed analysis should allow class boundaries to be refined and in the case of the modified class subsumed within the more degraded peatland classification, for example the absence of significant amounts sphagnum species or the presence of large areas of dry heath vegetation;
- hydrology and peat surface conditions (erosion features, peat density, surface moisture). Peat in poor condition is often denser and drier than that in poor condition, this is difficult to ascertain from satellite imagery and therefore provides an additional evidence base for degradation. Also, smaller scale erosion features/bare peat patches may extend further than visible on imagery;
- current impacts of land management, such as evidence of burning, grazing, and tracks which are too small to be seen remotely to support the condition assessment; and
- ground validation and extensive baseline from which post restoration progress and can be benchmarked against and also decisions regarding siting justified against. For example in restored areas where non-blanket peatland vegetation is colonising along natural low peat depth areas, justifying use of that area as a potential route to a turbine base, or alternatively using the restoration on site to indicate which techniques are working best when planning further restoration efforts elsewhere.

This will generate data on key condition indicators including:

- Ecological;
- Plant functional Type (Cover, Community structure);
- Peatland microforms;
- Grazing indicators (Heather Height etc.);
- Hydrological;

- Hydrological features (Drains, peat pipes, gulleys, natural drainage);
- Surface wetness;
- Fire evidence (surface charring);
- Geomorphology;
- Peat Stability/Mechanical;
- Surface Density (quaking, soft, firm);
- Failure features (slumping, dessication cracks, strain cracks);
- Land use; and
- Any additional land-use data not determined in desk study.

9.3.8 Borrow Pit Assessment (BPA)

The identification and assessment of potential borrow pit locations will initially comprise a review of all relevant historical and geological maps, soil survey maps and aerial photographs together with any available borehole records held by the British Geological Survey. This information will be used in combination with elevation data for the Site to identify preferred borrow pit sites based on topographic gradients and anticipated geology.

This document will incorporate an engineering geological assessment of those locations identified as potentially viable borrow pits to supply sufficient quality and quantity of materials for the construction of the proposed development.

The report will include:

- Justification for each proposed location;
- Area assessed for suitability for development of the borrow pit (“area of search”) for which the various environmental assessments will be undertaken;
- Estimated dimensions of the borrow pit to be developed within the “area of search”;
- Estimated volumes of overburden to be removed;
- Description of geology;
- Anticipated method of working / extraction;
- Proposals for restoration / reinstatement of borrow pit;
- Individual figures for each borrow pit showing:
    - the area of search and proposed dimensions in plan view on an OS background map;
    - an indicative cross-section of the proposed borrow pit with original and restored ground profile; and
    - a colour photograph of the proposed location, annotated with indicative borrow pit layout.

9.4 Consultation

As part of the consultation phase of the project environmental data and views of the proposed development will be sought from:

- Dumfries and Galloway Council;
- SEPA;

- NatureScot; and
- Scottish Water.

9.5 Matters Scoped Out

It is proposed that the potential impacts outlined above will be assessed as part of the EIA Report.

At this stage, it is proposed that the following can be scoped out of detailed assessment:

- Effects on geology. While there will be effects arising from track construction and for turbine and crane pad areas, these are limited in area and do not extend beyond the immediate development footprint. No particularly sensitive geological features have been identified within the Site. Potential effects on carbon rich soils and peat will be assessed in full.
- Effects from decommissioning activities. While there will be effects arising from the decommissioning phase, these will be similar to the effects during the construction phase. It is not currently anticipated that any potential effects would result in any significant impact during decommissioning provided that a suitable Decommissioning Plan is prepared. Methods for decommissioning and mitigation measures to be employed at decommissioning stage will follow best practice measures and guidance at that time.
- A Geomorphological Assessment, as photographs and records of key existing or baseline water features would be recorded and presented in the assessment.
- Detailed Flood Risk Assessment. Published mapping confirms the Site is not located in an area at risk of fluvial, coastal or significant surface water flooding. It is proposed, therefore, that a simple screening of the potential sources of flooding (fluvial, coastal, groundwater, pluvial, infrastructure etc.) is presented in the EIA Report and measure that would be used to control the rate and quality of runoff will be specified in the EIA Report.
- A Drainage Impact Assessment. Design standards and sustainable drainage measures which would be used to control and manage incident rainfall would be specified in the EIA Report. A site drainage design plan would be prepared as part of the detailed site design (post planning) and form part of the final Construction and Environmental Management Plan. This would be submitted to SEPA for approval at that stage.
- Water Quality Monitoring as part of the baseline assessment. Classification data is available from SEPA for the watercourses at Site and there are no known sources of potential water pollution at the Site that might give rise for the need for water quality monitoring.
- Designated Sites, as the nearest designated site is over 2km downstream of the Site. Therefore, at such distances, due to the dilution and attenuation of any potentially polluting chemicals or sedimentation, the proposed development would not impact these sites.
- Peat Landslide Hazard Risk Assessment (PLHRA) is unlikely to be required based on the previous results of the Phase 1 peat depth survey undertaken in 2014. Further Phase 1 peat probing will be undertaken and if this data confirms that the proposed development avoids peat (>0.5m) then a PLHRA will not be required. If development is proposed on peat greater than 0.5m and on slopes greater than 2 degrees then a PLHRA will be undertaken.

9.6 Approach to Mitigation

There is much best practice guidance which has been developed to assist developers minimise the risks associated with wind farm and solar array construction and operation; this will be used to develop site-specific mitigation measures. Measures will be proposed to control and mitigate, for example, pollution risk (from anthropogenic and geogenic sources), flood risk, watercourse crossings, impacts on surface and groundwater flow paths, and management of peat and carbon rich soils.

Good practice measures will be applied in relation to pollution risk, and management of surface run-off rates and volumes. This will form part of the final CEMP to be implemented for the proposed development.

9.7 Questions to Consultees

The following are questions to consultees:

- Published mapping confirms that most of the Site is not identified as being at flood risk. It is proposed, therefore, that a simple screening of potential flooding sources (fluvial, coastal, pluvial, groundwater etc.) is presented in the EIA Report. Is this approach acceptable?
- It is not proposed to prepare a detailed drainage design. Rather measures that would be used to control the rate and quality of runoff will be specified in the EIA Report. Again, is this acceptable?
- Site investigations, including peat probing, augering and condition assessment, private water supply survey, and GWDTE assessment will be undertaken as part of the proposed assessment. Should any additional investigation or data sources be considered when assessing baseline conditions?
- It is not proposed to undertake any water quality sampling, establish groundwater monitoring points, surface water monitoring points or undertake leachability trials of any rock as there is published data that can be used to characterise baseline conditions and complete the impact assessment. Is this acceptable?
- Do you agree that the scope of the proposed assessment is appropriate?

9.8 References and Standard Guidance

European Union (EU) Water Framework Directive (2000/60/European Commission (EC)) available at: https://www.legislation.gov.uk/eudr/2000/60/contents

EU Drinking Water Directive (98/83/EC) available at: https://www.legislation.gov.uk/eudr/1998/83

The Water Environment and Water Services (WEWS)(Scotland) Act 2003 (WEWS Act) available at: https://www.legislation.gov.uk/asp/2003/3/contents

The Environment Act 1995 available at: https://www.legislation.gov.uk/ukpga/1995/25/contents

Environment Protection Act 1990 available at: https://www.legislation.gov.uk/ukpga/1990/43/contents

The Flood Risk Management (Scotland) Act 2009 available at: https://www.legislation.gov.uk/asp/2009/6/contents

The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (Controlled Activities Regulations (CAR)) (as amended) available at: https://www.legislation.gov.uk/ssi/2011/209/contents

The Water Supply (Water Quality) (Scotland) Regulations, 2001 available at: https://www.legislation.gov.uk/ssi/2001/207/contents

Private Water Supplies (Scotland) Regulations 2006 available at: https://www.legislation.gov.uk/ssi/2006/209/contents

The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017 available at https://www.legislation.gov.uk/ssi/2017/282/contents

The Electricity Act 1989 available at: https://www.legislation.gov.uk/ukpga/1989/29/contents

National Planning Policy Framework 4 (NPF4) adopted by Scottish Government on 13 February 2023 available at: https://www.gov.scot/publications/national-planning-framework-4/

Dumfries and Galloway Local Development Plan 2 adopted on 3 October 2019 available at: https://www.dumfriesandgalloway.gov.uk/planning-building/planning/planning-policy/local-development-plan/local-development-plan-2-ldp2

Planning Advice Notes (PANs) published by the Scottish Government available at: https://www.gov.scot/collections/planning-advice-notes-pans/

SEPA and NetRegs Pollution Prevention Guidelines (PPG) and replacement Guidance for Pollution Prevention (GPP) available at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/

Construction Industry Research and Information Association (CIRIA) publications

SEPA Publications

Scottish Government, Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (2017) available at: https://www.gov.scot/publications/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/

Forestry Commission, Guidelines for the Risk Management of Peat Slips on the Construction of Low Volume/Low Cost Roads on Peat (2006);

Department of Environment, Food and Rural Affairs (DEFRA) Construction Code of Practice for the Sustainable Use of Soils on constructions Sites (2011) available at: https://www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

DEFRA Good Practice Guide for Handling Soils (Ministry of Agriculture, Fisheries and Food (MAFF) 2000)

10.0 Archaeology and Cultural Heritage

10.1 Introduction

This section outlines the proposed scope and methodological approach for the Archaeology and Cultural Heritage chapter of the EIA Report. The chapter would assess the potential effects resulting from the proposed development on archaeology and cultural heritage assets, which include:

- World Heritage Sites;
- Scheduled Monuments;
- Listed Buildings;
- Inventoried Gardens and Designed Landscapes (GDLs);
- Inventoried Battlefields;
- Conservation Areas; and
- Non-designated heritage assets, such as locally and regionally important heritage features.

The cultural heritage impact assessment will:

- Identify cultural heritage assets that may be subject to significant effects, both within the limits of the proposed development and within a Study Area;
- Establish the potential for currently unknown archaeological assets to survive buried within the Site;
- Assess the predicted effects on these assets; and
- Propose a programme of mitigation where appropriate.

It will consider direct effects (such as physical disturbance or effects through setting change), indirect effects (such as increased pollution or changes in water draining patterns which can indirectly affect the preservation of heritage materials), and cumulative effects (where assets affected by the proposed development are also likely to be affected by other unrelated development proposals). The Site is located within Dumfries and Galloway in Scotland, though its Study Area includes areas and heritage assets within England. Therefore, English legislation, policy, and guidance has been listed and applied to the relevant heritage assets.

The proposed approach to the assessment of effects on cultural heritage is set out within this Scoping Report Section. The assessment will be undertaken by a qualified consultant at SLR Consulting Ltd. This section is supported by the following:

- **Appendix 04 – Cultural Heritage Appraisal**; and
- **Figure 21 – Designated Cultural Heritage Assets – ZTV**.

10.1.1 Legislation, Policy and Guidance

10.1.1.1 Legislation

- The Ancient Monuments and Archaeological Areas Act 1979;
- The Planning (Listed Buildings and Conservations Areas (Scotland) Act 1997;
- The Historic Environment (Amendment) (Scotland) Act 2014;

- Town and Country Planning Act (1997) (Scotland);
- Town and Country Planning Act (1990) (England); and
- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017.

10.1.1.2 Planning Policy

The UK Government, Scottish Government, Historic Environment Scotland and the relevant local authorities have issued a number of statements of policy with respect to dealing with the historic environment in the planning system:

- Onshore Wind Turbines: Planning Advice (2014);

Scotland

- National Planning Framework 4 (Scotland) (Scottish Government, 2023);
- Historic Environment Policy for Scotland (HEPS 2019);
- Dumfries and Galloway Local Development Plan (2019) relevant policies including;
  - Policy HE1: Listed Buildings;
  - Policy HE2: Conservation Areas;
  - Policy HE3: Archaeology;
  - Policy HE4: Archaeologically Sensitive Areas;
  - Policy HE5: Hadrian's Wall;
  - Policy HE6: Gardens and Designed Landscapes; and
  - Policy HE7: Historic Battlefields.

England

- National Planning Policy Framework (UK Government, 2024) (England);
- Carlisle District Local Plan 2015 – 2030.
  - Policy CC2 – Energy from Wind
  - Policy HE 1 – Hadrian's Wall World Heritage Site
  - Policy HE 2 – Scheduled Ancient Monuments and Non-Designated Archaeological Assets
- Cumbria Wind Energy Supplementary Planning Document (Cumbria County Council, 2007)

10.1.1.3 Guidance and Standards

- IEMA Principles of Cultural Heritage Impact Assessment (IEMA, 2021); and
- Chartered Institute for Archaeologists Standard and Guidance for Historic Environment Desk Based Assessment (2014, updated 2020).

Scotland

- Historic Environment Scotland Guidance on Managing Change in the Historic Environment: Setting (HES, 2020);

- Planning Advice Note 2/2011: Planning and Archaeology (Scottish Government, 2011);
- Our Past, Our Future: The Strategy for Scotland's Historic Environment (HES, 2023);
- A Guide to Climate Change Impact: On Scotland's Historic Environment (HES, 2019);
- Scottish National Heritage (now NatureScot) and Historic Environment Scotland Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (HES/NS, 2019); and
- The area of the Site is within Dumfries and Galloway Council (D&GC), who is advised by their internal archaeologist on archaeological and heritage matters.

England

- Setting of Heritage Assets Guidance (Historic England, 2017) (England);
- Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (Historic England, 2008) (England);
- Managing Significance in Decision-Taking in the Historic Environment (Historic England, 2015) (England); and
- Statements of Heritage Significance: Analysing Significance in Heritage Assets (Historic England, 2019).

10.1.1.4 Policy and Guidance relating to Hadrian's Wall World Heritage Site (WHS)

The Frontiers of the Roman Empire WHS is comprised of three separate World Heritage Sites – The Antonine Wall, The German-Raetian Limes and Hadrian's Wall. The latter, Hadrian's Wall, is set wholly within northern England and partially within the study area of the proposed development. Therefore, the policy and guidance relating to the management of WHS sites in England is relevant and consultees will include Historic England (HE) and Cumberland Council Local Planning Authority. HE note that *"Inscription of a World Heritage Site by UNESCO brings no additional statutory controls, but protection is afforded through the planning system as well as through the other national designations (listed buildings, scheduled monuments, sites of specific interest (SSSI) and so on) that cover elements, if not the whole, of the site."*. In this, the cultural significance or its outstanding universal value will be reflected in the cultural significance of its constituent parts under the Ancient Monuments and Archaeological Areas Act 1979. Those designations that are considered as constituents of the WHS within the study are:

- Hadrian's Wall between Port Carlisle and Bowness-on-Solway in wall miles 78 and 79 (1015951);
- Hadrian's Wall north of Kirkland House, Port Carlisle in wall mile 78 (1016075);
- Hadrian's Wall vallum between the track south of Kirkland House and Bowness-on-Solway in wall miles 78 and 79 (1016021);
- Hadrian's Wall and vallum between the access road to Glendale caravan park and the track south of Kirkland House in wall miles 77 and 78 (1014701);
- Hadrian's Wall between Apple Garth, Westfield, and the dismantled railway in wall mile 77 (1015903);

- Hadrian's Wall between the dismantled railway and the access road to Glendale caravan park in wall mile 77 (1015904);
- Hadrian's Wall between Fulwood House at Burgh by Sands and Burgh Marsh in wall miles 72 and 73 (1014698);
- Hadrian's Wall Vallum between West End, Burgh by Sands and the eastern boundary of Dykesfield (1018308);
- Hadrian's Wall vallum between the dismantled railway west of Kirkandrews Farm and the dismantled railway south east of Burgh by Sands in wall miles 70 and 71 (1014697);
- Hadrian's Wall vallum between east side of road at Burgh Head, and boundary south of Ash Tree Square, Burgh-by-Sands in wall miles 71 and 72 (1018458);
- Hadrian's Wall vallum between the watercourse 400m south east of Glasson and the access road to Glendale caravan park in wall miles 76 and 77 (1014700); and
- Drumburgh Roman fort and Hadrian's Wall between Burgh Marsh and Westfield House in wall miles 76 and 77.

Additional policy and guidance that will be used is as follows:

- Hadrian's Wall Management Plan 2024-2029 (Draft); and
- Frontiers of the Roman Empire: Hadrian's Wall Statement of Outstanding Universal Value (2015).

10.2 Pre-Application Consultation

Pre-application advice was sought from Historic Environment Scotland (HES) on 9 December 2024. Their response, dated 23 January 2025, is summarised below in **Table 10-1** with resolutions to be taken by that SLR cultural heritage team and incorporated into the EIA Report chapter.

Table 10-1: Pre Application Advice Summary

Consultee and Date	Scoping/Other Consultation	Summary
Historic Environment Scotland, (HES) 23/01/2025	Pre-application	HES were largely content with the list of assets scoped in and proposed that Battle of Sark (**BTL40**) is scoped out as the proposed development would likely not detract from the landscape context of the battlefield. HES have highlighted a few assets with which they have concern around potential significant setting impacts: • Calvertsholm Cottages, cairn 315m WNW of (SM11947) • Calvertsholm Cottages, cairn 320m NNW of (SM11950) • Mossknowe House Category A Listed Building (LB9799)

Consultee and Date	Scoping/Other Consultation	Summary
		HES request photomontages be produced for the above and the following additional visualisations added: • A photomontage from a location approximately 25m to the north east of SM11950, in alignment with the orientation of the two cairns (Calversholm Cottages cairns (SM11947 and SM11950). • Stapelton Tower (LB3782) wireline taken from the tower itself and/or from the field north west toward the tower.

10.3 Environmental Baseline

10.3.1 Overview

A high-level review of the baseline conditions has been undertaken with reference to the available historic environment data and the Scoping layout described in Section 3 of this Scoping Report. This is subject to change according to subsequent design iterations.

10.3.2 Assets within the Site Boundary

There are no known assets within the Site boundary. The nearest are West Scales farmstead (MDG10852) 130m to the east, and two findspots of decorated stone balls (MDG9735, MDG13581) 260m and 830m to the west.

Prehistoric activity within 1km of the Site Boundary suggests a reasonable level of settlement and transient activity, evidenced by a settlement enclosures (SM12029, MDG7360, MDG5373), a prehistoric field system (MDG8976), and a stone circle (Canmore ID 95201). The low, undulating terrain north of the Solway Firth was likely deemed advantageous for settlement and agriculture and was likely utilised for such from at least the prehistoric period. Other assets within the 1km study can be dated to the post-medieval period and consist of farmsteads and remains of farmsteads (Canmore IDs 95135, 95136, 95130) identified by their remains or from the 1st edition OS map (1861). The modern B721 follows the path of an 18th century military road – Battle of Sark to Portpatrick (Canmore ID 142461).

There are no known previous investigations within or adjacent to the Site boundary. A previous Environmental Statement by Headland Archaeology was produced and submitted in 2015. The assessment walkover investigated the proposed locations of the five turbine bases and inspected the Site boundary for unknown heritage assets. No previously unknown cultural heritage assets were identified.

10.3.3 Assets outwith the Site Boundary

Within 10km of the proposed development turbines there are a total of 483 designated cultural heritage assets. In total, this is comprised of one World Heritage Site, 429 Listed Buildings, 53 Scheduled Monuments, and one Conservation Area. Of the Listed Buildings, there are 21 Category A Listed Buildings and one Grade I Listed Building. There are no Gardens and Designed Landscapes or Archaeologically Sensitive Areas within 10km of the Site. These are split according to country below.

Scotland

Within the 10km Study Area, there are 368 Listed Buildings, 36 Scheduled Monuments, and one Conservation Area within the administrative boundary of Scotland.

England

Within the 10km Study Area, there is one World Heritage Site, 61 Listed Buildings, 17 Scheduled Monuments within the administrative boundary of England.

10.4 Potential Sources of Impact

10.4.1 Potential Sources of Impact within the Site Boundary

As there are no known heritage assets within the Site Boundary, there is no potential for direct physical impacts on known heritage assets. Using information from the archaeological baseline from within 1km of the Site, there is evidence of prehistoric activity, and wider settlement activity in this period. The area within the Site Boundary may contain further findspots of this type of prehistoric activity or other as yet unknown heritage assets.

These unknown heritage assets may be susceptible to a significant level of direct or indirect impact as a result of the construction of the associated infrastructure (e.g. access tracks), turbines, and the solar array. Our approach to mitigation is discussed in Section 10.9 and relevant mitigation measures will be embedded within the design as it progresses.

10.4.2 Potential Sources of Impact outwith the Site Boundary

Setting impacts are the most likely source of impact to heritage assets outwith the site boundary, particularly as part of the construction and operational phases of development - this will be considered as part of the EIA report. Scheduled Monument, Category A Listed Buildings, and Inventory Battlefields within 10km and Conservation Areas and Category B Listed Buildings within 5km, along with the ZTV indicating their visibility of the proposed turbines, are depicted on **Figure 21**: **Designated Cultural Heritage Assets.**

To provide a preliminary list of assets that will be subject to a detailed assessment, all assets that were considered for assessment have been subject to an appraisal found in **Appendix 04**. This Appendix has aimed to create a proportionate scope for the assessment and will be an evolving document throughout the EIA process. A search for assets outside the initial 10km study area, particularly those that have long distance views have been considered. None were identified to be scoped in for further assessment.

Assets that fall out of the proposed study area, the ZTV, and that do not have a third viewpoint that contributes to the significance of the monument, have been scoped out of assessment. Assets that have been scoped in may be scoped out and vice versa, dependent on the final layout of the proposed development.

As a result of this exercise and after pre-application consultation with HES, there are 12 designated cultural heritage assets within 10km of the proposed turbine locations that will be subject to detailed settings assessment within the EIA, as there is the potential for the proposed development to have a significant effect upon them. Some scheduled monuments relating to Hadrian's Wall WHS were included. These are listed in Section 10.1.4.

The assets scoped in for further assessment within the EIA process, after the initial heritage appraisal, are compiled in **Table 10-2** and shown on **Figure 21.**

Table 10-2: Heritage Assets Scoped In

Heritage asset	Designation	Approx. distance to nearest turbine (km)
Frontiers of the Roman Empire – Hadrian's Wall and its associated scheduled monuments.	World Heritage Site	5.1
Calvertsholm, settlement 110m N of (SM12128)	Scheduled Monument	1.5
Calvertsholm Cottages, cairn 315m WNW of (SM11947)	Scheduled Monument	1.6
Calvertsholm Cottages, cairn 320m NNW of (SM11950)	Scheduled Monument	1.7
Blackyett, cairn 224m E of (SM11951)	Scheduled Monument	3.2
Robgill Tower, fort 90m NW of (SM12157)	Scheduled Monument	3.5
Robgill Mains, cairn 320m E of (SM11987)	Scheduled Monument	3.5
Woodhouse Tower, tower house (SM12071)	Scheduled Monument	3.7
The Bracken, enclosed settlement and droveway 3280m WSW of (SM11994)	Scheduled Monument	4.0
Category A listed Stapleton Tower (LB3782)	Category A Listed Building	3.0
Category A listed Mossknowe House (LB9799) and	Category A Listed Building	2.1
Category A listed Bonshaw Tower and House (LB3489)	Category A Listed Building	4.5

Hadrian's Wall WHS

The setting of this asset is understood to extend beyond its Buffer Zone, the nearest point of which is approximately 5.1km to the east of the proposed development. Although the proposed development is within Dumfries and Galloway, it will be visible from and have the potential to affect the setting of Hadrian's Wall.

10.5 Proposed Visualisations

Table 10-3 lists the proposed visualisations to be prepared during the EIA stage.

Table 10-3: List of Proposed Visualisations

Viewpoint Number	Designation Reference	Designation Title	Visualisation Coordinates	Visualisation Type	Visualisation Details
CH1	N/A	Frontiers of the Roman Empire – Hadrian's Wall and its associated scheduled monuments	323068, 562406	Photomontage	From prominent point of Hadrian's Wall (between Port Carlisle and Bowness-on-Solway in wall miles 78 and 79 (1015951)) across Solway Firth toward proposed turbines.
CH2	SM12128	Calvertsholm, settlement 110m N of	328153, 569004	Wireline	From high point of asset towards SM11947 to the east and toward proposed turbines to the south east.
CH3	SM11947	Calvertsholm Cottages, cairn 315m WNW of	327937, 569094	Photomontage	From high point of asset towards proposed turbines
CH4	SM11950	Calvertsholm Cottages, cairn 320m NNW of	328083, 569284	Photomontage	From approximately 25m north north-west of the cairn, looking towards the cairn and SM11947
CH5	SM11951	Blackyett, cairn 224m E of	325278, 571084	Wireline	From centre of asset toward proposed turbines
CH6	SM12157	Robgill Tower, fort 90m NW of	324718, 571708	Wireline	From centre of asset toward proposed turbines
CH7	SM11987	Robgill Mains, Cairn 320m E of	324723, 571085	Wireline	From centre of asset toward proposed turbines
CH8	SM12071	Woodhouse Tower, tower house	325074, 571492	Wireline	From centre of asset toward proposed turbines
CH9	LB3489	Bonshaw Tower and House	324261, 572068	Wireline	From highest accessible point of the tower on

Viewpoint Number	Designation Reference	Designation Title	Visualisation Coordinates	Visualisation Type	Visualisation Details
					the southern elevation toward proposed turbines and
CH10	SM11994	The Bracken, enclosed settlement and droveway 3280m WSW of	330269, 568859	Wireline	From high point of asset towards proposed turbines
CH11	LB3782	Category A listed Stapleton Tower	323475, 568866	Wireline	From the field north west of the tower, looking toward proposed turbines demonstrating potential impact of the development on views towards the tower.
CH12	LB9799	Category A listed Mossknowe House	328306, 569134	Photomontage	Specifically placed from the meadow to the north of the house with views towards the south east to capture the view of the northern elevation and any visibility of the proposed development behind
CH13	SM11947 SM11950	Third point of appreciation for Calvertsholm Cottages, cairn 315m WNW of (SM11947) and Calvertsholm Cottages, cairn 320m NNW of (SM11950)	328100, 569292	Photomontage	View towards proposed development, highlighting the relationship between the two cairns with the proposed turbines in the background.

10.6 Method of Assessment and Reporting

10.6.1 Study Area

For purposes of this assessment, a study area (**Figure 21**) has been defined by the ZTV and scale of the proposed development. It has been determined that 10km from the locations of the proposed turbines is sufficient. The sources identified within **Table 10-4** will be consulted to inform the assessment, however, this list is not exhaustive.

Table 10-4: Sources to be consulted

Subject	Author Summary	Source
Designated cultural heritage assets (except conservation areas	The database of Historic Environment Scotland (HES)	HES digital data download
Conservation Areas	D&GC and HES	HES digital data download
Non-designated cultural heritage assets including non-inventory designated landscapes	Data held by the D&GC and Canmore	Digital data purchased from D&GC as download
Historic Mapping	National Library of Scotland	National Library of Scotland website
Historic Environment Information	Canmore online database curated by Historic Environment Scotland	Canmore online database
	Unpublished reports	Various
	Published works of synthesis	Various
LiDAR	Scottish Government	Scottish Remote Sensing Portal
Aerial Photography	HES	HES database Canmore and National Collection of Aerial Photography (NCAP) (online)
Historic Land Use Assessment	HES	HES digital data download

10.6.2 Scope

Assets within the Site

Designated and non-designated assets within the Site will be looked at in order to determine any direct, setting, or indirect impacts. Should D&GC identify any non-designated assets that they consider to be of national/regional significance, and which they consider derive significance from their settings, these should be made known to the Applicant via consultation. Nationally significant designated assets within the Site will be subject to setting assessment as below.

Assets outwith the Site

All nationally significant designated assets within the aforementioned 10km Study Area will be subject to an initial setting assessment in order to determine any impacts **(Appendix 04).**

Field Surveys

A targeted Site inspection will be carried out in relation to all recorded assets within the Site boundary of the proposed development; the aim of this would be to establish the condition of any recorded assets and identify the potential for any additional presently unrecorded assets.

Asset mapping would also be compared with ZTV and satellite imagery in order to identify designated heritage assets for which the proposed development might cause impacts in relation change of an asset's setting. This would be followed by a detailed analysis of those sites identified as potentially sensitive to such impacts, including a targeted field inspection.

10.6.3 Assessment and Types of Impacts

The proposed development has the potential to result in impacts upon the significance of heritage assets where it changes their baseline condition and/or their setting.

In accordance with the EIA Regulations, the assessment will identify any development effects as either direct or indirect, adverse or beneficial, and short-term, long-term or permanent.

Assessment will be undertaken separately for direct impact and indirect impact. Direct impacts are those which would change the heritage significance of an asset through physical alteration or changes to their setting; indirect impacts are those which would affect the heritage significance of an asset by causing change to its fabric indirectly, such as increased pollution or changes in water draining patterns which can indirectly affect the preservation of heritage materials.

Direct impacts upon the significance of heritage assets will take into account the level of their heritage significance (where known) and the magnitude (extent) of the identified impacts.

Setting impacts (direct) on the significance of heritage assets will be identified and assessed with reference to Managing Change in the Historic Environment: Setting (HES 2020) and the EIA guidance set out by NatureScot and HES (2018). Assessment will be carried out in the following stages:

- Initial consideration of intervisibility and other factors leading to the identification of potentially affected assets;
- Assessment of the cultural heritage significance of potentially affected assets;
- Assessment of the contribution of setting to the cultural heritage significance of those assets;
- Assessment of the extent to which change to any contributing aspects of the settings of those assets, as a result of the proposed Development, would affect their cultural heritage significance (magnitude of change); and
- Determination of the significance of any identified effects.

10.6.4 Zone of Theoretical Visibility

The setting assessments will be assisted by a ZTV calculation, presented in **Figure 21 - Designated Cultural Heritage Assets**. ZTV calculation maps the predicted degree of visibility of a proposed development from all points within a proportionate, defined study area around the Site, as would be seen from an average observer's eye level (two metres above ground level). The ZTV model presented in **Figure 21** is based upon the maximum level of theoretical visibility, i.e. the maximum height of the turbine blade tips and solar arrays.

Based on the results of the baseline study, constraint mapping will be generated using GIS software to show mapped heritage assets in relation to a ZTV. This will filter out those assets that do not require further assessment. It will also be used to identify and agree on the most potentially sensitive assets; these may then require computer-generated visualisations to be produced as part of their assessment, in liaison with consultees.

10.6.5 Cultural Heritage Significance

The categories of cultural heritage significance to be referred to are presented in **Table 10-5**, which will act as an aid to consistency in the exercise of professional judgement and provide a degree of transparency for others in evaluating the conclusions drawn.

The significance categories take into account factors such as: designation, status and grading. For non-designated assets, consideration will be given to their inherent heritage

interests, intrinsic, contextual, and associative characteristics. In relation to these assets, the assessment will focus upon the assets' inherent capability to contribute to our understanding of the past; the character of their structural, decorative and field characteristics as informed by the local HER and Canmore records and / or site visit observations; the contribution of an asset to their class of monument, or the diminution of that class should an asset be lost; and how a site relates to people, practices, events, and/or historical or social movements. Assessments of the cultural significance of specific assets, where recorded within the HER, will be taken into account where appropriate.

Table 10-5: Cultural Heritage Significance

Heritage Value	Explanation
Highest	Sites of international importance, including: • World Heritage Sites
High	Sites of national importance, including; • Scheduled Monuments; • Category A Listed Buildings; • Gardens and Designed Landscapes included on the national inventory; • Designated Battlefields; and • Non-designated assets of equivalent significance.
Medium	Sites of regional/local importance, including: • Category B and C Listed Buildings; • Some Conservation Areas; • Non-designated assets of equivalent significance.
Low	Sites of minor importance or with little of the asset remaining to justify a higher importance
None	Sites that are of no heritage significance
Unknown	Further information is required to assess the significance of these assets

In addition to identifying the significance of a heritage asset, it is essential, where changes to setting are being assessed, to understand the contribution that setting makes towards the significance of an asset. Elements of setting may make a positive, neutral or negative contribution to the significance of an asset. Thus, in determining the nature and level of effect upon an asset and its setting by the proposed development, the contribution that setting makes to an asset's significance, and thus its sensitivity to changes to its setting, need to be considered.

This approach recognises the importance of avoiding significant adverse effects on the integrity of the setting of an asset in the context of the contribution that setting makes to the understanding, appreciation and experience of an asset. It recognises that setting may be key in characterising, understanding and appreciating some, but not necessarily all, assets. Indeed, assets of high or very high significance do not necessarily have high sensitivity to changes to their settings.

An asset's relative sensitivity to alterations to its setting refers to its capacity to retain its ability to contribute to an understanding and appreciation of the past in the face of changes to its setting. The ability of an asset's setting to contribute to an understanding, appreciation and experience of it and its significance also has a bearing on the sensitivity of that asset to changes to its setting.

While certain cultural heritage assets of high or very high importance are likely to be sensitive to direct impacts, not all will have a similar sensitivity to impacts on their setting;

this would be true where setting does not appreciably contribute to their significance. HES's guidance on setting makes clear that the level of effect may relate to *"the ability of the setting of an asset to absorb new development without eroding its key characteristics*" (2020). Assets with Very High or High relative sensitivity to setting impacts may be vulnerable to any changes that affect their settings and even slight changes may erode their key characteristics or the ability of their settings to contribute to the understanding, appreciation or experience of them. Assets where relative sensitivity to changes to their settings is lower may be able to accommodate greater changes to their settings without key characteristics being eroded.

The key criteria used for establishing an asset's relative sensitivity to changes to its setting is detailed in **Table 10-6.** This table has been developed based on SLR's professional judgement and experience of setting effects. It has been developed in line with relevant policy and guidance.

Table 10-6: Sensitivity of Setting

Relative Sensitivity	Explanatory Criteria
Very High	An asset, the setting of which is crucial to an understanding, appreciation and experience of it, should be regarded as having very high sensitivity to changes to its setting. This is particularly relevant where setting, or elements of, make a crucial and essential direct contribution to significance.
High	An asset, the setting of which is major to an understanding, appreciation and experience of it, should be regarded as having high sensitivity to changes to its setting. This is particularly relevant where setting, or elements of, contribute substantially to the asset's cultural significance.
Medium	An asset, the setting of which makes a moderate contribution to the understanding, appreciation and experience of it, should be regarded as having medium sensitivity to changes to its setting. This could be an asset for which setting makes a contribution to significance but whereby its value is derived equally from its other characteristics.
Low	An asset, the setting of which makes some contribution to the understanding, appreciation and experience of it, should be regarded as having low sensitivity to changes to its setting. This could be an asset where its significance is derived mainly from other characteristics.
Negligible	An asset where setting makes a minimal contribution to the understanding, appreciation and experience of the asset and it should be thought of having a negligible sensitivity to changes to its setting.

The determination of an asset's relative sensitivity to changes to its setting is first and foremost reliant upon the determination of its setting and how setting aligns with other key characteristics which contribute to cultural significance. The criteria set out in **Table 10-5** is a guide and assessment of individual assets is informed by knowledge of the asset itself, its

type and, where appropriate by a site visit conducted by the assessor, to establish the current setting of an asset. This allows for use of professional judgement on an individual basis.

10.6.6 Magnitude of Change

Determining the magnitude of any likely impacts includes consideration of the nature of the activities proposed during the construction and operational phases of the proposed Development.

Changes could potentially include ground disturbance and changes to setting. The latter might include visual change, as well as noise, vibration, smell, dust, traffic movements etc. Effects may be beneficial or adverse, and may be short-term, long-term or permanent.

Where adverse effects on cultural heritage assets are possible, the magnitude of change can be reduced through measures to prevent, reduce and/or, where possible, offset these effects. Refer to Section 10.4 for information on mitigation measures that may be considered suitable, if required.

Taking into account all embedded mitigation measures, the magnitude of change will be been assessed using professional judgment, with reference to the criteria set out in **Table 10-7.**

Table 10-7: Magnitude of Change

Magnitude Of Change	Explanatory Criteria
High Beneficial	The proposed development would considerably enhance the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it.
Medium Beneficial	The proposed development would enhance, to a clearly discernible extent, the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it.
Low Beneficial	The proposed development would enhance, to a minor extent, the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it.
Very Low Beneficial	The proposed development would enhance, to a very minor extent, the cultural heritage significance of the effected asset, or the ability understand, appreciate and experience it.
Neutral/None	The proposed development would not effect the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it.
Very Low Adverse	The proposed development would erode, to a very minor extent, the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it. This level of effect would not affect the integrity of the asset's setting.
Low Adverse	The proposed development would erode, to a minor extent, the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it. This level of effect would rarely affect the integrity of the asset's setting.
Medium Adverse	The proposed development would erode, to a clearly discernible extent, the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it. This level of effect might affect the integrity of the asset's setting.

High Adverse	The proposed development would considerably erode the cultural heritage significance of the effected asset, or the ability to understand, appreciate and experience it. This level of effect would affect the integrity of the asset's setting.

Table 10-8 provides a matrix that relates the cultural heritage significance of the asset to the magnitude of change on its significance, to produce an overall anticipated level of effect.

Table 10-8: Significance of Effect

Magnitude Of Change	Sensitivity Of Asset			
	Highest	**High**	**Medium**	**Low**
High Beneficial	**Major**	**Major**	**Moderate**	Minor
Medium Beneficial	**Major**	**Moderate**	Minor	Very Minor
Low Beneficial	**Moderate**	Minor	Very Minor	Very Minor
Very Low Beneficial	Minor	Very Minor	Negligible	Negligible
Neutral/None	Neutral/Nil	Neutral/Nil	Neutral/Nil	Neutral/Nil
Very Low Adverse	Minor	Very Minor	Negligible	Negligible
Low Adverse	**Moderate**	Minor	Very Minor	Very Minor
Medium Adverse	**Major**	**Moderate**	Minor	Very Minor
High Adverse	**Major**	**Major**	**Moderate**	Minor

10.6.7 Significance

Once the anticipated effects of the proposed development upon cultural heritage assets are defined, professional judgment will be used to determine whether those effects would be either 'Significant' or 'Not Significant' for the purposes of EIA. As part of this determination process, regard will be given to any relevant guidance.

With reference to the matrix presented in **Table 10-8.**

- any effects identified as 'Major' would in most instances be assessed as 'Significant';
- any effects identified as 'Moderate' may be assessed as 'Significant', though professional judgment may determine otherwise on the basis of the associated site-/asset-specific detail; and

- any effects identified as ‘Minor’ or less would in most instances be assessed as ‘Not Significant’, though again, professional judgment will be exercised.

A clear statement will be made in relation to all affected assets as to whether the identified effects upon them are ‘Significant’ or ‘Not Significant’ for purposes of EIA.

10.6.8 Integrity

NPF4 indicates that development proposals affecting Scheduled Monuments will only be supported where; *“significant adverse impacts on the integrity of the setting of a scheduled monument are avoided.”*

A significant effect in EIA terms does not necessarily equate to a significant impact upon the integrity of setting. Where EIA significant effects are found, a detailed assessment of adverse impacts upon the integrity of the setting will be made. Whilst non-significant effects are unlikely to significantly impact the integrity of the setting, the reverse is not always true. That is, the assessment of an effect as being significant in EIA terms does not necessarily mean that the adverse effect on the setting of the asset will significantly impact its integrity. The assessment of adverse impact upon the integrity of an asset’s setting, where required, is a qualitative one and largely dependent upon whether the impact predicted would result in a major impediment to the ability to understand, appreciate or experience a cultural heritage asset. This is most likely to occur where the cultural heritage sensitivity set out as in **Table 10-6** is ‘High’ or ‘Very High’.

A significant impact upon the integrity of the setting of an asset will only occur where the degree of change that will be represented by the proposed development would adversely alter those factors of the monument’s setting that contribute to cultural significance such that the understanding, appreciation and experience of an asset are not adequately retained.

10.6.9 Residual Effects

Residual effects are those that remain even after the implementation of suitable mitigation measures. Residual effects will be identified, and the level of those residual effects defined with reference to **Tables 10-7** and **10-8.**

10.6.10 Cumulative Effects

A cumulative effect is occurs when there is a combination of:

- An impact on an asset or group of assets due to changes resulting from the development subject of assessment; and
- An impact on the same asset or group of assets resulting from other development (consented or proposed) within the surrounding landscape.

Consideration of other developments will be limited to:

- Wind farm planning applications, within 10km, that have been submitted and have a decision pending;
- Solar farm planning applications, within 2km, that have been submitted and have a decision pending;
- Wind farm planning applications, within 10km, that have been granted permission but not yet constructed; and
- Solar farm planning applications, within 2km, that have been granted permission but not yet constructed.

Any effect resulting from operational wind farms (within 10km of the proposed development) will be considered as part of the baseline impact assessment. Cumulative impact will be considered in two stages:

- Assessment of the combined impact of the developments, including the proposed development; and
- Assessment of the extent to which the proposed development contributes to the combined impact.

10.7 Consultation

Pre-application advice was sought from HES and the response is detailed in Section 10.2 above.

Further consultation will be undertaken with HES in relation to the method of assessment employed in assessing those heritage assets within their remit; these include Scheduled Monuments, Category A Listed Buildings, GDLs, and Inventoried Battlefields. D&GC will be consulted in relation to the local HER which includes non-designated heritage assets and designated heritage assets of regional significance, and any non-designated assets they consider to be of higher significance, including archaeologically sensitive areas (ASAs).

10.8 Matters Scoped Out

On the basis of the work undertaken to date, the professional judgement of the cultural heritage team, and experience of other comparable projects, it is proposed that indirect and cumulative impacts of the proposed development on Category C Listed Buildings can be scoped out of the EIA in relation to cultural heritage. As per Best Practice Guidance within EIA Handbook (NatureScot, 2018), Category C Listed Buildings are of local rather than national or regional importance, unless in the opinion of an assessor the designation should be higher.

Category B Listed Buildings within 10km of the proposed turbines have been scoped out of any further assessment, with the exception of those wherein specific views are considered to contribute to their significance and/or to the ability to understand, appreciate and experience them. At this stage, no Category B Listed Buildings were identified to match this criteria, and as such, all Category B Listed Buildings are scoped out.

The significance of a Conservation Area derives from its local heritage and the assets that it contains, rather than the wider landscape. As such, assessment of effects on Conservation Areas has been scoped out, with the justification that, even if visibility between the proposed development and the Conservation Areas may occur, the Conservation Areas' significance would not be diminished.

It is also proposed that any assets that fall outwith the ZTV (and where those assets' approaches and third points of appreciation also fall outwith the ZTV) can be scoped out of the EIA in relation to cultural heritage.

10.8.1 Decommissioning

Any change arising from decommissioning activities will be scoped out as it is assumed that no ground-breaking works would be required, and as such, the overall impacts would be lower than during the construction phase. If ground-breaking works occur, mitigation measures may need to be implemented and would be agreed with key stakeholders at that time via a Decommissioning Management Plan.

10.9 Approach to Mitigation

There are multiple methods of mitigation that may be employed to reduce the potential for impact as a result of the proposed development.

Suitable measures for minimising impacts through ground disturbance might include:

- The micrositing of proposed development infrastructure away from sensitive locations;
- The fencing off or marking out of heritage assets or features in proximity to construction activity in order to avoid disturbance where possible;
- A programme of archaeological work where required, such as an archaeological watching brief during construction activities in or in proximity to areas of archaeological sensitivity, or excavation and recording where impact is unavoidable; and/or
- A working protocol to be implemented should unrecorded archaeological features be discovered.

Suitable measures for mitigating any setting impacts might include:

- Alteration of the proposed turbine layout; and/or
- Reduction of proposed turbine heights.

These mitigation measures will be embedded into the design of the proposed Development and developed through careful consultation with the relevant statutory consultees.

10.10 Questions to Consultees

The following are questions to consultees:

- Do consultees agree with the proposed scope of the assessment, including the proposed study area?
- Do consultees agree with the proposed assessment methodology?
- Are consultees satisfied with the mitigation measures proposed?
- Are consultees satisfied with the locations and types of visualisations proposed?
- Are consultees satisfied with matters scoped out?

10.11 References and Standard Guidance

Chartered Institute for Archaeologists. (2014, updated 2020.) Standard and Guidance for Historic Environment Desk Based Assessment.

Dumfries and Galloway Council (2019). Adopted Local Development Plan 2. Available online at: https://new.dumgal.gov.uk/sites/default/files/2024-07/Adopted_LDP2_OCTOBER_2019_web_version.pdf

Historic England., 2008. Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment. Available at: https://www.historicengland.org.uk /images-books/publications/conservation-principles-sustainable-management-historic-environment/ [accessed 17 January 2025]

Historic England., 2015. Managing Significance in Decision-Taking in the Historic Environment: Historic Environment Good Practice Advice in Planning Note 2. Available at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/ [accessed 17 January 2025]

Historic England., 2017. The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3. Available at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/ [accessed 17 January 2025

Historic England., 2019. Statements of Heritage Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12. Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/heag279-statements-heritage-significance/ [accessed 17 January 2025]

Historic Environment Scotland. (Undated.) Pastmap. Available at: https://pastmap.org.uk/ [Accessed December 2024]

Historic Environment Scotland. (2016a) Scotland's Listed Buildings 2016.

Historic Environment Scotland. (2016b) Scotland's Scheduled Monuments 2016.

Historic Environment Scotland. (2019a) Historic Environment Policy for Scotland May 2019.

Historic Environment Scotland. (2019b) Designation Policy and Selection Criteria.

Historic Environment Scotland. (2019c) A Guide to Climate Change Impact: On Scotland's Historic Environment.

Historic Environment Scotland. (2020) Managing Change in the Historic Environment.

Historic Environment Scotland. (2020) Our Past, Our Future: The Strategy for Scotland's Historic Environment.

NatureScot. (2024) General pre-application and scoping advice for onshore wind farms.

NatureScot and HES. (2019) Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland.

Scottish Government. (2011) Planning Advice Note 2/2011: Planning and Archaeology. Available at: https://www.gov.scot/publications/pan-2-2011-planning-archaeology/

Scottish Government. (2014) The Historic Environment (Amendment) (Scotland) Act 2014. Available at: https://www.legislation.gov.uk/asp/2014/19/contents

Scottish Government. (2014) Onshore Wind Turbines: Planning Advice. Available at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/

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

Scottish Government. (2023) National Planning Framework 4. Available at: https://www.gov.scot/publications/national-planning-framework-4/

Scottish National Heritage and Historic Environment Scotland. (2018) Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland.

UK Government. (1979) Ancient Monuments and Archaeological Areas Act 1979. Available at: https://www.legislation.gov.uk/ukpga/1979/46

UK Government. (1997) The Planning (Listed Buildings and Conservations Areas (Scotland) Act 1997. Available at: https://www.legislation.gov.uk/ukpga/1997/9/contents

11.0 Noise and Vibration

11.1 Introduction

The noise assessment will focus on the potential for adverse noise and vibration impacts and effects at the nearest noise sensitive receptors (NSRs) from the following aspects of the proposed development:

- Construction noise from the wind turbine installation; and
- Operational noise from the wind turbines.
- Operational noise from fixed plant and equipment associated with the solar farm.

Noise sensitive receptors are defined, in this context, to be residential properties that could be adversely affected by incident noise from the project.

This Section provides a summary of the noise effects anticipated at each stage of the proposed development and, where appropriate, details the proposed assessment methodologies proposed.

11.2 Environmental Baseline and Potential Sources of Impact

The proposed development is located within a rural location, on land currently used as a farmland.

There are several scattered residential properties around the Site (see **Figure 5**), with the closest occupied properties located to the south and east. Although those to the north and west are not dissimilarly distant.

Should other receptors be identified at consultation stage this will also be considered within future assessments.

Section 2.1.1 of this document summarises other wind farms and solar farms in the vicinity of the Site, which are in turn discussed further within this Section in respect to cumulative noise impacts.

11.3 Potential Sources of Impact

11.3.1 Construction Phase

The noise assessment will consider the potential impacts of noise generated during construction of the proposed development on nearby noise-sensitive receptors.

Given the intervening distances between receptors and turbine locations, it is proposed to scope out construction vibration from detailed assessment.

11.3.2 Operational Noise – Wind Turbines

An assessment of operational wind turbine noise is warranted. The assessment will also assess cumulative wind turbine noise impacts, considering all proposed (planning application submitted), consented and operational wind farm sites within reasonable proximity to the proposed development, and that may have a contribution to noise effects at the identified NSRs.

Given the intervening distances between receptors and turbine locations, it is proposed to scope out operational vibration from detailed assessment.

11.3.3 Operational Noise – Solar PV Array and BESS

Solar farms typically contain electrical, and ventilation plant associated with inverters and transformers. BESS sites typically also include transformers and cooling equipment associated with the battery cubes for heat dissipation during charge and discharge cycles. It will be necessary to undertake a relevant noise impact assessment of the operational phase on the identified NSRs.

11.4 Method of Assessment and Reporting

11.4.1 Guidance and Legislation

The UK Government's online Guidance note on Noise states that the management of the noise associated with wind turbines is considered in the 'National planning practice guidance for renewable and low carbon energy and the 'Assessment and rating of noise from wind farms (ETSU-R-97).

The online Guidance Note on Renewable and Low Carbon Energy states:

'The report, ETSU-R-97: The assessment and rating of noise from wind farms should be used by local planning authorities when assessing and rating noise from wind energy developments. Good practice guidance on noise assessments of wind farms has been prepared by the Institute of Acoustics. The Department of Energy and Climate Change accept that it represents current industry good practice and endorses it as a supplement to ETSU-R-97. It is available on the Department of Energy and Climate Change's website.'

In February 2023, a report was published by WSP, produced on behalf of the (former) UK Government Department for Business, Energy & Industrial Strategy (BEIS); the primary aim of the report was to review current guidance in relation to wind farm noise assessment and make a recommendation as to whether the guidance requires updating. The WSP BEIS report concluded that current guidance would benefit from further review and recommends updates in a number of areas.

At present, no official response has been issued by BEIS or any of the new Government departments that are being created to replace BEIS, therefore current guidance remains applicable.

The Scottish Government - Planning Information on Onshore Wind Turbines and PAN 1/2011

The Scottish Government's web-based information provides advice to local authorities on the planning issues associated with wind farm development. With respect to noise from wind farms, it recommends the use of ETSU-R-97: The Assessment and Rating of Noise from Wind Farms and the Institute of Acoustics' Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise.

It goes on to refer to PAN 1/2011 as providing advice on the role of the planning system in helping to prevent and limit the adverse effects of noise, and states that the associated Technical Advice Note provides guidance which may assist in the technical evaluation of noise assessment.

PAN 1/2011 promotes the principles of good acoustic design and the appropriate location of new potentially noisy development. The associated Technical Advice Note offers advice on the assessment of noise impact and includes details of the legislation, technical standards and codes of practice appropriate to specific noise issues.

Appendix 1 of the Technical Advice Note: Assessment of Noise, describes the use of ETSU-R-97 in the assessment of wind turbine noise.

11.4.2 Existing Noise Limits

There is one operational wind turbine site within 10km of the proposed development. Applied noise limits for the operational turbines within 10km of the site will be used to inform the assessment of cumulative noise.

11.4.3 Proposed Study Area

The nearest noise-sensitive receptors surrounding the proposed development will be considered within the noise assessment, as well as receptors located in proximity to cumulative wind farm developments.

In respect to cumulative assessments. A cumulative effect occurs when there is a combination of:

- A noise impact on an asset or group of assets due to changes resulting from the development subject of assessment; and
- An impact on the same asset or group of assets resulting from other development (consented or proposed) within the surrounding landscape.
- In respect to noise consideration of other developments will be limited to:
- Wind farm planning applications, within 10km, that have been submitted and have a decision pending;
- Solar farm planning applications, within 2km, that have been submitted and have a decision pending;
- Wind farm planning applications, within 10km, that have been granted permission but not yet constructed; and
- Solar farm planning applications, within 2km, that have been granted permission but not yet constructed.

Any effect resulting from operational wind farms (within 10km of the proposed development) will be included as part of the baseline impact assessment. Cumulative impact will be considered in two stages:

- Assessment of the combined impact of the developments, including the proposed development; and
- Assessment of the extent to which the proposed development contributes to the combined impact.

Any such assessment will remain to consider the relevant guidance outlined in respect to wind, or solar and BESS noise impact assessment respectively.

11.4.4 Field Survey

The existing baseline noise environment at noise sensitive receptors in the vicinity of the proposed development is anticipated to consist of a combination of natural biophonic and other man made anthropological sound sources.

Natural sounds include birdsong and wind generated effects, such as wind in the trees and foliage.

Other sounds include road traffic noise, farming activities, noise from industrial activities, existing wind turbine developments, and local noises such as running water and boiler flues, with the levels of each noise source being depended on the distance from the receptor and shielding.

As noted above, baseline noise levels used to derive the relevant noise limits must not include noise from existing wind turbine development, and the derived ETSU-R-97 noise limits then apply to operational noise from all wind turbine developments.

A baseline noise survey is being undertaken to derive noise limits in line with ETSU-R-97. The locations for measurement (either at receptors or agreed suitably proxy locations) will be discussed with D&GC, and the results will be corrected to ensure existing turbine noise is not included in the derivation of the limits devised.

All measurements will be long term (circa 1 month minimum) to facilitate capturing a full range of wind speed correlated dB L_{A90} background noise levels at 10min intervals such that noise level limits can be directed.

11.4.5 Assessment of Construction Noise

A 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 – Part 1: Noise'.

11.4.6 Assessment of Operational Noise – Wind – ETSU-R-97

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) 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 and a justification for deriving suitable noise limits will be included in the noise assessment.

It is proposed that appropriate noise limits can be derived and applied to the proposed wind turbines acting in isolation.

Meeting these derived noise limits would then ensure that cumulative operational noise levels from the proposed development alongside other wind turbines in the area remain within acceptable levels.

The noise limits for the proposed development will be calculated by logarithmically subtracting the existing predicted operational noise levels from the following noise limits that apply to cumulative noise from all wind farm developments within a 10km radius.

- The greater of 43 dB LA90 or background plus 5 dB at night;
- The greater of 40 dB LA90 or background plus 5 dB during the daytime; and
- Or the greater of 45 dB LA90 or background plus 5 dB at receptor locations that are financially involved with the development.

The exception to this is at receptors where the consented daytime noise limit identified upon review of consented or completed wind farms varies from the above, which will be applied as the relevant cumulative noise limit during the daytime.

The derived noise limits will be discussed with D&GC, and it is intended that a report describing the derivation of the noise limits is submitted and will be included as a technical appendix to the EIA Report.

Baseline noise measurements will be undertaken to allow the cumulative noise limits to be related to background noise levels and the scope of the baseline noise measurements will be discussed with D&GC.

In addition to the noise limits that will be derived for the proposed development, consideration will also be made to how much the cumulative noise levels increase due to the proposed development.

Where the predicted increase is less than 1 dB the increase in operational noise levels will be negligible as the minimum perceptible change in noise level in the environment is about 3 dB (and the minimum perceptible change under laboratory conditions is about 1 dB).

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 in the area.

The proposed development is located entirely within the D&GC council area, thus detailed consultation will only be undertaken with the Environmental Health Department at D&GC in order to agree the overall assessment methodology.

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 operational, consented and proposed (planning application submitted) wind farms within the vicinity of the proposed development. The assessment will be undertaken in accordance with ETSU-R-97 and the IOA GPG.

11.4.7 Assessment of Operational Noise - Solar and BESS

An operational noise impact assessment of fixed plant and services associated with the solar farm proposal will be undertaken in accordance with BS4142:2014+A1:2019.

11.5 Consultation

SLR will seek scoping opinion via correspondence with D&GC regarding representative baseline noise survey locations. Where access is refused, SLR may then seek agreement of

suitable accessible proxy measurement locations which are also considered representative to facilitate assessments to be undertaken in a timely manner.

Any commentary received on methodology, items scoped in and out of assessment, and perceived mitigation needs will be captured within the EIA Report Noise Chapter.

11.6 Matters Scoped Out

11.6.1 Vibration

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

Similarly given the intervening distance between proposed wind turbines, and identified NSR locations, assessment of vibration impacts from operational turbines is proposed to be scoped out of the EIA.

11.6.2 Infrasound and Low-Frequency Noise

A study, published in 2006 by acoustic consultants Hayes McKenzie on the behalf of the Department of Trade and Industry (DTI), investigated low frequency noise from wind farms. This study concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines.

In February 2013, the Environmental Protection Authority of South Australia published the results of a study into in infrasound levels near wind farms. This study measured infrasound levels at urban locations and rural locations with wind turbines close by, and rural locations with no wind turbines in the vicinity. It found that infrasound levels near wind farms are comparable to levels away from wind farms in both urban and rural locations. Infrasound levels were also measured during organised shut downs of the wind farms; the results showed that there was no noticeable difference in infrasound levels whether the turbines were active or inactive.

Bowdler et al., (2009) concluded that:

"...there is no robust evidence that low frequency noise (including 'infrasound') or ground-borne vibration from wind farms generally has adverse effects on wind farm neighbours".

During a planning Appeal (PPA-310-2028, Clydeport Hunterston Terminal Facility, approximately 2.5km south west of Fairlie, 9 Jan 2018), the health impacts related to low frequency noise associated with wind turbines were considered at length by the appointed Reporter (Mr M Croft). The Reporter considered evidence from Health Protection Scotland and the National Health Service.

In addition, he also considered low frequency noise surveys undertaken by the Appellant and the Local Authority both of which demonstrated compliance with planning conditions and did not identify any problems attributable to the turbine operations; some periods with highest levels of low frequency noise were recorded when the turbines were not operating.

The Reporter concluded that:

- The literature reviews by bodies with very significant responsibilities for the health of local people found insufficient evidence to confirm a causal relationship between wind turbine noise and the type of health complaints cited by some local residents.
- The NHS's assessment is that concerns about health impact are not supported by good quality research.

- Although given the opportunity, the Community Council failed to provide evidence that can properly be set against the general tenor of the scientific evidence.

Low-frequency noise and infrasound is 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 116 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 emissions 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 WSP BEIS report, the study that was granted funding by NHMRC (the National Health and Medical Research Council of Australia) was published in the Environmental Health Perspectives (EHP) journal which is published by the United States National Institute of Environmental Health. The study 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. The study concluded that:

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

It is therefore not necessary to carry out specific assessments of low frequency noise and infrasound and it is proposed that they are scoped out of the full EIA.

11.6.3 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.

A study was carried out in 2007 on behalf of the Department for Business, Enterprise and Regulatory Reform (BERR) by the University of Salford, which investigated the incidence of noise complaints associated with wind farms and whether these were associated with AM. The study defined AM as aerodynamic noise from wind turbines with a greater degree of fluctuation than normal at blade passing frequency. Its aims were to ascertain the prevalence of AM on UK wind farm sites, to try to gain a better understanding of the likely causes, and to establish whether further research into AM is required.

The study concluded that AM had occurred at only a small number (4 of 133) of wind farms in the UK, and only for between 7% and 15% of the time. It also stated that, the causes of AM are not well understood and that prediction of the effect was not currently possible.

This research was updated in 2013 by an in-depth study undertaken by Renewable UK, which has identified that many of the previously suggested causes of AM have little or no association to the occurrence of AM in practice. The generation of AM is based upon the interaction of a number of factors, the combination and contributions of which are unique to each site. With the current state of knowledge, it is not possible to predict whether any particular site is more or less likely to give rise to AM, and the incidence of AM occurring at any particular site remains low, as identified in the University of Salford study. The report includes a sample planning condition to address AM, however that has not yet been validated or endorsed by UK Government.

In 2016, the IOA proposed a measurement technique to quantify the level of AM present in any particular sample of wind farm noise. In August 2016 a report written by WSP/Parsons Brinkerhoff was published by the Department of Business, Energy & Industrial Strategy (BEIS, formerly The Department of Energy & Climate Change). The report sought to build on the conclusions of the IOA study in order to define an appropriate assessment method for AM, including a penalty scheme and an outline planning condition.

In November 2017, an article entitled ‘A planning condition for wind farms’ was published in Vol 42 No 6 of the Acoustics Bulletin magazine. The article was written collaboratively by a number of noise consultants and suggested a noise planning condition which included consideration of AM. The authors noted in the article that:

“Whilst local authorities and developers have waited for a planning condition that could be applied to newly consented wind farms, or to those already consented but with a suspensive condition, the report Wind Turbine AM Review (WTAMR) by WSP/Parsons Brinckerhoff for DECC arguably did not provide that. In addition there have been a number of comments on WTAMR that we consider should be addressed.”.

The article then went on to propose a draft condition but noted that: *“This approach is proposed based on the current state of understanding, but may be subject to modification in light of new research and further robust information.”* and *“As various people before us have discovered, the derivation of a penalty is not easy. There is not sufficient reliable research to be confident that a penalty system would always provide a fair indication of the impact of AM.”*.

At the time of writing there has been no official response to those recommendations from the IOA Noise Working Group and, as yet, no endorsement from any Scottish Government Minister or Department. The recommendation to impose a planning condition and the associated penalty scheme is at odds with the advice from the IOA GPG which currently states (paragraph 7.2.1):

“7.2.1 The evidence in relation to “Excess” or “Other” Amplitude Modulation (AM) is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM.”

The WP BEIS report discusses AM, and on page 119 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.”.

In addition there is no agreed methodology which can be definitively used to predict the occurrence of AM or an agreed methodology which can be used (with consensus of industry) to determine whether the effects of AM, should it occur, are actually significant.

In summary “excess” amplitude modulation’ (i.e. where the wind turbine noise has higher variability with momentary time than the 2 – 3 dB(A) considered within ETSU-R-97) is still the subject of research; current practice (at the time of publishing of the IoA GPG) in relation

to determining applications for wind turbine developments is to not impose a planning condition specific to this phenomenon.

It should also be noted that AM is also much less likely to occur with modern turbine technology and that historically any complaints linked to amplitude modulation have been investigated in terms of the Statutory Nuisance provisions of the Environmental Protection Act 1990.

On this basis it is therefore concluded that formal assessment of amplitude modulation is scoped out of the EIA.

11.6.4 Operational Noise

Operational noise effects will be scoped out where the predicted noise levels from the proposed development are below 10 dB below the typical lowest noise limit applicable to cumulative wind farm noise, typically a level of 30dB LA90.

Where predicted noise levels from the proposed development are 10 dB or more below the lowest applicable noise limit then its contribution at noise sensitive properties can be concluded to be negligible.

Cumulative operational noise from the proposed wind turbines in conjunction with other (non-wind turbine) sources is proposed to be scoped out, as the noise limits apply to wind turbine noise only.

11.6.5 Decommissioning

Noise from decommissioning activities will be scoped out as the overall noise impacts are usually lower than during the construction phase, and will be assessed and mitigated as required at the time of decommissioning.

11.6.6 Uncorrelated Noise Sources

Cumulative operational noise from the proposed wind turbines in conjunction with other (non-wind turbine) sources, such as the solar aspects of the proposed development, has been scoped out as the noise limits apply to wind turbine noise only. Where there is no defined standard or applicable methodology to consider wind turbine noise with other sources appropriately.

11.7 Questions to Consultees

The following are questions to consultees:

- Can the consultees confirm that they agree with the proposed assessment methodologies, specifically the use of ETSU-R-97 and the IOA GPG to assess operational noise and BS5228 to assess construction noise?
- Can consultees agree that assessment of vibration, infrasound, low frequency noise and amplitude modulation be scoped out of the EIA?
- is proposed that cumulative noise from the wind farms is assessed in isolation from any other forms of development which have their own assessment criteria and methodologies and are therefore not comparable. Is this agreeable?
- Are the consultees aware of any additional potential noise-sensitive receptors, such as new housing developments?
- Are there any other wind energy developments which should be taken into consideration in the cumulative noise assessment alongside those listed herein.

- What are the Council's requirements for the provision of information on noise during construction?

11.8 References and Standard Guidance

UK Government (1974): The Control of Pollution Act 1974, available online at: http://www.legislation.gov.uk/ukpga/1974/40, [last accessed 24 March 2021].

UK Government (1990): The Environmental Protection Act 1990, available online at: http://www.legislation.gov.uk/ukpga/1990/43/contents, [last accessed 24 March 2021].
University of Salford (2007): Research into aerodynamic modulation of wind turbine noise.

Planning for renewable and low carbon energy. Available at: https://www.gov.uk/guidance/renewable-and-low-carbon- energy

Scottish Government (2014): Onshore Wind Turbines Planning Advice, available online at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/, [last accessed 18/01/2021].

Scottish Government (2011): Planning Advice Note PAN 1/2011 Planning and Noise and accompanying Technical Advice Note.

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.

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

ISO (1996): 9613-2:1996 Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation.

The British Standards Institution (2009), BS 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise and Part 2: Vibration.

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)

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

BEIS (2016): Review of the evidence on the response to amplitude modulation from wind turbines. Review of the evidence on the response to amplitude modulation from wind turbines - GOV.UK

Bowdler et al. (2009).“Prediction and Assessment of Wind Turbine Noise: Agreement about relevant factors for noise assessment from wind energy projects.” Institute of Acoustics: Acoustic Bulletin, Vol 34 No2, [March/April 2009].

Bullmore et al. (2009): Wind Farm Noise Predictions and Comparison with Measurements, Third International Meeting on Wind Turbine Noise, Aalborg, Denmark 17 – 19 June 2009.

Environment Protection Authority (2013): Infrasound levels near wind farms and in other environments, available online http://www.epa.sa.gov.au/xstd_files/Noise/Report/infrasound.pdf, [last accessed 24 March 2021].

Hayes Mckenzie (2006): The measurement of low frequency noise at three UK wind farms, The Department for Trade and Industry, URN 06/1412.

Institute of Acoustics (2016): A Method for Rating Amplitude Modulation in Wind Turbine Noise.

Keele University (2005): Microseismic and infrasound monitoring of low frequency noise and vibrations from wind farms: recommendations on the siting of wind farms in the vicinity of Eskdalemuir, Scotland.

Renewable UK (2013): Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effects.

Snow, D. J. (1997): Low Frequency Noise and Vibrations Measurement at a Modern Wind Farm, ETSU.

12.0 Site Access, Traffic and Transport

12.1 Introduction

This Section of the Scoping Report outlines the proposed method to assess the potential significant effects associated with access, traffic and transport during the construction and operational phases of the proposed development. These are described in more detail below.

The method will follow the guidance in the Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Traffic and Movement, July 2023. The method will involve:

- Establishing the environmental baseline;
- Identifying potential sources of impact;
- Quantifying impacts;
- Assessing effects;
- Identifying mitigation;
- Assessing cumulative effects; and
- Identifying residual effects.

12.1.1 Legislation, Policy and Guidance

12.1.1.1 Legislation

The assessment will be informed by the following legislation:

- The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
- The Road Vehicles (Construction and Use) Regulations (1986); and
- The Road Vehicles (Authorisation of Special Types) (General) Order 2003.

12.1.1.2 Guidance

The IEMA Guidelines referred to above will be used to assess of the traffic and transport effects of the Proposed Development. The assessment will also be informed by:

- Circular 1/2017 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, The Scottish Government;
- Transport Assessment Guidance, Transport Scotland;
- Planning Advice Note: PAN 75 - Planning For Transport, The Scottish Government; and
- Design Manual for Roads and Bridges (DMRB) TA 46/97 Traffic Flow Ranges for Use in the Assessment of New Rural Roads.

Although TA 46/97 has been withdrawn from the DMRB, Transport Scotland state it remains applicable to trunk road projects in Scotland[15].

[15] Design of trunk roads | Design standards | Transport Scotland

12.2 Environmental Baseline and Potential Sources of Impact

12.2.1 Study Area

The baseline for the transport network around the proposed development will be established via a combination of site visits, collation of existing data and collection of new data. The study area for assessment will comprise the public road network likely to be used by traffic generated by the proposed development, based on the currently-anticipated vehicle routeing as described in section 3.3.5. The extent of the study area will be refined through the assessment, but it is likely to comprise:

- The A75 as it passes the proposed development;
- The B6357 between the A75 and the C43A; and
- The C43A between the B6357 and the A75.

12.2.2 Site Visit

The above roads will be visited by members of the project team to record their nature, noting characteristics such as their configuration, presence of footways, speed limits, any restrictions on the passage of vehicles, and to identify any sensitive receptors. The IEMA Guidelines identify such receptors as:

- People at home;
- People at work;
- Sensitive and/or vulnerable groups (including young age, older age, income, health status, social disadvantage and access and geographic factors);
- Locations with concentrations of vulnerable users (e.g. hospitals, places of worship, schools);
- Retail areas;
- Recreational areas;
- Tourist attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and highway links at (or over) capacity.

12.2.3 Data Collation and Collection

Data on accidents within the last three years on the roads within the study area will be collated from the Crashmap website. The roads authorities for the roads in the study area will be consulted to understand if there are any locations on the road network within the study area where there have been atypically-high accident rates and if there are any plans for remedial works or improvements at those locations.

Traffic data will be extracted from Transport Scotland's traffic survey database for site '115042 A75 East Riggs'. Traffic surveys will also be commissioned at locations on the B6357 and the C43A in the study area. These surveys will be carried out by Automatic Traffic Counter (ATC) for a week outwith school holidays.

Traffic data will be extracted from the surveys for the weekday 0700 – 1900 period, as that is likely to be the period when traffic to and from the Site would be generated. Some construction activities may take place on Saturday mornings, but assuming all the construction-related traffic is concentrated during only during the period 0700-1900 Monday to Friday provides a more robust assessment than assuming it occurs over a longer period.

12.3 Method of Assessment and Reporting

12.3.1 Potential Sources of Impact

12.3.1.1 Construction

The proposed development would generate demand for transport during its construction and this demand would have the potential to impact on users of the transport network and potentially have an effect on those users. Transport demand would be generated during construction by staff traveling to and from the Site and plant, components, materials and supplies being delivered to or removed from the Site. This transport demand would lead to additional cars, vans, Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs) on the road network.

The number of typical daily construction-related vehicle movements that would be generated during each month of the construction programme will be estimated. These estimates will reflect the activities that would take place during the various phases of the construction programme and the amount of materials and number of items of equipment that would need to be delivered to or removed from the Site.

The number of staff likely to be present during each week or month of the construction programme will be estimated based on the Applicant's experience of other similar developments, and the phasing plan for the proposed development.

Professional judgment will be applied to estimate the routes taken by vehicles travelling to and from the Site. It is likely, however, that it will be assumed that there will be an equal split of construction-related vehicles (other than AILVs) between the section of the A75 to the east and west of the proposed development.

A 'low' growth factor from the National Road Traffic Forecasts (NRTF) dataset will be applied to the observed traffic flows to make them representative of traffic flows that could be expected during the year when construction of the proposed development could be expected to commence

The assessment of the traffic and transport effects of the proposed development will be accompanied by an investigation of the feasibility of the AILVs routeing to the Site. That investigation would likely require a wider study area than listed above.

12.3.1.2 Operation

The proposed development would generate only a handful of maintenance and inspection vehicle movements once operational and these would be expected to cause no significant traffic and transport-related effects. Hence, assessment of potential effects during operation are proposed to be scoped out of the assessment.

12.3.1.3 Decommissioning

Decommissioning of the proposed development is likely to generate fewer trips than construction as some elements of the proposed development may remain in place after decommissioning. Notwithstanding that, the decommissioning of the proposed development would occur so far into the future that the information collected on the existing baseline would be of limited relevance. Furthermore, any projections of the future baseline would likely be too uncertain to be useful. Hence, assessment of potential effects during decommissioning are proposed to be scoped out of the assessment.

12.3.2 Potential Impacts

The additional vehicle movements expected to be generated by the proposed development will then be compared to the baseline traffic flows and the percentage increase in all vehicles and in HGVs only will be calculated. These increases will then be reviewed against the IEMA Guidelines, which state:

"Following the determination of a study area, it is recommended the competent traffic and movement expert applies two broad rules of thumb as criteria to assist in delimiting the scale and extent of the environmental assessment:

Rule 1 Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%)

Rule 2 Include highway links of high sensitivity where traffic flows have increased by 10% or more."

All sections of road within the study would be subject to the threshold in Rule 1. The baseline study work referred to above will have established which sections of road within the study area could be classified as being of "high sensitivity" and hence should also be subject to the threshold in Rule 2. Any locations identified by either roads authority as an accident cluster site will be concluded as locations of 'high sensitivity'.

Where the estimated increase in traffic arising from the proposed development does not breach the relevant threshold for any section of road, the significance of any effects could be concluded to be negligible and not significant in EIA terms. No further assessment work would be undertaken on such sections.

Where the estimated increase in traffic arising from the proposed development breaches the relevant threshold for any section of road, assessment of the potential effects would be undertaken as described in the following section.

12.3.3 Potential Effects

Where the appropriate threshold is breached for a section of road, the effects of the traffic estimated to be generated during the construction of the proposed development will be considered on the following issues.

12.3.3.1 Severance

Severance is the perceived division that can occur within a community when it becomes separated by major transport infrastructure and the separation of people from places and other people. The IEMA Guidelines state that "*Changes in traffic flow of 30%, 60% and 90% are regarded as producing 'slight', 'moderate' and 'substantial' changes in severance respectively*" and "*caution needs to be observed when applying these thresholds as very low baseline flows are unlikely to experience severance impacts even with high percentage changes in traffic."*

12.3.3.2 Road Vehicle Driver and Passenger Delay

The IEMA Guidelines state that "*Traffic delays to non-development traffic can occur at several points on the network surrounding a development site.*" Regarding the significance of effects, the Guidelines state that "*These delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system.*"

No detailed traffic modelling (which would quantify delays to drivers) is proposed given the predominately rural nature of the road network around the Site and the likelihood, based on professional judgment, that there is substantial spare capacity on that network.

12.3.3.3 Non-Motorised User Delay

The IEMA Guidelines state that "*Pedestrian delay and severance are closely related effects and can be grouped together. Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend on the general level of pedestrian activity, visibility and general physical conditions of the development site.*".

Regarding the significance of effects, the Guidelines state that "*Given the range of local factors and conditions that can influence pedestrian delay (e.g. a discrete delay may have a lesser impact in an urban environment than a rural setting), it is not considered wise to set down definitive thresholds. Instead it is recommended that the competent traffic and movement expert use their judgement to determine whether pedestrian delay constitutes a significant effect*.".

12.3.3.4 Non-Motorised User Amenity

The IEMA Guidelines define this as "*the relative pleasantness of a journey, and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic*." The IEMA Guidelines also suggest that "*A tentative threshold for judging the significance of changes in pedestrian amenity would be where the traffic flow (or HGV component) is halved or doubled*" and that "*Thresholds are expressed as a starting point for any assessment and typically have been derived from studies of major changes in traffic flow and therefore should be used cautiously in any assessment. The assessment of amenity should pay full regard to specific local conditions.*".

12.3.3.5 Fear and Intimidation of and by Road Users

This considers the effects that moving vehicles have on people. It considers matters such as the volume of traffic, the proportion of heavy vehicles, the speed of vehicles and the proximity of traffic to people. The IEMA Guidelines set out a means to calculate a 'Degree of hazard score' based on the amount, composition and speed of traffic. This score is then used to identify a 'Level of fear and intimidation'; the degree of change in that level compared to the baseline is then used to categorise the magnitude of change.

12.3.3.6 Road User and Pedestrian Safety

The assessment of accidents relates to the potential for the traffic generated by a development to change accident rates on the road network. The IEMA Guidelines discuss a 'Safe System' approach but also state "*It is recommended that the traffic and movement expert engages with the relevant authorities to determine the best approach for determining the significance of road safety effects.".*

As mentioned above, the roads authorities will be consulted to determine if there are any locations on any of the roads within the study area which have atypically-high accident rates and, if so, what plans, if any, the road authority has to address those rates.

12.3.3.7 Hazardous / Large Loads

As mentioned above, the proposed development will require some AILV movements to deliver some turbine components and a report on the feasibility of delivering those components will be included as an appendix to the EIA Report. There may also be AILV movements generated by the delivery of BESS components. Reports on the feasibility of delivering these components will also be included.

The number of such movements will be determined, and their potential significance will be based on the extent of works, if any, required to accommodate the vehicles, their number and the sections of road that they will use. There are, however, established procedures in place to manage such movements and it is considered that a risk or catastrophe analysis as described in paragraph 3.50 of the IEMA Guidelines is not required.

12.3.3.8 Magnitude of Impact Change

The application of Rule 2 in the IEMA Guidelines requires the identification of "*any other link or location where it is felt specific environmental or population sensitivities may occur*". It is proposed that sections of road will be identified as being of high sensitivity if they are subject to substantial use by sensitive groups (e.g. children, elderly or mobility impaired), they are at sensitive locations (e.g. fronted by schools, hospitals or care homes) or they have been identified by the relevant roads authority has having atypically-high accident rates.

The magnitude of change for each of the effects listed above will be on a scale of high, medium, low and negligible. The suggested application of that scale to each of the effects is shown in **Table 12-1**.

Table 12-1: Suggested Categorisation of Impact Magnitude by Potential Change

Effect	Change Magnitude			
	High	Medium	Low	Negligible
Severance	Change in road link traffic flow of over 90 %	Change in road link traffic flow of 60 % to less than 90 %	Change in road link traffic flow of 30 % to less than 60 %	Change in road link traffic flow of less
Road Vehicle Driver and Passenger Delay	Judgement based on the individual characteristics of sections of road			
Non-Motorised User Delay	Judgement based on the individual characteristics of sections of road			
Non-Motorised User Amenity	Judgement based on the individual characteristics of sections of road with change in total traffic flows or HGV			Change in total traffic flows or HGV flows of less than 100 %
Fear and Intimidation of and by Road Users	Two changes in level of fear and intimidation	One change in level of fear and intimidation with >400 vehicle increase in average 18 hour vehicle flow or >500 Heavy Vehicles (HV) increase in total 18 hour HV flows	One change in level of fear and intimidation with <400 vehicle increase in average 18 hour vehicle flow or <500 HV increase in total 18 hour HV flows	No change in Level of fear and intimidation
Road User and Pedestrian Safety	Judgement based on accident data. Low or negligible impact likely if section of road under consideration has not been identified by the relevant roads authority as having an atypically high accident rate.			
Hazardous / Large Loads	Judgement based on number of such movements and nature of affected road network.			

12.3.4 Significance of Effect

A suggested effect significance matrix based on the impact magnitude and receptor sensitivity is set out in **Table 12-2**.

Table 12-2: Suggested Effect Significance Matric based on Change Magnitude and Receptor Sensitivity

Receptor Sensitivity	Change Magnitude			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

12.3.5 Cumulative Impacts

A cumulative assessment will be undertaken which will establish the cumulative increase in traffic arising from the proposed development and any other developments which are consented but not yet implemented and which would increase traffic on the same sections of the road network as the proposed development.

This approach is consistent with Schedule 4, Paragraph 5 of The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 which requires that EIA Reports provide "*A description of the likely significant effects of the development on the environment resulting from, inter alia*: […] (*e)the cumulation of effects with other existing and/or approved projects".*

This approach is also consistent with the Scottish Government's document Planning Circular 1/2017: Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 which state *"Generally, it would not be feasible to consider the cumulative effects with other applications which have not yet been determined, since there can be no certainty that they will receive planning permission".*

The significance of predicted cumulative effects will be assessed using the same process as described above.

12.4 Consultation

The roads authorities will be consulted to understand if there are any locations on the road network within the study area where there have been atypically-high accident rates and if there are any plans for remedial works or improvements at those locations.

12.5 Matters Scoped Out

The effects of the proposed development during operation and decommissioning are proposed to be scoped out of the assessment.

12.6 Approach to Mitigation

The options to embed primary mitigation in the design of the proposed development will be considered throughout the design process. Examples of primary mitigation would be using on-site borrow pits and batching plants. These examples are primary mitigation as they would generate fewer vehicle movements on the public road network than would be generated if all materials were imported to the Site.

Secondary mitigation measures will be suggested to avoid any potential significant effects. An example of such a measure would be stipulating that HGVs to and from the Site should avoid a specific route or avoid passing by a sensitive receptor at specific times.

Tertiary mitigation measures would include standard practices that are commonly implemented by contractors. Examples of such mitigation would be sheeting of loads (to prevent dust) and wheel washes (to prevent mud and debris being deposited on the public road).

Secondary and Tertiary measures would be described in a Construction Traffic Management Plan (CTMP). The traffic and transport chapter of the EIA Report will summarise the measures that could be included in a CTMP. The satisfactory submission of a CTMP could be made a condition of any consent granted for the proposed development.

Any further mitigation measures that may be required to address cumulative effects will be identified.

12.7 Questions to Consultees

The following are questions to consultees:

- Can you please advise of any developments that should be considered as part of the cumulative assessment?
- Can you please advise of any upcoming changes you are aware of to the transport network surrounding the Site?
- Can you please advise of any comments you may have on the suggested scope?
- Can you please advise if there are any locations on the roads within the study area that have atypically-high accident rates and what works (if any) are proposed at such locations to address those rates?
- Do consultees agree with items proposed to be scoped out?

12.8 References and Standard Guidance

Davis, S., Hoare, D., Howard, R., Ross, A. (2023) Institute of Environmental Management and Assessment (IEMA) Guidelines: Environmental Assessment of Road Traffic and Movement.

Scottish Government (2023). National Planning Framework 4. Edinburgh: The Scottish Government.

Transport Scotland (2012). Transport Assessment Guidance. Glasgow: Transport Scotland.

Scottish Government (2005) Planning Advice Note: Pan 75 - Planning For Transport. Edinburgh: The Scottish Government.

Scottish Government (2017). Circular 1/2017 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. Edinburgh: The Scottish Government.

The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. 2017 No. 102. HMSO: London

The Road Vehicles (Construction and Use) Regulations (1986). 1986 No. 1078. HMSO: London.

The Road Vehicles (Authorisation of Special Types) (General) Order 2003. 2003 No. 1998. HMSO: London.

13.0 Aviation

13.1 Introduction

This Section assesses the potential for the proposed development to affect aviation Communications, Navigation and Surveillance (CNS) infrastructure in the vicinity of the Site location. The section identifies the potential significant effects that the proposed development may have on civilian and military aviation and agrees the methodology for their assessment. The following are considered:

- Civil aviation interests, including 'En Route' facilities managed and operated by National Air Traffic Services (En Route) Ltd (NERL), airports, licensed and unlicensed aerodromes, light aircraft landing strips, microlight sites, parachute and gliding sites; and
- Military facilities including Ministry of Defence (MoD) Airfields and military Air Traffic Control (ATC) facilities, Air Defence Radars (ADR), Danger Areas and Ranges and low flying operations.

13.1.1 Legislation, Policy and Guidance

The proposed development will continue to be assessed against existing national policy and guidance and will be based upon the guidance laid down in Civil Aviation Authority (CAA) Publication (CAP) 764, Policy and Guidelines on Wind Turbines. Since there are many issues that need to be considered when assessing the potential impact of proposed developments, the local Air Navigation and Air Traffic Services Providers (ANSPs) are best placed to provide expert interpretation of what those impacts might be and how they might affect safety, efficiency and flexibility of their operations. There is a well-established regulatory and policy framework that has been in force for a number of years, but which has been the subject of constant amendment and updating and there are a number of regulatory and guidance documents that have been taken into account and complied within the preparation of this assessment.

13.2 Environmental Baseline and Potential Sources of Impact

The Site is in Class G (or uncontrolled) airspace under Borders Control Area (CTA) that is the main routing for air traffic to/from the south, into and out of, the Scottish Terminal Manoeuvring Area (TMA) surrounding Edinburgh, Glasgow and Prestwick airports. It is also close to the military training areas surrounding, and associated with, RAF Spadeadam.

The development of wind turbines has the potential to cause a variety of adverse effects on aviation during turbine operation. These include (but are not limited to): physical obstructions, the generation of unwanted returns on Primary Surveillance Radar (PSR) and adverse effects on the overall performance of CNS equipment. The aviation study area and assessment has been determined by, and is dependent on, the maximum operating ranges of each of the radar systems scoped into the assessment. The operational range of the radar system is dependent on the function of the radar, the operational requirement of the radar and on the type of radar used. The ranges of those radars and, subsequently, the topic-specific study area will vary depending on the technical specification of each radar system and, possibly, between different installations of the same system. The same factors apply to other aviation infrastructure (radios/beacons). CAP 764 provides criteria for initial guidance in assessing whether any wind turbine development might have an impact on civil aerodrome related operations.

Taken collectively the reference and guidance sources establish that:

- Officially safeguarded aerodromes and aerodromes with a surveillance radar facility need to be consulted if the proposed wind turbines are within 30km;
- Within airspace coincidental with any published Instrument Flight Procedure (IFP) to take into account the aerodrome's requirement to protect its IFPs;
- Consultation with the operators of officially safeguarded technical sites is required if the proposed wind turbines are within 10km;
- Further assessment and/or consultation will be required if turbines are planned within:
- 17km of a licensed aerodrome within a runway of 1100m or more;
- 5km of a licensed aerodrome with a runway of less than 1100m;
- 4km of an unlicensed aerodrome with a runway of more than 800m; and/or
- 3km of an unlicensed aerodrome with a runway of less than 800m.

CAP 764 goes on to state that these distances are for guidance purposes only and do not represent the radar/safeguarding range beyond which all wind turbine developments will be approved or within which they will always be objected to. These quoted ranges are intended as a prompt for further discussion between developers and aviation stakeholders.

It is also necessary to consider the operations of the Ministry of Defence including:

- Ministry of Defence Airfields (radar and non-radar equipped);
- Ministry of Defence Remote Air Traffic Control Radars;
- Ministry of Defence Air Defence Radars;
- Ministry of Defence Low Flying; and
- Ministry of Defence Meteorological Radars.

The Ministry of Defence does not stipulate consultation distances for their radars.

It will also be necessary to take into account the possible effects of wind turbines upon the National Air Traffic Services (NATS) radar systems – a network of primary and secondary radars and navigation facilities around the country.

13.3 Method of Assessment and Reporting

The aviation study area and assessment has been determined by, and is dependent on, the maximum operating ranges of each of the radar systems scoped into the assessment. The operational range of the radar system is dependent on the function of the radar, the operational requirement of the radar and on the type of radar used. The ranges of those radars and, subsequently, the topic-specific study area will vary depending on the technical specification of each radar system and, possibly, between different installations of the same system. The same factors apply to other aviation infrastructure (radios/beacons). CAP 764 provides criteria for initial guidance in assessing whether any wind turbine development might have an impact on civil aerodrome related operations.

Radar modelling has been undertaken using specialist propagation prediction software (RView) which has been designed and refined specifically for the task. RView uses a comprehensive systems database which incorporates the safeguarding criteria for a wide range of radar and radio navigation systems and models terrain using the Ordnance Survey (OS) Landform Panorama digital terrain model, which has a post spacing of 50 metres and has a root mean square (RMS) error of 3 metres. The results are verified using the Shuttle

Radar Topography Mission (SRTM) dataset, a separate smoothed digital terrain model with data spacing of 3 arc seconds. By using two separate and independently generated digital terrain models, anomalies are identified and consistent results assured. RView models the refractive effects of the atmosphere on radio waves and the First Fresnel Zone. RView can perform calculations using the true Earth Radius at the midpoint between the radar and the wind turbine or the simplified 4/3 Earth Radius model. If needed, RView is also capable of modelling a range of atmospheric refractive conditions and models the trajectory of radar signals at different elevations permitting the modelling of both volume surveillance and pencil beam radars.

13.4 Consultation

There are potential Line of Sight implications for the Spadeadam Dead Water Fell radar. This will be confirmed, along with the nature of the operational effects and possible mitigation, through consultation with Defence Infrastructure Organisation (DIO) and will be reported within the EIA Report.

DIO will need to be consulted regarding any likely low flying implications, and this will be reported within the EIA Report.

There are no MoD Air Defence Radars (ADRs) likely to be affected by the proposed development. This will be confirmed with DIO during consultation and reported in the EIA Report.

There should be no NATS radars affected by the proposed development. This will be confirmed through consultation with NATS and reported within the EIA Report.

13.5 Matters Scoped Out

Construction - Algorithms within radar systems are established to prevent static objects being detected and to ensure that only moving objects are presented to the controllers' screens. During the construction phase the blades will be static and will not be detected. There should be no interference with radar systems.

There is a well-established procedure for the dissemination of information relating to construction and considered essential for the safety of flying operations, both civil and military, to allow such aviation operations to be planned and to continue accordingly. The construction activities, when conducted in accordance with mandated procedure, will not pose a risk to aviation and there should be no effect; the inherent embedded mitigation means that construction activities can be scoped out from further consideration with aviation.

Decommissioning - There is a well-established procedure for the dissemination of information relating to de-construction and considered essential for the safety of flying operations, both civil and military, to allow such aviation operations to be planned and to continue accordingly. The decommissioning activities, when conducted in accordance with mandated procedure, will not pose a risk to aviation and there should be no effect; the inherent embedded mitigation means that de-construction activities can be scoped out from further consideration with aviation.

There are no non-radar equipped licensed aerodromes within the recommended consultation distance and these can be scoped out from further consideration.

There are no unlicensed aerodromes, hang-gliding sites or glider sites within the stipulated consultation distances, and these can be scoped out from further consideration.

13.6 Approach to Mitigation

The suitability of any mitigation will be a matter for the affected stakeholders. These will be identified and reported within the EIA Report.

13.7 Questions to Consultees

The following are questions to consultees:

- Is the extent of envisaged scoping considered appropriate?
- Is there any other aviation stakeholder that could/should be consulted?
- Do consultees agree with items proposed to be scoped out?

13.8 References and Standard Guidance

Civil Aviation Publication (CAP) 764 Civil Aviation Authority (CAA) Policy and Guidance on Wind Turbines.

CAP 774 UK Flight Information Services.

CAP 168 Licensing of Aerodromes.

CAP 493 Manual of Air Traffic Services Part 1.

CAP 670 Air Traffic Services Safety Requirements.

CAP 774 UK Flight Information Services.

CAP 738 Safeguarding of Aerodromes.

CAP 793 Safe Operating Practices at Unlicensed Aerodromes.

CAP 1096 Guidance to Crane Operators on Aviation Lighting and Notification

CAA Policy Statement of Lighting of Onshore Wind Turbine Generators.

Military Aviation Authority Traffic Management (3000 series) Instructions.

Military Aviation Authority Regulatory Article 2330 (Low Flying).

UK Military Aeronautical Information Publication (MIL AIP).

UK Aeronautical Information Publications (AIP).

CAA 1:250,000 and 1:500,000 VFR Charts

14.0 Socio-Economics, Recreation, Tourism and Land Use

14.1 Introduction

BiGGAR Economics has been commissioned to undertake a socio-economic assessment of the proposed development. Socio-economic assessments of onshore wind farms over the last decade have found no adverse effects 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 out of the EIA.

Nevertheless, it will be necessary to determine whether the proposed development is likely to comply with Policy 11 of Scotland's fourth National Planning Framework (NPF4), specifically paragraph (c), which states that "*development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities*".

It is proposed that a separate report on socio-economics will be provided and submitted alongside the EIA.

It is expected that further guidance for wind farm developers on what is expected in relation to Policy 11(c) in Scotland's NPF4 will be published in early 2025. The approach set out in this note is consistent with the draft guidance available at the time of writing.

The socio-economics report will include consideration of employment generation and any indirect or induced effects from the proposed development, which, in addition to turbines, includes solar panels and might include a Battery Energy Storage System (BESS). To maintain consistency with previous assessments and ensure the report meets the needs of all stakeholders the report will also consider potential effects on tourism.

14.1.1 Legislation, Policy and Guidance

There is no specific legislation or guidance on the methods that should be used to assess the socio-economic impacts of a proposed onshore wind farm development. The proposed method has however been based on established best practice, including that used in the UK Government and industry reports on the sector. In particular, this assessment will draw from two studies by BiGGAR Economics on the UK onshore wind energy sector: 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 2015.

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

For recreational assets, guidance has been provided by NatureScot (NS) on how to assess effects on recreational amenity and the approach outlined has been used. This takes into consideration a number of potential effects, including direct effect on facilities, such as limitation or restrictions on access, and effects on the intrinsic quality of the resources enjoyed by people. In general, this guidance would consider recreational and access impacts to potentially be significant if:

- Permanent or long-term effects on the resources on which enjoyment of the natural heritage depends, in particular where facilities have been provided by SNH or others under statutory powers;

- Permanent or long-term change that would affect the integrity and long-term sustainable management of facilities which were provided by SNH or others under statutory powers;
- Where there are recreational resources for open air recreation pursuits affected by the proposal which have more than local use or importance, especially if that importance is national in significance;
- Major constraints on or improvements for access or accessibility to designated natural heritage sites; and
- Where mitigation and/or compensatory or alternative recreational provision is considered to be inadequate.

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

- Scottish Government (2022), Scotland's National Strategy for Economic Transformation;
- Scottish Government (2023), Scotland's National Performance Framework;
- Scottish Government (2021), Local Energy Policy Statement;
- Scottish Government (2022), Onshore Wind Policy Statement;
- Scottish Government (2023), Onshore Wind Sector Deal;
- EDAS (2023), Implementing Community Wealth Building, A Guide
- SoSE (2022), South of Scotland’s Regional Economic Strategy Delivery Plan 2022-2025;
- Dumfries and Galloway Council (2023), Dumfries and Galloway Council Plan 2023-2028; and
- Scottish Tourism Alliance (2021), Scotland Outlook 2030.

It is also essential to take into consideration for the assessment the fourth National Planning Framework (NPF4), 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).

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

In addition, Policy 25 states that *“Development proposals which contribute to local or regional community wealth building strategies and are consistent with local economic priorities will be supported”*. The standalone report will also consider how this development will contribute to community wealth in the local area.

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 Local Area the employment in tourism related sectors accounts for a higher percentage of total employment in the area (16%) compared to both Dumfries and Galloway (13%) and Scotland (11%). 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. A tourism analysis will therefore be included in the socio-economic report.

14.2 Environmental Baseline and Potential Sources of Impact

The study areas of the assessment will be selected to meet the interests of key stakeholders and will be made of predefined geographies. The baseline assessment will include a description of the current socio-economic, recreation and tourism baseline within the local area.

The baseline description will cover and compare the study areas of:

- Local Area (defined as the electoral wards of Annandale South and Annandale East and Eskdale);
- Dumfries and Galloway; and
- Scotland.

The economic impacts will be quantified for Dumfries and Galloway, and Scotland.

14.2.1 Population Estimates

The current data indicates that the Local Area has a population of 24,600, which accounts for 16.5% of the total population of Dumfries and Galloway.

The Local Area has an older population, with 27.1% of the population aged 65 or over. In comparison, 19.0% of the Scottish population is aged 65 or over. Similarly, 58.0% of the population in the Local Area are aged between 16-64, compared to 59% of Dumfries and Galloway and to 64.7% of the Scottish population.

Table 14-1: Population Estimates by Age, 2023

Category	Local Area	Dumfries and Galloway	Scotland
Total Population	24,600	145,670	5,490,100
% under 16	14.9%	15.0%	16.3%
% age 16 - 64	58.0%	59.0%	64.7%
% aged 65 and over	27.1%	26.0%	19.0%

14.2.2 Population Projections

The National Records of Scotland provide population projections at local authority and Scottish level. While information is not available at electoral ward level, current population estimates and future trends at local authority level can be used to form a view of more localised trends.

The total population of Dumfries and Galloway is projected to decrease from 148,800 to 136,290 between 2022 and 2043. During the same period, the population of Scotland is projected to increase by 1.7%.

Dumfries and Galloway is also projected to experience an ageing population, with the share of the working age population expected to fall from 58.0% to 53.0%, which implies a loss of around 14,000 working age people from Dumfries and Galloway.

Table 14-2: Population Projections by Age, 2022

Category	Dumfries and Galloway		Scotland	
	2022	2043	2022	2043
Total Population	148,800	136,290	5,479,900	5,574,819
% under 16	15.4%	13.2%	16.6%	14.8%
% age 16 - 64	58.0%	53.0%	63.8%	60.3%
% aged 65 and over	26.6%	33.7%	19.6%	24.9%

14.2.3 Economic Activity

The economic activity rate in Dumfries and Galloway is the higher than that of Scotland as a whole, with 78.4% of the population aged between 16 and 64 either in employment or looking for work. The unemployment rate in Dumfries and Galloway (3.1%) was bellow the Scottish average (3.5%). The median annual gross wage was also slightly lower for residents of Dumfries and Galloway (£25,893) than for residents of Scotland (£29,842).

Table 14-3: Economic Activity, 2023

Category	Dumfries and Galloway	Scotland
Economic Activity Rate	78.4%	77.3%
Unemployment Rate	3.1%	3.5%
Median Annual Gross Income (All Residents)	£25,893	£29,842

14.2.4 Industrial Structure

As shown in the table below, the wholesale and retail trade sector is particularly important to the Local Area, accounting for 16.6% of all jobs in the area. This is higher than that of the Dumfries and Galloway (15.3%) and Scotland (13.2%)

Similarly, the manufacturing sector is the second largest employer in the Local Area (13.9%) and the Dumfries and Galloway (8.5%) employing a larger proportion of the workforce compared to Scotland as a whole (6.9%).

Employment in accommodation and food service activities accounts for a higher proportion of jobs in the Local Area (13.9%) than that of Dumfries and Galloway (10.2%) and Scotland (8.7%). This indicates importance of tourism to the economy of the Local Area.

The economic opportunities from the development, construction and operation of the Proposed Development are likely to be within specific sectors. These include construction and professional, scientific and technical services. The construction sector accounts for 6.2% of jobs in the Local Area, which is higher than that of the Dumfries and Galloway (4.2%) and Scotland (5.1%). There are less people employed in professional, scientific and technical activities in the Local Area than in Scotland as a whole.

Table 14-4: Industrial Structure, 2023

Category	Local Area	Dumfries and Galloway	Scotland
Wholesale and retail trade	16.6%	15.3%	13.2%
Manufacturing	13.9%	8.5%	6.9%
Accommodation and food service activities	13.9%	10.2%	8.7%
Human health and social work activities	11.4%	18.7%	16.0%
Education	7.4%	8.1%	8.4%
Construction	6.2%	4.2%	5.1%
Transportation and storage	5.5%	5.1%	4.5%
Agriculture, forestry and fishing	4.3%	8.5%	2.0%
Professional, scientific and technical activities	4.0%	4.0%	7.2%
Administrative and support service activities	3.6%	4.7%	6.9%
Water supply; sewerage, waste management and remediation activities	3.3%	1.2%	0.8%
Public administration and defence; compulsory social security	3.0%	4.2%	6.4%
Other service activities	2.1%	1.5%	1.7%
Arts, entertainment and recreation	1.7%	2.3%	2.7%
Information and communication	1.2%	0.8%	3.1%
Real estate activities	0.8%	1.5%	1.4%
Financial and insurance activities	0.8%	0.6%	3.3%
Mining and quarrying	0.2%	0.1%	1.0%
Electricity, gas, steam and air conditioning supply	0.1%	0.5%	0.7%

14.2.5 Education

The workforce in Dumfries and Galloway has lower levels of qualification than the wider Scottish population. Across Dumfries and Galloway, 42.9% of people have achieved at least a National Vocational Qualification Level 4 (NVQ4) qualification, equivalent to a higher education certificate. This is lower than the share of people in Scotland of 50.0%, with a higher education certificate. The proportion of people who have achieved no qualifications in Dumfries and Galloway (8.9%) is slightly higher than across Scotland as a whole (7.8%).

Table 14-5: Education Levels, 2022

	Dumfries and Galloway	Scotland
% with NVQ4+	42.9%	50.0%
% with NVQ3+	61.5%	64.8%
% with NVQ2+	79.5%	79.6%
% with NVQ1+	85.7%	86.4%
% with other qualifications (NVQ)	5.4%	5.8%
% with no qualifications (NVQ)	8.9%	7.8%

14.2.6 Potential Sources of Impact

The impacts that will be considered in this assessment will include the potential socio-economic, tourism and recreation impacts associated with the proposed development.

An economic impact analysis will be undertaken using the methodology developed by BiGGAR Economics; which has been used to assess over 150 onshore wind farms across the UK. The potential socio-economic impacts that will be considered are:

- Temporary effects on the regional and/or national economy due to expenditure during the construction phase;
- Permanent effects on the regional and/or national economy due to expenditure associated with the ongoing operation and maintenance of the proposed development;
- Permanent effects as a result of any additional public expenditure that could be supported by the additional tax revenue that would be generated by the development during the operational phase; and
- Permanent effects on the local economy that could be supported by any community funding and/or shared ownership proposals during the operational phase of the development.

The link between onshore wind energy developments and the tourism sector has been a subject of debate. However, the most recent research has not found a link between tourism employment, visitor numbers and onshore wind development.

In 2021 this study was updated, and research identified 16 wind farms with a capacity of at least 10 megawatts that became operational between 2015 and 2019. 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 windfarms, 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 developments. The analysis found that there was no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at the local authority level nor in the areas immediately surrounding wind farm developments.

Nevertheless, the tourism sector is an important contributor to the Scottish economy, and so there is merit in considering whether the development will have any effect on the tourism sector. This assessment will consider the potential effects that the development could have on tourism attractions, routes, trail, and local accommodation providers. This will consider the implications of any effects identified for the tourism sector in the local area and wider region.

14.3 Method of Assessment and Reporting

It is anticipated that the contents of the standalone report will include:

- Introduction.
- Economic development strategic context.
- Economic impact assessment.
- Assessment of potential supply chain effects (and actions to maximise).
- Assessment of potential labour market effects (and actions to maximise).
- Assessment of contributions to community empowerment (and actions to maximise).
- Assessment of contribution to place making (and actions to maximise).
- Assessment of the potential effects on tourism in the Local Area.
- Alignment of proposed actions with local Community Wealth Building strategy; 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 socio-economic, recreation and tourism baseline and inform any opportunities from the proposed development which arise therein.

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

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

In order to assess effects on tourism and recreation assets, the features that make them distinctive and attractive, such as how they display local heritage, will be identified. The potential impact of the proposed development on those key features will then assessed, with consideration of chapters of the EIA Report where relevant, to determine the magnitude of change.

14.4 Consultation

The assessment will use desk-based information sources to assess the likely effects, supplemented by consultation with stakeholders if relevant. Information to inform the baseline will be sought from various sources, including:

- Dumfries and Galloway Council;
- Local Community Councils; and
- VisitScotland.

14.5 Matters Scoped Out

It is proposed that any substantial, adverse impacts identified as part of the standalone socio-economic, tourism and recreation assessment will be considered as part of the EIA, and all other impacts will be scoped out.

14.6 Approach to Mitigation

Proposed mitigation measures will depend on the findings of the assessment. Proposed measures that will be adopted to enhance the socio-economic impacts include:

- Engaging early with the local community and local businesses;
- Providing clear information on technical requirements that can allow businesses to prepare; and
- Incentivising Tier 1 suppliers to engage with local businesses.
- Other measures will be identified as part of the standalone socio-economic and tourism assessment.

14.7 Questions to Consultees

The following are questions to consultees:

- Do the consultees agree with the approach of scoping socio-economics out of the EIA and into a standalone report to better address the socio-economics requirements of NPF4?
- Do the consultees agree that the scope of the proposed socio-economic assessment is appropriate?
- Are there specific socio-economic effects that should be considered in the standalone report?

14.8 References and Standard Guidance

National Records of Scotland. (2023). 'Mid-2023 Population Estimates Scotland'. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2021 (Accessed January 2025)

ONS. (2020b). 'Principal Population Projections'. https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/nationalpopulationprojections/2018based (Accessed November 2024)

ONS. (2022a). 'Annual Survey of Hours and Earnings 2022'. https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=30 (Accessed January 2024)

ONS. (2024b). 'Business Register and Employment Survey 2023'. https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=189 (Accessed November 2024)

ONS. (2023). 'Annual Population Survey 2022'. https://www.nomisweb.co.uk/query/construct/summary.asp?mode=construct&version=0&dataset=17 (Accessed January 2024)

Scottish Government (2023). 'National Planning Framework 4' https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2023/02/national-planning-framework-4/documents/national-planning-framework-4-revised-draft/national-planning-framework-4-revised-draft/govscot%3Adocument/national-planning-framework-4.pdf (accessed April 2023)

RenewableUK (2012). 'Onshore Wind, direct and wider economic impacts' https://assets.publishing.service.gov.uk/media/5a74dfc7ed915d502d6cbaec/5229-onshore-wind-direct--wider-economic-impacts.pdf (Accessed December 2024)

BiGGAR Economics (2021). 'Wind Farms & Tourism Trends in Scotland: Evidence from 44 Wind Farms' https://biggareconomics.co.uk/wp-content/uploads/2021/11/BiGGAR-Economics-Wind-Farms-and-Tourism-2021.pdf (Accessed December 2024)

15.0 Other Issues

15.1 Introduction

A number of other environmental issues will be considered in relation to the proposed development, including:

- Shadow Flicker;
- infrastructure;
- telecommunications;
- Glint and Glare;
- Agricultural Land Classification;
- television reception;
- ice throw
- climate and carbon balance;
- air quality;
- population and human health;
- risks of major accidents and/or disasters; and
- environmental management.

These topics, including reference to how they will be assessed or if they are proposed to be scoped out, are discussed in turn in the following text.

15.1.1 Shadow Flicker

Shadow flicker occurs when a certain combination of conditions prevail at a certain location, time of day and year. It firstly requires the sun to be at a certain level in the sky. The sun then shines onto a window of a residential dwelling from behind the wind turbine rotor. As the wind turbine blades rotate it causes the shadow of the turbine to flick on and off. This may have a negative effect on residents in affected properties. If shadow flicker cannot be avoided through design, technical mitigation solutions are available, such as shutting down turbines when certain conditions prevail.

In the UK, significant shadow flicker is only likely to occur within a distance of 10 times the rotor diameter (of a wind turbine), from an existing residential dwelling and within 130 degrees either side of north.

Once the final turbine layout and parameters are fixed, the locations of residential properties in proximity to the Site will be verified and if any are situated within 10 rotor diameters from the proposed turbine locations, a shadow flicker model will be run to predict potential levels of effect.

The location of all residential dwellings in proximity to the Site will be verified during the EIA. If no properties are located within the zone of influence of the proposed turbine locations, then shadow flicker will be scoped out of the EIA.

15.1.2 Infrastructure

Details and locations of infrastructure including overhead power lines, gas pipelines and underground cables will be checked and taken into account during the design of the proposed development.

The Applicant are aware of the SP Transmission Plc (SPT) proposals for the reinforcement of an 132kV electricity transmission network between Annan and Gretna referred to as 'the T Route Rebuild Project'.

15.1.3 Telecommunications

Tall structures such as buildings and turbines can adversely affect the performance of fixed telecommunications links, if positioned close enough to those links.

Ofcom data will be used in order to identify all fixed microwave telecommunications links within 3km of the Site boundary; mapping the proximity of any such links to the proposed development; and, if required, calculating, using the Ofcom-recommended 'Bacon Formula', whether the proposed development has the potential to adversely affect the performance of the link(s).

Consultation will also be undertaken with key stakeholders to identify relevant microwave links and Ultra High Frequency (UHF) telemetry links.

Potential means of mitigation of effects on fixed telecommunications links include micro-siting of turbines, installation of higher performance antennae, or re-routing of links.

15.1.4 Glint and Glare

Given the topography of the Site and surrounds, and the level of screening from intervening vegetation, the potential for glint and glare effects is concluded to be limited. The indicative solar PV array area is located, at its closest point, immediately north of the A75, and approximately 300m from the nearest residential receptor.

Once the extent of the area of the proposed solar PV array is known, an assessment of satellite aerial mapping and a ZTV of the solar PV array would be carried out in order to understand the potential for residential and traffic nuisance glare. Should this assessment conclude that no significant effects upon vehicle or residential receptors are anticipated, it is proposed to scope out the need for a glint and glare assessment. If the assessment suggests that there is a reasonable likelihood of significant effects on vehicle or residential receptors, then a glint and glare assessment would be carried out.

15.1.5 Agricultural Land Classification

The online Scotland's Soils map[16] details the land on which the indicative solar PV array area is located is classified as a mix of classes 3.1 and 6.3.

Class 3.1 is classified as *"Land capable of producing consistently high yields of a narrow range of crops and/ or moderate yields of a wider range. Short grass leys are common."*.

Class 6.3 is classified as *"Land capable of use as rough grazings with low quality plants."*.

As the land where the solar PV array would be located is not mapped as being of the highest quality arable farmland, it is proposed to scope out the need for an agricultural land classification assessment.

15.1.6 Television Reception

The Ste is located in an area which is served by a digital transmitter and television reception is unlikely to be affected by the proposed development as digital signals are rarely affected. In the unlikely event that television signals are affected by the proposed development, mitigation measures will be considered by the Applicant.

[16] https://soils.environment.gov.scot/

Television reception is scoped out of the EIA.

15.1.7 Ice Throw

Ice build-up on blade surfaces can occur in cold weather conditions. Turbines can continue to operate with a very thin accumulation of snow or ice, but will shut down automatically as soon as there is a sufficient build up to cause aerodynamic or physical imbalance of the rotor assembly. Potential icing conditions affecting turbines can be expected two to seven days per year (light icing) in Scotland (WECO, 1999).

The potential for ice throw to occur after start-up following a turbine shut down during conditions suitable for ice formation is high. There are monitoring systems and protocols in place to ensure that turbines that have been stationary during icing conditions are restarted in a controlled manner to ensure public safety. The risk to public safety is concluded to be very low due to the few likely occurrences of these conditions along with the particular circumstances that can cause ice throw.

Due to the very low risk, it is proposed that ice throw is scoped out of the EIA Report.

15.1.8 Climate and Carbon Balance

The EIA Regulations 2017 include for consideration of potentially significant effects on climate which includes greenhouse gas emissions. As a renewable energy project, the proposed development is likely to result in a significant saving in carbon and therefore benefit to the UK climate.

The main aims of the calculation are: to quantify sources of carbon emissions associated with the proposed development (i.e. from construction, operation and transportation of materials, as well as loss of peat as relevant); to quantify the carbon emissions which will be saved by constructing the proposed development; and to calculate the length of time for the project to become a ‘net avoider’, rather than a ‘net emitter’ of carbon dioxide emissions. The length of time is termed the ‘payback time’.

A carbon balance assessment will be undertaken for the proposed development using guidance Calculating Potential Carbon Losses and Savings from Wind Farms on Scottish Peatlands.

15.1.9 Air Quality

Given the rural location of the Site, the generation of dust during construction activity is likely to have limited direct impact on human receptors and would be controlled by means of best practice to be described in the EIA Report.

Consideration will be given within the Ecology and Geology, Peat, Hydrology & Hydrogeology Chapters to the potential impacts that dust generation could have on any identified sensitive ecological or hydrological receptors. If required, detailed mitigation measures will be proposed within these EIA Report Chapters. Otherwise, it is proposed that air quality is scoped out of the EIA Report.

15.1.10 Population and Human Health

The EIA Regulations 2017 include a requirement to assess as part of the EIA process, the potential significant effects on population and human health resulting from the proposed development. These requirements will be addressed in the EIA and EIA Report, as appropriate, under each of the other topic headings e.g. noise, landscape and visual, or socio-economic effects.

Where no significant effects are likely these will be scoped out of the EIA.

15.1.11 Risk of Major Accidents and/or Disasters

The proposed development would be constructed in accordance with relevant health and safety legislation and would be subject to routine inspections during operation. Braking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced, then the turbines would be shut down. In addition, given the elevated location of the site, flooding will not pose a significant risk to the operation of the proposed development nor will the construction of the proposed development contribute to flooding elsewhere. Therefore, it is unlikely that significant effects will arise as a result of the proposed development, and this topic is proposed to be scoped out of the EIA.

15.1.12 Environmental Management

The applicant is committed to pollution prevention and environmental protection. As such an environmental management strategy to minimise environmental effects of the proposed development during construction will be developed. The principles of this strategy will be presented in an Outline Construction Environmental Management Plan (OCEMP) appended to the EIA Report. Should consent be granted, the OCEMP would be revised and updated to a CEMP, the content of which would be agreed with SBC through consultation and enforced via a planning condition. The CEMP would be used by the Contractor to ensure appropriate environmental management is implemented throughout the construction phase of the proposed development.

16.0 Schedule of Commitments

A Schedule of Commitments will be included in the EIA Report. This Chapter will summarise the mitigation measures proposed in the preceding Chapters of the EIA Report to reduce or offset the effects of the proposed development on the environment. These will be measures that have been agreed with the relevant stakeholders and will be applied during the construction and operation of the proposed development. A number of these measures will be embedded mitigation, undertaken through good practice and to adhere to relevant legislation during all stages of the proposed development.

17.0 Invitation to Comment

You are invited to provide comment on this Scoping Report. Please send all Scoping responses to Dumfries and Galloway Council at:

Development Management

Militia House

English Street,

Dumfries,

DG1 2HR,

planning@dumgal.gov.uk

If you wish to discuss matters contained in this report in greater detail prior to responding to the scoping exercise, please contact:

Alastair Smith

SLR Consulting Ltd

24 St. Vincent Place,

Glasgow,

United Kingdom,

G1 2EU,

alastairsmith@slrconsulting.com

18.0 Closure

This report has been prepared by SLR Consulting Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of West Scales Windfarm Limited; no warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the client and others in respect of any matters outside the agreed scope of the work.

Appendix 01 Figures

Environmental Impact Assessment Scoping Report

West Scales Energy Park

Error! No text of specified style in document.

SLR Project No.: 428.013321.00001

19 March 2025

Appendix 02 Consultee List

Environmental Impact Assessment Scoping Report

West Scales Energy Park

Error! No text of specified style in document.

SLR Project No.: 428.013321.00001

19 March 2025

Statutory Consultees
Dumfries and Galloway Council
Historic Environment Scotland
NatureScot
SEPA

Non-Statutory Consultees	
British Horse Society	NATS Safeguarding
British Telecommunications Plc	Ofcom
Civil Aviation Authority	Transport Scotland
Crown Estate	RSPB Scotland
Defence Infrastructure Organisation	Scottish Rights of Way Society (ScotWays)
Glasgow Airport	Scottish Forestry
Fisheries Management Scotland	Scottish Water
Prestwick Airport	Scottish Wildlife Trust
Joint Radio Company	River Annan Trust
Marine Scotland Science	Vodafone
Mountaineering Scotland	Visit Scotland
Eskdalemuir Seismic Array	Natural England
Edinburgh Airport	Cumberland Council
Atkins	Historic England
Telefonica	Carlisle Airport
MBNL	
John Muir Trust	
Nuclear Decommissioning Authority	
Annan District Salmon Fisheries Board	

Community Councils
Gretna and Rigg Community Council
Eastriggs, Dornock and Creca Community Council
Kirkpatrick Fleming and District Community Council
Springfield and Gretna Green Community Council

Appendix 03 Wirelines

Environmental Impact Assessment Scoping Report

West Scales Energy Park

Error! No text of specified style in document.

SLR Project No.: 428.013321.00001

19 March 2025

Appendix 04 Cultural Heritage Appraisal

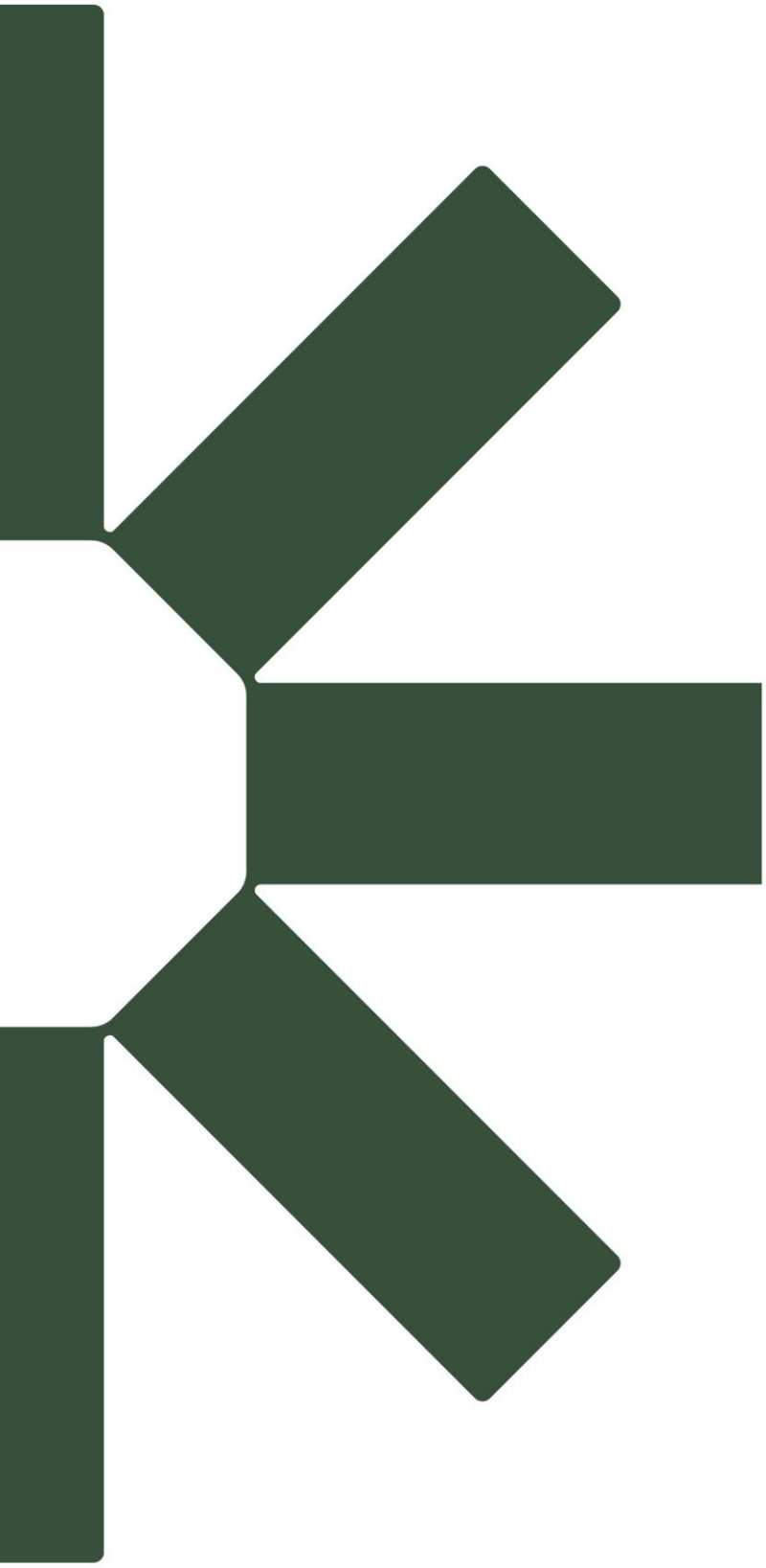
Environmental Impact Assessment Scoping Report

West Scales Energy Park

Error! No text of specified style in document.

SLR Project No.: 428.013321.00001

19 March 2025



Making Sustainability Happen