Wind Power North Six Limited

PATNA WIND FARM

Scoping Report

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WSP

110 Queen Street
Glasgow
G1 3BX

Phone: +44 141 429 3555

WSP.com

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Prepared by	Abby Mynett Rebecca Rylott James Powlson Julia Laver Lowri McCann Paul White Stuart Bone Jessica Coulson Vicky McLean	Abby Mynett Rebecca Rylott James Powlson Julia Laver Lowri McCann Paul White Stuart Bone Jessica Coulson Vicky McLean	Abby Mynett Rebecca Rylott James Powlson Julia Laver Lowri McCann Paul White Stuart Bone Jessica Coulson Vicky McLean	
Signature				
Checked by	Karen Bates	Karen Bates Suzy Yendell	Karen Bates Vicky McLean	
Signature				
Authorised by	Glen Robson	Glen Robson	Glen Robson	
Signature				
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EXECUTIVE SUMMARY

PURPOSE OF THIS REPORT

This report sets out the proposed scope of the Environmental Impact Assessment (EIA) for the proposed Patna Wind Farm (the 'Proposed Development'), the findings of which will be presented in an EIA Report. The purpose of this document (the 'Scoping Report') is to serve as a formal request to the Scottish Ministers to provide a Scoping Opinion under Regulation 12 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

This Scoping Report and the subsequent Scoping Opinion will inform the preparation of the EIA for the Proposed Development as part of a forthcoming application under Section 36 of the Electricity Act 1989 (as amended) for Section 36 consent and deemed planning permission to construct and operate Patna Wind Farm. The Proposed Development would comprise up to nine (9) wind turbines with maximum blade tip heights of 200 metres and associated infrastructure, with an expected capacity in excess of 50 Megawatts (MW).

SUMMARY OF FINDINGS OF THE SCOPING REPORT

The EIA will focus on any significant effects that may arise during the construction, operation and decommissioning of the Proposed Development. This Scoping Report utilises currently available baseline information to identify significant effects likely to occur as a result of the Proposed Development; and thereby determine which aspects should be "scoped in" or "scoped out" of the EIA.

The purpose of the EIA is to focus on topics likely to have significant effects and thus this Scoping Report aims to identify these key issues early in the EIA process and "scope-out" any issues deemed unlikely to cause significant effects as a result of the Proposed Development.

The following environmental topic areas are proposed to be included in the EIA:

- Chapter 5: Terrestrial Ecology.
- Chapter 6: Ornithology.
- Chapter 7: Landscape and Visual.
- Chapter 8: Cultural Heritage.
- Chapter 9: Hydrology, Hydrogeology and Peat.
- Chapter 10: Traffic, Transport and Access.
- Chapter 11: Noise and Vibration.
- Chapter 12: Climate Change and Carbon Balance.
- Chapter 13: Other Issues (Aviation, Telecommunications, Recreation, Tourism & Shadow Flicker).

The EIA will be accompanied by a Non-Technical Summary, Planning Statement, a report on pre-application consultation with the public and a Design and Access Statement.

GLOSSARY

Abbreviation	Description
AEECoW	Association of Environmental and Ecological Clerk of Works
AIL	Abnormal Indivisible Load
ALRA	Abnormal Load Route Assessment
AMP	Access Management Plan
Applicant	Wind Power North Six Limited
BGS	British Geological Society
BT	British Telecom
CAA	Civil Aviation Authority
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CIfA	Chartered Institute for Archaeologists
CSL	Construction Site Licence
CTMP	Construction Traffic Management Plan
Development Site	The site area within the redline application boundary
EAC	East Ayrshire Council
ECoW	Ecological Clerk of Works
EnCoW	Environmental Clerk of Works
ECU	Energy Consents Unit (Scottish Government)
EIA	Environmental Impact Assessment
GDL	Gardens and Designed Landscapes
GIS	Geographical Information Systems
GPG	Good Practice Guidance
GVA	Gross Value Added
GWDTE	Groundwater Dependent Terrestrial Ecosystems
HER	Historic Environment Records

Abbreviation	Description
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
HMP	Habitat Management Plan
HSE	Health and Safety Executive
IEF	Important Ecological Features
IEMA	Institute of Environmental Management and Assessment
IoA	Institute of Acoustics
JRC	Joint Radio Company
LCT	Landscape Character Type
LGV	Light Goods Vehicle
LNCS	Local Nature Conservation Site
LVIA	Landscape and Visual Impact Assessment
MBNL	Mobile Broadband Network Limited
MW	Megawatt
NATS	National Air Traffic Services
NLS	National Library of Scotland
NNR	National Nature Reserve
NPF4	National Planning Framework 4
NS	NatureScot
NSA	National Scenic Area
NVC	National Vegetation Classification
NVZ	Nitrate Vulnerable Zone
OHL	Overhead (Transmission) Line
OS	Ordnance Survey
OWSG	Onshore Wind Supplementary Guidance
PAN	Planning Advice Note

Abbreviation	Description
PIRP	Pollution Incident Response Procedures
PMP	Peat Management Plan
PPP	Pollution Prevention Plan
Proposed Development	Patna Wind Farm, including turbines and associated infrastructure
PWS	Private Water Supply
RSPB	Royal Society for the Protection of Birds
S36	Section 36 of the Electricity Act 1989
SAC	Special Area of Conservation
SAS	Specific Advice Sheets
SEPA	Scottish Environment Protection Agency
SG	Scottish Government
SNRHE	Scottish National Record for Historic Environment
SPA	Special Protection Area
SPEN	Scottish Power Energy Networks
SR	Scottish Renewables
SSSI	Site of Special Scientific Interest
SWLG	Scottish Wild Land Group
SWT	Scottish Wildlife Trust
SoAC	South Ayrshire Council
WFD	Water Framework Directive
WLA	Wild Land Area
WMP	Water Management Plan
ZTV	Zone of Theoretical Visibility

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1. Wind Power North Six Limited (the "Applicant") is proposing to develop a wind farm, Patna Wind Farm (the "Proposed Development") within the administrative areas of South Ayrshire and East Ayrshire Councils.

1.1.2. The Proposed Development would be located on a commercial forestry dominated site (the "Development Site") to the west of the village of Patna. The majority of the Development Site lies within East Ayrshire, with an area in the south-west situated within South Ayrshire. The Development Site is centred at coordinates 240216, 609375. **Figure 1-1** shows the Development Site boundary and indicative wind turbine locations. This includes a shared access to the Development Site through the proposed Sclenteuch Wind Farm, which is the Applicant's preferred access to the Development Site from the public road.

1.1.3. The Applicant intends to seek consent from the Scottish Ministers pursuant to Section 36 of the Electricity Act 1989, together with a direction that planning permission be deemed to be granted pursuant to Section 57(2) of the Town and Country Planning (Scotland) Act 1997, to construct and operate the Proposed Development, currently anticipated to comprise up to nine (9) wind turbines, with a generating capacity of up to 64.8 megawatts (MW) of electricity along with associated infrastructure including, access tracks, crane hardstandings, control building / substation, electrical cabling between turbines, a temporary construction compound and temporary working areas. An initial site layout has been developed to inform the preliminary environmental assessments and, for the purpose of identifying the scope of the EIA, a maximum tip height of 200 metres (m) has been assumed. It is considered that the Proposed Development will constitute EIA development in the context of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

1.1.4. In due course, the adopted Scoping Opinion, together with consultation responses received as part of the scoping process and the findings of the EIA process, will inform the final design of the Proposed Development. The assessment of predicted environmental effects will be focused on the likely significant effects arising as a result of the Proposed Development and will detail how they are proposed to be mitigated or compensated, together with any enhancement proposals. The results of the EIA will be presented in an Environmental Impact Assessment Report that will be accompany the application to the Scottish Ministers.

1.2 THE APPLICANT

The application will be made by Wind Power North Six Limited a wholly owned subsidiary company of Vestas Development A/S which is in turn owned by Vestas Wind Systems A/S. The Proposed Development is being developed under the terms of an agreement between Wind Power North Six Limited and Vestas Development A/S. Through the agreement, Wind Power North Six Limited leads on the development process of wind farm proposals up to consent. Wind Power North Six Limited is supported during this period by Vestas both financially and with staff resources requested by Wind Power North Six Limited on issues such as access, engineering design, turbine selection, wind flow and optimisation of energy capture.

1.2.1. Vestas is, by many measures, the leading global manufacturer and supplier of wind turbines. Vestas has installed over 92,000 turbines with a capacity of over 189,000 MW in 88 countries worldwide. In

addition, Vestas has a broad range of experience of project development issues including turbine siting and optimisation, grid connection and construction management. They maintain and service over 56,000 turbines worldwide amounting to 156,000 MW. Wind Power North Six Limited is a successful, independent UK wind farm developer based in Glasgow, Scotland. Wind farms developed by the Wind Power North Six Limited team and in operation already contribute more than 200MW of clean, renewable, generating capacity in the UK. Wind Power North Six Limited also have a development pipeline of over 300MW of consented potential installed capacity, 72MW (installed wind capacity) of developments in planning and are bringing forward a portfolio of over 400MW of potential generating capacity (including Patna).

1.3 THE AGENT

1.3.1. WSP UK Ltd (WSP) has been commissioned to prepare this Scoping Report. As a multidisciplinary firm, WSP provides a comprehensive "one company" solution, leveraging over 25 years of experience in preparing EIA for onshore wind farm developments across the UK. WSP employs a proven approach to assessing environmental effects, which reduces consenting risk by actively involving key stakeholders through meaningful consultation and engagement throughout the EIA process. The WSP EIA methodology is recognised by the Institute of Environmental Management and Assessment (IEMA).

1.4 HISTORY OF THE PROPOSED DEVELOPMENT

1.4.1. The Proposed Development was identified by Wind Power North Six Limited as having the potential to accommodate a windfarm development through a process run by Forestry Land Scotland. Having identified the potential in the site, Wind Power North Six Limited were appointed preferred developer for the site by Forestry Land Scotland and initial feasibility work started. Feasibility work included understanding potential access routes to site for abnormal load deliveries, grid connection options, potential impact on radar systems and other aviation issues, consultation with telecommunications operators to understand the presence of links across site and wind analysis, including the deployment of a lidar on site.

1.4.2. After completing initial feasibility studies environmental baseline survey work commenced. Ornithology surveys have been on-going on the Development Site since March 2023 whilst ecology surveys commenced in Spring 2024. A full year of bird survey work has now been completed. Initial phase 1 peat survey work has also been completed.

1.5 REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

1.5.1. The term ‘Environmental Impact Assessment’ (‘EIA’) describes a procedure that must be followed for certain types of projects before ‘consent’ can be given and is a means of drawing together, in a systematic way, an assessment of a project’s likely significant environmental effects. This helps to ensure that the predicted effects, and the scope for avoiding, preventing, reducing or offsetting them are properly understood by the public and the authority granting consent (the 'determining authority') before it makes its decision.

1.5.2. The development falls under Schedule 2 of The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[1] (hereinafter referred to as the "EIA Regulations") as a generating station (Schedule 2(1)). A Schedule 2 development constitutes EIA development if it is likely to have significant effects on the environment by virtue of factors such as its nature, size or location as set out in Schedule 3 of the EIA Regulations. Due to the scale and nature of the Proposed Development, the Applicant will undertake an EIA to assess the potential significant effects.

1.6 PURPOSE OF THE SCOPING REPORT

This report sets out the proposed scope of the EIA, which is to be submitted to the Scottish Ministers as a formal request for a scoping opinion. A scoping opinion is defined under the EIA Regulations as "*an opinion adopted by the Scottish Ministers as to the scope and level of detail of information to be provided in the EIA Report*". The purpose of this Scoping Report is therefore to:

- Define the Proposed Development under consideration (**Chapter 2**);
- Describe the consenting and EIA requirements in relation to the Proposed Development (**Chapters 3 and 4**); and
- Outline the aspects of the Proposed Development that could potentially result in significant environmental effects (**Chapter 4**) and where potentially significant effects may result, the methodologies that will be used to assess potential impacts (**Chapters 5-12**).

1.6.1. The Scoping Report has been based upon site surveys (identified in individual specialist chapters where applicable), currently available baseline data, site characteristics and best practice across the specialist topics.

1.6.2. A number of specialist topics within the Scoping Report conclude with questions for consultees where specific feedback is required and to allow for a more focused assessment at EIA stage. It is requested that consultees only provide feedback to questions which are appropriate to them.

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

2 SITE CONTEXT AND PROPOSED DEVELOPMENT

2.1 PURPOSE OF THE DEVELOPMENT

2.1.1. By 2030, Scotland aims to source 50% of its total energy consumption from renewable sources[2]. This is a significant step up from previous goals and reflects Scotland's commitment to transitioning to a low-carbon energy system[3]. These targets are part of the broader strategy to decarbonize the energy sector, including electricity, heat, and transport. Additionally, the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[4] commits Scotland to achieving 'net zero' emissions by 2045.

2.1.2. Onshore wind farm developments are pivotal in meeting the UK Government's renewable energy goals and reducing carbon emissions in accordance with current targets. The necessity for such development is underscored by the UK Government's phase-out of coal-fired power stations by October 2024. The final coal power station in the UK closed on 30 September 2024. UK's climate change goals, among the most ambitious in Europe, aim for an 80% reduction in carbon dioxide emissions by 2050[5].

2.1.3. The UK Energy Roadmap[6] and The UK Low Carbon Transition Plan[7] both highlight onshore wind as essential for reaching the UK Government's renewable energy targets and transitioning to a low-carbon energy system. In December 2022, the Scottish Government established its ambition of deploying 20GW of onshore wind by 2030 as part of its effort to achieve net-zero.

2.1.4. The most recent overarching clean energy publication by the UK Government, the Clean Power 2030 Action Plan: A new era of clean electricity (December 2024), demonstrates the commitment to transitioning the UK to a clean power system by 2030. The aspiration is for the domestic power system to have clean sources produce at least as much power as Great Britain consumes annually and provide at least 95% of Great Britain's generation (backed up by unabated gas to be used only when essential).

2.1.5. The Proposed Development will make a positive contribution to increasing the capacity of clean power generation.

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[2] Scottish Government (2017) Scotland's Route to 2050: Targets, Priorities and Actions – The future of energy in Scotland: Scottish energy strategy

[3] Scottish Government. (2023). 'Scotland's Energy Strategy and Just Transition Plan: Ministerial statement'. Available at: https://www.gov.scot/publications/scotlands-energy-strategy-transition-plan-ministerial-statement/

[4] UK Government. (2019). 'Climate Change (Emissions Reduction Targets) (Scotland) Act 2019'. Available at: https://www.legislation.gov.uk/asp/2019/15

[5] UK Parliament. (2023). "The UK's plans and progress to reach net zero by 2050'. Available at: https://commonslibrary.parliament.uk/research-briefings/cbp-9888/

[6] UK Government. (2013). 'The UK Renewable Energy Roadmap'. Available at: https://www.gov.uk/government/collections/uk-renewable-energy-roadmap.

[7] UK Government. (2009). 'The UK Low Carbon Transition Plan'. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/228752/9780108508394.pdf.

2.2 THE DEVELOPMENT SITE

2.2.1. The Development Site shown in **Figure 2.1** covers an area of approximately 577 ha. Of this, 467 ha is within the East Ayrshire Council administrative area and 110 ha within the South Ayrshire Council administrative area. **Figure 2-2** illustrates the administrative area boundaries within which the Development Site sits.

2.2.2. The village of Patna, a former mining village, is located to the east of the Development Site whilst Waterside is located to the south-east. There are numerous other settlements within 15km of the Development Site, including Straiton and Kirkmichael within 5km, and Dalmellington, Crosshill, Maybole, Hollybush and Dalrymple within 10km.

2.2.3. The Development Site is within active commercial forestry owned by Forestry Land Scotland (FLS). The forestry is served by several access tracks which appear to have been constructed using local stone from a borrow pit close by. Loch Spallander Reservoir is located to the south-west of the Development Site. In addition, the 275kV overhead transmission line (OHTL) interconnector to Northern Ireland runs from north to south through the Development Site.

2.2.4. There are no statutory designated sites within the Development Site boundary. The closest ecological statutory designation is located 4.7km south-east of the Development Site. There are two Local Nature Conservation Sites (LNCS) within 5km (Benquhat Hill, 2.5km to the east and Dunaskin Iron Works, 1.5km from the Development Site).

2.2.5. The closest existing wind farm to the Development Site is Dersalloch Wind Farm to the south (which is approximately 3.6 km from the Proposed Development boundary to closest Dersalloch turbine).

2.3 FORESTRY

2.3.1. The main land use at the Site is commercial forestry managed by FLS and a Land Management Plan approved by Scottish Forestry is in place.

2.3.2. A Wind Farm Forest Design Plan (WFFDP) will be developed for the Proposed Development. The starting point for the WFFDP would be the existing forest management plans, with proposed modification of these to reflect the requirements of the Proposed Development as far as reasonably practicable rather than assuming a radical departure from their provisions. It is anticipated that the WFFDP would be finalised once the wind farm layout has been established. The proposed WFFDP would take into account the Scottish Government's Control of Woodland Removal Policy, the UK Forest Standard and other relevant regulations and guidelines.

2.3.3. The primary objectives of the WFFDP will be to integrate the wind farm into the forest environment in such a way that wind turbine performance can be optimised while minimising large-scale premature felling and resulting compensatory measures as far as reasonably practicable. A felling plan would also be prepared as part of the forestry assessment following liaison with the forest owners/managers, this being based on existing felling plans.

2.3.4. It is expected that a restocking plan will be prepared following agreement of the felling plan, this will set out the crop types to be planted in areas cleared. The locations for open ground and native woodland, both of which would minimise negative wind flow effects, would be identified with the aim of ensuring long-term optimisation that meets UK Forest Standard requirements and landowner management objectives. Any restocking will also be informed by environmental considerations

identified through the EIA, working with landscape and ecology professionals to ensure key ecological and other environmental objectives are accounted for.

2.4 PROPOSED DEVELOPMENT

2.4.1. The Proposed Development is likely to comprise of the following main elements:

- Up to nine (9) wind turbines with a maximum tip height of 200m;
- Access tracks connecting infrastructure elements;
- Hardstanding areas e.g. crane pads;
- Potential borrow pit(s);
- Temporary construction compound and working areas;
- Control building / substation and electrical cabling between these and the turbines; and
- Forestry works.

2.4.2. The grid connection will be subject to a separate consenting process and therefore will not be considered under this EIA process.

2.4.3. For the purposes of the EIA, a candidate turbine will be proposed from the Vestas portfolio for use during each assessment. The candidate turbine selected will represent the worst-case scenario for the assessment. The final selection of turbine model and specification will be influenced by the results of the EIA and the wind monitoring campaign.

2.4.4. A proposed micrositing allowance will be set out and assessed in the EIA Report. Micrositing refers to the precise locating of wind farm infrastructure following more detailed ground investigations that would be carried out post consent. This allows the location of infrastructure to be revised within a specified distance in response to the findings of the more detailed ground investigations that are carried out as part of the preparations for construction.

2.4.5. As the Proposed Development as progressed, an additional area of land has been made available to the west of the Development Site, which follows a boundary with Troquhain Wood and Rodgerston Burn. A separate area of land surrounding Patna Hill to the north of the main Development Site was also removed from the site boundary at this stage.

2.4.6. The indicative turbine locations are set out in **Table 2-1** and **Figure 2-1.**

Table 2-1: Indicative Turbine Locations

Component	Maximum Height (m)	Location (X, Y)
Turbine 1	200	238633, 608748
Turbine 2	200	239055, 608497
Turbine 3	200	239406, 609113
Turbine 4	200	239542, 608416
Turbine 5	200	240107, 608806
Turbine 6	200	240544, 609036
Turbine 7	200	240348, 608127

Component	Maximum Height (m)	Location (X, Y)
Turbine 8	200	240550, 608542
Turbine 9	200	241009, 608682

2.5 HISTORIC AND CURRENT DEVELOPMENT SITE USES

2.5.1. The current Development Site is used for commercial forestry. A reservoir is situated to the south-west of the Project Site.

2.6 CONSTRUCTION

2.6.1. It is expected that the construction period of the Proposed Development will be up to 24 months. The commencement of construction will largely be dependent on the date that consent is granted and the offered grid connection date, though this will be assumed to be 2030 for the purposes of the EIA. Felling and site clearance will be required initially in coupes around the location of infrastructure.

2.6.2. Following construction, temporary construction compound(s), working areas and associated facilities will be removed and fully re-instated with vegetation/peat displaced from elsewhere on the Development Site and landscaped taking account of local topography.

2.7 OPERATION AND MAINTENANCE

2.7.1. The Proposed Development is expected to have an operational period of 30 years. A Supervisory Control and Data Acquisition (SCADA) system will be implemented to obtain information from each turbine on its performance and allow for control of the turbines remotely.

2.7.2. Typically, routine maintenance or servicing of turbines is likely carried out twice a year with a main service at 12-monthly intervals and a minor service at six months. The turbine requiring maintenance is switched off during the duration of the service. It takes two people (on average) one day to service each turbine.

2.8 DECOMMISSIONING

2.8.1. At the end of the Proposed Development's operational life, there are two options available:

- To re-power the Development Site with new turbines, which would require a new application and environmental assessment; or
- Removal of the wind turbines and control building/substation and reinstate the Development Site to its former condition in agreement with the controlling bodies at the time such as East Ayrshire Council and South Ayrshire Council.

2.8.2. The latter option of decommissioning at the end of the Proposed Development's life is assumed and will inform the EIA. It is proposed that above ground structures would be removed (as per any condition relating to this topic on the grant of consent) and the hardstanding areas re-instated where appropriate. Sub-surface infrastructure and access tracks will likely remain in situ in agreement with the landowner.

2.9 ENVIRONMENTAL MANAGEMENT

2.9.1. The EIA Report will identify potential impacts and outline measures to avoid, prevent, reduce, or, where necessary, offset significant adverse effects. Where appropriate, these measures will be supported by monitoring commitments to ensure their effectiveness.

2.9.2. An outline Construction Environmental Management Plan (CEMP) will be submitted with the Section 36 application and will be further developed prior to construction. This will set out responsibilities for compliance with legislation and the mitigation and monitoring measures included in the EIA that must be implemented. The EIA Report and the outline CEMP will be informed by the guidance document 'Good Practice during Windfarm Construction, 2024'[8].

[8] SNH. (2024). 'Good Practice during Windfarm Construction'. Available at: https://www.nature.scot/guidance-good-practice-during-wind-farm-construction.

3 LEGISLATION AND PLANNING POLICY

3.1.1. The EIA will be conducted in accordance with all relevant legislation, policies, and guidelines pertinent to the Proposed Development.

3.1.2. The S36 application will be accompanied by a Planning Statement, which will provide an assessment against relevant policies and detail the planning justification for the Proposed Development in relation to national and local policies, as well as other material considerations.

3.2 LEGISLATIVE CONTEXT

3.2.1. The application for the Proposed Development would be made pursuant to S36 of the Electricity Act 1989[9] as a generating station with a capacity exceeding 50 MW and deemed planning permission under section 57 of the TCP(S)A 1997 will be requested of Scottish Ministers.

3.2.2. The EIA Regulations[10] provide the requirements for undertaking EIAs for developments to be consented under the Electricity Act 1989 (as amended)[9]. The EIA Report would be prepared in accordance with Schedule 4 of the Regulations.

3.2.3. The environmentally led approach to siting and design of the Proposed Development to date will be driven by Schedule 9 of the Electricity Act 1989. The duties referred to in Schedule 9 sub-paragraph 3 (1) (a) and (b) of the Electricity Act do not apply to the Applicant as they are not a licenced generator. Notwithstanding this, the Scottish Ministers must have regard to the matters set out in subparagraph 3(1)(a) to when determining the S.36 application:

3.2.4. "…. the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest"

3.2.5. The key features relating to "the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects" to be considered during the design process include:

- Identified landscape and visual constraints;
- Distance to nearest receptors with consideration for noise and visual amenity effects, and potential for shadow flicker effects;
- Ground conditions (including peat) and slopes;
- Access feasibility;
- Presence of power lines (existing and proposed) and telecommunications links;
- Presence of protected habitats and species;
- Presence of watercourses;
- Current land use;
- Presence of cultural heritage features; and

[9] UK Government. (1989). 'Section 36 Electricity Act 1989'. Available at: https://www.legislation.gov.uk/ukpga/1989/29/section/36
[10] UK Government. (2017). 'The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017'. Available at: https://www.legislation.gov.uk/ssi/2017/101/contents

- Compatibility with aviation interests.

3.2.6. The requirements set out under Schedule 9 of the Electricity Act will be fully considered and accounted for throughout the design and EIA assessment processes.

3.3 SCOTTISH PLANNING POLICY AND GUIDANCE

3.3.1. Scottish Ministers will have regard to policy and advice documents relevant to the Proposed Development in the determination of the S36 application, including those noted in the following sections:

NATIONAL PLANNING FRAMEWORK 4 (NPF4)

3.3.2. NPF4[11] serves as a comprehensive strategic document guiding Scotland's spatial development and planning policies. It integrates land use and planning directives to address key national priorities, including sustainable development, climate change mitigation, the nature crisis and the promotion of economic growth. NPF4 emphasises the importance of a place-based approach, encouraging developments that contribute positively to communities, enhance environmental quality, and support infrastructure resilience. By setting out a clear vision for the future development of Scotland, NPF4 aims to balance economic, social, and environmental objectives, ensuring a coordinated and sustainable approach to national and regional planning efforts.

3.3.3. The Proposed Development would be considered national development as per the provisions of NPF4. The policies of relevance to onshore wind include the following:

- Policy 1: Tackling the Climate and Nature Crisis;
- Policy 3: Biodiversity;
- Policy 4: Natural Places;
- Policy 5: Soils;
- Policy 6: Forestry, Woodland and Trees;
- Policy 7: Historic Assets and Places;
- Policy 11: Energy;
- Policy 22: Flood Risk and Water management.

NATIONAL PLANNING ADVICE, CIRCULARS AND ADVICE SHEETS

3.3.4. National planning policy[12] is supported by Planning Circulars, Planning Advice Notes (PANs) and Specific Advice Sheets and Ministerial/ Chief Planning Letters to Planning Authorities, which set out detailed advice from the Scottish Government in relation to a number of planning issues. The PANS and Specific Advice Sheets considered relevant to the Proposed Development include:

- PAN 1/2011 Planning and Noise, March 2011[13];

[11] Scottish Government. (2023). 'National Planning Framework 4'. Available at: https://www.gov.scot/publications/national-planning-framework-4/
[12] UK Government. (2012). 'National Planning Policy Framework'. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2
[13] Scottish Government. (2011). 'Planning Advice Note 1/2011: planning and noise'. Available at: https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/

- PAN 2/2011 Planning and Archaeology, July 2011[14];
- PAN 3/2010 Community Engagement, August 2010[15];
- PAN 51 Planning, Environmental Protection and Regulation, October 2006[16];
- PAN 60 Natural Heritage, January 2000[17];
- PAN 61 Sustainable Urban Drainage Systems, July 2011[18];
- PAN 75 Planning for Transport, August 2005[19];
- PAN 79 Water and Drainage, September 2006[20];
- Wind Farm Developments on Peat Land, May 2013;[21]
- Specific Advice Sheet: Guidance on Developments on Peat Land: Peatland Survey, 2017[22];
- Draft Peatland and Energy Policy Statement, 2016[23];
- Specific Advice Sheet (updated 28 May 2014); Onshore Wind Turbines[24];
- Spatial Planning for Onshore Wind Turbines – Natural Heritage Considerations, June 2015[25];

[14] Scottish Government. (2011). 'Planning Advice Note 2/2011: Planning and archaeology. Available at: https://www.gov.scot/publications/pan-2-2011-planning-archaeology/
[15] Scottish Government. (2010). 'Planning Advice Note 1/3010: Community and engagement. Available at: https://www.gov.scot/publications/pan-3-2010-community-engagement/
[16] Scottish Government. (2006). Planning Advice Note 51: planning, environmental protection and regulation. Available at: https://www.gov.scot/publications/planning-advice-note-pan-51-revised-2006-planning-environmental-protection/
[17] Scottish Government. (2000). 'Planning Advice Note 60: natural heritage. Available at: https://www.gov.scot/publications/pan-60-natural-heritage/
[18] Scottish Government. (2001). 'Planning Advice Note 61: Sustainable urban drainage systems. Available at: https://www.gov.scot/publications/pan-61-sustainable-urban-drainage-systems/
[19] Scottish Government. (2005). 'Planning Advice Not: PAN – PLANNING FOR TRANSPORT. Available at: https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/
[20] Scottish Government. (2001). 'Planning Advice Note 79: water and drainage. Available at: https://www.gov.scot/publications/planning-advice-note-pan-79-water-drainage/
[21] Scottish Government. (2011). 'Wind farm developments on peat land'. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2013/05/wind-farm-developments-on-peat-land-planning-advice/documents/wind-farm-developments-peat-land_online-renewables-advice-pdf/wind-farm-developments-peat-land_online-renewables-advice-pdf/govscot%3Adocument/Wind%2BFarm%2BDevelopments%2BOn%2BPeat%2BLand_online%2Brenewables%2Badvice.pdf
[22] Scottish Government, Scottish Natural Heritage, SEPA. (2017). Peatland Survey. *Guidance on Developments on Peatland'.* Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2018/12/peatland-survey-guidance/documents/peatland-survey-guidance-2017/peatland-survey-guidance-2017/govscot%3Adocument
[23] Scottish Government. 2016. 'Draft Peatland and Energy Policy Statement (2016-21)'. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/corporate-report/2018/11/peatland-and-energy-draft-policy-statement/documents/draft-peatland-and-energy-policy-statement/draft-peatland-and-energy-policy-statement/govscot%3Adocument/Draft%2Bpeatland%2Band%2Benergy%2Bpolicy%2Bstatement.pdf
[24] Scottish Government. (2014). 'Onshore wind turbines: planning advice. Available at: https://www.gov.scot/publications/onshore-wind-turbines-planning-advice/
[25] Scottish Natural Heritage. (2015). 'Spatial Planning for Onshore Wind Turbines – natural heritage considerations'. Available at: https://www.kintradwell-windfarm.co.uk/media/2641818/cd007011-spatial-planning-for-onshore-wind-turbines-natural-heritage-consideration-june-2015.pdf

- Onshore Wind Sector Deal (2023)[26],
- Onshore Wind Policy Statement (2022)[27], and
- Chief Planner Letter regarding Energy Targets and Scottish Planning Policy, 2015[28].

3.4 LOCAL PLANNING POLICY

3.4.1. In considering the overall legal framework within the Proposed Development which would be assessed, the development plan should be a key consideration. However, Section 25 of the Town and Country Planning (Scotland) Act 1997[29] is not engaged for applications pursuant to Section 36 of the Electricity Act 1989[9] (i.e. the development plan does not take primacy in the determination process).

3.4.2. Where a Local Plan policy is incompatible with NPF4 then the most recent policy will apply (s.24A TCP(S)A1997).

EAST AYRSHIRE LOCAL DEVELOPMENT PLAN (LDP)

3.4.3. The East Ayrshire LDP2[30] was adopted by East Ayrshire Council (EAC) on 23 July 2024. This supersedes the East Ayrshire LDP (2017) and the East Ayrshire Minerals LDP (2020) to form (along with NPF4) the Development Plan for East Ayrshire.

3.4.4. Policies of relevance within the East Ayrshire LDP2 include Policy: RE1 Renewable Energy. The relevant criteria of Policy RE1 seeks to protect environmental receptors including the landscape, cultural and natural heritage, water and general amenity from unacceptable significant adverse impact. It is stated that renewable energy proposals will be assessed against all relevant criteria as set out in plan including:

- Climate change impacts;
  - Scale of contribution to renewable energy targets.
  - Effect on greenhouse gas and carbon emissions.
- Environmental impacts;
  - Significant landscape and visual impacts,
- Community and economic impacts
- Infrastructure impacts

3.4.5. Other policies within the East Ayrshire LDP2 which are of relevance to the Proposed Development are:

[26] Scottish Government (2023) Onshore wind sector deal - gov.scot
[27] Scottish Government (2022) Onshore wind: policy statement 2022 - gov.scot
[28] Scottish Government. (2015). 'Energy targets and Scottish planning policy: Chief Planner letter'. Available at: https://www.gov.scot/publications/energy-targets-and-scottish-planning-policy-chief-planner-letter/
[29] UK Government. (1997). 'Town and Country Planning (Scotland) Act 1997'. Available at: https://www.legislation.gov.uk/ukpga/1997/8/section/25
[30] https://www.east-ayrshire.gov.uk/PlanningAndTheEnvironment/development-plans-and-policies/ldp2/ldp2.aspx

- Policy SS1: Climate Change;
- Policy SS2: Overarching Policy;
- Policy SS11: Skills & Employment;
- Policy OS1: Green and Blue Infrastructure;
- Policy HE1: Listed Buildings;
- Policy HE2: Conservation Areas;
- Policy HE3: Scheduled Monuments, Historic Battlefields and other Archaeological and Historic Environment assets;
- Policy NE1: Protecting and Enhancing Landscape and Features,
- Policy NE2: Development Impacts on Areas of Wild Land;
- Policy NE3: Local Landscape Area;
- Policy NE5: Protection of Areas of Nature Conservation Interest;
- Policy NE7: Geodiversity and Geological Interest;
- Policy NE8: Trees, Woodland, Forestry and Hedgerows;
- Policy NE12: Water, Air, Light and Noise Pollution;
- Policy NE11: Soils;
- Policy TOUR4: The Dark Sky Park; and
- Policy CR1: Flood Risk Management.

East Ayrshire Supplementary Planning Guidance

3.4.6. Relevant statutory supplementary planning guidance to this Proposed Development includes:

- Dark Sky Park Lighting (April 2024).
- Listed Buildings and Conservation Areas (August 2024).
- Local Landscape Area (August 2024).
- Energy and EV Charging (2024).

3.4.7. Non-statutory guidance of relevance includes:

- Local Nature Conservation Sites (2024).
- Strategic Woodland Creation (2024).
- East Ayrshire Landscape Wind Capacity Study (2024).
- Community Benefits (2024).

SOUTH AYRSHIRE LOCAL DEVELOPMENT PLAN (LDP)

3.4.8. The South Ayrshire LDP2[31] was adopted by South Ayrshire Council (SAC) in August 2022 superseding the South Ayrshire LDP and the Town Centre and Retail LDP. The Adopted LDP2 and proposals map sets out the development strategy, key policies and proposals that provide the land use planning framework to guide development in South Ayrshire up to 2032.

3.4.9. It should be noted that Section 24 of the Town and Country Planning (Scotland) Act 1997 provides that, in the event of any incompatibility between a provision of NPF4 and a provision of an LDP, the

[31] Local development plan 2 - South Ayrshire Council

latter in date is to prevail. As the LDP pre-dates NPF4, should there be any policy conflict, NPF4 policies will apply.

3.4.10. The main policy of relevance is LDP Policy: Wind Energy. All wind farm proposals will be assessed by SAC against the following criteria:

a. They consider and respect the main landscape features and character through careful site selection, layout and overall design. Potential impacts will be mitigated appropriately to ensure that significant effects on the landscape and wider area are minimised;

b. They do not have a significant detrimental visual impact, taking into account views experienced from surrounding residential properties and settlements, public roads and paths, significant public viewpoints, and important recreational assets and tourist attractions;

c. The extent to which they would have a positive net economic impact, including local and community socio-economic benefits such as employment, business and supply chain opportunities;

d. The extent to which they would contribute to renewable energy generation targets and to the Scottish Government's net-zero target;

e. They would have no other unacceptable detrimental effect upon the amenity of nearby residents, including from noise and shadow flicker;

f. Taking into account the criteria in LDP policy natural heritage, they would not have an unacceptably detrimental effect upon natural heritage, including wild land, birds and carbon rich soils;

g. Taking into account the criteria in LDP policy: historic environment and LDP policy archaeology, they would not have an unacceptably detrimental effect upon the historic environment;

h. They would not adversely affect aviation safety or defence interests, as well as telecommunications and broadcasting installations, ensuring in particular that transmission links are not compromised;

i. Their cumulative impact in combinations with other existing and approved wind energy developments, and those for which applications for approval have already been submitted, is acceptable.

3.4.11. In addition to the above, the South Ayrshire Landscape Wind Capacity Study 2018 (and any subsequent update) and the South Ayrshire Local Landscape Area Review 2018 are both non-statutory guidance. It is also stated that development will only be permitted where it can be demonstrated to SAC's satisfaction that there would be no adverse effect on the integrity of European site(s) either alone or in combination with other plans or projects.

3.4.12. Other policies of relevance include:

- LDP Policy: Sustainable Development.
- LDP Policy: Renewable Energy.
- LDP Policy: Wind Energy.
- LDP Policy: Landscape Quality.
- LDP Policy: Dark Skies.

- LDP Policy: Glasgow Prestwick Airport.
- LDP Policy: Land Use and Transport.
- LDP Policy: Galloway and Southern Ayrshire Biosphere.
- LDP Policy: Water Environment.
- LDP Policy: Historic Environment.
- LDP Policy: Archaeology.
- LDP Policy: Natural Heritage.
- LDP Policy: Flooding and Development.
- LDP Policy: Air, Noise and Light Pollution.
- LDP Policy: Woodland and Forestry.
- LDP Policy: Outdoor Public Access and Core Paths.
- LDP Policy: Tourism.

South Ayrshire Planning Guidance

Supplementary guidance adopted as part of LDP2 does not carry the status of development plan policy but, where relevant, may still be used by SAC in the consideration of planning applications. These are now referred to as planning guidance. Those of relevance include:

- Historic Environment Planning Guidance.
- Supplementary Guidance Wind Energy.
- Supplementary Guidance Dark Sky Lighting.
- South Ayrshire Landscape Wind Capacity Study (updated August 2018).

4 APPROACH TO EIA

4.1 EIA OVERVIEW

4.1.1. EIA is a systematic process required for certain categories of development before they can receive development consent, the focus of which is on environmental effects that are likely to be significant. As part of this process, environmental effects that are likely to be significant are identified and can be set out in an EIA Scoping Report for agreement with key stakeholders, and the environmental impact of a Proposed Development assessed thereafter and described in an EIA Report. This ensures that the significance of the predicted effects as a result of a Proposed Development, and the potential for mitigation measures to reduce them, are well understood by key stakeholders before a decision is made; in this case by the Scottish Ministers.

4.1.2. The EIA process is iterative and, typically, multiple design iterations occur in response to environmental constraints identified during the EIA process before the final design is determined.

4.1.3. The assessment adheres to recognised best practices and guidelines specific to each technical area, identifying the likely significant environmental effects of a proposed development. Consultees are encouraged to confirm agreement with the proposed scope, including what is included and excluded in the assessment, the methodology used, and the receptors identified.

4.1.4. The preparation of the EIA Report is one of the key stages in the EIA process as it brings together information about any potentially significant environmental effects, which the Scottish Ministers in this instance, will use to inform a decision about whether the Proposed Development should be allowed to proceed.

4.2 EIA TERMINOLOGY

IMPACTS AND EFFECTS

4.2.1. The EIA focuses on identifying likely significant effects on the environment. The terms “impact” and “effect” however are often used interchangeably, which can lead to confusion. To maintain clarity, this assessment adopts the convention of using “impacts” specifically within the context of the EIA process, which encompasses everything from scoping and EIA Report preparation to subsequent monitoring and other related activities. In contrast, the term “effects” is used throughout this document to describe the environmental consequences of the Proposed Development. For instance, these effects may result from:

- Physical activities that take place if the Proposed Development were to proceed (e.g. vehicle movements during construction operations); and
- Environmental changes that are predicted to occur because of these activities (e.g. loss of vegetation due to construction work or an increase in noise levels). In some cases, one change causes another change, which in turn results in an environmental effect.

4.2.2. The predicted effects refer to the consequences of environmental changes on specific receptors. For example, in the case of bats, the loss of roosting sites or foraging areas could reduce their population size in a given area. Similarly, for people, an increase in noise levels could reduce overall amenity.

4.2.3. This assessment focuses on evaluating the significance of the environmental effects resulting from the Proposed Development, rather than the activities or changes that cause these effects. However,

understanding these activities and identifying the resulting changes are crucial, often requiring predictive assessment work.

TYPE OF EFFECT

4.2.4. The EIA Regulations (Schedule 4, Part 5) require consideration of various types of effects, including direct and indirect, secondary, cumulative, positive and negative, as well as short-term, medium-term, long-term, permanent, and temporary effects. In the forthcoming EIA Report, which will build on this Scoping Report and take account of the subsequent Scoping Opinion, these effects will be assessed based on their origin, nature (i.e., whether they are positive or negative), and duration. Each effect will have a source originating from the Proposed Development, a pathway, and a receptor, and may fall into one or more of the following categories:

- **Direct effects** are readily identified because of the physical connection between some element of a development and an affected receptor;
- **Indirect effects** require some additional pathway for the effect to arise.
- **Secondary effects** would typically require further pathway connections, for example, an effect on a receptor population (A) could have a secondary effect on receptor population (B), if B was itself dependent on A in some way, as, for example, a food source; and
- **Cumulative effects** arise when the receptors affected by one development are affected by other developments resulting in the aggregation of environmental effects or the interaction of impacts. The subsequent EIA will consider potential cumulative effects from other wind farm developments that are operational, have received consent, or are the subject of a live and validated application. This consideration is subject to a cut-off point, typically around 12 weeks before the submission of the application, to allow for assessments to be completed.

4.2.5. Most predicted effects will be clearly positive or negative and will be described accordingly. However, in some cases, the interpretation of a change may be subjective and informed by professional judgement.

TEMPORAL AND SPATIAL SCOPE

4.2.6. In its broadest sense, the spatial scope refers to the area over which environmental changes would occur as a result of a development.

4.2.7. The spatial scope varies depending on the environmental topic. For example, the impact of a development on landscape resources and visual amenity is typically assessed within a zone extending up to 45 km from the wind turbines (and potentially up to 60 km for cumulative effects). In contrast, noise effects are evaluated within a much smaller area, focusing on representative properties close to the Development Site.

4.2.8. The temporal scope is stated where known and effects are typically described as:

- **Temporary** – likely to be related to a particular activity and would cease when the activity finishes. The terms ‘short-term’ and ‘long-term’ may also be used to provide a further indication of how long the effect would be experienced for.
- **Permanent** – this typically means an unrecoverable change.

4.2.9. Effects are generally considered in relation to the following key stages of a Proposed Development:

- **Construction effects** may arise from the construction activities themselves, or from the temporary occupation of land. Effects are often of limited duration although there is potential for

permanent effects. Where construction activities create permanent change, the effects would continue into the operational period;

- **Operational effects** may be permanent, or they may be temporary, intermittent, or limited to the life of the Proposed Development until decommissioning (as in the case of wind power developments which gain consent for a defined and finite number of years); and
- **Decommissioning effects** may arise from the decommissioning activities themselves, or from the temporary occupation of land. The effects would generally be temporary and of limited duration, with changes as a result of decommissioning activities typically of a lesser magnitude than those during construction. Additional permanent change would normally be unlikely unless associated with restoration.

DEFINING SIGNIFICANCE

4.2.10. Development proposals affect various environmental elements to differing degrees, and not all of resulting effects are significant enough to warrant detailed investigation or assessment within the EIA process. The EIA Regulations identify environmental resources that merit investigation as those "likely to be significantly affected by the development" (Schedule 4(4)).

4.2.11. The EIA Regulations do not explicitly define "significance," making it necessary to explain how this term is applied in the context of the assessment. Determinations of significance are based on available information about the nature of the development proposal, the characteristics of the environmental receptors (or 'receiving environment'), and predictions about the potential changes the Proposed Development may cause.

4.2.12. For each environmental topic considered, professional judgement, combined with relevant guidelines, is used to assess the interaction between a receptor's 'sensitivity' (which may be defined in terms of importance, value, rarity, or quality) and the predicted magnitude of change to determine the level of effect.

4.2.13. While there may be variation depending on the technical topic being considered, significance evaluation generally involves combining information about the sensitivity, importance or value of a receptor, and the magnitude and other characteristics of the changes that affect the receptor. The approach to using this information for significance evaluation is outlined below.

Receptor Sensitivity, Importance or Value

4.2.14. The sensitivity or value of a receptor is largely determined by its importance, as informed by legislation, policy, and professional judgement. For example, receptors related to landscape, biodiversity, or the historic environment may be classified as being of international or national importance. Receptors of lower value may be considered sensitive or important at a county or district level.

4.2.15. The use of a location or physical element, which may represent receptors (e.g., people), also contributes to its classification in terms of sensitivity, importance, or value. For instance, when considering effects on the amenity of people, a location used for recreational purposes may be deemed more sensitive to change or valued more highly than a workplace.

4.2.16. The sensitivity, importance, or value of receptors that may be affected by the Proposed Development would be assessed on a scale from very low to very high. For each environmental topic, a detailed rationale must be provided to explain how the categories of sensitivity, importance, or value has been applied.

Magnitude of Change

4.2.17. The magnitude of change affecting a receptor as a result of the Proposed Development would be assessed on a scale from very low to very high. As with receptor sensitivity and value, each topic chapter provides a rationale explaining how the categories of environmental change are defined. For certain topics, the magnitude of change may relate to guidance on acceptable levels of change (e.g., for noise) and be based on numerical parameters. For other changes, the magnitude will be determined using descriptive terms, relying on professional judgement.

Determination of Significance

4.2.18. The significance of effects is determined by considering the nature of the development, the receptors that could be affected, their sensitivity, importance, or value, and the magnitude of environmental changes likely to occur.

4.2.19. The evaluation of the significance of the Proposed Development's effects for many environmental topics can be guided by matrices that combine sensitivity, importance, or value with the magnitude of environmental changes. Additionally, professional judgement is applied, especially in cases where the distinctions between sensitivities or magnitudes of change are not clearly defined, and the assessment conclusions require further clarification. It should be noted that, as directed by topic-specific guidelines from relevant institutions, some environmental topics may avoid the use of matrices to assess significance.

4.2.20. Once a level of effect has been defined, professional judgement, in combination with guidance and standards, is applied to determine which levels of effect are considered significant under the EIA Regulations. Within the matrix commonly used in significance evaluation exercises, the following distinctions are made:

- Major effects are considered significant in EIA terms;
- Moderate effects may be significant or not significant, with the conclusion of which being based on professional judgement; and
- Minor or negligible effects, which are always considered not significant.

For some of the topics, published guidance on significance evaluation exists and will be used to inform the development of significance evaluation methodologies. Furthermore, for some topics, less categories of change magnitude and sensitivity/importance may be used and effects may be classified using different terminology, for example substantial, moderate or negligible. In such cases, substantial or moderate/substantial are typically of most importance to the decision-maker and are therefore considered significant under the EIA Regulations. Effects considered moderate or less are generally not deemed significant, though depending on the receptor, some moderate effects may be judged as significant. While there may be variation, the approach applicable to specific environmental topics will be detailed in the relevant 'assessment methodology' subsection within each environmental topic chapter.

4.3 EIA SCOPING

4.3.1. Schedule 4(4) of the EIA Regulations[32] specifies that the EIA Report should describe:

"… the factors… likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape."

4.3.2. Regulation 4(2) of the EIA Regulations requires the interaction between these factors to be considered. In addition, Regulation 4(4) requires EIA Reports to consider:

"… the expected effects deriving from the vulnerability of the development to risks, so far as relevant to the development, of major accidents and disasters."

4.3.3. Establishing which aspects of the environment are likely to be significantly affected by a particular project is a key objective of the EIA scoping process. This process aims to identify the environmental aspects and associated issues that must be considered when assessing the potential effects of a proposed development. It also recognises that there may be certain environmental elements for which the project is unlikely to have a significant effect, thereby eliminating the need for further investigation as part of the EIA.

4.3.4. The scope of the EIA for this Proposed Development with respect to the relevant environmental topics is set out in **Chapters 5** to **12** of this Report and comprises:

- Chapter 5: Terrestrial Ecology;
- Chapter 6: Ornithology;
- Chapter 7: Landscape and Visual;
- Chapter 8: Cultural Heritage;
- Chapter 9: Hydrology, Hydrogeology and Peat;
- Chapter 10: Traffic, Transport and Access;
- Chapter 11: Noise and Vibration;
- Chapter 12: Other Issues (Aviation, Telecommunications, Tourism, Recreation & Shadow Flicker).

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

4.3.5. The scope and assessment methodologies set out in this Scoping Report are based on recognised best practices and guidelines specific to each topic area. Baseline conditions have been established through desk-based studies and survey work conducted to date. The environmental topic chapters identify where significant effects are anticipated as a result of the Proposed Development, considering the following:

- The baseline data;
- The current description of the Proposed Development; and
- Relevant guidance on assessment methodologies.

4.4 CUMULATIVE EFFECTS

4.4.1. Cumulative effects can arise from the interaction between a proposed development and other developments already built or proposed. In line with standard practice, for the purpose of the EIA, other wind farm developments which are operational, subject to planning approval or subject to a full and validated planning application will be included in the consideration of potential cumulative effects (subject to a cut-off point to allow assessments to be undertaken). It should be noted that not all of the cumulative developments would necessarily have a cumulative effect in respect of any particular environmental topic.

4.4.2. In total, 104 wind energy developments are identified within a 45km Study Area as shown on **Figure 7.4**. As of July 2025 this includes 52 existing wind farms, 33 consented developments and 19 applications.

4.5 CONSULTATION

4.5.1. Consultation is a regulatory and essential element of the EIA process and would be reported within the EIA Report and within supporting documentation as necessary.

4.5.2. The Applicant is committed to promoting dialogue with statutory and non-statutory consultees and the local community, seeking to engage with all those with an interest in the Proposed Development to provide transparency during the process.

4.5.3. For many key stakeholders, the publication of the Scoping Report will be the first notification of the Proposed Development, and it is expected that the ECU will request a response from a wide range of organisations prior to adopting a Scoping Opinion, including:

- **Local Authorities in the area:** East Ayrshire Council (EAC), South Ayrshire Council (SAC);
- **Statutory Consultees**: Planning Authority – EAC & SAC, Scottish Environmental Protection Agency (SEPA), NatureScot, Historic Environment Scotland, the Marine Directorate (previously Marine Scotland).
- **Internal Scottish Government Advisors:** Scottish Forestry, Transport Scotland

Community Councils and Site-Specific Consultees : Patna Community Council, Nine Community Council Group Ayrshire[33], Crosshill, Straiton and Kirkmichael Community Council & Dalmellington Community Council.

- **Non-Statutory Consultees**:
  - Environmental and Conservation Organisations: Royal Society for the Protection of Birds (RSPB) Scotland, Scottish Wildlife Trust, Ayrshire Rivers Trust, John Muir Trust, Dark Skies Observatory, Woodland Trust, Fisheries Management Scotland, Visit Scotland, Scottish Rights of Way and Access Society (ScotWays) and Scottish Wild Land Group (SWLG).
  - Utilities and Infrastructure Providers: Electricity Network Operators (National Grid, Scottish Gas Networks, Scottish and Southern Electricity Networks (SSEN), Scottish Power Energy Networks (SPEN)), Telecommunications providers (including British Telecom (BT), Airwave Solutions, Arqiva, EE, Ericsson, Joint Radio Company (JRC), Mobile Broadband Network Limited (MBNL), and Vodafone), Network Rail, Scottish Water; and
  - Other Non-Statutory Consultees: British Horse Society, Health and Safety Executive (HSE), Crown Estate Scotland, Civil Aviation Authority (CAA) - Airspace, Defence Infrastructure Organisation, Glasgow Prestwick Airport, Glasgow Airport, The Coal Authority, Scottish Fire and Rescue Service, National Air Traffic Services (NATS) Safeguarding, and Office for Nuclear Regulation (ONR).

4.5.4. In addition to the consultation requirements at the scoping stage, ongoing engagement throughout the EIA process will occur with key consultees who express an interest in the Proposed Development. This engagement will focus on the exchange of information, with the Applicant actively seeking input from consultees to inform the iterative design process and provide technical contributions to relevant topic areas.

4.6 MITIGATION

4.6.1. Some mitigation measures to avoid, reduce, or offset changes resulting from the Proposed Development will be integrated into its design, while others may require adherence to specific construction methodologies or operational constraints. The subsequent EIA will consider these mitigation measures, and the assessment of residual effects will be presented in the EIA Report.

4.7 STRUCTURE OF THE EIA SCOPING REPORT

4.7.1. The EIA Report will outline the assessment methodologies, which are based on recognised best practices and guidelines specific to each relevant environmental topic area where the Proposed Development could lead to significant effects. Generally, the technical studies conducted for each topic area, and the chapters included in the EIA Report accompanying the application, will include the following:

[33] The 9 Community Council Group (9CC Group) was formed to ensure fair distribution of wind farm community benefit funds.

- Collection and collation of existing baseline information about the receiving environment and surveys to fill any gaps in knowledge or to update any historic information, together with identification or any relevant trends in, or evolution of, the baseline;
- Consultation with experts and relevant consultees as necessary;
- Consideration of the potential effects of the Proposed Development on the baseline, followed by identification of any additional mitigation measures to seek to avoid or reduce any predicted adverse effects; and
- Assessment and evaluation of any residual significant effects after mitigation measures have been implemented.

4.7.2. Information from the Scoping Opinion received, will inform details to be included within each specialist chapter.

4.7.3. It is anticipated that the EIA Report will consist of the following structure:

- Chapter 1: Introduction.
- Chapter 2: Project Description (including forestry appendix).
- Chapter 3: Design Evolution and Alternatives.
- Chapter 4: EIA Approach and Methodology.
- Chapter 5: Terrestrial Ecology.
- Chapter 6: Ornithology.
- Chapter 7: Landscape and Visual.
- Chapter 8: Cultural Heritage.
- Chapter 9: Hydrology, Hydrogeology and Peat.
- Chapter 10: Traffic, Transport and Access.
- Chapter 11: Noise and Vibration.
- Chapter 12: Climate Change and Carbon Balance.
- Chapter 13: Aviation, Telecommunications, Recreation, Tourism and Shadow Flicker.
- Chapter 14: Summary of Mitigation.

4.7.4. The EIA will be accompanied by a Non-Technical Summary, Planning Statement (including Economic Benefits Report), a report setting out the measures undertaken to consult with the public and Design and Access Statement.

5 TERRESTRIAL ECOLOGY

5.1 INTRODUCTION

5.1.1. This chapter defines the proposed methodology for the ecological assessment that will be included in the EIA Report. It also details the methods that have and will be used to establish the baseline conditions within the Development Site and its surroundings, and the process used to determine the importance of the habitats and species' populations present. It includes consideration of protected and priority habitats and species (excluding birds and sites designated for these, which are dealt with separately in **Chapter 6: Ornithology**).

5.1.2. The chapter (and its associated figures and appendices) should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Site Context and Proposed Development Description** and other technical chapters, such as **Chapter 6**. It is also acknowledged that there will be cross-over in assessments from **Chapter 9: Hydrology, Hydrogeology and Peat** (with regards to peatland and Groundwater Dependent Terrestrial Ecosystems (GWDTE)).

5.1.3. This chapter is supported by the following figures:

- **Figure 5-1**: Ecological Designated Sites and Ancient Woodland within 5km;
- **Figure 5-2**: Peatland within 1km; and
- **Figure 5-3**: Habitat Survey Area and Survey Results.

5.1.4. The assessment of effects on ecology will be undertaken by MacArthur Green.

5.2 CONSULTATION

5.2.1. Consultation will be undertaken with the following statutory and non-statutory bodies in relation to ecology:

- NatureScot;
- East Ayrshire Council;
- South Ayrshire Council; and
- Ayrshire Rivers Trust (ART).

5.3 BASELINE CONDITIONS

STUDY AREA

5.3.1. The EIA Report will incorporate the following study areas:

- Designated sites: the Development Site and a 5km surrounding area ('buffer');
- Protected species: the Development Site and any species-specific buffers as necessary and as defined in guidance;
- Potential bat roost features: the Development Site and a buffer of 200m plus turbine blade length (as per NatureScot *et al*. 2021);
- Habitats and potential GWDTE: the Development Site; and
- Cumulative assessment (if required): the Development Site and a 5km buffer.

DATA SOURCES

5.3.2. Baseline ecological conditions have been and/or will be established from the following sources:

Desk Study

- NatureScot Sitelink[34], for statutory designated sites;
- East Ayrshire Council[35], for non-statutory designated sites;
- South Ayrshire Council[36], for non-statutory designated sites;
- Ancient Woodland Inventory (Scotland)[37], for designated ancient woodland;
- National Biodiversity Network (NBN) Scotland Atlas[38], for ecological records within 5km (and 10km for bat species) of the Development Site within the last 15 years (i.e. since 2010);
- Carbon and Peatland Map 2016[39], for indicative identification of nearby areas of peatland habitat;
- Deer Distribution Survey by the British Deer Society[40], for likely deer species present in the local area;
- Saving Scotland's Red Squirrels[41]; and
- Any other Environmental Statements, EIA Reports or technical reports from other developments or proposed developments in the local area, including Sclenteuch Wind Farm[42], located to the immediate south of the Development Site. A shared access to the Development Site through the proposed Sclenteuch Wind Farm is the Applicant's preferred access.

Field Surveys

5.3.3. The following ecological field surveys have been and/or will be undertaken to inform the EIA for the Proposed Development:

- National Vegetation Classification (NVC) habitat surveys undertaken in August 2024;
- Phase 1 peat depth surveys undertaken in October 2024;
- Phase 2 peat depth surveys, to be undertaken prior to assessment;
- Protected species walkover surveys undertaken in June 2024;
- Static bat activity surveys undertaken over three deployments from May to September 2024; and
- Electrofishing surveys undertaken by ART in July and October 2024.

[34] NatureScot Sitelink (2025). Available at: Available at: https://sitelink.nature.scot/home. Accessed: July 2025.
[35] East Ayrshire Council (2024). Local Development Plan 2: Local Nature Conservation Sites. Non-statutory Planning Guidance.
[36] South Ayrshire Council. Biodiversity, Flora & Fauna. Available at: https://www.south-ayrshire.gov.uk/media/1932/Baseline-data-relating-to-South-Ayrshire/pdf/SEAEnv_R_Appendix_1_Env_Baseline.pdf?m=1619538953637. Accessed: May 2025
[37] Ancient Woodland Inventory (Scotland). Available at: https://www.spatialdata.gov.scot/geonetwork/srv/api/records/A091F945-F744-4C8F-95B3-A09E6EF6AE33. Accessed: April 2025.
[38] National Biodiversity Network Atlas Scotland (2025). Available at: https://scotland.nbnatlas.org/. Accessed: April 2025.
[39] Scottish Government (2025). Scotland's Soils. Available at: https://map.environment.gov.scot/Soil_maps/?layer=10#. Accessed: April 2025.
[40] British Deer Society (2023). Deer Distribution Survey. Available at: https://bds.org.uk/science-research/deer-surveys/deer-distribution-survey/. Accessed: May 2025.
[41] Scottish Squirrels (2025). Sightings of Red and Grey Squirrels across Scotland. Available at: https://scottishsquirrels.org.uk/squirrel-sightings/. Accessed: May 2025.
[42] RES (2022). Sclenteuch Wind Farm Environmental Impact Assessment Report. Volume 1. Chapter 7: Ecology.

5.3.4. Additional surveys to supplement those listed above will be carried out to cover the proposed access route subsequently added to the Development Site after initial surveys were carried out; and for any other data gaps that may arise from further changes to the design.

SUMMARY OF CURRENT BASELINE CONDITIONS

Desk Study

5.3.5. There are no statutory designated sites with ecological qualifying interests within the Development Site. There are two statutory designated sites with ecological qualifying interests within 5km of the Development Site:

- Dalmellington Moss Site of Special Scientific Interest (SSSI), designated for raised bog (condition unfavourable recovering as of 10 November 2009)[34], is 2.8km south-east of the Development Site; and
- Bogton Loch SSSI, designated for open water transition fen (condition unfavourable recovering as of 11 August 2024)[3434], is 3.6km from the Development Site (see **Figure 5.1**).

5.3.6. There are three Local Nature Conservation Sites (LNCS) within 5km of the Development Site that are designated for habitat related, botanical or protected species interests (see **Figure 5.1**). Benquhat Hill lies 2.5km east of the Development Site and is described as botanically-rich grassland with rare plants and butterflies. Dunaskin Ironworks is 1.5km east of the Development Site and comprises broadleaf semi-natural woodland, areas of scrub, neutral grassland and a water body. Benbeoch / Pennyvennie Glen lies 4.7km east of the Development Site and is described as a botanically rich grassland and woodland with rare plants. The vegetated ledges of Beneoch Craig also provide botanical interest, and Pennyvennie Glen contains semi-natural gorge woodland. There are an additional 24 'provisional' LNCS within 5km selected for their habitats and associated biodiversity, including Dallowie Burn and Loch Spallander and Cloncaird Moor which overlap with the Development Site. These sites have not been fully surveyed or assessed and as such are currently not confirmed ('designated') LNCS. The LNCS are detailed in **Table 5-1** and are shown on **Figure 5.1**.

Table 5-1: Local Nature Conservation Sites with 5 km of the Development Site

Site Name	Status	Distance from Development Site (km)
East Ayrshire		
Benquhat Hill	Designated	1
Dunaskin Ironworks	Designated	0.1
Benbeoch / Pennyvennie Glen	Designated	4.7
Ashentree Glen Wood	Provisional	3.6
Auchenroy / Glenmount Uplands	Provisional	0.7
Bow Burn	Provisional	3.8
Craigengillan / Ness Glen Woodland	Provisional	4.5

Site Name	Status	Distance from Development Site (km)
Cumnock Burn / Pennyvenie Burn	Provisional	4.6
Dallowie Burn Woods	Provisional	0
Dalmellington Town Common	Provisional	4.8
Doon Valley Wetlands	Provisional	0.8
Kerse Loch	Provisional	3.3
River Doon Woodland	Provisional	0
Wallace Moor / Keirs Hill	Provisional	0
South Ayrshire		
Kirkmichael House	Provisional	3.5
Drumore Loch	Provisional	3.9
Tranew Flushes	Provisional	3.2
Straiton Hills	Provisional	0.7
Blairquhan	Provisional	2
Guiltree Wood	Provisional	1.8
Loch Spallander and Cloncaird Moor	Provisional	0
Dyrock and Backglen Burn	Provisional	0.6
Barnshean Loch and Loch Croot	Provisional	1.5
Shankston Loch	Provisional	0.9
River Doon (Dalrymple to Patna)	Provisional	2.4
Whitehill Wood	Provisional	4.5
Craigs of Kyle	Provisional	4.3

5.3.7. There are several areas of ancient woodland within the Development Site, an unnamed stand in the east which was included on the Roy map, an area near Spallander Burn in the west which is of semi-natural origin, and an unnamed area near High Keirs Cottage which is also of semi-natural origin (**Figure 5.1**), with additional areas within 5km[37].

5.3.8. The NBN Scotland Atlas returned records of the following protected or notable species within 5km of the Development Site in the last 15 years (i.e. since 2010):

- Roe deer (*Capreolus capreolus*)[43,44];
- Otter (*Lutra lutra*)[43,45];
- Daubenton's bat (*Myotis daubentonii)*[46,47,48];
- Leisler's bat (*Nyctalus leisleri*)[46,47];
- Common pipistrelle (*Pipistrellus pipistrellus*)[46,49,47];
- Soprano pipistrelle (*Pipistrellus pygmaeus*)[46,50,47];
- Brown long-eared bat (*Plecotus auritus*)[46,47];
- Red squirrel (*Sciurus vulgaris*)[43,51]; and
- Common lizard (*Zootoca vivipara*)[43,52].

5.3.9. Records of the following invasive non-native species (INNS) were also returned by this search:

- Giant hogweed (*Heracleum mantegazzianum*)[46,53]; and
- Grey squirrel (*Sciurus carolinensis*) [43,51].[4351]

5.3.10. The search was extended to 10km for bats and returned records of one additional bat species; Natterer's bat (*Myotis nattereri*)[46,47].

5.3.11. The Carbon Peatland Map 2016[39] indicates that the Development Site comprises a mixture of Class 0[54], Class 4[55] and Class 5[56] soils (**Figure 5.2**). The proposed access route to the Development Site crosses areas of Class 1[57] peatland. The Carbon Peatland Map 2016 is an indicative source and the habitat and peat depth surveys undertaken at the Development Site provide further detailed information relating to vegetation and soils. Further information on the bespoke surveys undertaken at the Development Site are provided in the **Field Surveys** section below (ecological surveys) and **Chapter 9** (with reference to peat probing surveys).

[43] Licence: CC-BY. Creative Commons with Attribution 4.0 (CC-BY). https://creativecommons.org/licenses/by/4.0/. Accessed: May 2025.
[44] Highland Biological Recording Group (2025). Vertebrates (not Badger) Dataset. Occurrence dataset on the NBN Atlas.
[45] Records provided by Wild Surveys Otter Records, accessed through NBN Atlas website.
[46] Licence: OGL. Open Government Licence (OGL) https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/. Accessed: May 2025.
[47] Newson, S.E., Evans, H.E., Gillings, S., Jarrett, D. & Wilson, M.W. 2017. A survey of high risk bat species across southern Scotland. Scottish Natural Heritage Commissioned Report No. 1008.
[48] Bat Conservation Trust (2025). Waterway Survey. Occurrence dataset on the NBN Atlas.
[49] NatureScot (2025). SNH Bat Casework Recording log 2015. Occurrence dataset on the NBN Atlas.
[50] NatureScot (2025). SNH Bat Casework Recording log 2014. Occurrence dataset on the NBN Atlas.
[51] Scottish Wildlife Trust (2025). The Scottish Squirrel Database. Occurrence dataset accessed through the NBN Atlas.
[52] Amphibian and Reptile Conservation and Biological Records Centre. (2025) Records verified via iRecord.
[53] Records provided by Invasive non-native species records from SEWeb, accessed through NBN Atlas website.
[54] Class 0: Mineral Soil.
[55] Class 4: Area unlikely to be associated with peatland habitats or wet and acidic type. Area unlikely to include carbon-rich soils.
[56] Class 5: Soil information takes precedence over vegetation data. No peatland habitat recorded. May also include areas of bare soil. Soils are carbon-rich and deep peat.
[57] Class 1: Nationally important carbon-rich soils, deep peat and priority peatland habitat. Areas likely to be of high conservation value.

5.3.12. The results of the Deer Distribution Survey[40] suggest the likely presence of roe deer and red deer (*Cervus elaphus*) in the local area.

5.3.13. The Saving Scotland's Red Squirrels[41] sightings map suggests that there have been occasional sightings of both red and grey squirrels within 5km of the Development Site in the last 15 years (since 2010, the earliest year which sighting information is available).

5.3.14. The EIA Report for Sclenteuch Wind Farm[Error! Bookmark not defined. Error! Bookmark not defined.], which has a submitted application, provides the following relevant ecological information: common pipistrelle, Nathusius' pipistrelle (*Pipistrellus nathusii*), *Pipistrelle* sp., *Myotis* sp., noctule (*Nyctalus noctula*), *Nyctalus* sp., and brown long-eared bat were recorded as part of the static bat activity surveys undertaken. Presence of badger (*Meles meles*) and otter was confirmed within the Sclenteuch Wind Farm Site, with potential presence of pine marten (*Martes martes*) also indicated.

5.3.15. The Environmental Statement for Dersalloch Wind Farm[58] - which lies less than 5km south of the Development Site - recorded presence of brown trout (*Salmo trutta*), European eel (*Anguilla anguilla*) and Atlantic salmon (*Salmo salar*). Otter presence was also confirmed. Bat species recorded during surveys included common pipistrelle, soprano pipistrelle, *Myotis* sp, and noctule.

Field Surveys

5.3.16. NVC habitats surveys were undertaken within the Development Site in August 2024. The majority of the Development Site is made up of conifer plantation (A1.2.2) and recently-felled conifers (A4.2), with other habitats variable and limited in extent. In the south-west portion of the Development Site, there are some areas of wet modified bog (E1.7, A1.2.2/E1.7 and D2/E1.7). All turbines for the scoping layout are in areas of recently-felled conifer habitat (**Figure 5.3**).

5.3.17. Areas of potential GWDTE were limited to discrete areas in clearings and forestry rides and ranged from sub-dominant to dominant in classification. Determining actual groundwater dependency requires a hydrological assessment; as such GWDTE are identified as potential only at this stage based on NVC habitat classification. Assessment of GWDTE is set out in **Chapter 9**.

5.3.18. Phase 1 peat depth surveys covering the Proposed Development took place in October 2024. There is some deep peat (>0.5m) on the Development Site; located in the north around White Hill, and more widely across the southern portion.

5.3.19. Protected species surveys carried out at the Development Site in June 2024 identified the presence of the following species:

- Badger: five setts (over 300m between any of these and turbines in the scoping layout);
- Bats (potential): several trees/groups of trees were identified as having features offering potential for small numbers of or individual roosting bats;
- Otter: two spraints recorded on Loch Spallander reservoir, and one on Meikleholm Burn. No protected features (i.e. holts or couches) recorded;
- Pine marten: three potential scats;

[58] Scottish Power Renewables (2012). Dersalloch Windfarm Environmental Statement 2012 Addendum. Chapter 8 Ecology.

- Reptiles: three potential reptile hibernacula (drystone wall features) were identified in the southern area of the Development Site; and one common lizard sighting in clear fell habitat;
- Squirrel: potential squirrel drey; and
- Water vole (*Arvicola amphibius*): burrow identified in the northern area of the Development Site (over 1km from any turbines in the scoping layout).

5.3.20. Static bat detector surveys were carried out between May and September 2024, with three 14-day deployments undertaken in this period in line with NatureScot *et al.* (2021)[59] guidance. Anabat detectors were deployed at 11 locations within the Development Site and collected 360 complete recording nights of data. Seven species or genus-level groups were detected: Daubenton's, Natterer's (*Myotis nattereri*), *Nyctalus* spp., Nathusius' pipistrelle (*Pipistrellus nathusii*), common pipistrelle, soprano pipistrelle and brown long-eared bat. The total number of bat passes recorded was 11,853. Common and soprano pipistrelle accounted for 87.3% of all passes, with *Nyctalus spp.* making up 7.8%.

5.3.21. Fish population and habitat surveys were carried out by ART in July and October 2024. The Development Site spans two sub-catchments, Dyrock and River Doon, and nine electrofishing sites were chosen to represent both sub-catchments. Two survey points were within the Development Site, and seven were downstream.

5.3.22. Atlantic salmon were found at one electrofishing site; very low numbers of salmon fry were detected on Meikleholm Burn at the site furthest downstream of the Development Site. Brown trout were recorded at seven survey sites. Other species recorded were European eel, lamprey (*Lampetra spp.*), stone loach (*Barbatula barbatula*), common minnow (*Phoxinus phoxinus*) and three-spined stickleback (*Gasterosteus aculeatus*).

5.3.23. Two survey sites recorded no fish presence: Carskeoch Burn and Dallowie Burn. Carskeoch Burn was noted to have had historic pollution incidents and has culverts upstream of the survey area that may act as a barrier to migration. Dallowie Burn was described as having good habitat, but with intermittently-drying upper reaches and steep sections which may hamper fish migration.

5.4 POTENTIAL SIGNIFICANT EFFECTS

5.4.1. The assessment will consider the potential for significant effects upon Important Ecological Features (IEFs) during the construction, operation and decommissioning of the Proposed Development as set out below.

5.4.2. Construction impacts that will be considered:

- Temporary and permanent habitat loss/alteration/fragmentation/drainage;
- Pollution impacts on watercourses and aquatic fauna;
- Loss of shelter, breeding or foraging habitat for identified protected species;
- Displacement of deer;

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

- Risk of injury or death to protected species from collisions with construction traffic; and
- Visual and noise disturbance to protected species.

5.4.3. Operational impacts that will be considered:

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

5.4.4. Where appropriate, these construction and operational effects will also be considered in a cumulative assessment.

5.4.5. Decommissioning phase impacts are assumed to be similar to construction impacts, albeit with reduced magnitude of change since any ground level and below infrastructure will remain in situ. Decommissioning effects are not expected to be assessed in detail.

5.5 PROPOSED ASSESSMENT METHODOLOGY

SCOPE OF ASSESSMENT

5.5.1. The scope of assessment will be informed by legislation, national and local policy and guidance (as set out below).

5.5.2. The approach to assessment will also take account of existing guidance and published scientific literature in relation to ecological features and wind farms, together with professional judgement and experience of renewable energy EIAs.

5.5.3. The assessment will focus on IEFs that could be affected by the Proposed Development. The IEFs will be identified by reviewing baseline information and identifying which occur within the Proposed Development's Ecological Zone of Influence (EZoI). A geographic level of importance to each receptor within the EZoI will be assigned based on its conservation status, population/assemblage trends and other relevant criteria (including size, naturalness, rarity, and diversity). An IEF would be a receptor within the EZoI which meets a threshold of at least 'Local' level importance.

5.5.4. Impacts upon any identified IEFs will be assessed in relation to the species'/habitats' relevant reference population/extent, conservation status, range and distribution, based on best available evidence.

LEGISLATION, POLICY AND GUIDANCE

5.5.5. The Ecological Impact Assessment (EcIA) will be completed in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment[60]. Relevant legislation and policy will be set out. Additional guidance that will be considered in the assessment includes (but not limited to):

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

- Ayrshire Biodiversity Action Plan (2008) The Conservation and Enhancement of Ayrshire's Biodiversity 2007 – 2010.
- East Ayrshire Council (2024) The East Ayrshire Local Development Plan 2 (LDP2).
- CIEEM advice note on the lifespan of ecological reports and surveys[61].
- NatureScot bats and onshore wind turbines – survey, assessment and mitigation[62].
- NatureScot standing advice for planning consultations on protected species[63].
- NatureScot advice on peatland, carbon-rich soils and priority peatland habitats in development management[64].
- UK Bat Mitigation Guidelines[65].

ASSESSMENT METHODOLOGIES

5.5.6. The EcIA will consider the potential direct, indirect and cumulative effects that the construction and operation of the Proposed Development could have on IEFs as per CIEEM guidance[60]. The assessment will be supported by appendices that will include details of survey methodologies and all survey data.

5.5.7. An assessment of relevant cumulative effects will be undertaken following published guidance. Where determined that a cumulative assessment is necessary, impacts will be assessed with other wind farm projects subject to the EIA process within a relevant search area, and their effects on a relevant reference population; for example, at a watercourse, watershed or Natural Heritage Zone (NHZ) level.

5.5.8. The EcIA will include the following elements:

- Baseline conditions;
- Scope of the Assessment;
- Assessment of potential impacts and effects on IEFs;
- Assessment of cumulative effects;
- Mitigation; and
- Summary of significant residual effects.

[61] CIEEM (2019). Advice Note: On the lifespan of ecological reports & surveys. Available at: https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf.
[62] NatureScot, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT) (2019, with minor updates 2021). Bats and Onshore Wind Turbines – Survey, Assessment and Mitigation.
[63] NatureScot (online). Planning and development: standing advice and guidance documents. Available at: https://www.nature.scot/professional-advice/planning-and-development/planning-and-development-advice/planning-and-development-standing-advice-and-guidance-documents
[64] NatureScot (online). Advising on peatland, carbon-rich soils and priority peatland habitats in development management. Available at: https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management#:~:text=Blanket%20bog%20%28including%20montane%20bog%29%20is%20identified%20as, which%20slowly%20accumulates%20below%20ground%20in%20carbon-rich%20soils.
[65] Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Version 1.1. CIEEM, Ampfield. Available at: https://cieem.net/wp-content/uploads/2023/09/Bat-Mitigation-Guidelines-2023-V1.1.pdf

5.5.9. The significance of effects will be determined using professional judgement and guidance, and will involve the following process:

- Identifying potential impacts of the Proposed Development;
- Considering the likelihood of occurrence of potential impacts;
- Defining the nature conservation value (NCV) and conservation status of relevant populations/extents for each IEF to determine overall importance;
- Establishing the magnitude of the likely change (both spatial and temporal) on each IEF;
- Based on the above information, making a judgement as to whether or not the consequent potential effect would be significant with respect to the EIA Regulations;
- If a potential effect is determined to be significant, identify measures to avoid or reduce the significance of effects;
- Consider opportunities for mitigation where appropriate;
- Determine residual potential effects after considering mitigation, and in the event remaining residual effects are assessed as significant, considering appropriate proposals for compensation; and,
- Finally set out enhancement measures, where appropriate.

APPROACH TO MITIGATION AND ENHANCEMENT

Design Considerations

5.5.10. Significant effects on IEFs will be avoided or minimised where possible through the design process. Such considerations will include but are not limited to:

- Avoidance of priority habitats and GWDTEs as far as practicable;
- Maintenance of a buffer from turbines to forest edge habitats to maintain a minimum 50m buffer from turbine blade tip to feature height for all turbines, as recommended by NatureScot *et al.* (2021)[66] to reduce likelihood of bat collisions;
- Maintaining buffers between infrastructure and any protected features in line with appropriate guidance (e.g., a minimum 30m buffer for any infrastructure or construction activity (100m if blasting is required) around any badger sett);
- Maintaining a 50m buffer between infrastructure and any watercourses, except where watercourse crossings are necessary; and
- Design of the track alignment to minimise its length as far as practicable.

Good Practice

5.5.11. The following good practice mitigation measures will be assumed to be in place for the purposes of the assessment:

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

- A Species Protection Plan (SPP) will be implemented as part of a Construction Environmental Management Plan (CEMP) or similar during the construction phase to ensure that all reasonable precautions are taken to adhere to the relevant wildlife legislation;
- Pre- and during-construction surveys will be carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ecologist as part of the SPP, and an ECoW present during the construction period; and
- A comprehensive site-specific CEMP will be implemented. This will detail how the successful Principal Contractor will manage the works in accordance with all commitments and mitigation detailed in the EIA Report, the SPP, statutory consents and authorisations, and good industry practice and guidance for environmental management, including implementation of appropriate pollution prevention (particularly in relation to watercourses).

Biodiversity Enhancement

5.5.12. Enhancement, restoration and creation of habitats of conservation value would provide an opportunity to deliver significant biodiversity enhancement at the Development Site in line with objectives outlined in NPF4 Policy 3, the Onshore Wind Policy Statement, and the Scottish Biodiversity Strategy to 2045.

5.5.13. Specific biodiversity enhancement proposals and their locations will be developed through discussions with the Applicant, landowner and relevant technical specialists to enhance, create and connect habitats of biodiversity value. Based on the existing knowledge of the Development Site, biodiversity enhancement measures may include native broadleaf woodland/riparian planting and conifer restructuring, for example. The proposals will be presented within the outline Biodiversity Enhancement Management Plan (BEMP) in the EIA Report.

5.6 MATTERS TO BE SCOPED INTO THE ASSESSMENT

5.6.1. There is potential connectivity between the Proposed Development and four provisional LNCS within/adjacent to the Development Site: Loch Spallander and Cloncaird Moor, River Doon Woodland, Wallace Moor / Keirs Hill and Dallowie Burn Woods. These will be considered further as the layout of the Proposed Development evolves and will potentially be scoped in.

5.6.2. There is potential connectivity between the Proposed Development and areas of ancient woodland within and adjacent to the Development Site; this will be considered further as the layout of the Proposed Development evolves and will potentially be scoped in.

5.6.3. Habitats on Annex I to the Habitats Directive will be scoped in until the presence and distribution of such habitats in relation to the planned infrastructure and activities associated with the Proposed Development are fully understood. These habitats are limited in extent within the Development Site.

5.6.4. Effects on badger, otter, pine marten, water vole, bats, red squirrel, fish populations (migratory salmonids and resident fish) and deer will be scoped in until the presence and distribution of ecological features, species, suitable habitats and respective levels of activity in relation to the planned infrastructure and activities associated with the Proposed Development are fully understood.

5.7 MATTERS TO BE SCOPED OUT OF ASSESSMENT

5.7.1. In line with CIEEM guidance[60], it is not necessary to carry out detailed assessment on features that are sufficiently widespread, unthreatened, and resilient to effects of the Proposed Development. Therefore, adverse effects on common and widely distributed habitats or species will be scoped out.

5.7.2. On the basis of the results of the desk-based work and fieldwork undertaken to date, the professional judgement of the EIA team, experience from other relevant projects and policy guidance or standards, generally common and widely distributed habitats or species which do not fall within the categories listed below will be scoped out of the assessment:

- Habitats not on Annex I to the Habitats Directive and species not on Annex II to the Habitats Directive;
- Habitats or species not protected by other legislation (e.g., the Wildlife and Countryside Act 1981 (as amended), the Nature Conservation (Scotland) Act 2004 or the Protection of Badgers Act); and
- Habitats or species not highlighted for their local importance within a LBAP.

5.7.3. Adverse effects on statutory designated sites can be scoped out of the assessment. There are two designated sites within 5km of the Development Site: Dalmellington Moss SSSI and Bogton Loch SSSI (**Figure 5.1**). Potential effects on these statutory designated sites can be scoped out of assessment due to distance and the respective qualifying features (**Section 5.3.5**), and a lack of ecological connectivity with the Development Site.

5.7.4. Other than the four LNCS mentioned above, all others within the study area will be scoped out of the assessment. This is due to hydrological, topographical, and ecological separation, lack of connectivity, and in cognisance of standard good practice/embedded mitigation, including adherence to a CEMP which would include good practice mitigation for effective silt and pollution prevention.

5.7.5. Adverse effects on great crested newt (GCN), beaver and wildcat will be scoped out due to lack of field signs, absence of suitable habitat at the Development Site and/or its geographical location being outwith the known range of the respective species and/or the lack of evidence of their presence locally from desk-based research and recent and historical surveys in the study area. Adverse effects on reptiles will be scoped out in cognisance of standard good practice and embedded mitigation, including adherence to a SPP.

5.8 QUESTIONS FOR CONSULTEES

5.8.1. Consultees are requested to respond to the following questions as part of their consultation response.

- Q5.1 - Do consultees agree that, subject to further information coming to light from any further field surveys and the desk study, the scope of IEFs to be included in the assessment is appropriate?
- Q5.2 - Do consultees agree that the assessment methodology is appropriate?
- Q5.3 - Are there any other relevant consultees who should be consulted, or other sources of information that should be considered?

6 ORNITHOLOGY

6.1 INTRODUCTION

6.1.1. This chapter of the Scoping Report details the approach to establishing baseline conditions and the proposed scope of the assessment of potentially significant effects upon ornithological features to be presented within Chapter 6 'Ornithology' of the Environmental Impact Assessment (EIA) Report for the Proposed Development.

6.1.2. This chapter of the Scoping Report has been prepared by MacArthur Green, who will complete the subsequent Chapter 6 'Ornithology' of the EIA Report.

6.1.3. This chapter is supported by the following figures:

- **Figure 6-1**: Ornithological Designated Sites;
- **Figure 6-2**: Vantage Point Survey Locations and Viewsheds; and,
- **Figure 6-3**: Ornithological Survey Areas.

6.2 CONSULTATION

6.2.1. Consultation has been undertaken with the following statutory and non-statutory bodies with relation to ornithology as summarised in **Table 6-1**:

- Royal Society for the Protection of Birds (RSPB) Data Unit;
- South Strathclyde Raptor Study Group (SSRSG); and,
- NatureScot.

6.2.2. The purpose of these consultations has been to obtain existing ornithological information within proximity to the Proposed Development and to inform the scope of baseline surveys.

6.2.3. For existing ornithological records, the time period requested for existing records from consultees was the most recent 5-year period (from the date of request) for all relevant species and 10-year period for eagle records. The search area provided comprised proposed turbine locations and at least a 2km buffer for all ornithological records, extended to at least 6km for eagle records.

Table 6-1: Summary of consultations undertaken to date.

Consultation undertaken to date	Date of Consultation	Key outcomes of discussions
RSPB Data unit	13/06/2024	**Existing Ornithological Records** Provided one record of swift for the search area and time period requested.
South Strathclyde Raptor Study Group (SSRSG)	18/06/2024	**Existing Ornithological Records** Held no breeding or roosting records for the search area and time period requested, but advised on the use of habitats within the south-east of the search area by hen harrier and red kite in the autumn-spring period.
NatureScot	07/03/2023	**Designated Sites**

Consultation undertaken to date	Date of Consultation	Key outcomes of discussions
	26/06/2024	The NatureScot Sitelink was reviewed for information on designated sites[67] with ornithological interests in proximity to the Site. **Baseline survey scope** Advised that it was satisfied that the proposal for a single year of surveys was sufficient to assess potential ornithological impacts of the Proposed Development based on field survey results and existing baseline information obtained.

6.3 BASELINE CONDITIONS

6.3.1. Baseline ornithological studies to inform the assessment of the Proposed Development will comprise a desk-based review of existing ornithological information together with a single year of ornithological field surveys undertaken in accordance with recommended methodologies set out in NatureScot guidance (2025a[68]) and NatureScot site-specific advice (see **Table 6-1**).

6.3.2. This section provides a summary of these baseline studies. Full details including field survey methods, survey areas and conditions will be presented within the EIA Report, associated Technical Appendices and Figures.

DATA SOURCES

Desk Study

6.3.3. The study area for existing ornithological information extends out to 20 km from proposed turbine locations[69] for statutory designated sites with ornithological interests (SNH[70] 2016a[71]; **Figure 6-1**), and at least 2 km for species listed on Annex 1 of NatureScot guidance (NatureScot, 2025b[72]), extended to 6 km for eagle species.

[67] Available at https://sitelink.nature.scot/home [Accessed 24th July 2025].
[68] NatureScot (2025a) Recommended bird survey methods to inform impact assessment of onshore wind farms. Updated March 2025. Available at: https://www.nature.scot/doc/recommended-bird-survey-methods-inform-impact-assessment-onshore-windfarms [Accessed 24th July 2025].
[69] The maximum core range of breeding and non-breeding ornithological features from Special Protection Area (SPA) boundaries, set out in NatureScot guidance (SNH 2016a)
[70] Scottish Natural Heritage (SNH) the previous operating name of NatureScot.
[71] SNH (2016a) Assessing Connectivity with Special Protection Areas (SPAs). Version 3 - June 2016. Scottish Natural Heritage (SNH), Guidance.
[72] NatureScot (2025b). Assessing the significance of impacts on bird populations from onshore wind farms that do not affect protected areas [Online]. March 2025. Available at: https://www.nature.scot/doc/guidance-note-assessing-significance-impacts-bird-populations-onshore-wind-farms-do-not-affect [Accessed 24th July 2025].

6.3.4. Wetland Bird Survey (WeBS)[73] Data for Loch Spallander, recent Ayrshire Bird Reports (2017-2021[74]) and planning documentation for the following immediately adjacent developments has also been reviewed:

- Keirs Hill Wind Farm (East Ayrshire Council Ref. 13/0002/S36), with baseline ornithological survey areas that overlap the Development Site[75]; and,
- Sclenteuch Wind Farm (ECU Ref. 22/0004/S36), with baseline ornithological survey areas that overlap the Development Site[76], and where NatureScot advised a single year of ornithological surveys was sufficient to inform its design and assessment.

Field Surveys

6.3.5. Ornithological field surveys commenced in March 2023 and were undertaken through to June 2024 inclusive. Surveys were curtailed following consultation with NatureScot that a single year of surveys was sufficient to inform the design and assessment of the Proposed Development (see **Table 6-1**).

6.3.6. Full details of the following surveys, including those undertaken during the partial 2024 breeding season (March to June 2024 inclusive), will be presented within the EIA Report:

- Flight activity surveys during the 2023 and 2024 breeding seasons and 2023/2024 non-breeding season, from two Vantage Point (VP) locations;
- Breeding wader survey (2023 breeding season);
- Winter walkover surveys over the 2023/2024 non-breeding season;
- Scarce[77] breeding bird surveys (2023 and 2024 breeding seasons); and,
- Black grouse surveys (2023 and 2024 breeding seasons).

6.3.7. All field surveys have followed methodologies recommended within NatureScot guidance (2025a[68]), including species-specific survey methodologies as set out in Hardey *et al*. (2013[78]) and Gilbert *et al.* (1998[79]).

6.3.8. VP locations adopted during flight activity surveys and their associated viewsheds are illustrated on **Figure 6-2.** A summary of observational effort completed at each VP from March 2023 to the end of June 2024 is included in **Table 6-2.**

[73] Contains Wetland Bird Survey (WeBS) data from Waterbirds in the UK 2022/23 © copyright and database right 2024. WeBS is a partnership jointly funded by the BTO, RSPB and JNCC, with fieldwork conducted by volunteers and previous support from WWT.
[74] Available at: https://www.ayrshire-birding.org.uk/bird_report/ [Accessed 24th July 2025].
[75] Figures 9.2 to 9.6 of the Keirs Hill Wind Farm Environmental Statement (2023).
[76] Figure 8.2 of the Sclenteuch Wind Farm EIA Report (2022).
[77] Scarce breeding birds are those listed on Annex 1 of the EU Birds Directive or Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and in the case of the Proposed Development consists of any raptor and owl species listed on either Annex 1 or Schedule 1.
[78] Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013) *Raptors: a field guide to survey and monitoring*. 3rd Edition. The Stationery Office, Edinburgh.
[79] Gilbert, G., Gibbons, D.W., & Evans, J. (1998) *Bird Monitoring Methods: A Manual of Techniques for UK Key Species*. Royal Society for the protection of Birds (RSPB), Sandy, Bedfordshire, England.

6.3.9. Distribution survey areas are illustrated on **Figure 6-3.** These were defined on the basis of the largest possible layout of turbine locations within the Development Site, applicable at the time of survey.

Table 6-2: VP flight activity survey effort per season.

Survey period	Survey effort (hours)	
	VP1	VP2
2023 breeding season	36	36
2023/2024 non-breeding season	36	36
2024 breeding season (Mar-Jun)	21	21

Target Species

6.3.10. The identification of target species for recording during field surveys was made with reference to versions of the following lists applicable at the time of survey and refined on the basis of species' perceived sensitivity to onshore wind farm developments e.g. as set out in NatureScot guidance (2025a[68] and 2025b[72]) applicable at the time of survey:

- Annex 1 of the EC Birds Directive[80];
- Schedule 1 of the Wildlife & Countryside Act 1981[81]; and,
- Red-listed Birds of Conservation Concern (Stanbury *et al*. 2021[82]).

6.3.11. Secondary species for survey/recording were defined as the non-red list raptor and owl species (i.e. buzzard, kestrel, sparrowhawk, tawny owl and long-eared owl), gulls (excluding herring gull), amber or green listed waders, feral species (e.g. Canada goose), mallard, raven and any large concentrations of/regionally common Schedule 1 or red listed passerine species as noted to be present during surveys.

SUMMARY OF BASELINE CONDITIONS

6.3.12. This section provides a summary of the findings of completed baseline studies. Full details will be presented within the EIA Report, associated Technical Appendices and Figures.

6.3.13. It should be noted that within the EIA Report, study areas within which baseline ornithological information will have been gathered and will be presented will comprise:

[80] Directive 2009/147/EC of the European Parliament and of the Council. Available at: https://www.legislation.gov.uk/eudr/2009/147/contents.
[81] Scottish Government (1981). Wildlife and Countryside Act 1981. Available at: https://www.legislation.gov.uk/ukpga/1981/69
[82] 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, pp. 723-747

- Designated sites - the final layout of the Proposed Development and a 20 km buffer around proposed turbine locations (as per SNH 2016a[71]);
- Collision mortality risks - the results of flight activity surveys will be used to inform collision risk modelling. A Collision Risk Analysis Area (CRAA) will be created from the final proposed turbine locations and a 500m buffer (on a precautionary basis, as per NatureScot 2025a[68]);
- Scarce breeding birds - the final layout of the Proposed Development, a 2 km buffer around proposed turbine locations (extended to 6 km for eagle species) and an 800 m buffer around all other infrastructure (extended to 1 km for eagle species) (with reference to NatureScot 2025a[68] and Goodship & Furness 2022[83]);
- Moorland breeding and wintering birds - the final layout of the Proposed Development and a 500 m buffer (with reference to NatureScot 2025a[68] and Goodship & Furness 2022[83]); and
- Black grouse - the final layout of the Proposed Development, a 1.5 km buffer around proposed turbine locations and 750 m around all other infrastructure (with reference to NatureScot 2025a[68] and Goodship & Furness 2022[83]).

Designated sites

6.3.14. **Figure 6-1** and **Table 6-3** illustrate and provide a summary of designated sites with cited ornithological qualifying features located within 20 km of proposed turbine locations.

Table 6-3: Ornithological designated sites within 20 km.

Site Name	Designation	Distance	Qualifying features
Bogton Loch	SSSI	6.2km	Breeding bird assemblage, which includes song thrush, grasshopper warbler, spotted flycatcher, willow tit, reed bunting and black-headed gull.
Merrick Kells	SSSI	16.3km	Breeding bird assemblage.

6.3.15. In review of the qualifying features of these designated sites, it is considered that connectivity with the Development Site is therefore very unlikely and the Proposed Development is unlikely to result in significant effects on either designation. This is on account of spatial separation and the qualifying breeding birds being predominantly passerine species, and in accordance with advice NatureScot provided for the immediately adjacent Sclenteuch Wind Farm as summarised below:

- As set out in Table 8.2 Chapter 8 'Ornithology', Table 8.2 of the Sclenteuch Wind Farm EIA Report "*Bogton Loch SSSI (Site of Special Scientific Interest) lies within 5 km of the Proposed [Sclenteuch Wind Farm] Development Area and is designated for its breeding bird assemblage. As passerine birds form the primary component of the objectives of designation, we are satisfied that the Proposed Development will not have any significant effect on the qualifying interest of the SSSI*"; and,

[83] Goodship, N.M. and Furness, R.W. (2022) Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

- Annex 2 of its 24 November 2022 dated response on the Sclenteuch Wind Farm s36 application (Ref: CDM168063) "*There will be no likelihood of any significant effects on any national or international statutory natural heritage designations*".

6.3.16. The assessment of potential for impacts upon designated sites with cited ornithological qualifying features is therefore not considered to be required within the EIA Report.

Flight Activity

6.3.17. Flight activity surveys have been carried out from the two VPs shown on **Figure 6.2** to quantify the level and distribution of target species' flight activity within proximity to potential turbine locations.

6.3.18. A total of 11 target species were recorded over the course of surveys between March 2023 and June 2024:

- Goshawk (2 flights);
- Greylag goose (2 flights);
- Hen harrier (2 flights);
- Herring gull (5 flights);
- Merlin (1 flight);
- Osprey (1 flight);
- Peregrine falcon (3 flights);
- Pink-footed goose (6 flights);
- Red kite (1 flight)
- Whooper swan (2 flights); and,
- Woodcock (1 flight).

6.3.19. This range of target species and very low level of overall flight activity recorded is consistent with that which was recorded during baseline surveys for the Sclenteuch Wind Farm (2018-2021) and the Kiers Hill Wind Farm (2011-2012).

Scarce Breeding Birds

6.3.20. Scarce breeding bird surveys were conducted in the 2023 breeding season and part of the 2024 breeding season to establish the breeding status and location of any Schedule 1 raptor or owl species within proximity to the Proposed Development.

6.3.21. No breeding sites of any Schedule 1 raptor or owl species were recorded within the survey area and therefore within the potential disturbance distance from proposed turbine locations (with reference to Goodship & Furness 2022[83]). This is consistent with the findings of surveys undertaken for the previously proposed Kiers Hill Wind Farm (in 2011) and Sclenteuch Wind Farm (2018-2021).

6.3.22. The SSRSG also confirmed that it holds no records of breeding or roosting Schedule 1 raptors or owls, or short-eared owl within at least 2 km of proposed turbine locations, or golden eagle records within 6 km (**Table 6-1**).

6.3.23. A very small number of goshawk, hen harrier, merlin, osprey, peregrine falcon, and red kite observations were made over the course of surveys. No breeding activity was identified and there was very limited evidence of the survey area being of any importance for any species.

Breeding Waders

6.3.24. Breeding bird surveys targeting the potential presence for breeding waders were conducted over the 2023 breeding season and part of the 2024 breeding season.

6.3.25. Surveys established a very narrow assemblage of species outwith the Development Site to the south and distributed around the Loch Spallander Reservoir. This included a single little ringed plover territory (Schedule 1), with other breeding wader species being common sandpiper, lapwing, ringed plover and oystercatcher. The predominantly forested habitats within the Development Site and survey area covered are considered unsuitable for breeding waders.

6.3.26. The RSPB Data Unit held no existing breeding wader records within at least 2 km of proposed turbine locations for the search period requested (see **Table 6-1**).

Black Grouse

6.3.27. Surveys to identify areas of black grouse activity, locate lek locations and establish lek sizes were conducted in April and May 2023 and 2024.

6.3.28. No black grouse observations were recorded during targeted surveys in either survey year, or incidentally during any other survey visit.

6.3.29. It is understood that black grouse were previously known to be present at Keirs Hill[84], but were not recorded during baseline surveys for the Keirs Hill Wind Farm (in 2011) or for the Sclenteuch Wind Farm (in 2020 and 2021).

6.3.30. The RSPB Data Unit held no existing records of black grouse within at least 2 km of proposed turbine locations for the search period requested (see **Table 6-1**), and it is possible the species is now absent locally.

Winter Walkover

6.3.31. Winter walkover surveys were conducted over the 2023/2024 non-breeding season to record any aggregations of foraging migratory waterfowl and the potential for communally roosting non-breeding Schedule 1 raptors or short-eared owl within the survey area and recorded any additional observations of non-breeding target species with reference to Annex 1 of NatureScot guidance (2025b[72]).

6.3.32. No evidence of Schedule 1 raptor winter roost locations or aggregations of migratory waterfowl were identified within the survey area. The predominantly forested habitats of the Development Site are unsuitable for migratory waterfowl and neither the RSPB Data Unit or SSRSG held any records of communally roosting Schedule 1 raptors or short-eared owls within at least 2km of proposed turbine locations (see **Table 6-1**).

6.3.33. In review of WeBS data for the Loch Spallander Reservoir (located adjacent to the southwest area of the Development Site), this is known to typically support very small numbers of common

[84] K. Sludden (SSRSG) *Pers Comms.*

waterfowl over the non-breeding season[85]. This is consistent with observations made at the reservoir over the course of 2023/2024 winter walkover surveys and during surveys undertaken for the Keirs Hill and Sclenteuch Wind Farms.

6.3.34. Similarly, a review of recent Ayrshire Bird Reports does not identify Loch Spallander as being a main site for any migratory waterfowl species.

6.4 LIKELY ENVIRONMENTAL EFFECTS AND SCOPE OF ASSESSMENT

6.4.1. Onshore wind farm developments have the potential to impact ornithological features in the following ways:

- Habitat loss and disturbance during construction and decommissioning;
- Mortality through collision with turbine blades; and,
- Displacement and barrier effects from the avoidance of the wind farm resulting in indirect operational habitat loss.

6.4.2. NatureScot guidance (2024a[86] and 2025c[87]) and CIEEM guidelines (2018[88]) stipulate that the detailed assessment of such impacts upon ornithological features that are widespread, unthreatened, and/or resilient to the construction and operation of wind farms with standard mitigation, is not necessary. This includes species that do not require surveys to inform the EIA but will require mitigation in order to comply with legislation; e.g., breeding passerines and other species not considered to be target species (refer to paragraph 6.3.10).

6.4.3. As such, with the support of relevant guidance and professional judgement, ornithological features that do not require detailed assessment or are not expected to be significantly affected at a population level based on established baseline conditions, can be 'scoped out' of the assessments for onshore wind farms. Specific mitigation measures may however be outlined within the EIA Report to reduce and/or avoid any potential negative effects that may be in breach of legislative compliance.

6.4.4. Potentially significant effects upon the following species groups can therefore be generally scoped out of detailed assessments for onshore wind farms, and would therefore be scoped out for the Proposed Development:

- Common and/or low conservation value species not recognised in statute as requiring special conservation measures i.e., not listed as Annex 1/Schedule 1 species);

[85] Including gulls, curlew, oystercatcher, cormorant, grey heron, goosander, goldeneye, scaup, tufted duck, pochard, mallard, wigeon, shelduck, whooper swan and greylag goose.
[86] NatureScot (2024a). NatureScot pre-application guidance for onshore wind farms
[87] NatureScot (2025c). Assessing the cumulative impacts of onshore wind farms on birds [Online]. Updated March 2025. Available at: https://www.nature.scot/doc/guidance-assessing-cumulative-impacts-onshore-wind-farms-birds [Accessed 21st May 2025].
[88] 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 (CIEEM), Winchester.

- Common and/or low conservation value species not included in non-statutory lists i.e., not listed as a Red-listed Birds of Conservation Concern species as per Stanbury *et al*. (2021[82] and 2024[89]); and
- Passerine species, not generally considered to be at risk from wind farm developments (NatureScot 2024a[86], 2025a[68] and 2025b[72]), unless being particularly rare or vulnerable at a national level.

6.4.5. In the case of the Proposed Development, providing the inclusion of industry standard good practice measures set out below in Section 6.5, it is further considered that the absence of potentially significant effects upon any other ornithological species can be reasonably concluded without the requirement for detailed assessment.

6.4.6. This is on the basis of established very low levels of ornithological activity recorded during surveys, including the absence of potentially important breeding sites or non-breeding (wintering) areas for ornithological species considered sensitive to onshore wind farm developments/a priority for assessment (as per NatureScot 2025b[72]).

6.4.7. Impacts of habitat loss would be insignificant, given the relatively small permanent footprint of the Proposed Development within the Development Site, and losses primarily involving commercial coniferous plantation woodland of established low importance for ornithological species.

6.4.8. Impacts of collision risk (estimated using the NatureScot CRM, Band *et al.* 2007[90] and Band 2024[91]) can also be judged as being indiscernible for any species, based on the low level of flight activity recorded (it should be noted that the results of the CRM based on the finalised turbine layout will be presented in the EIA Report). Baseline studies have also not identified the Development Site as being important for species susceptible to elevated risks to collisions with lit turbines (NatureScot 2020[92]) and, as such, impacts upon ornithological features relating to turbine, or any other infrastructure lighting do not need to be considered.

6.4.9. Following a review of designated sites in proximity to the Proposed Development and NatureScot's response to the Sclenteuch Wind Farm (see Section 6.3), there is considered to be no connectivity with the Bogton Loch SSSI or the Merrick Kellls SSSI on account of qualifying species and spatial separation. The potential for impacts upon either SSSI is therefore considered unlikely and can also be scoped out of requiring detailed assessment within the EIA.

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[89] Stanbury, A.J., Burns, F., Aebischer, N.J., Baker, H., Balmer, D.E., Brown, A., Dunn, T., Lindley, P., Murphy, M., Noble, D.G, Owen, R. and Quinn, L. (2024) The status of the UK's breeding seabirds: an addendum to 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, 117, pp 471-487.

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

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

[92] NatureScot (2020) The Effect of Aviation Obstruction Lighting on Birds at Wind Turbines, Communication Towers and Other Structures. NatureScot Information Note. Available at: https://www.nature.scot/doc/information-note-effect-aviation-obstruction-lighting-birds-wind-turbines-communication-towers-and [Accessed 24th July 2025].

6.5 SCOPE OF ASSESSMENT

6.5.1. It is therefore proposed that the scope of the Ornithological chapter of the EIA Report will be restricted to the following:

- Description of the ornithological baseline, supported by technical appendices and figures;
- Description of industry standard good practice measures to avoid or otherwise minimise impacts on breeding birds and ensure legislative compliance during construction works (outlined below);
- An appraisal of potential construction, operational and decommissioning effects on the bird assemblage recorded during baseline surveys. Where the level of flight activity requires it, this will include the estimation of potential collision mortality risks to target species using the NatureScot collision risk model (Band *et al.* 2007[90] and Band 2024[91]);
- Identification and outline of opportunities for enhancement; and,
- Where required, the consideration of cumulative collision mortality risks.

6.5.2. The appraisal will be undertaken adopting an established approach to the assessment of onshore wind farm developments in Scotland, as recommended in NatureScot guidance (NatureScot 2025b[72]) and impact assessment guidance published by the Chartered Institute of Environmental and Ecological Management (CIEEM 2018[88]).

6.5.3. The approach will also take account existing guidance and published scientific literature in relation to birds and wind farms, together with MacArthur Green's professional judgement and experience of renewable energy EIAs.

APPROACH TO MITIGATION AND ENHANCEMENT

6.5.4. Industry standard good practice measures, as set out in NatureScot guidance (SNH 2016b[93] and NatureScot 2024b[94]) will be implemented during the construction and where necessary, during the operation and decommissioning of the Proposed Development.

6.5.5. This will include the following, which will be further detailed within the EIA Report:

- A Bird Disturbance Management Plan (BDMP) as part of a Construction Environmental Management Plan (CEMP). This will ensure that precautions are taken to comply with legislation in regard to the protection of wild birds; and,
- Pre- and during- construction/decommissioning surveys carried out by an Ecological Clerk of Works (ECoW) or suitably qualified ornithologist as part of the BDMP.

6.5.6. An Outline Biodiversity Enhancement Management Plan (OBEMP) will also be submitted as part of the EIA Report.

6.5.7. The OBEMP will present draft habitat and species conservation management measures that will be committed to as part of the Proposed Development, and which will contribute to the enhancement of

[93] SNH (2016b). Dealing with construction and birds. Scottish Natural Heritage (SNH), Guidance.
[94] NatureScot (2024b) Good practice during wind farm construction [Online]. Available at: https://www.nature.scot/doc/good-practice-during-wind-farm-construction [Accessed 24th July 2025].

biodiversity in accordance with the principles of National Planning Framework 4 (NPF4) Policy 3: Biodiversity, through restoring degraded habitats and creating and strengthening nature networks.

6.5.8. The finalisation of management measures and the areas over which those measures will take place, would be undertaken in consultation with relevant stakeholders following planning consent and any further site-investigations as required.

CONSIDERATION OF CUMULATIVE EFFECTS

6.5.9. The consideration of cumulative effects with other operational, consented and formerly submitted onshore wind farms, will be undertaken for any ornithological feature for which collision mortality risks are predicted, with reference to NatureScot guidance (NatureScot 2025c[87]).

6.5.10. This will be done at the regional Natural Heritage Zone (NHZ) level, which for the Proposed Development is NHZ 19, where sufficient information is available.

ACCESS TRACK

6.5.11. Within the Ornithological Chapter of the EIA Report a review of existing ornithological information, including from key sources set out in Section 6.3, will be presented to establish the known distribution of ornithological features along the access track route.

6.5.12. Only localised habitat works and minor upgrades will however be required along the majority of the proposed access track route from Waterside. New sections of access track where required to join the existing Patna forest haulage tracks to the Dalmellington Road (A713), will route over agricultural land and will be relatively limited in their overall extent. The access route is intended to be shared with the Sclenteuch wind farm, which is currently in planning.

6.5.13. Timelines of any construction works will also be short and activities will be subject to the implementation of industry standard good practice measures outlined above (refer to paragraphs 6.5.4 and 6.5.5). Operational maintenance activities will similarly be relatively limited.

6.5.14. The potential for significant impacts upon ornithological features as a result of relatively minor habitat losses and construction activities, is therefore considered highly unlikely and is not proposed to be considered in detail within the Ornithology Chapter of the EIA Report.

6.6 CONSULTATION QUESTIONS

6.6.1. Consultees are requested to respond to the following questions as part of their consultation response.

- Q6.1 - Do the consultees agree that scope of the field surveys and desk study that have been completed will be sufficient to inform the assessment?
- Q6.2 - Do the consultees agree that the approach to mitigation and enhancement is appropriate and in accordance with industry good practice?
- Q6.3 - Do the consultees agree that impacts upon ornithological interests can be addressed as proposed?
- Q6.4 - Do consultees consider there to be any current or proposed local conservation initiatives that the Proposed Development could look to support as part of its contribution to restoring degraded habitats and creating and strengthening nature networks for any specific species?

7 LANDSCAPE AND VISUAL

7.1 INTRODUCTION

7.1.1. This Chapter sets out the proposed scope of the Landscape and Visual Impact Assessment (LVIA). It will assess the likely effects (and whether these are significant), including cumulative effects, on the landscape resource and visual amenity arising from the construction, operation and decommissioning of the Proposed Development.

7.1.2. Where required, the following technical assessments will also be included as part of the LVIA scope:

- Residential Visual Amenity Assessment (RVAA); and
- Night-time LVIA of the effects of visible aviation warning lights.

7.1.3. This Chapter is supported by **Figures 7.1 to 7.6** and **Appendix A** as follows:

- **Figure 7.1a:** LVIA Study Area with Zone of Theoretical Visibility (ZTV), designated landscapes;
- **Figure 7.1b:** LVIA Study Area with ZTV, and Wild Land Areas;
- **Figure 7.1c:** LVIA Study Area with ZTV, and Local Landscape Areas;
- **Figure 7.2:** LVIA Study Area with ZTV and Viewpoints at 1:120,000 scale);
- **Figure 7.3:** Site Layout and nearest Residential Properties within 2 km;
- **Figure 7.4:** Cumulative Wind Farms within 45 km.
- **Figure 7.5:** Landscape Character and Cumulative Wind Farms within 10 km;
- **Figure 7.6:** ZTV with Key Recreational Routes within 45 km; and,
- **Appendix A**: LVIA Methodology and Glossary.

7.1.4. This Chapter has been prepared by chartered landscape architects at WSP UK Ltd. who have considerable experience in undertaking LVIA of wind farms throughout the United Kingdom and Ireland. WSP is a registered practice of the Landscape Institute (LI) and the Institute of Environmental Assessment and Management (IEMA) and is a Registrant of IEMA's EIA Quality Mark Scheme.

7.2 CONSULTATION

7.2.1. No consultation on LVIA has been undertaken to date however consultation responses received following scoping will be reviewed and followed-up with consultees as required.

7.3 BASELINE CONDITIONS

STUDY AREA

7.3.1. A 45 km radius Study Area, in accordance with NatureScot guidance[95], as illustrated in **Figures 7.1a/b-2**, will be adopted for the LVIA. However, considering the blade tip ZTV and distribution of receptors proposed to be scoped in / out of the LVIA it is questioned if the Study Area could be

[95] SNH, Siting and Design Wind Farms in the Landscape, Version 3a, Aug 2017.

reduced to 30 km as a focussed area for establishing the potential for significant landscape and visual effects (see **Section 7.6**).

7.3.2. The assessment will focus on locations within the Study Area with theoretical visibility of the Proposed Development and where significant landscape and visual effects are likely to occur.

7.3.3. The duration of the assessment covers the construction of the Proposed Development and associated infrastructure, its operation for a period of 30 years, and subsequent decommissioning. The assessment process will involve iterative design and re-assessment of any residual effects that could not otherwise be mitigated or 'designed out'.

DATA SOURCES

7.3.4. A range of desk-based and site-based data will be sourced to undertake the LVIA and cumulative assessment, covering landscape and visual receptors and other cumulative wind farm development. These are set out in **Table 7-1.**

Desk Study

7.3.5. The desk-based data will be drawn from Ordnance Survey maps and a range of document sources in addition to relevant planning policy documents.

7.3.6. Computer modelling of the landscape / landform, other cumulative development and the Proposed Development will be undertaken using a variety of software to support the LVIA and cumulative assessment.

Field Surveys

7.3.7. Field surveys will be undertaken to observe, assess and record landscape and visual receptors and provide a photographic record of each assessment viewpoint in accordance with NatureScot, *Visual Representation of Wind Farms: Good Practice Guidance, Version 2.2*, 2017. The field studies will include documented visits to all relevant landscape and visual receptors to assess the likely effects of the Proposed Development in the field, checking data, 'ground truthing' and examining landscape elements, characteristics / character and views / visual amenity.

Table 7-1: Data Sources

Landscape and Visual Receptors	Source Document / Data
Landscape Character	East Ayrshire Wind Farm Landscape Capacity Study (EALCS), Carol Anderson Landscape Associates, (June 2018). South Ayrshire Wind Farm Landscape Capacity Study (SALCS), Carol Anderson Landscape Associates, (August 2018). To accord with NS guidance, the above documents will take precedence over the NatureScot, Landscape Character Assessment, 2019 although this more recent document will be considered as additional information.
National Landscape Designations	National Scenic Areas: National Scenic Areas of Scotland: maps - gov.scot (www.gov.scot); and NatureScot, The Special Qualities of the National Scenic Areas: SNH Commissioned Report No. 374, 2010.

Landscape and Visual Receptors	Source Document / Data
Local Landscape Designations	East Ayrshire Local Landscape Area Boundary Review, June 2021 South Ayrshire Local Landscape Designations Review, December 2018 Dumfries and Galloway, Local Development Plan 2, Regional Scenic Areas Technical Paper 2018
Wild Land Areas	NatureScot, Map of Wild Land Areas, 2014; and NatureScot, Wild Land Area Descriptions, 2017.
Settlements and residential properties	Settlements: Defined / listed in local development plans. Residential properties shown on 1:25,000 scale Ordnance Survey mapping within 2km of the proposed turbines.
Transport Routes	'A' and 'B' class roads and passenger railway lines: Ordnance Survey mapping and Network Rail.
Recreational Routes	Scotland's National Tourist Routes: Scotland's 13 Most Scenic Drives & Routes | VisitScotland; Scotland's Great Trails: http://www.snh.gov.uk/enjoying-the-outdoors/where-to-go/routes-to-explore/scotlands-great-trails/; Sustrans National Cycle Network: http://www.sustrans.org.uk/ncn/map/national-cycle-network/using-network/route-numbering-system. Core Path Network and Plans within 10km of the Proposed Development.
Recreational Locations	Golf courses, water facilities, caravan and camping sites and other passive recreational locations involving an appreciation of the landscape as a main activity. Excludes team sports / indoor locations: Ordnance Survey mapping.
Tourist / Visitor Attractions	Inventory of Gardens and Designed Landscapes and other visitor attractions, Historic Environment Scotland sites open to the public: http://www.historic-scotland.gov.uk/; East Ayrshire Council local Development Plan 2, Gardens and Designed Landscapes, Non-statutory Planning Guidance 2025; National Trust for Scotland Places to Visit in Scotland | National Trust for Scotland (nts.org.uk); VisitScotland sites: https://www.visitscotland.com/; Scottish Wildlife Trust Sites: Our wildlife reserves | Scottish Wildlife Trust; Woodland Trust sites: Find A Wood - Visiting Woods - Woodland Trust; Forest and Land Scotland sites - Forestry and Land Scotland; and Ordnance Survey mapping at 1:50,000 scale.

Landscape and Visual Receptors	Source Document / Data
Hill walking summits	Hills / local walks: Walk Highlands Website: http://www.walkhighlands.co.uk.

ZONE OF THEORETICAL VISIBILITY AND PROPOSED VIEWPOINTS

7.3.8. Zone of Theoretical Visibility (ZTV) and Viewpoint Analysis plays an important role in defining the scope of the LVIA and cumulative assessment as well as assisting the iterative landscape design and assessment of the Proposed Development.

7.3.9. Two ZTVs of the Proposed Development have been illustrated as follows:

- **Figure 7.1a/b:** Illustrates a ZTV for the Proposed Development, with turbines calculated to a 200m blade tip height within the 45 km radius Study Area. The numbers of turbines which may be theoretically visible are shown in different colours along with the proposed viewpoint locations; and
- **Figure 7.2:** (A0 paper size): Illustrates the same ZTV as shown in **Figure 7.1** but overlaid on a 1:50,000 scale OS map. The purpose of this figure is to allow consultees to examine the ZTV and consider the viewpoint locations in detail, enabling them to confirm or suggest additional / alternative viewpoint locations.

7.3.10. For the avoidance of doubt, areas outwith the coloured areas of the ZTV would have no view of the Proposed Development and landscape and visual receptors within these areas are consequently scoped out of the LVIA.

VIEWPOINT SELECTION

7.3.11. Viewpoints will be agreed through consultation with local planning authorities and NatureScot within the 45 km LVIA Study Area. The locations of these will focus on key views from local communities, tourist locations, hill summits, and transport routes. These viewpoints will be used to assist the design process, confirm the scope and support the LVIA and cumulative assessment. Some of these viewpoints will also illustrate the night-time LVIA for the visible aviation warning lights.

7.3.12. Visualisations will be prepared in line with good practice guidance and submitted in accordance with NatureScot guidance[96]. The viewpoint locations will be subject to micro-siting and confirmation of the final design.

7.3.13. A preliminary list of suggested viewpoints is provided in **Table 7-2** and their locations are indicated in **Figure 7.2**. Consultees are requested to confirm the proposed viewpoints.

[96] Visual Representation of Windfarms, Version 2.2, SNH, February 2017.

Table 7-2: Proposed Viewpoint Locations

Viewpoint No.	Receptor	Visualisation Technique	Viewpoint Type (GLVIA 3)
Patna, Whitehill Avenue at roundabout	Residents	Photo, wireline and montage (90°)	Specific viewpoint from within northern half of settlement with views towards the Development Site.
Patna, Meikleholm Drive	Residents	Photo, wireline and montage (90°)	Specific viewpoint from within southern half of settlement with views towards the Development Site.
A713 at Patna	Residents / road users	Photo, wireline and montage (90°)	Sequential view from the A713 Galloway Tourist Route at Patna.
A713 north approach to Patna	Road users	Photo and wireline (90°)	Sequential view from the A713 Galloway Tourist Route.
Letham Hill War Memorial	Walkers / visitors	Photo, wireline and montage (180°)	Specific viewpoint from hill summit and monument.
A713 at Waterside	Residents / visitors	Photo and wireline (90°)	Specific / representative viewpoint from more elevated part of Waterside / railway museum.
A713 at Dalmellington	Residents / road users	Photo and wireline (90°)	Sequential view from the A713 Galloway Tourist Route at Dalmellington.
Auchenroy Hill	Walkers / visitors	Photo, wireline and montage	Specific viewpoint from hill summit.
Blairquhan	Visitors / walkers	Photo, wireline and montage	Specific viewpoint from within the GDL.
Colonel Hunter Blair's Monument, Craigengower Hill	Walkers / visitors	Photo, wireline and montage (360°)	Specific viewpoint from hill summit and monument.
Crosshill	Residents / road users	Photo, wireline and montage (90°)	Specific / representative viewpoint from settlement / B road within the Water of Girvan Valley.

Viewpoint No.	Receptor	Visualisation Technique	Viewpoint Type (GLVIA 3)
Maybole	Residents / road users	Photo, wireline and montage (90°)	Specific / representative viewpoint from settlement / B road.
Brown Carrick Hill	Walkers	Photo and wireline (360°)	Specific viewpoint from hill summit.
Cairnsmore of Carsphain	Walkers	Photo and wireline (360°)	Specific viewpoint from hill summit.
*Viewpoints 3, 5, 8, and 13 are proposed as Night-time viewpoints.			

SUMMARY OF BASELINE CONDITIONS

7.3.14. In landscape terms, most of the Development Site (and all of the proposed turbines) is located within a forested area of the *Foothills with Forest west of Doon Valley* (17b) Landscape Character Type (LCT). This LCT straddles the South Ayrshire and East Ayrshire local authority boundary and is identified in both the *East Ayrshire Wind Farm Landscape Capacity Study* (EALCS), Carol Anderson Landscape Associates, (June 2018); and the *South Ayrshire Wind Farm Landscape Capacity Study* (SALCS), Carol Anderson Landscape Associates, (August 2018). Both of these documents form supplementary guidance to the respective local development plans.

7.3.15. A small part of the Site Boundary to the north, and east at the start of the Site access overlaps with part of the River Doon, Upper River Valley LCT, although no turbines are proposed to be located within this area.

7.3.16. The landscape character within 10 km of the Development Site is illustrated in **Figure 7.5** and the 'Foothills' typology forms an intermediate layer of topography between the lowlands, valleys and coastal areas and the higher hills of the Carrick Forest and Southern Uplands, generally to the south and southeast. They are listed as follows:

- 17a: Foothills with Forest and Opencast Mining
- 17b: Foothills with Forest west of Doon Valley;
- 17c: Foothills with Forest and Wind Farm;
- 17d: Maybole Foothills; and
- 17e: Coastal Foothills.

7.3.17. LCT's 17a-c are all subject to existing, consented or proposed wind farm development and in all cases wind farm development is a key characteristic of these areas.

7.3.18. The host LCT and Development Site area is bounded to the north and east by the Doon Valley and all of this area is locally designated as part of the Doon Valley Local Landscape Area (LLA) which extends further south to cover Loch Doon. The A713 is routed along the river valley and is part of the Galloway Tourist Route which links the former mining settlements of Patna, Waterside and Dalmellington. Consequently, the area has both industrial heritage and scenic qualities. Further

south, beyond Dalmellington, there are a number of designated landscapes including other LLA's the Craigengillan Garden and Designed Landscape (GDL), the UNESCO Galloway and Southern Ayrshire Biosphere, the Galloway Forest Park and the Galloway Forest Dark Sky Park. The Merrick Wild Land Area is a protected landscape and largely overlaps with the area of the Galloway Forest Dark Sky Park. Further east the foothills extend beyond the Doon Valley and are described as *Foothills with Forest and Opencast Mining* (17a).

7.3.19. The Sclenteuch Wind Farm application is located within forestry to the immediate south of the Development Site. A shared access to the Development Site through the proposed Sclenteuch Wind Farm is the Applicant's preferred access to the Development Site from the public road. Beyond this, the existing Dersalloch Wind Farm is located within the southern part of the LCT as it extends across the local authority boundary into South Ayrshire. The Carrick Forest and hills are located further south beyond this and the Water of Girvan.

7.3.20. To the west the Development Site and beyond the host landscape of *Foothills with Forest west of Doon Valley* (17b) the land falls away into the undulating area and broader river valley of the Water of Girvan. The B741 is routed along this valley linking a number of small settlements including Straiton, Kirkmichael and Crosshill. This area (excluding Dersalloch Wind Farm) is also locally designated LLA in South Ayrshire and includes the Blairquhan GDL.

7.3.21. The *Foothills with Forest west of Doon Valley* LCT covering the Development Site area is characterised by an undulating plateau of coniferous forestry. The plateau ranges in height from approximately 306m AOD at Green Hill in the east, dropping to approximately 250m at Sclenteuch Moor, Glenside Hill and Carskeoch Hill before dropping down to the perimeter roads to the north, east and west at between approximately 160-100m AOD. A 275kV overhead transmission line passes through the Development Site on a north / south alignment. The Loch Spallander Reservoir is located to the south-west of the Development Site although it is not widely visible from the surrounding area due to landform screening. The reservoir is not believed to be a local tourist resource or recreational attraction. Further south and beyond the edge of the forestry the *Foothills with Forest west of Doon Valley* LCT is crossed by the B741 and the open moorland rises to approximately 360m AOD at Dersalloch Hill and the Dersalloch Wind Farm.

7.3.22. Although the commercial forestry of the Development Site is not sensitive to wind farm development, key sensitivities of the Development Site include the likely cumulative effects of the Proposed Development on the surrounding lower lying valleys including the Doon Valley and associated visual receptors (settlements, roads, recreational routes and attractions). The respective EALCS and SALCS identify the *Foothills with Forest west of Doon Valley* LCT as of high sensitivity for new wind farm development with turbines >130m.

LANDSCAPE BASELINE

7.3.23. The LVIA will assess the following landscape receptors.

Landscape character

7.3.24. Landscape character units within 10 km as illustrated in **Figure 7.5** will be reviewed and included in the assessment where appropriate:

- East Ayrshire:
  - Ayrshire Lowlands (EALCS Ref: 7c);

- Lowland River Valley (EALCS Ref: 9);
- Upper River Valley – River Doon (EALCS Ref: 10);
- Foothills with Forest and Opencast Mining (EALCS Ref: 17a);
- Foothills with Forest west of Doon Valley (EALCS Ref: 17b - host landscape);
- Southern Uplands with Forestry (EALCS Ref: 20c); and
- Rugged Uplands, with Lochs and Forest (EALCS Ref: 21).

- South Ayrshire:

  - Brown Carrick Hills (SALCS Ref: 4b);
  - A marginal area of Coastal Valley with Policies (SALCS Ref: 5);
  - South Ayrshire Lowlands (SALCS Ref: 7d);
  - Lowland River Valley(SALCS Ref: 9);
  - Middle Dale (SALCS Ref: 12);
  - Intimate Pastoral Valley (SALCS Ref: 13);
  - Foothills with Forest west of Doon Valley (SALCS Ref: 17b - host landscape);
  - Foothills with Forest and Wind Farm (SALCS Ref: 17c).;
  - Maybole Foothills (SALCS Ref: 17d); and
  - Rugged Uplands, Lochs and Forest (SALCS Ref: 21).

7.3.25. The landscape elements of the host landscape character unit (*Foothills with Forest west of Doon Valley*) within the Development Site; including coniferous forestry, water features, grassland, moss, stone walls, trees and woodland / shelterbelts will be included in the assessment.

7.3.26. No seascape or coastal landscape units would be included in the LVIA as these are beyond 10 km distance from the Proposed Development and unlikely to be significantly affected.

Landscape Designations

7.3.27. Protected and designated landscapes within 10 km as illustrated in **Figure 7.1a** will be reviewed and included in the assessment where appropriate:

- UNESCO Biosphere: Dumfries and Galloway / Galloway Forest:

  - An outline or limited assessment is proposed due to the intervening Dersalloch Wind Farm and limited blade tip ZTV coverage which indicates that significant effects may be unlikely.

- Galloway Forest Dark Sky Park:

  - A night-time LVIA of any visible aviation lights required as part of the Proposed Development will assess the likely effects on the Core Area and Buffer areas of the Dark Sky Park to accord with the NatureScot, Guidance on Aviation Lighting Impact Assessment, November 2024.

- Gardens and Designed Landscapes (GDL):

  - GDL's will be considered as part of the LVIA in terms of their influence and contribution to landscape character, scenic quality and as tourist / visitor attractions. Effects on the GDLs will be assessed as part of the Cultural Heritage assessment.

Local Landscape Areas

7.3.28. The Local Landscape Areas (LLA) are illustrated in **Figure 7.1b**.

7.3.29. It is proposed that those LLA's within 10 km of the Proposed Development are included in the assessment and in addition those with blade tip ZTV coverage as follows:

- East Ayrshire:
  - Doon Valley LLA.
- South Ayrshire:
  - Water of Girvan Valley LLA;
  - High Carrick Hills LLA;
  - Doon Valley LLA; and
  - Brown Carrick Hills and Coast.

7.3.30. The special landscape qualities and reasons for these LLA designations will be assessed against the *East Ayrshire Local Landscape Area Boundary Review*, June 2021 and the *South Ayrshire Local Landscape Designations Review*, December 2018.

7.3.31. It is proposed that all other LLAs within the 45 km study area are excluded due to limited or no ZTV coverage; the presence in some cases of intervening wind farm development; and long intervening distances between some of these receptors and the Proposed Development.

Wild Land Areas

- Merrick Wild Land Area (WLA):
  - An outline or limited assessment is proposed due to the intervening Dersalloch Wind Farm and limited blade tip ZTV coverage which indicates that significant effects may be unlikely. The WLA assessment would be supported by ZTV, viewpoint analysis and site visits to confirm no significant effects. The assessment would accord with the NatureScot Technical Guidance: *Assessing Impacts on Wild Land Areas* (September 2020).

Table 7-3: Landscape Receptors to be Scoped Out of the Assessment

Receptor	Rationale
Landscape character beyond 10 km	Landscape Character units (including seascapes) beyond 10 km distance from the Proposed Development are unlikely to be significantly affected.
Seascape / Coastal landscapes	Excluded from the LVIA due to the long intervening distances and/or lack of ZTV coverage.
Designated Landscapes: LLAs East Ayrshire: River Ayr Valley LLA Uplands and moorlands LLA South Ayrshire: Ailsa Craig LLA Culzean LLA	Excluded due to limited or no ZTV coverage; the presence in some cases of intervening wind farm development; and long intervening distances between some of these receptors and the Proposed Development. Note: there is no blade tip ZTV coverage of the South Lanarkshire LLAs.

Receptor	Rationale
Girvan to Ballantrae Coast and Hills LLA Glen App Coast and Hills LLA The Ayr Valley LLA The Stinchar Valley LLA The Turnberry Coast LLA All LLAs within North Ayrshire, South Lanarkshire and Dumfries and Galloway.	

VISUAL BASELINE

7.3.32. The LVIA will assess the following visual receptors, some of which are illustrated in **Figure 7.6**.

Settlements

7.3.33. Settlements listed in the Local Development Plans and overlapped by the blade tip ZTV will be included in the LVIA. The assessment will be proportionate and will include a more detailed townscape assessment of Patna and detailed LVIA of other settlements within 10 km of the Proposed Development. Settlement within 10 km includePatna, Waterside, Burnton, Dalmellington / Bellsbank, Straiton, Kirkmichael, Crosshill, Hollybush, Maybole and Dalrymple. An outline or limited assessment of other settlements where ZTV, viewpoint analysis and site visits confirm no significant effects is proposed to confirm that assumption.

Individual Residential Properties

7.3.34. Individual residential properties (excluding the settlement of Patna) within 2 km of the turbines of the Proposed Development, as indicated in **Figure 7.3**, will be included in the Residential Visual Amenity Assessment (RVAA). The RVAA will be undertaken to accord with the Landscape Institute's *Residential Visual Amenity Assessment: Technical Guidance Note*, 2019.

7.3.35. The settlement of Patna as defined in the East Ayrshire Local Development Plan 2, Volume 2 - Settlements Maps, April 2024, will be subject to both townscape / visual assessment and RVAA from key viewpoints forming a grid across the settlement as described further under 'Residential Visual Amenity Assessment'. The assessment of Patna will not therefore include an assessment of individual residential properties.

Transport Routes

7.3.36. Transport Routes including A and B class roads and rail routes including the following:

- A Class roads:
  - The A713 / Galloway Tourist Route; and
  - A77.
- B Class roads:
  - B741;
  - B7045;

- B7023;
- B742; and
- B730.

- Passenger rail routes:

7.3.37. The assessment will be proportionate and will include a more detailed assessment of the A713 and other transport routes within 10 km of the Proposed Development and an outline or limited assessment of other receptors where ZTV, viewpoint analysis and site visits confirm no significant effects.

Recreational Routes

7.3.38. Recreational routes as illustrated in **Figure 7.6** including the following:

- Scotland's Great Trails:
  - River Ayr Way;
  - Ayrshire Coastal Path;
  - Southern Upland Way; and
  - Arran Coastal Way.
- Sustrans Cycle Routes (Nos:7, 73 and 753) / reclassified / promoted cycling routes;
- Other Long-Distance Routes:
  - Galloway Tourist Route (also A713);
  - Burns Heritage Trail; and
  - Robert the Bruce Trail.
  - Core Path Network.

7.3.39. The assessment will be proportionate and will include a more detailed assessment of the recreational routes (including the Core Path Network) within 10 km of the Proposed Development and an outline or limited assessment of other receptors where ZTV, viewpoint analysis and site visits confirm no significant effects.

Recreational and Tourist / Visitor Attractions

7.3.40. Recreational and Tourist / Visitor Attractions as illustrated in **Figure 7.1a** including the following:

- Gardens and Designed Landscapes (GDL) open to the public:
  - Blairquhan;
  - Craigengillan;
  - Killkerran;
  - Skeldon House;
  - Rozelle (La Rochelle);
  - Auchincruive;
  - Bargany; and
  - Others which are more distant: Eglinton Castle, Blair Estate, Rowallan, and Loudon Castle.
- Recreational / Tourist / Visitor Attractions:
  - Galloway Forest and the Galloway Forest Dark Sky Park
  - Dunaskin Open-Air Museum / Doon Valley Railway Museum;

- Barony A Frame, Ochiltree;
- Knockshinnock Lagoons;
- Doon Valley Golf Club, Patna; and
- Roodlea Golf Club, Coylton.

- Hill Walking Summits:
  - Letham Hill and associated abandoned mining villages and War Memorial;
  - Auchenroy Hill;
  - Colonel Hunter Blair's Monument, Craigengower Hill;
  - Brown Carrick Hill;
  - Cairnsmore of Carsphairn;
  - Blackcraig Hill; and
  - Awful Hand Ridge and Merrick.

7.3.41. Main attractions including the Loch Doon area and Dumfries House have been excluded from the assessment as they are not overlapped by the blade tip ZTV and would have no visibility of the Proposed Development.

7.3.42. The assessment will be proportionate and will include a more detailed assessment of the receptors within 10 km of the Proposed Development and an outline or limited assessment of other receptors where ZTV, viewpoint analysis and site visits confirm no significant effects.

Table 7-4: Visual Receptors to be Scoped Out of the Assessment

Receptor	Rationale
Settlements: Settlements beyond 20km and / or outwith the blade tip ZTV.	Excluded due to limited or no ZTV coverage; the presence in some cases of intervening wind farm development; and long intervening distances between some of these receptors and the Proposed Development.
Transport Routes: Ferry / road / rail routes beyond 20km and / or outwith the blade tip ZTV.	Excluded due to limited or no ZTV coverage; the presence in some cases of intervening wind farm development; and long intervening distances between some of these receptors and the Proposed Development.
Recreational Routes: Southern Upland Way and Robert the Bruce Trail.	Excluded due to no ZTV coverage.
Recreational and Tourist / Visitor Attractions: Receptors such as Loch Doon and associated attractions and Dumfries House	Excluded due to no ZTV coverage.

7.4 SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

7.4.1. The following potentially significant landscape and visual effects are likely to result from the Proposed Development, although these may be reduced and mitigated through the design process.

- Potentially significant landscape effects:
  - Effects on 'host' landscape character of *Foothills with Forest west of Doon Valley* (17b) and adjacent *Upper River Valley – River Doon* (10) have the potential to be significantly affected.
  - Wider effects on surrounding landscape are less likely but may relate to cumulative effects and / or effects on the special landscape qualities and values of the *Doon Valley* LLA in East Ayrshire and potentially the *Water of Girvan Valley* LLA in South Ayrshire.
  - The nature of these effects is likely to be cumulative.
- Potentially significant visual effects:
  - Effects on views from residential properties and the settlement of Patna within 2 km of the proposed turbines, which will be subject to RVAA.
  - Effects on views from residential properties and settlements within the wider 10 km area may also be significantly affected.
  - Visual effects on the views from transport routes including the A713 / Galloway Tourist Route and potentially the B741 within 10 km.
  - Visual effects on recreational and tourist / visitor attractions including the views from the Blairquhan GDL, part of the Core Path and Sustrans networks, part of the Burns Heritage Trail and some hilltops within approximately 10-15 km may be significantly affected.
  - The nature of these effects is likely to be cumulative.
- Night-time Effects:
  - Potentially significant and cumulative landscape and visual night-time effects may affect the views from receptors in the Doon Valley and local residents / road users.
  - Cumulative effects are likely to be a key component of the assessment and any resulting significant effects.

MITIGATION

7.4.2. The EALCS and the SALCS both comment on the sensitivity and general constraints to wind farm development of this scale within the *Foothills with Forest west of Doon Valley* (17b) as follows:

"The narrowness and consequent high visibility of these foothills which increases sensitivity in terms of potential effects on adjacent well-settled valleys."

7.4.3. Notably both documents refer to the potential for visual effects on Blairquhan GDL (noting that there would be little or no visibility from Craigengillan GDL) and from settlements such as Patna within the Doon Valley LLA. Views from and towards landmark hills including Auchenroy Hill and Craigengower Hill above Straiton are also referenced and these are included as proposed viewpoints.

7.4.4. Although both documents advise no scope for new development, opportunities are noted as follows:

"The simpler, less visually prominent densely forested lower hills and shallow basins to the north which may provide opportunities to accommodate smaller turbines to reduce effects on adjacent landscapes and on the setting of designed landscapes and settlements (although cumulative effects on the Girvan and Doon Valleys will be a major constraint to any additional development in this landscape given a rapidly changing scene of recent wind farm consents and proposals in nearby upland areas)."

7.4.5. The Proposed Development therefore will explore design opportunities that limit significant visual impact on the adjacent Water of Girvan and Doon Valleys and their associated receptors including the settlements of Patna and the Blairquhan GDL.

7.4.6. Other mitigation opportunities relate to possible landscape and biodiversity enhancement which through an integrated and landscape led Design Strategy could improve the landscape fit and visual screening / composition of the Proposed Development when viewed from locations within the Doon Valley. Opportunities to 'design the view' through forestry management and / or additional tree planting could also deliver increased biodiversity through woodland / habitat creation and improved recreational access.

7.4.7. In developing a Design Strategy, reference will be made, but not limited to the following:

- NatureScot, Siting and Designing Wind Farms in the Landscape, Version 3a, August 2017;
- Scottish Renewables, NatureScot, Scottish Environment Protection Agency, and the Forestry Commission Scotland joint publication, Good Practice during Windfarm Construction: July 2024;
- NatureScot, Guidance: Spatial Planning for Onshore Wind Turbines – natural heritage considerations, Version 3a, June 2015; and,
- NatureScot, General Pre-application and Scoping Advice for Onshore Wind Farms, November 2024.

7.5 PROPOSED ASSESSMENT METHODOLOGY

7.5.1. LVIA forms one of the key components of the EIA process when assessing proposed wind farm developments. The assessment will be undertaken in accordance with the GLVIA3. An overview of the LVIA methodology (including cumulative assessment) is provided below, with the detailed methodology to be provided as an appendix to the completed EIA Report.

7.5.2. Essentially, the level of landscape and visual effect (and whether this is significant) is determined by assessing the sensitivity of the landscape or visual receptor and the magnitude of change likely to result from the Proposed Development. The LVIA includes an iterative design and assessment process that takes account of design improvements and mitigation. Further assessment is then undertaken of any remaining, residual effects that could not otherwise be mitigated or 'designed out'.

7.5.3. The proposed LVIA methodology has been provided in **Appendix A**.

LANDSCAPE EFFECTS

7.5.4. Landscape effects[97] are defined by the Landscape Institute as:

"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern ... is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the proposed Development may influence in a significant manner."

7.5.5. The landscape effects occurring during the construction, operational and decommissioning phases of the Proposed Development may potentially include the following:

- Changes to landscape elements: the addition of new elements (wind turbines) or the removal of existing elements such as trees, vegetation and buildings and other characteristic elements of the landscape character type;
- Changes to landscape qualities: degradation or erosion of landscape elements and patterns and perceptual characteristics, particularly those that form key characteristic elements of landscape character types or contribute to the landscape value;
- Changes to landscape character: landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities (including perceptual characteristics) and the cumulative addition of new features, the magnitude of which is sufficient to alter the overall landscape character type of a particular area; and
- Cumulative landscape effects: where more than one wind farm may lead to a potential landscape effect.

7.5.6. The LVIA will also assess the effect of the Proposed Development on the areas of designated and protected landscapes and the special qualities for which they have been designated. The approach taken for the assessment of NSAs will accord with the NatureScot *Special Landscape Qualities – Guidance on Assessing Effects*, 2025. A similar approach will be adopted for locally designated SLAs, subject to the advice of consultees.

VISUAL EFFECTS

7.5.7. Visual Effects are concerned wholly with the effect of the development on views, and the general visual amenity, and are defined by the Landscape Institute in GLVIA3 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern ... is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views."

[97] The term 'landscape' encompasses seascape and townscape where relevant.

7.5.8. Visual effects are identified for different receptors (people) who would experience the view(s) at their places of residence, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

- Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view(s); and,
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

CUMULATIVE ASSESSMENT

7.5.9. The assessment of cumulative landscape and visual effects is similar to the assessment of the individual landscape and visual effects, in that the level of landscape and visual effect is determined by assessing the sensitivity of the landscape or visual receptor and the magnitude of change. Cumulative assessment however considers the magnitude of change posed by multiple developments.

7.5.10. The cumulative assessment will assess the following types of cumulative effects:

- Cumulative Landscape Effects: Where more than one wind development may have an effect on a landscape designation or particular area of landscape character; and,
- Cumulative Visual Effects: the cumulative or incremental visibility of similar types of development that may combine to have a cumulative visual effect. These can be further defined as follows:
  - Simultaneous or combined: where two or more developments may be viewed from a single fixed viewpoint simultaneously, within the viewer's field of view and without requiring them to turn their head;
  - Successive or repetitive: where two or more developments may be viewed from a single viewpoint successively as the viewer turns through 360°; and,
  - Sequential: where a number of developments may be viewed sequentially or repeatedly at increased frequency, from a range of locations when travelling along a route within the Study Area.

7.5.11. The cumulative assessment will adopt the same Study Area as the LVIA and will include other relevant wind energy developments within this area, including those listed in **Figure 7.4.**

7.5.12. The cumulative assessment will accord with NatureScot *Guidance: Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments*, 2021 and will be prepared to ensure that, as well as the effects of the Proposed Development (LVIA), the 'additional' cumulative effects and the 'combined' cumulative effects are also reported to account for two Cumulative Scenarios as follows:

- Scenario 1: Existing + Consented + the Proposed Development: The additional and combined cumulative effects of the Proposed Development and existing and consented wind energy developments are assessed; and,
- Scenario 2: Existing + Consented + Applications + the Proposed Development: The additional and combined cumulative effects of the Proposed Development and existing and consented wind energy developments and live applications (including schemes at planning appeal) are assessed.

7.5.13. Existing wind farms considered within the cumulative assessment include those under construction.

7.5.14. In addition, the cumulative assessment takes account of the timescales for the operation of the existing and consented developments.

RESIDENTIAL VISUAL AMENITY ASSESSMENT (RVAA)

7.5.15. Residential amenity is a planning matter that involves a number of effects (such as noise and shadow flicker) of which residential *visual* amenity is just one component. The RVAA will assess the effects on residential visual amenity likely to be experienced at individual residential properties within 2 km of the proposed turbines. In addition, it will include an assessment of the settlement of Patna as described previously. The RVAA will accord with the advice in GLVIA 3 and the Landscape Institute's *Residential Visual Amenity Assessment: Technical Guidance Note*, 2019.

7.5.16. As a minimum the visual effects on the views from the individual residential properties included in the assessment will be illustrated by a wireline.

7.5.17. The settlement of Patna will be subject to both townscape / visual assessment and RVAA from key viewpoints forming a grid across the settlement. Those viewpoints listed in **Table 7-2**, Viewpoints 1-5 will be illustrated as they are located where the turbine visibility would be greatest. The assessment will therefore identify those properties and streets where the visual effects are likely to be greatest and identify whether there is a significant visual effect and if there is also a breach of the Residential Visual Amenity Threshold.

WILD LAND ASSESSMENT

7.5.18. Consultees are requested to consider if the WLA assessment can be scoped out due to the intervening Dersalloch Wind Farm and limited blade tip ZTV coverage which indicates that significant effects may be unlikely.

7.5.19. Alternatively, and outline or limited assessment may be undertaken to confirm this assumption. The WLA assessment would be supported by ZTV, viewpoint analysis and site visits to confirm no significant effects. In this case the approach would accord with NatureScot, *Assessing Impacts on Wild Land Areas – Technical Guidance*, 2023.

NIGHT-TIME LIGHTING ASSESSMENT

7.5.20. Aviation warning lights attached to turbine hubs and towers are required on all proposed wind turbines ≥150 m in accordance with Article 222 of the UK Air Navigation Order 2016[98], subject to any proposed lighting mitigation strategy. A proportionate Night-time LVIA of the proposed visible aviation warning lighting will be undertaken in accordance with the NatureScot, *Guidance on Aviation Lighting Impact Assessment*, November 2024 and the NatureScot, *General Pre-application and Scoping Advice for Onshore Wind Farms,* November 2024. The assessment will be supported by ZTVs and night-time viewpoints, which have been selected as representative of locations where there are likely to be people at night and include roads and settlements.

7.5.21. **Table 7-2** identifies that Viewpoints 3, 5, 8, and 13 are proposed as Night-time viewpoints.

[98] Civil Aviation Authority (2016) UK Air Navigation Order, Article 222.

7.6 CONSULATION QUESTIONS

7.6.1. Consultees are requested to respond to the following questions as part of their consultation response.

- Policy and Guidance:
  - Q7.1 Are the consultees aware of any particular landscape policy or guidance (including emerging / draft guidance) they would like to bring to our attention?
- Methodology:
  - Q7.2 Consultees are invited to review and comment on the proposed assessment methodology, including **Appendix A: LVIA Methodology**.
  - Q7.2 Are the consultees satisfied with the LVIA methodology and approach including for example the LVIA Study Area of 45 km – considering the information in this report could the LVIA Study Area be reduced to 30 km?
  - Q7.3 Please confirm if there are any other known wind energy developments that should be included in the cumulative LVIA beyond those illustrated in **Figure 7.4**.
- Baseline and Scope of Assessment:
  - Q7.4 Please review and comment on the proposed baseline and data sources, noting in particular any known information / receptor gaps not listed in **Table 7-1**. (The landscape character within 10 km is illustrated in **Figure 7.5** and the landscape planning designations, WLAs and recreational routes within **Figures 7.1** and **7.6**).
  - Q7.5 Please review **Table 7-2**– Proposed Viewpoint Locations and confirm agreement (or otherwise) of the selected viewpoints for day and night-time analysis. The ZTV and suggested viewpoints are illustrated in **Figures 7.1** and **7.2**. The following will be consulted on their respective areas:
    - East Ayrshire Council;
    - South Ayrshire Council
    - North Ayrshire Council; and
    - Dumfries and Galloway.
  - Q7.6 Please confirm your agreement / otherwise with the approach to provide sequential route assessment of the A713 Galloway Tourist Route.
  - Q7.7 Please confirm agreement of the list of landscape and visual factors / receptors to be scoped in / out of the LVIA as set out in **Table 7-3** and **Table 7-4.**
  - Q7.8 NatureScot is requested to advise whether a wild land impact assessment of the Merrick WLA can be excluded from the LVIA?
  - Q7.9 Local Planning Authorities are requested to advise further on the LLAs that may be scoped in or out of the assessment (see **Table 7-3**) and the selection of Special Landscape Qualities that should be included in the assessment of LLA's retained within the assessment.
  - Q7.10 Please review and comment on the potentially significant effects listed in **Section 7.4.**
- Mitigation:
  - Q7.11 Please review **Section 7.4** and comment on the proposed emerging Design Strategy and approach to mitigation. Are there additional aspects of the design / mitigation that are missing or should be considered further?

8 CULTURAL HERITAGE

8.1 INTRODUCTION

8.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from the Proposed Development upon Cultural Heritage. It includes consideration of impacts to non-designated heritage assets within the Development Site and designated heritage assets within the wider study area.

8.1.2. The chapter (and its associated figures; **Figure 8.1** and **Figure 8.2**) should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Site Context and Proposed Development** and with respect to relevant parts of other technical chapters.

8.2 CONSULTATION

8.2.1. No consultation with stakeholders has taken place to date on the Proposed Development. For the preparation of the EIA for the Proposed Development, cultural heritage will require consultation with Historic Environment Scotland (HES) and West of Scotland Archaeology Services (WoSAS) who advise East Ayrshire and South Ayrshire Councils. Discussions will focus on study areas, methodology, heritage assets, and any information which may not be available through historic environment records (HER) data.

8.3 STUDY AREA

8.3.1. The Development Site Boundary will be used for gathering information on non-designated heritage assets that may be physically impacted during construction of the Proposed Development. A 1 km study area from the scoping layout will also be utilised to gather information on non-designated heritage assets to provide context and information on what may be identified within the construction areas of the scoping layout.

8.3.2. For the EIA Report, the baseline will include those heritage assets with visibility of the proposed development, according to a Zone of Theoretical Visibility (ZTV) (see **Figure 8.2**), within the following study areas:

- 10km for Scheduled Monuments, GDLs and Category A Listed Buildings;
- 5km for Conservation Areas and Category B and C Listed Buildings; and
- 5km for non-designated heritage assets deemed to be of national importance, and with long ranging views forming part of the heritage assets significance.

8.3.3. Other designated heritage assets outside of the study areas will be added to the baseline where recommended through consultation with Historic Environment Scotland and West of Scotland Archaeology Service (WoSAS).

8.4 BASELINE CONDITIONS

8.4.1. An initial high-level desk-based study of cultural heritage records has been carried out to inform the potential for significant effects in the vicinity of the Proposed Development. The Development Site boundary was used to determine the potential for effects on non-designated heritage assets during construction, through physical impacts. The 10km buffer around the proposed turbine locations in conjunction with the ZTV has been used at this stage to identify designated heritage assets that have the potential for effects through changes within their setting. Designated heritage assets

comprise the following heritage assets that have been identified by regulators for additional protection and consideration under heritage legislation: World Heritage Sites, scheduled monuments, listed buildings, conservation areas, inventory battlefields, and inventory gardens and designed landscapes. Significant effects are considered unlikely to occur outside of a 5km radius from the turbine locations, unless the components that contribute to the cultural significance of the heritage asset includes specific long distance landscape views or intervisibility with other heritage assets and/or landscape features.

DATA SOURCES

Desk Study

8.4.2. Data sources consulted for this desk-based study include:

- data on World Heritage Sites, scheduled monuments, listed buildings, conservation areas, Inventory Battlefields, and Inventory Gardens and Designed Landscapes obtained from HES; and
- data on non-designated heritage assets obtained from the National Record of the Historic Environment (NRHE) which is maintained by HES.

Field Surveys

8.4.3. No field surveys of the Development Site boundary have been undertaken to date. Walkover surveys will be undertaken to inform the EIA.

CURRENT AND HISTORICAL BASELINE

8.4.4. There are no World Heritage Sites or Inventory Battlefields within the 10km study area.

8.4.5. There are 23 scheduled monuments, four Gardens and Designed Landscapes, and 11 Category A listed buildings within 10km of the scoping turbine layout. These heritage assets comprise the following:

- Scheduled Monuments:
  - Waterside, miners' villages & mineral railways scheduled monument (SM7863);
  - Waterside, Dalmellington Ironworks scheduled monument (SM4345);
  - Bogton Loch airfield, 175m SSE of Buchan's Bridge, Dalmellington (SM13693);
  - Kildoon, fort (SM2176);
  - Alloway, motte (SM2864);
  - Mote Knowe, dun, Monkwood (SM2865);
  - Dowan's Hill, dun, Dunree (SM2886);
  - Two henges, 175m NE and 410m WSW of Lindston House (SM2932);
  - Dalmellington, motte (SM3009);
  - Knockinculloch, enclosures on E slope of,600m NW of Glenalla (SM3357);
  - The Lady Chapel,640m NE of Kilkerran (SM3358);
  - Dalnean Hill, farmstead and field system (SM4390);
  - Highpark,enclosure 250m NW of (SM4436);
  - Craigmuir Mote,dun (SM4866);
  - Munteoch, settlement and field systems (SM5200);
  - Brigend Castle (SM5268);
  - Martnaham Castle (SM5280);

- Wallace's Stone, cross-incised stone (SM5786);
- Lyonston,standing stone 250m ESE of (SM5787);
- Knockdon, enclosure 700m NE of (SM7491);
- Waterside Bing, iron slag bing, Dalmellington Ironworks (SM7544);
- Laight Castle (SM7690); and
- Maybole Collegiate Church (SM90212).

- Gardens and Designed Landscapes:
  - Craigengillan (GDL00111);
  - Skeldon House (GDL00342);
  - Blairquhan (GDL00063); and
  - Kilkerran (GDL00238).
- Category A Listed Buildings:
  - Waterside Engine House (LB1092);
  - Kilkerran House (LB1114);
  - Dovecote, Drumfad (LB7558);
  - Baltersan Castle (LB7588);
  - Cassillis Castle (LB13655);
  - Craigengillan (LB18793);
  - Stables, Craigengillan (LB18794);
  - Parish Church and Graveyard (LB19089);
  - Blairquhan (LB19094)
  - High Street, Maybole Castle, Garden Walls and Gate Piers (LB37709); and
  - St. John's Cottage (LB37718)

8.4.6. There are 90 listed buildings, and three Conservation Areas within 5km of the scoping turbine layout, comprising 30 Category B, and 60 Category C, with the majority contained within the Conservation Areas.

8.4.7. There are four non-designated heritage assets within the Development Site Boundary on the NRHE. These comprise:

- Carnshalloch Limestone Works (Canmore ID 295670);
- Meikle Cairnshalloch farmstead (Canmore ID 170034);
- Chapel Hill church (Canmore ID 42598); and
- Carskeoch Hill sheep ree (Canmore ID 170032).

The 1km study area has an additional 43 non-designated heritage assets that are predominantly post-medieval in date relating to transport infrastructure, farmsteads, agricultural activity, and the post-medieval residential, commercial, and ecclesiastical development within Patna.

8.4.8. Details of all of the heritage assets can be found in the Historic Environment Gazetteer (**Appendix B**).

FUTURE BASELINE DATA GATHERING

8.4.9. Desk-based data for the Development Site will be obtained, and a walkover survey will be conducted, focussing on the access tracks and turbine bases. This will enable:

- Identification of potential heritage assets, both designated and non-designated, that could be impacted as a result of the Proposed Development;
- Determination of the nature of the heritage assets and the contribution of its setting to the cultural significance of the individual designated heritage asset;
- Identification of potential direct impacts, both physical and through changes within the setting, of heritage assets; and
- Inform an assessment of the archaeological potential of the Development Site.

8.5 SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

8.5.1. The baseline research confirms that there are non-designated heritage assets within the Development Site Boundary and both designated and non-designated heritage assets within the 10km study area, which have the potential to be affected by the Proposed Development. As a result, there could be potential physical effects on heritage assets, caused by the construction of turbines, access tracks, compounds, and associated infrastructure. The operation of the turbines has the potential to have significant effects on heritage assets due to changes within their setting.

8.5.2. The ZTV for the current scoping layout (**Figure 8.2**) was utilised to determine the potential designated heritage assets that could be impacted by the Proposed Development through changes within their setting. As a result, it was determined that 85 listed buildings, 16 scheduled monuments, three Conservation Areas, and four Gardens and Designed Landscapes have the potential to be impacted through visible changes within the setting. The results of the scoping exercise of the designated heritage assets in relation to the ZTV are detailed in **Table 8-1**.

Table 8-1 Designated heritage asset scoping per ZTV

HES Reference No.	Description	Scoped In/Out	Justification
CA50	Waterside	In	Within the ZTV
CA88	Kirkmichael	In	Within the ZTV
CA92	Straiton	In	Within the ZTV
GDL00063	Blairquhan	In	Within the ZTV
GDL00111	Craigengillan	In	Within the ZTV
GDL00238	Kilkerran	In	Within the ZTV
GDL00342	Skeldon House	In	Within the ZTV
LB1090	Patna Bridge Main Street, Patna	In	Within the ZTV
LB1092	Waterside Engine House	In	Within the ZTV

HES Reference No.	Description	Scoped In/Out	Justification
LB1093	Waterside Chapel of Ease	In	Within the ZTV
LB1094	Waterside, Ardoon House	In	Within the ZTV
LB1101	Skeldon House.	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings.
LB1103	The Old Castle and Remains of Skeldon Castle	In	Within the ZTV
LB1114	Kilkerran House	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings.
LB11738	Blairquhan Estate, Blairquhan Lodge	In	Within the ZTV
LB11740	Cloncaird Castle, Stable Block and Boundary Wall, Steps and Ancillary Structures	In	Within the ZTV
LB13653	36 Patna Road Kirkmichael	In	Within the ZTV
LB13654	Kirkmichael House	In	Within the ZTV
LB13655	Cassillis Castle	Out	The view to the southeast, which is toward the Proposed Development, is one of the key views of the asset; however, the proposed turbines would not be visible from the asset as a result of intervening topography.
LB13656	40 Patna Road Kirkmichael	In	Within the ZTV
LB13657	62 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings.
LB13782	Cloncaird Castle, Bridge	In	Within the ZTV
LB13783	Guiltreehill	In	Within the ZTV
LB18793	Craigengillan	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.

HES Reference No.	Description	Scoped In/Out	Justification
LB18794	Stables, Craigengillan	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB19089	Parish Church and Graveyard	In	Within the ZTV
LB19090	Traboyack House, Former Manse	In	Within the ZTV
LB19091	Straiton, 6-42 (Even Nos) Main Street	In	Within the ZTV
LB19092	Straiton, 1-19 (Odd Nos) Main Street	In	Within the ZTV
LB19093	Straiton, Black Bull Hotel	In	Within the ZTV
LB19094	Blairquhan	In	Within the ZTV
LB19095	Balirquhan, Stables	In	Within the ZTV
LB19096	Blairquhan Estate, Icehouse	In	Within the ZTV
LB19097	Blairquhan, Kennels	In	Within the ZTV
LB19099	Blairquhan Estate, Walled Garden, Greenhouse and Terrace	In	Within the ZTV
LB19100	Blairquhan Estate, Milton Lodge with Gatepiers	In	Within the ZTV
LB19101	Blairquhan Estate, Girvan Lodge with Gatepiers and Gates	In	Within the ZTV
LB19102	Old Bridge of Blairquhan	In	Within the ZTV
LB19104	Colonel Hunter Blair's Monument	In	Within the ZTV
LB19106	Straiton, Dalmellington Road, K6 Telephone Kiosk	In	Within the ZTV
LB37709	High Street, Maybole Castle, Garden Walls and Gatepiers	In	Within the ZTV
LB37718	St John's Cottage	In	Within the ZTV

HES Reference No.	Description	Scoped In/Out	Justification
LB50618	Cloncaird Castle, Former Garage and Store	In	Within the ZTV
LB52623	The McCosh Hall (former Kirkmichael Working Men's Club), 17/19 Patna Road, including boundary walls and railings, Kirkmichael, Maybole	In	Within the ZTV
LB6595	Waterside, Waterside Institute	In	Within the ZTV
LB6596	Waterside, War Memorial	In	Within the ZTV
LB6623	Palace Bar, Waterside Village	In	Within the ZTV
LB7533	Fairholm 34 Patna Road Kirkmichael	In	Within the ZTV
LB7534	Kirkmichael Parish Church, (Church of Scotland)	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7535	Lych Gate and Graveyard	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7536	Bridge, Portcheck	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7537	Portcheck 3 Bolestyle Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7538	31 Patna Road Kirkmichael	In	Within the ZTV
LB7539	Rose Cottage 37 Patna Road Kirkmichael	In	Within the ZTV
LB7540	Duniquaich 39 Patna Road Kirkmichael	In	Within the ZTV
LB7541	43 Patna Road Kirkmichael	In	Within the ZTV

HES Reference No.	Description	Scoped In/Out	Justification
LB7542	45 Patna Road Kirkmichael	In	Within the ZTV
LB7543	Myrtle Cottage 47 Patna Road Kirkmichael	In	Within the ZTV
LB7544	Kirkmichael Arms, The White House and Adjoining Joiner's Shop	In	Within the ZTV
LB7545	The Manse 63 Patna Road Kirkmichael	In	Within the ZTV
LB7546	81 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7547	8 Patna Road Kirkmichael	In	Within the ZTV
LB7548	16 Patna Road Kirkmichael	In	Within the ZTV
LB7549	20 Patna Road Kirkmichael	In	Within the ZTV
LB7550	Adjoining 20 Patna Road Kirkmichael	In	Within the ZTV
LB7551	30 Patna Road (Mr Mcculloch, Plasterer) Kirkmichael	In	Within the ZTV
LB7552	32 Patna Road Kirkmichael	In	Within the ZTV
LB7553	Hillburn 76 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7554	Gatepiers, Kirkmichael House	In	Within the ZTV
LB7555	Blairquhan Bridge	In	Within the ZTV
LB7557	Cloncaird Castle	In	Within the ZTV
LB7558	Dovecote, Drumfad	In	Within the ZTV
LB7560	Tolverne 38 Patna Road Kirkmichael	In	Within the ZTV
LB7561	42 Patna Road Kirkmichael	In	Within the ZTV

HES Reference No.	Description	Scoped In/Out	Justification
LB7562	Kirkmichael, 2 Burnside Row, The Auld Posthouse	In	Within the ZTV
LB7563	Almar 50 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7564	58 Patna Road (Now Belongs to 50) Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7565	60 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7566	74 Patna Road Kirkmichael	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
LB7588	Baltersan Castle	In	Within the ZTV
SM13693	Bogton Loch airfield, 175m SSE of Buchan's Bridge, Dalmellington	In	Within the ZTV
SM2176	Kildoon, fort	In	Within the ZTV
SM2864	Alloway, motte	In	Within the ZTV
SM2865	Mote Knowe, dun, Monkwood	In	Within the ZTV
SM2886	Dowan's Hill, dun, Dunree	In	Within the ZTV
SM2932	Two henges, 175m NE and 410m WSW of Lindston House	In	Within the ZTV
SM3009	Dalmellington, motte	In	Within the ZTV
SM3357	Knockinculloch, enclosures on E slope of,600m NW of Glenalla	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.

HES Reference No.	Description	Scoped In/Out	Justification
SM3358	The Lady Chapel,640m NE of Kilkerran	In	Within the ZTV
SM4345	Waterside, Dalmellington Ironworks	In	Within the ZTV
SM4390	Dalnean Hill, farmstead and field system	In	Within the ZTV
SM4436	Highpark,enclosure 250m NW of	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
SM4866	Craigmuir Mote,dun	In	Within the ZTV
SM5200	Munteoch, settlement and field systems	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.
SM5268	Brigend Castle	Out	The view to the southeast, which is toward the Proposed Development, was likely to have been important to the function of the asset as a defensive installation; however, the proposed turbines would not be visible from the asset as a result of intervening topography.
SM5280	Martnaham Castle	Out	The view to the south, which is toward the Proposed Development, was likely to have been important to the function of the asset as a defensive installation; however, the proposed turbines would not be visible from the asset as a result of intervening topography.
SM5786	Wallace's Stone, cross-incised stone	In	Within the ZTV
SM5787	Lyonston,standing stone 250m ESE of	In	Within the ZTV
SM7491	Knockdon, enclosure 700m NE of	Out	The proposed turbines would not be visible from the asset. Additionally, the important aspects of the asset's setting are expected to be its immediate surroundings and connections with related assets.

HES Reference No.	Description	Scoped In/Out	Justification
SM7544	Waterside Bing, iron slag bing, Dalmellington Ironworks	In	Within the ZTV
SM7690	Laight Castle	Out	The view to the northwest, which is toward the Proposed Development, was likely to have been important to the function of the asset as a defensive installation; however, the proposed turbines would not be visible from the asset as a result of intervening topography and mature vegetation.
SM7863	Waterside, miners' villages & mineral railways N of	In	Within the ZTV
SM90212	Maybole Collegiate Church	In	Within the ZTV

8.5.3. The scoping exercise results detailed in **Table 8-1** were undertaken on the current ZTV (Figure 8-2) and will be revised in the event that the Proposed Development design is amended at EIA stage. Further assessment of the scoped-in designated heritage assets in **Table 8-1** will be undertaken through the EIA process and further heritage assets may be considered or scoped out as a result of changes to the Proposed Development as well as the setting assessment process.

8.5.4. There is potential for previously unrecorded archaeological remains to survive within the Proposed Development. These remains could be affected during excavation works at the construction phase, such as ground clearance for turbine bases, compounds, access roads and service trenches.

8.5.5. Given the potential for significant effects on heritage assets, cultural heritage is scoped into the EIA for the Proposed Development.

Table 8-2 Elements Scoped in or Out of Further Assessment

Element	Phase	Scoped In	Scoped Out	Justification
Non-designated heritage assets	*Construction and Operation*	✔		*Physical impacts caused by the construction of turbine bases, access tracks and temporary work areas, which may cause significant effects. Where relevant, impacts caused by changes in the setting of non-designated assets will also be considered, where setting contributes to the heritage assets cultural significance.*
Scheduled Monuments, Gardens and Designed landscapes, and Category A Listed Buildings within 10km, and Category B and C listed	*Operation*	✔		*Potential for impacts during the operation/maintenance phase caused by changes within the setting.*

Element	Phase	Scoped In	Scoped Out	Justification
buildings within 5km (see Table 8-1 for details)				
Registered Battlefields and World Heritage	*Construction and Operation*		✔	*There are no examples of these within the Proposed Development or the 10km Study Area.*
Temporary impacts on setting during construction, including on designated heritage assets within 10km	*Construction*		✔	*The temporary nature of construction impacts on changes within the setting of heritage assets and the distance between the Site and the historic assets would not be anticipated to lead to significant effects.*
Indirect impacts on heritage assets	*Construction and Operation*		✔	*Indirect, or secondary impacts, are not anticipated due to the Proposed Development.*
Cumulative impacts	*Construction, Operation and Demolition*	✔		*The Proposed Development has the potential to impact through setting impacts on the same receptors as other proposed developments within the area.*

8.6 PROPOSED ASSESSMENT METHODOLOGY

8.6.1. The assessment will be supported by a detailed and illustrated desk study to inform the cultural heritage baseline and will include consultation with HES and the West of Scotland Archaeology Service (WoSAS). The results of the desk study will be provided in an appendix to the EIA Chapter, supported by an updated cultural heritage gazetteer.

8.6.2. The baseline data will be informed by a review of all available archaeological records, historical documentary evidence, cartographic evidence, and photographic material. This will involve consultation of the following sources:

- Data on scheduled monuments, listed buildings, and Gardens and Designed Landscapes, obtained from HES;
- Data on other, non-designated heritage assets obtained from the National Record of the Historic Environment (NRHE) which is maintained by HES, and from the WoSAS Historic Environment Record (HER);
- Readily accessible primary and secondary historical sources for information relating to the area's historical past, including past land use from The National Library of Scotland and WoSAS HER;
- Pre- Ordnance Survey (OS) maps of the Development Site Boundary, available online from the National Library of Scotland (NLS);

- First and subsequent editions of the OS maps of the Development Site Boundary, examined via the NLS;
- LiDAR datasets of the general area through NLS;
- The solid and drift geology for the Development Site Boundary based on that recorded by the British Geological Survey/Geological Survey of Great Britain maps; and
- The results of a walkover survey of the construction areas of the Proposed Development and any heritage assets identified with potential for effects through changes within their setting.

Effects on the cultural heritage resource will be determined by identifying the heritage assets within the baseline that may be impacted by the Proposed Development during construction and operation, and identifying the value of those heritage assets, before assessing the magnitude of any potential impacts.

8.6.3. The determination of the value of heritage assets is based on statutory designation and/or professional judgement against the characteristics and criteria expressed in HES Designation Policy and Selection Guidance and the Historic Environment Policy for Scotland. The assessment of heritage asset value will adopt five ratings for value: very high, high, medium, low, and negligible.

Table 8-3 Criteria for Assessing the Value of Cultural Heritage Asset

Value	Example
Very High	World Heritage Sites (including nominated sites); and Assets of acknowledged international importance.
High	Scheduled Monuments (including proposed sites); Listed Buildings (Category A and B); Battlefields included within the inventory; Marine Protected Areas; Gardens and Designed Landscapes Conservation areas containing nationally important buildings; and Non-designated heritage assets of scheduled quality and importance, as specified within the local authority Historic Environment Records.
Medium	Listed Buildings (Category C); Conservation areas containing buildings that contribute significantly to its historic character; and Non-designated heritage assets of regional importance.
Low	Non-designated heritage assets of local importance; Heritage assets compromised by poor preservation and/or poor survival of contextual associations; and Buildings of modest quality in their fabric or historical association.
Negligible	Assets with very little or no surviving archaeological interest; Artefact find spots (where the artefacts are no longer in situ and where their provenance is uncertain); and Poorly preserved examples of particular types of minor historic landscape features (e.g. quarries and gravel pits, dilapidated sheepfolds, etc).

8.6.4. The assessment of magnitude of impact will adopt four ratings for impacts ranging from Major, where heritage assets are fully removed, to Negligible, where there are very minor changes to the heritage asset, or within its setting.

Table 8-4 Criteria for Assessing the Magnitude of Impact on Cultural Heritage Assets

Value	Adverse	Beneficial
Major	Changes to most or all key archaeological materials or key historic building elements such that the resource is totally altered; and Comprehensive changes to setting such as extreme visual effects, gross change of noise or change to sound quality, or fundamental changes to use or access.	Preservation of a heritage asset in situ where it would otherwise be completely or almost lost; and Changes that appreciably enhance the cultural significance of a heritage asset and how it is understood, appreciated and experienced.
Moderate	Changes to many key archaeological materials or key historic building elements, such that the resource is clearly modified; and Considerable changes to setting that affect the character of the asset such as visual change to many key aspects or views, noticeable differences in noise or sound quality, or considerable changes to use or access.	Changes to important elements of a heritage asset's fabric or setting, resulting in its cultural significance being preserved (where this would otherwise be lost) or restored; and Changes that improve the way in which the heritage asset is understood, appreciated and experienced.
Minor	Changes to key archaeological materials or key historic building elements, such that the asset is slightly altered; and Slight changes to setting such as slight visual changes to few key aspects or views, limited changes to noise levels or sound quality, or slight changes to use or access.	Changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed; and Changes that result in a slight improvement in the way a heritage asset is understood, appreciated and experienced.
Negligible	Very minor changes to archaeological materials, historic buildings elements, or setting; and Very minor changes to setting such as virtually unchanged visual effects, very slight changes in noise levels or sound quality, or very slight changes to use or access.	Very minor changes that result in elements of a heritage asset's fabric or setting detracting from its cultural significance being removed; and Very minor changes that result in a slight improvement in the way a heritage asset is understood, appreciated and experienced.
No Change	Changes to fabric or setting that leave significance unchanged.	

8.6.5. The effects will be assessed by taking account of the predicted magnitude of impact and the value of the receptor, that follows closely to the guidance provided within the Environmental Impact Assessment Handbook (2018[99]).

8.6.6. For the purpose of the EIA assessment, significance of effects of Moderate or greater are potentially significant in the context of the EIA Regulations and are highlighted in bold in **Table 8-5**. Where a significant effect is reported on scheduled monument from impact to setting, an assessment will be conducted to determine if the impact is significant in line with NPF4 policy regarding setting integrity.

Table 8-5 Significance of Effect

	Magnitude of Impact				
Cultural Value	**Major**	**Moderate**	**Minor**	**Negligible**	**No Change**
Very High	**Very Large**	**Very Large** or **Large**	**Large** or **Moderate**	Slight	Neutral
High	**Very Large** or **Large**	**Large** or **Moderate**	**Moderate** or Slight	Slight	Neutral
Medium	**Large** or **Moderate**	**Moderate**	Slight	Slight or Neutral	Neutral
Low	**Moderate** or Slight	Slight	Slight or Neutral	Slight or Neutral	Neutral
Negligible	Slight	Slight or Neutral	Slight or Neutral	Neutral	Neutral

8.6.7. For heritage assets that are impacted by the Proposed Development, mitigation measures will be recommended to remove, minimise, reduce, or offset the impacts, and a residual effect will be determined.

RELEVANT LEGISLATION AND GUIDANCE

8.6.8. The assessment of potential effects on heritage assets within the baseline will be carried out in accordance with the standards set by the Chartered Institute for Archaeologists (CIfA), and follow the methodology contained within the Environmental Impact Assessment Handbook (2018[100]) published by Scottish Natural Heritage (now NatureScot) and HES.

8.6.9. The following national legislation and guidance forms the background against which the assessment has been made:

[99] Scottish Natural Heritage and Historic Environment Scotland, 2018 Environmental Impact Assessment Handbook Available at https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

[100] Scottish Natural Heritage and Historic Environment Scotland, 2018 Environmental Impact Assessment Handbook Available at https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

- Electricity Act 1989 (as amended)[101]
- The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017[102]
- Scotland National Planning Framework 4 (2023[103]);
- Planning Advice Note (PAN) 2/2011: Planning and Archaeology (2011[104]);
- Town and Country Planning (Scotland) Act 1997[105];
- The Historic Environment Scotland Act 2014[106];
- Historic Environment Policy for Scotland (2019)[107];
- Ancient Monuments and Archaeological Areas Act 1979[108];
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997[109];
- Managing Change in the Historic Environment: Setting[110]; and
- Environmental Impact Assessment Handbook[111].

SURVEY METHODOLOGY

8.6.10. The walkover survey to be undertaken within the Development Site Boundary will be limited to turbine locations and the 50m micrositing allowance, access tracks, and other areas of construction that are accessible, in order to assess the known heritage assets and to assess the potential for previously unrecorded archaeological remains. Heritage assets where their setting contributes to their significance, and which are deemed to have their setting impacted as shown on the ZTV, will be visited only if they are publicly accessible.

MITIGATION

8.6.11. Mitigation measures would typically take the form of demarcation and avoidance of heritage assets within the Development Site, to remove the potential for direct physical impacts. Where avoidance

[101] UK Government. (1989). 'Section 36 Electricity Act 1989'. Available at: https://www.legislation.gov.uk/ukpga/1989/29/section/36
[102] UK Government. (2017). 'The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017'. Available at: https://www.legislation.gov.uk/ssi/2017/101/contents
[103] Scottish Government, 2023 Fourth National Planning Framework 2023. Available at: https://www.gov.scot/publications/national-planning-framework-4/pages/3/
[104] Scottish Government, 2011 Planning Advice Note (PAN) 2/011: Planning and Archaeology
[105] UK Government, 2017 The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017
[106] Scottish Government, 2014 The Historic Environment Scotland Act 2014
[107] Scottish Government, 2019 Historic Environment Policy for Scotland (HEPS)
[108] UK Government, 1979 The Ancient Monuments and Archaeological Areas Act 1979
[109] UK Government, 1997 Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997
[110] Historic Environment Scotland, 2020, *Managing Change in the Historic Environment: Setting*. Available at https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationid=80b7c0a0-584b-4625-b1fd-a60b009c2549
[111] Scottish Natural Heritage and Historic Environment Scotand, 2018 Environmental Impact Assessment Handbook Available at https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0

cannot be achieved then mitigation would take the form of archaeological recording through survey and/or excavations, to preserve the archaeological remains by record. Any archaeological investigations recommended would require the approval of the WoSAS.

8.6.12. Mitigation to screen the Proposed Development where there are impacts to the setting of heritage assets, would not be feasible, although design will be considered carefully to minimise or reduce impacts where possible.

9 HYDROLOGY, HYDROGEOLOGY AND PEAT

9.1 INTRODUCTION

9.1.1. This Chapter of the Scoping Report provides a brief overview of the Hydrology, Hydrogeology, Geology and Soils baseline conditions, the potential effects associated with construction, operation and decommissioning of the Proposed Development and the proposed scope of assessment methodology to be considered in the EIA Report.

9.2 CONSULTATION

9.2.1. No direct consultation specific to this report was undertaken at this stage. However, data has been gathered as part of a desk study to ensure the information is accurate and current as set out below. Future consultation will be undertaken for hydrology, hydrogeology, geology and soils. The following consultees will be approached for information to inform the EIA:

- Scottish Environment Protection Agency (SEPA) (regarding licensed abstractions and engineering activities in the water environment);
- Scottish Water (regarding public water supplies); and
- East Ayrshire Council (EAC) and South Ayrshire Council (SAC) (regarding Private Water Supplies (PWS)).

9.3 BASELINE CONDITIONS

DATA SOURCES

9.3.1. The appraisal of existing (baseline) conditions for the purposes of this Scoping Section has involved the collection and interpretation of a wide range of data and information from published material. The data collected and other sources of information are listed in **Table 9-1**.

Table 9-1: Sources of Desk Study Information for Geology, Hydrology and Hydrogeology Consultation undertaken to date

Source	Data
Scottish Environment Protection Agency (2025). [online] Available at: https://informatics.sepa.org.uk/WaterClassificationHub/ [Accessed: May 2025] OS Map data at 1:10,000, 1:25,000 and 1:50,000 scales	Hydrology
NatureScot (2025). [online] Available at: https://sitelink.nature.scot/map [Accessed: May 2025]	Statutory Designated Sites
Link to all PWS data is: Private Water Supply Sources - Scotland - data.gov.uk Scottish Government (2014) Drinking Water Protected Areas – Scotland River Basin District: Maps [Online] Available at: https://www.gov.scot/publications/drinking-water-protected-areas-scotland-river-basin-district-maps/ [Accessed May 2025)	Private and Public Water Supplies
British Geological Society (2025). [online] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed: May 2025]	Geology, Peat and Soils

Source	Data
James Hutton Institute 2025). National Soil Map of Scotland 1:250,000 scale [online] Available at: https://www.hutton.ac.uk/soil-maps/ [Accessed: May 2025] NatureScot (2025). Carbon and Peatland (interactive web map) [online] Available at: https://map.environment.gov.scot/Soil_maps/?layer=10 [Accessed: May 2025]	
BGS (2025). Hydrogeological Map of Scotland 1:625,000 scale (interactive web map) [online] Available at: https://www.bgs.ac.uk/datasets/bgs-geology-50k-digmapgb/ [Accessed: May 2025]	Hydrogeology
Scottish Environmental Protection Agency (2023). [online] Available at: https://map.sepa.org.uk/floodmap/map.htm [Accessed May 2025]	Flood Risk
Scottish Environmental Protection Agency (2024). [online] Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fi2cnr03k%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK [Accessed: May 2025]	Ground Water Dependant Terrestrial Ecosystems (GWDTE)

SUMMARY OF BASELINE CONDITIONS

Desk Study

Study Area

9.3.2. Data for this Scoping section has been gathered with respect to a defined Study Area. The Study Area is focussed on the Development Site and a 1km radius beyond that.

Hydrology

9.3.3. The Development Site is located in East Ayrshire and South Ayrshire Council Areas, approximately 1.5km south-west from the village of Patna, in the south-west of Scotland. The Development Site is within the Scotland River Basin district and the catchments of the River Doon and Water of Girvan. The eastern part of the Development Site is intersected by tributaries of the River Doon which flows in a north-westerly direction before discharging in the Firth of Clyde estuary. The western part of the Development Site intersects tributaries of the Water of Girvan catchment which flows in a south-westerly direction before discharging to the Firth of Cyle estuary.

9.3.4. The following Water Framework Directive (WFD) classified watercourses were identified within the Development Site and its Study Area. The northern edge of the Development Site marginally intersects the classified water body, Dyrock Burn (ID: 10462), which has an overall WFD status of 'Moderate Ecological Potential' (2023)[112]. The River Doon (ID: 10924) is situated within the eastern

[112] Scottish Environment Protection Agency (2025). [online] Available at: https://informatics.sepa.org.uk/WaterClassificationHub/ [Accessed: May 2025]

part of the Study Area, and approximately 350m east of the Development Site, and has an overall WFD status of 'Good Ecological Potential' (2023)[112].

9.3.5. Named tributaries of River Doon (Meikleholm Burn) and Water of Girvan (Dyrock Burn, Dallowie Burn, Backglen Burn, Rodgerston Burn, Wee Burn, Muirsmill Burn, and Spallander Burn) are present within the Development Site. The Development Site also contains many smaller unnamed tributaries. It is likely some of these will be crossed during construction of the Proposed Development.

9.3.6. The Development Site also closely borders Loch Spallander Reservoir, that feeds into Spallander Burn, and eventually, Dyrock Burn.

Statutory Designated Sites

A review of NatureScot data[113] (e.g. Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Geological Conservation Review (GCR) Sites or Marine Protected Areas) indicates there are no water dependent conservation sites situated within 1km of the Development Site. The nearest is the Dalmellington Moss (raised bog) SSSI and GCR which is approximately 5km from the Development Site and is hydrologically separated from the Proposed Development by the River Doon.

Private Water Supplies (PWS) and SEPA Abstractions

9.3.7. The Development Site is partly situated within EAC and SAC administrative areas. EAC Private Water Supplies (PWS) data indicates that there are two PWS to the north within the Development Site: Dalvennan Farm (supply type: B) and Carclout Farm (supply type: B). Within the Development Site, there is one Controlled Activity Regulation (CAR) Registered SEPA abstraction, which pertains to 5 Jellieston Cottage – Ayr Road (CAR/R/1188403). The purpose of this abstraction is unknown. EAC and SAC PWS data indicates that there are no PWS elsewhere within the Development Site or Study Area.

Public Water Supplies

9.3.8. The Development Site and its associated Study Area are not indicated to be situated within any surface water Drinking Water Protection Areas (DWPAs). Spallander Reservoir which is located adjacent to the southern boundary of the Development Site is identified as a Scottish Water drinking water supply reservoir.

Geology, Peat and Soils

9.3.9. British Geological Survey (BGS) Geoindex mapping[114], indicates that the superficial deposits within the Development Site predominantly comprise of Pleistocene till. Bedrock geology across the Development Site is varied and includes the Clyde and Kinnesswood sandstone formations,

[113] NatureScot Sitelink (2025). Available at: Available at: https://sitelink.nature.scot/home. Accessed: July 2025.
[114] British Geological Society (2025). [online] Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore/ [Accessed: May 2025].

Ballagan mudstone, siltstone, limestone and sandstone formation, Clackmannan Group limestone formation, as well as carboniferous and early Permian volcanic plugs.

9.3.10. According to the James Hutton Institute National Soil Map of Scotland[115], the Development Site is predominantly underlain by Peaty Gleys, with Brown Forest soils underlying its northern extent. Superficial deposits consist mainly of Till, with some areas to the southeast of the Development Site consisting of peaty gleys with dystrophic blanket peat[115].

9.3.11. The NatureScot Carbon and Peatland map[116] indicates there are no areas of 'Nationally important carbon-rich soils, deep peat and priority peatland habitat areas likely to be of high conservation value' within the Development Site. The Development Site is underlain predominantly by Class 4 (unlikely to be associated with peatland and carbon rich soils), with some areas of Class 5 (peat soils with a depth greater than 50cm that are not currently classified as peatland habitats and are considered carbon-rich and deep peat) present within the Development Site.

9.3.12. Initial Phase 1 peat surveys have been conducted by the Applicant for the Proposed Development. The results indicated that the majority of the Development Site (approximately 60%) had a peat depth of <0.5mand only a minority of the Development Site (approximately 7%) has a peat depth between 1 – 2m located in discrete pockets. The remainder of the Development Site (approximately 33%) has a peat depth between 0.5m – 1m.

Flood Risk

9.3.13. SEPA's indicative flood risk mapping[117] indicates there are very limited, sporadic areas of fluvial and surface water flood risk within the Development Site. Fluvial flood risk is only present within isolated areas along part of the Dyrock Burn in the southwestern corners of the Development Site. Surface water flood risk is only indicated within small pockets across the Development Site where there are topographic hollows or parts of tributary river channels. The nearest properties are Cairnhill Cottage and Carclout which are respectively situated to the west and centrally adjacent to the Development Site however there are no existing sources of flood risk which are linked with the Development Site.

Hydrogeology

9.3.14. Based on the online BGS hydrogeology map (1:50,000 scale)[118], the Development Site is mainly underlain by the Inverclyde Group (Class: 2B) moderately productive aquifer, consisting of a multi-layered aquifer with fracture flow yielding up to 10L/s. A small central proportion of the Development Site, around Chapel Hill, is also located on an unnamed igneous intrusion (Class: 2C) low

[115] James Hutton Institute (2025). [online] Available at: https://www.hutton.ac.uk/soil-maps/ [Accessed: May 2025].
[116] NatureScot (2025). [online] Available at: https://map.environment.gov.scot/Soil_maps/?layer=10 [Accessed: May 2025]
[117] Scottish Environmental Protection Agency (2023). [online] Available at: https://map.sepa.org.uk/floodmap/map.htm [Accessed May 2025].
[118] BGS (2025). [online] Available at: https://www.bgs.ac.uk/datasets/bgs-geology-50k-digmapgb/ [Accessed: May 2025]

productivity aquifer, where small amounts of groundwater in near surface weathered zone and secondary fractures, rare springs.

Groundwater Dependent Terrestrial Ecosystems (GWDTE)

9.3.15. SEPA's guidance on assessing the impacts of developments on GWDTE[119] requires assessment of potential GWDTE located within 250m of excavations greater than 1m and within 100m of excavations less than 1m. Therefore, the 100m and 250m buffers will be respectively applied around where such works are proposed on-site.

9.3.16. Phase 1 and National Vegetation Classification habitat surveys have been carried out for the Development Site by the Applicant. The results indicate that the majority of the Development Site does not contain potential GWDTE communities and that there are only limited areas where NVC communities are classed as being predominantly potential GWDTE. These are largely contained along the upper reaches of the tributary watercourses of the River Doon (Meikleholm Burn) and Water of Girvan (Dallowie Burn, Rodgerston Burn and Spallander Burn) in the east and west of the Development Site and to the north in the vicinity of existing track and forested areas.

9.4 SCOPE OF ASSESSMENT

Potential Receptors

9.4.1. From consideration of the baseline and the Proposed Development, receptors that could be potentially affected and that therefore need to be taken forward for further consideration in the EIA comprise the following:

- Watercourses and associated WFD surface water bodies namely the River Doon and Water of Girvan tributary watercourses, including the Dyrock Burn;
- Nearby abstractions, springs and water resource use including PWSs, SEPA CAR abstraction and the Loch Spallander public water supply;
- Groundwater within bedrock aquifers including the Inverclyde Group and Unnamed Igneous Intrusion; and
- Water conditions supporting GWDTE.

Likely Significant Effects

9.4.2. Taking account of the findings of the work undertaken to date, whilst still adopting a precautionary approach at this preliminary stage, potential effects associated with the construction, operation and decommissioning of the Proposed Development include:

- Pollution of public/private drinking water supplies caused by sedimentation of watercourses from excavated/stockpiled material (including tree felling) during wind farm construction;

[119] Scottish Environmental Protection Agency (2024). [online] Available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fi2cnr03k%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK [Accessed: May 2025]

- Pollution of surface water (including tributaries of the River Doon (Meikleholm Burn) and Water of Girvan (Dyrock Burn, Dallowie Burn, Backglen Burn, Rodgerston Burn, Wee Burn, Muirsmill Burn, Spallander Burn) and groundwater, including drinking water supplies, through operation of machinery (e.g. spillage of fuels, oils etc);
- Modifications to natural drainage patterns, changes to runoff rates and volumes during construction and operation of the wind farm as a result of increased areas of temporary and permanent hardstanding and watercourse crossing structures on access routes (including any shared access routes);
- Modifications to groundwater conditions, including levels and flows, which may cause alteration to receptors such as groundwater dependent terrestrial ecosystems (GWDTE) or groundwater-fed private water supplies;
- Reductions in natural flows arising from any temporary or permanent water abstractions; and
- Peat/ peaty soil losses due to excavation of material.

Mitigation

9.4.3. The review and analysis of data gathered during the EIA process will ensure that the Proposed Development and associated construction access and requirements are carefully sited to ensure potential effects on the water environment are minimised where practicable through design. This would include the sharing of access routes with a neighbouring site (e.g. Sclenteuch wind farm which is currently in planning includes a proposal for a bridge crossing of the River Doon which the Proposed Development is intending to make use of, subject to its consent). The majority of the assessed impacts are likely to be mitigated through the sensitive layout and design of the various elements of the proposed infrastructure, referred to as embedded mitigation. Environmental constraints relating to soil/peat, geology and water features will be provided to the design team and will enable an iterative design process to optimise the final layout.

9.4.4. Specific mitigation measures will be identified to reduce potential impact from construction, operation and decommissioning phases of the development, with good practice principles including measures to both limit the likelihood of an incident occurring and also reduce the magnitude of any incident which does occur. These will be mitigated via measures including:

- Fuel and chemical pollution prevention, including good practice storage and refuelling techniques;
- Erosion control and sediment management techniques;
- Sustainable drainage techniques;
- Appropriately designed, located and sized water-crossing structures; and
- Site supervision and staff training.

Issues Scoped Out

9.4.5. It is considered that good design and construction good practice, including pollution prevention mitigation will reduce the potential for pollutants or sediment to be released into water bodies as a result of the Proposed Development. As a result, operational impacts and the following construction impacts have been scoped out:

- Impacts to statutory designated sites on the basis that there are none present within 1 km of the Proposed Development.
- Impacts to bedrock and superficial geology as they have not been identified as sensitive receptors and significant effects are therefore not anticipated.

- Flood risk, given the small scale of the Development Site relative to downgradient surface water catchments and the paucity of downstream property and infrastructure.

Proposed Scope of Assessment

Desk Study

9.4.6. A desk study and data search will be undertaken to identify the baseline environment, including information on solid and drift geology, surface water and groundwater, and flood risk.

9.4.7. The following tasks will be undertaken in the completion of the assessment:

- Review of data obtained from relevant stakeholders, including SEPA, Scottish Water, EAC and SAC;
- Desk-based study to obtain baseline and historical data;
- Review of GIS data;
- Identification of the potential impacts of the Proposed Development and assessment of their significance based on the magnitude of the impact and the sensitivity of receptors;
- Identification of options for the mitigation of potential effects in accordance with applicable legislation, policies and guidance; and
- Identification of residual effects.

Field Surveys

9.4.8. The field survey will take the form of a reconnaissance level walkover with three objectives: ground-truthing of desk study data; identification of topographical and other features not shown on mapping; and placing the Development Site and surrounding landscape in context, including determining the general hydrological conditions of the Development Site. This will include utilisation of peat depth and GWDTE survey information for the Development Site.

9.4.9. Data collected during the field survey will provide an updated profile of the characteristics of the area, highlighting sensitive areas and constraints to the development. This will aid in the layout design and assessment of potential impacts and will also provide a range of figures to support the EIA Report.

Assessment of Effects

9.4.10. The significance of the impacts upon the baseline environment will be defined as a function of the sensitivity of receptors and the magnitude of change. The EIA will be undertaken in accordance with the EIA Regulations and the significance of effects will be determined using a combination of magnitude of effect, sensitivity of receptor and probability.

9.4.11. The assessment will also include the impacts of any works required along the access route upon the baseline environment. Particular attention will be paid to the potential hydrological and water quality impacts upon any water supplies within the vicinity of the Proposed Development and any aquatic ecological features identified within Chapter 5: Terrestrial Ecology (including forestry). The potential water quality impacts through enhanced erosion of disturbed soil will also be considered.

9.4.12. A private water supply screening assessment will be undertaken to identify supplies at risk of an adverse effect from the Proposed Development. Consultation with supply owners and site visits will

verify information collated, where required. Detailed private water supply risk assessment will be undertaken as identified as required, in accordance with SEPA guidance[120].

[120] Scottish Environment Protection Agency (2014). [online] Available at: https://www.sepa.org.uk/media/143868/lupsgu31_planning_guidance_on_groundwater_abstractions.pdf [Accessed: May 2025]

10 TRAFFIC, TRANSPORT AND ACCESS

10.1 INTRODUCTION

10.1.1. This chapter considers the scope of work required to assess the potential significant effects associated with Traffic, Transport and Access during the construction phase of the Proposed Development.

10.1.2. The chapter should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Site Context and Proposed Development** and with respect to relevant parts of other technical chapters, such as:

- Biodiversity – **Chapter 5: Terrestrial Ecology**;
- Landscape and Visual - **Chapter 7 Landscape and Visual**;
- Cultural Heritage - **Chapter 8: Cultural Heritage**; and
- Noise and Vibration- **Chapter 11: Noise and Vibration**.

10.1.3. Local air quality and dust / dirt impacts will not be assessed in detail, however actions to ensure appropriate management of these impacts are likely to be included in a Construction Environmental Management Plan (CEMP).

10.1.4. The Traffic, Transport and Access EIA Report Chapter will base the method of assessment on the IEMA Guidelines and will also take into account national policies referred to in **Chapter 3: Legislation and Planning Policy**.

10.1.5. The EIA chapter will also be undertaken in accordance with:

- Scottish Government – Planning Advice Note (PAN) 75 – Planning for Transport[121];
- Transport Scotland – Transport Assessment Guidance[122]; and
- National Highways et. al. (various dates). Design Manual for Roads and Bridges, Volume 15, Section 1, Part 1 The Nesa Manual (DMRB)[123].

[121] Scottish Government, (2005) *Planning Advice Note (PAN) 75 – Planning for Transport.* (online). Available at: https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/ [Accessed May 2025].
[122] Transport Scotland, (2012). *Transport Assessment Guidance (July 2012).* (online). Available at: https://www.transport.gov.scot/media/4589/planning_reform_-_dpmtag_-_development_management__dpmtag_ref__17__-_transport_assessment_guidance_final_-_june_2012.pdf. [Accessed May 2025].
[123] National Highways et al., (various dates). *Design Manual for Roads and Bridges, Volume 15, Section 1, Part 1: The NESA Manual (DMRB).* (online). Available at: https://www.standardsforhighways.co.uk/dmrb/. [Accessed May 2025].

10.2 CONSULTATION

10.2.1. No consultation pertaining to Traffic and Transport has been undertaken to date. The following local authorities and statutory bodies will be consulted to provide opinion on the scope and method of assessment proposed for the Traffic and Transport chapter:

- East Ayrshire Council (EAC);
- South Ayrshire Council (SAC); and
- Transport Scotland.

10.2.2. The following additional stakeholders will be consulted as a minimum, with regard to the suitability of the proposed access routes for both general construction traffic and abnormal load vehicles:

- Police Scotland; and,
- Network Rail.

10.3 BASELINE CONDITIONS

10.3.1. The most suitable Port of Entry for the delivery of the largest turbine components is considered to be Glasgow King George V Docks (Glasgow KGV). This Port of Entry has been used by a number of operational wind farms located in South-west Scotland.

STUDY AREA

10.3.2. The Study Area for the purposes of the Traffic and Transport chapter will include all the public roads, (including trunk roads) being utilised by construction traffic to access the Development Site in relation to construction activities.

10.3.3. There are currently four potential access options being considered for construction access to the site, including one preferred option for all construction traffic (including both Heavy Goods Vehicles (HGVs) and Abnormal Indivisible Load Vehicles (AILVs)) from the A77(T). The access route options will be refined as the Proposed Development progresses. The options are as follows:

- **Option 1:** Turn right off the A713 onto Main Street, crossing the River Doon using the existing bridge. From here the route would continue along Main Street, which becomes Fullerton Place, to an existing access track which runs west into the Development Site.
- **Option 2:** Turning west off the A713 onto a new access track to the south of Kiers Farm, crossing the river by means of a new bridge structure.
- **Option 3 (preferred):** Travel south on the A713 to the southern edge of Patna and then turn south-west at a new access junction for the proposed Sclenteuch Wind Farm.
- **Option 4:** Leave the A77 (T) at Hogg's corner onto the B7045 to Kirkmichael and on to the C11 (Kirkmichael to Patna Road) to the Development Site.

10.3.4. It is proposed that the Study Area will align with the preferred access option. Baseline data will be gathered for the preferred option.

BASELINE DATA

10.3.5. It is proposed to gather data from the Department for Transport (DfT), Transport Scotland (TS) Traffic Database (TS Data) or from Automatic Traffic Counts (ATC), unless data from SAC or EAC is made available.

10.3.6. At locations on the agreed study network where traffic data is unavailable, it is proposed that independent traffic surveys will be obtained through ATC installed for a period of one week.

10.3.7. As previously stated, Option 3 is the preferred option, it is proposed to use the following DfT counts to inform assessment:

- DfT Count ID: 74362, Manual Count 2022; and
- DfT Count ID: 10885, Manual Count 2022.

10.3.8. It is anticipated that flows will be factored to the current baseline year using low growth factors from the National Road Traffic Forecasts 1997 (NRTF97).

SENSITIVE RECEPTORS

10.3.9. The following receptors, including groups and special interests, will be assessed for the identified study area, according to the of Institute of Environmental Management and Assessment (IEMA) Guidelines for the Environmental Assessment of Traffic and Movement[124], to determine the sensitivity of receptors, which are as follows:

- Non-motorised users;
- Core path users;
- Motorists and freight vehicles;
- Public transport; and
- Emergency services.

10.3.10. The receptors above can broadly be grouped as the following affected parties; 'Users of Roads', and 'Users / Residents of Locations'. The following list identifies special interests that should be considered when defining sensitive receptor geographic locations, and the sensitive locations will inform the assessment of effect significance when the development traffic is assigned to the network:

- People at home;
- People at work;
- Sensitive people 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);
- Recreational and shopping areas;
- Recreation areas including ecological / nature conservation sites;

[124] IEMA (2023) *Institute of Environmental Management and Assessment (IEMA) Guidelines: Environment Assessment of Traffic and Movement.* (online). Available at: https://www.iema.net/resources/blog/2023/07/12/new-iema-guidance-environmental-assessment-of-traffic-and-movement [Accessed May 2025].

- Tourist / visitor attractions;
- Collision clusters and routes with road safety concerns; and
- Junctions and road links at (or over) capacity.

DATA SOURCES

Desk Study

10.3.11. The sources of information that will be used for the Traffic, Transport and Access assessment identified above are listed below in **Table 10.1**.

Table 10.1: Transport Data Sources

Organisation	Source	Data
Traffic Data Collection Ltd	Traffic Survey	Automatic Traffic Count Survey
Department for Transport	Traffic Data	Annual Average Daily Flows
Transport Scotland	Traffic Data	Annual Average Daily Flows
Google	Google Traffic	Online mapping, Desk Study
Google	Google Street View	Desk Study
Microsoft Bing	Bing OS Maps	Ordnance Survey (OS) Mapping
Agilysis	Crashmap	Personal Injury Accidents (PIAs)

10.3.12. Further data will be collected as required.

SUMMARY OF BASELINE CONDITIONS

10.3.13. To establish baseline traffic flows, data will be obtained from the DfT or from SAC, and EAC for the most recently available manual count period. It is anticipated that flows will be factored to the current baseline year using low NRTF97 growth factor.

10.3.14. Annual Average Daily Flow (AADF) information will be obtained for the study network to confirm the traffic levels including Light Goods Vehicles (LGVs) and HGVs currently using the access route. These figures will be combined with the forecast levels of construction traffic, in order to identify the impact of the Proposed Development on the study network.

10.3.15. At locations on the agreed study network where traffic data is unavailable, it is proposed that independent traffic surveys will be obtained through ATC installed for a period of one week and capture 24-hour traffic speed and volumetric data. This traffic flow data will inform the assessment of the impact of construction traffic on the operation of the study area road network.

10.3.16. The sensitivity of receptors will be defined in accordance with the IEMA Guidelines.

10.4 SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

10.4.1. The following transport-related environmental effects will be considered in the assessment:

- Severance: the separation of people from places and other people or impede pedestrian access to essential facilities.
- Driver delay: traffic delays to non-development traffic.
- Non-motorised user amenity: the effect on the relative pleasantness of a pedestrian journey as a result of changes in traffic flow, traffic composition and pavement width/separation from traffic.
- Non-motorised user delay: the ability of people to cross roads as a result of changes in traffic volume, composition and speed, the level of pedestrian activity, visibility and general physical conditions of the Proposed Development.
- Fear and intimidation: these may be experienced by people as a result of an increase in traffic volume and its proximity or the lack of protection caused by such factors such as narrow pavement widths.
- Accident and safety: the risk of accidents occurring where the Proposed Development, including during its construction, are expected to produce a change in the character of traffic.
- Large and hazardous loads: the increased risk of effect due to movement of transportation of hazardous or AIL

10.4.2. The potential sources of impact have been divided into two development phases: construction and operation.

Construction Phase

10.4.3. The construction phase of Proposed Development is likely to create the greatest environmental impact. This is due to the number of HGVs and LGVs required to transport the materials to the Development Site, and the requirement for AILs for turbine components which may cause delay. As such, there would be traffic impacts associated with the properties and roads along the delivery route.

10.4.4. As baseline traffic flows are currently unknown, this element is expected to generate a potentially significant, temporary effect in a local area, which will be managed through the implementation of a CTMP.

Operational Phase

10.4.5. Once the Proposed Development is operational, the development would have negligible traffic/ transport related impacts caused by intermittent maintenance vehicles travelling to the Development Site.

Decommissioning Phase

10.4.6. It is considered that this phase of the Proposed Development will produce traffic flows that are likely to be similar to or less than at construction and therefore effects will be similar.

10.4.7. The significance of the effects on receptors will be evaluated against the IEA guidance and where possible, in line with the criteria used for the other environmental topic areas covered in the EIA Report. These criteria are subjective but consider the number of receptors affected, their sensitivity and the length of the period for which they would be impacted.

ISSUES SCOPED OUT

10.4.8. The following topic areas have been scoped out of detailed assessment:

- As construction vehicles travel away from the Proposed Development, they will disperse across the wider road network, thus diluting any potential effects. It is therefore expected that the effects relating to Traffic and Transport are unlikely to be significant beyond the identified Study Area (identified within **paragraph 10.3.2**), and as such no other routes are proposed to be included.
- The traffic impacts associated with the operational phase are anticipated to be of low volume as they are limited to movements associated with maintenance activities and low numbers of staff commuting to the Development Site. Therefore, further assessment of the traffic impacts of the Proposed Development during the operational phase is not considered necessary.
- The effect of construction traffic on junction capacity along the road network with respect to traffic flows both in isolation and cumulatively. As this is highly unlikely to be significant in terms of congestion, it is considered that detailed junction capacity assessments will not require assessment is considered not necessary.
- The effects of hazardous loads. The form of the Proposed Development is not anticipated to generate hazardous movements in association with its construction or operation and this impact has therefore not been considered as part of this assessment.

11 NOISE AND VIBRATION

11.1 INTRODUCTION

11.1.1. This chapter considers the potential noise and vibration effects that could arise from the Proposed Development during the construction, operational and de-commissioning phases.

11.1.2. Where there is the potential for an effect to be significant, it has been 'scoped-in' and the proposed assessment methodology is presented. Where an effect would be not significant, it has been 'scoped-out' of the assessment with justification provided.

11.1.3. This chapter (and its associated figures) should be read in conjunction with the description of the Proposed Development presented in **Chapter 2: Site Context and Proposed Development.**

11.2 CONSULTATION

11.2.1. No consultation has taken place to date. This chapter of the Scoping Report will form the basis for initial consultation with the Environmental Health Departments of South Ayrshire Council (SAC) and East Ayrshire Council (EAC) in respect of noise and vibration.

11.2.2. During consultation, agreement will be sought from SAC and EAC on the content of this Chapter, including those elements that have been scoped-in and scoped-out, the assessment methodologies to be followed, the proposed approach to the cumulative operational noise assessment, and the proposed baseline noise survey.

11.3 STUDY AREA

CONSTRUCTION

11.3.1. For construction noise and vibration (including construction traffic), the adopted Study Area will be 300m around construction activities with the potential to generate noise and/or vibration, and 300m from the construction access routes. Beyond that distance, construction noise and vibration levels are expected to be sufficiently low that significant effects would not arise. The construction Study Area will be applied to construction activities on the site and across the immediate wider area, e.g. at locations where road or junction upgrade works would be undertaken (if required).

11.3.2. Where blasting may be required at proposed borrow pits, the adopted Study Area for blast induced vibration and air overpressures will be 1km from that works. Beyond that distance, blast induced vibration and air overpressures are expected to be sufficiently low that significant effects would not arise.

OPERATION

11.3.3. For operational noise, the Study Area will be 5km around the proposed wind turbines. This is sufficient to encompass the Proposed Development and other wind farm / wind turbine developments which have the potential to give rise to a cumulative effect with the Proposed Development if operated simultaneously. The potential impacts from the Proposed Development operating in isolation are expected to be contained within a much smaller area.

11.3.4. The assessment will extend to include a representative sample of receptors in proximity to both the Proposed Development and the other identified wind farm / wind turbine developments such that all

locations of potential cumulative effects are fully accounted for. It is expected that these receptor locations will fall well within the adopted 5km study area.

11.3.5. The cumulative wind farm / wind turbine developments identified to fall within the 5km Study Area, and are therefore scoped-in for consideration, are defined in the Cumulative Developments section below, and are shown on **Figure 11.1.**

11.3.6. Once further details of the identified cumulative developments are established and reviewed, it may be possible to reduce the geographic extent of the cumulative noise assessment.

Initial Noise Modelling

11.3.7. To further support the adopted 5km study area, initial noise modelling work has been undertaken for the Proposed Development operating in isolation. The Energy Technology Support Units R-97 document: *The assessment and rating of noise from wind farms*[125] (ETSU-R-97) presents a simplified assessment method for operational turbine noise. The simplified method states that if an assessment criterion of 35dB $L_{A90,T}$ can be met at a wind speed of 10m/s, then this offers sufficient protection of amenity without need to undertake more detailed assessment drawing on the results of baseline noise surveys. The 35dB $L_{A90,T}$ limit applies to cumulative turbine noise.

11.3.8. With respect to cumulative noise, the Institute of Acoustics': *A good practice guidance to the application of ETSU-R-97 for the assessment and rating of wind turbine noise*[126] (IoA GPG) states that "*If the proposed wind farm produces noise levels within 10 dB of any existing wind farm/s at the same receptor location, then a cumulative noise impact assessment is necessary*". On this basis, if noise from a Proposed Development is 10dB or more below that of other developments (or the applicable assessment criterion), then its contribution is not sufficient to cause a significant cumulative effect, i.e. it does not have an acoustically relevant contribution to the total level.

11.3.9. The assessment of potential cumulative effects can therefore be limited to the region within which there is the potential for noise from the Proposed Development to be above 25dB $L_{A90,T}$. Outside this area, levels from the development would be sufficiently low that they would not contribute to any cumulative effect. Initial noise modelling has therefore been undertaken to identify that area.

11.3.10. The model has been prepared in the SoundPLAN noise modelling suite. The noise model was set to use the ISO 9613-2[127] prediction method, which includes prescribed formulae for accounting for the effects of geometric divergence, ground absorption and atmospheric absorption. This prediction method is for the calculation of sound pressure levels at a 'downwind' location and the research findings presented in *Development of a windfarm noise prediction model* (Bass et al 1998)[128] identified that this model tends to over-predict wind farm noise levels, whilst also being the best

[125] The Energy Technology Support Units: R-97 document. The assessment and rating of noise from windfarms. 1996.
[126] Institute of Acoustics. A Good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise. 2013. (also including its Supplementary guidance notes)
[127] ISO 9613-2: 1996: Acoustics — Attenuation of sound during propagation outdoors
[128] Bass et al (1998). Development of a windfarm noise prediction model

available. This noise prediction model is referenced as appropriate for use within the IoA GPG[126], but with the following recommendations, which have been applied:

- Topographic screening effects of the terrain should be limited to a reduction of no more than 2 dB (unless a higher value can be fully justified), and only applied where there is no line of sight between the highest point on the wind turbine rotor and the receiver location; and
- A correction of +3 dB (or + 1.5 dB if using G=0.0) should be added where the propagation of noise from the wind turbine to a receiver is across a valley (as defined in the IoA GPG[126]).

11.3.11. Whilst the IoA GPG[126] presents methodologies for the determination of additional corrections to account for propagation directivity, such corrections have not been included within the model outputs. The predicted operational noise levels can, therefore, be considered worst case in this regard, assuming downwind propagation from all wind turbines in all directions.

11.3.12. The following approach has been adopted in the initial noise modelling:

- The model was geographically referenced to the Ordnance Survey National Grid.
- The noise model has been set to apply the ISO 9613-2[127] prediction method with the following settings:
  - ground absorption: G=0.5;
  - receptor height: 4 m;
  - a correction from $L_{Aeq,T}$ to $L_{A90,T}$ of -2dB was applied;
  - temperature: 10°C; and
  - humidity: 70%.
- Each of the nine wind turbines forming part of the Proposed Development was incorporated as an acoustic point source geographically located at the X-Y coordinates detailed in Table 2-1.
- The height of each turbine point source was set at hub height for the candidate turbine type (see wind turbines sound power level data below) i.e. 119m above the ground height.
- Scotlands freely available LiDAR Digital Terrina Model (DTM) phase 4 data, processed to 5m ground contours, was used to set ground heights within the model. These data covered the vast majority of the modelled area, but Ordnance Survey Terrain5™ data (processed to 5m contours), and 10m ground contours from Ordnance Survey 1:25k raster mapping was used to fill in a outer extremity of the model in the vicinity of Knockkippen Wind Farm.
- Each turbine point source was set to have the sound power level data for the candidate turbine operating at 10m/s (i.e. the maximum acoustic output).
- The applied turbine sound power level data was that set out in the section below which includes a +2dB uncertainty correction.

Wind Turbine Sound Power Level Data

11.3.13. The noise modelling has been undertaken based on a candidate turbine type that fits within the physical parameters for the Proposed Development. The candidate turbine is the Vestas V162-7.2MW installed with a hub height of 119 m. This turbine can operate in a sample of different ‘Standard’ and ‘Sound Optimised’ modes and includes an option for the use of Serrated Trailing Edge (STE) blades. STE blades generate lower noise levels that standard blades.

11.3.14. The noise modelling has been undertaken for this turbine type operating in a Standard (not noise optimised) mode (PO7200) and installed with STE blades. Use of sound reduced modes would

remain available for implementation should the operational noise assessment find them to be required.

11.3.15. This turbine is a technically feasible and realistic turbine selection on which to base the noise modelling work.

11.3.16. Noise emission data for this turbine has been obtained from manufacturer data[129,130]. The sound power level data contained within these manufacturer publications is referenced to hub height wind speed. It has therefore been necessary to convert it to be referenced to standardised 10m height wind speeds, as required for an ETSU-R-97[125] compliant assessment. The conversion has been completed in compliance with the IOA GPG[126].

11.3.17. Table 11-2 presents the resulting octave band and broadband sound power level data, including a +2dB correction for uncertainty. The data presented for 10m/s has been applied in the noise modelling work.

Table 11.1: Octave band spectra and broadband sound power level data (L_{WA}) for Vestas V162-7.2MW with 119m hub height - Operational mode PO7220 with STE blades - Referenced to Standardised 10m height wind speed

Standardised 10m height wind speed (U_{10}), m/s	Octave Band Centre Frequency (Hz)									dB(A)
	32	63	125	250	500	1k	2k	4k	8k	
Mode: PO7200 With STE Blades*										
2	68.3	79.5	86.2	89.4	90.8	89.7	85.6	78.6	68.5	**96.0**
3	69.1	80.0	86.5	89.5	90.8	89.6	85.4	78.3	68.3	**96.0**
4	69.1	80.7	87.8	90.7	91.6	90.2	85.9	78.6	68.2	**96.9**
5	73.3	85.1	92.5	95.5	96.1	94.5	90.1	82.6	72.0	**101.4**
6	77.0	89.2	96.8	100.0	100.2	98.5	93.9	86.3	75.6	**105.6**
7	78.1	90.2	97.9	101.0	101.2	99.6	95.0	87.3	76.6	**106.6**
8	78.4	90.5	98.0	101.1	101.4	99.7	95.2	87.6	77.0	**106.8**
9	78.5	90.6	98.2	101.4	101.7	100.1	95.6	88.1	77.5	**107.1**
10	78.2	90.5	98.4	101.7	102.1	100.6	96.1	88.5	77.9	**107.4**

[129] Vestas technical document: *Performance Specification EnVentus™ V162-7.2MW 50/60 Hz*, document reference: 0114-3777 V03, dated 01July 2022
[130] Vestas technical document: *Third octave noise emission EnVentus™ V162-7.2MW 50/60Hz*, document reference: 0116-1715_03, dated 13 January 2023

Data includes a +2dB uplift for uncertainty.

* Note: 'Sound Optimised' (i.e. reduced noise) modes of operation are also available for use should the noise impact assessment find their implementation to be required.

11.3.18. The resulting noise contours, for the proposed development operating in isolation, are presented in **Figure 11.2**.

11.3.19. It can be seen that the 25dB $L_{A90,T}$ noise contour extends to approximately 4km from the Proposed Development turbines and therefore falls within the proposed 5km study area.

11.3.20. The operational noise assessment will consider a representative sample of receptors within the 25dB $L_{A90,T}$ noise contour (see Table 11.1), and will include account of the potential contribution from the Proposed Development and those cumulative wind turbine / wind farm developments that are scoped-in for assessment. The cumulative developments scoped-in for assessment are listed in the Cumulative Development section below and are shown in **Figure 11.1** and **Figure 11.2**. It can be seen those developments fall outside the 25dB$L_{A90,T}$ contour, but inside the proposed 5km study area. The proposed 5km study area is therefore considered appropriate to ensure a comprehensive assessment.

11.4 BASELINE CONDITIONS

DATA SOURCES

Desk Study

11.4.1. A review of the following data sources has been undertaken to inform determination of the existing baseline conditions:

- A geographic database of residential properties in the vicinity of the site (client provided).
- The Ordnance Survey AddressBase Plus™ database.
- Publicly available Google online satellite/aerial imagery.
- Publicly available Google street view imagery.
- Ordnance Survey 1:25k Scale Colour Raster mapping of the site and surrounding area.
- East Ayrshire Council Onshore Wind Visual Register[131].
- East Ayrshire planning portal[132].

[131] https://www.east-ayrshire.gov.uk/PlanningAndTheEnvironment/Visual-registers/Onshore-Wind-Visual-Register.aspx [Accessed March 2025].
[132] https://eplanning.east-ayrshire.gov.uk/online/ - Search terms used: i) 'Turbine', with results then filtered to those with the term 'Waterside' included within the site address. ii) post code 'KA6 7' with results then filtered with the term 'wind'. [Accessed March 2025].[133] https://maps-southayrshire.opendata.arcgis.com/ [Accessed March 2025].

[132] https://eplanning.east-ayrshire.gov.uk/online/ - Search terms used: i) 'Turbine', with results then filtered to those with the term 'Waterside' included within the site address. ii) post code 'KA6 7' with results then filtered with the term 'wind'. [Accessed March 2025].[133] https://maps-southayrshire.opendata.arcgis.com/ [Accessed March 2025].

- South Ayrshire Council Open Map Data[133] ('Wind Turbines' and 'Wind Farms' data layers within the 'Planning' Dataset Category).
- Scottish Government Wind Farm Proposals Maps[134].

11.4.2. The SAC, EAC and Wind Farm Proposal Map data sources were used to identify proposed and existing wind turbine and wind farm developments within the operational Study Area. Proposed wind turbines and wind farms include developments at scoping stage, in planning or approved. Existing wind turbines and wind farms include developments that are either under construction or constructed.

NOISE AND VIBRATION SENSITIVE RECEPTORS

11.4.3. The primary data sources used to identify noise and vibration sensitive receptors in the vicinity of the Development Site are the geographic database of residential properties, the OS AddressBase Plus™ database, publicly available online satellite/aerial and street view imagery and Ordnance Survey mapping.

11.4.4. OS AddressBase Plus™ contains property and address information and incorporates a four-level classification scheme that explains the function of each property and identifies the geographic location. The OS AddressBase Plus™ database has been supplemented based on the review of mapping and satellite/aerial and street view imagery and the content of the client provided database of residential properties.

11.4.5. A representative sample of the closest receptors is presented in **Table 11-1** below, as also shown in **Figure 11.1 and Figure 11.2.** These have been selected to include:

- Receptors closest to the Proposed Development.
- Receptors close to the 'scoped-in' cumulative developments (see below) and which are between those developments and the Proposed Development.

11.4.6. It can be seen from **Figure11.2** that the selected representative sample of receptors all fall within the 25dB $L_{A90,T}$ noise contour for the Proposed Development (see paragraphs 11.3.7 to 11.3.9).

11.4.7. The primary data sources used to identify noise and vibration sensitive receptors in the vicinity of the Development Site are the geographic database of residential properties, the OS AddressBase Plus™ database, publicly available online satellite/aerial and street view imagery and Ordnance Survey mapping.

Table 11-2: Noise and Vibration Sensitive Receptors

[133] https://maps-southayrshire.opendata.arcgis.com/ [Accessed March 2025].
[134] https://www.data.gov.uk/dataset/3219c645-9664-4e86-b73b-e36190626ef8/wind-farm-proposals-scotland [Accessed March 2025]

Identifier / Receptor name	Receptor type	Coordinates		Closest turbine	Distance to closest wind turbine (m)
		X	Y		
NSR 01 Houlsworh Cottage	Residential	241895	611505	Knockkippen T2	1,350
NSR 02 Fullerton Place (Patna)	Residential	241047	610740	T2	1,775
NSR 03 Old School House	Residential	242881	610450	Knockkippen T3	980
NSR 04 30 Carskeoch Drive (Patna)	Residential	241372	610150	T2	1,390
NSR 05 20 Carskeoch Drive (Patna)	Residential	241387	610076	T2	1,340
NSR 06 144 Carnshalloch Avenue (Patna)	Residential	241531	609989	T2	1,370
NSR 07 4 Lethanhill View (Patna)	Residential	241624	609772	T9	1,250
NSR 08 15 Clements Wynd (Patna)	Residential	241710	609634	T9	1,180
NSR 09 41 Kilmein Avenue (Patna)	Residential	241810	609464	T9	1,120
NSR 14 Keirs Crescent (Patna)	Residential	241962	609280	T9	1,125
NSR 11 Ardoon House	Residential	244034	608660	Knockkippen T12	1,200
NSR 12 Low Keirs Farm	Residential	243312	608438	Sclenteuch T9	1,645
NSR 13 High Keirs Cottage	Residential	242958	608102	Sclenteuch T9	1,195
NSR 14 High Keirs Farm	Residential	243032	608060	Sclenteuch T9	1,185
NSR 15 Grimmet Farm	Residential	244734	606387	Dersalloch T17	2,010
NSR 16 Glentaggan Bungalow	Residential	241077	605622	Dersalloch T8	1,160
NSR 17 Sclenteuch Farm	Residential	239186	605505	Dersalloch T6	1,805
NSR 18 Glenhead	Residential	238698	605578	Sclenteuch T1	2,225

Identifier / Receptor name	Receptor type	Coordinates		Closest turbine	Distance to closest wind turbine (m)
		X	Y		
NSR 17 Balminnoch Cottage	Residential	238008	605845	Sclenteuch T1	2,720
NSR 20 Altizeurie Farm	Residential	237360	606683	T5	2,425
NSR 21 Cloncaird Mains	Residential	236318	607473	T5	2,645
NSR 22 Barneil Farm	Residential	236572	608579	T5	2,070
NSR 23 Glenside Farm	Residential	237481	608914	T5	1,165
NSR 24 Torquhain Farm	Residential	237555	609205	T5	1,170
NSR 25 Glenburn Cottage	Residential	237778	610067	T5	1,570
NSR 26 Dalvennan Farm	Residential	238366	610562	T7	1,785
NSR 27 Silver Birches	Residential	238624	610696	T7	1,765
NSR 28 Dallowie Farm	Residential	239027	610686	T7	1,620
NSR 29 Kiersmill Farm	Residential	239477	611225	T7	2,110
NSR 30 Carclout House	Residential	240062	609994	T2	1,070

11.4.8. The level of sensitivity for all residential receptors is 'High'.

CURRENT AND HISTORICAL BASELINE

11.4.9. The Proposed Development is in a generally sparsely populated area, but with the settlement of Patna to the east and, further away, the settlement of Waterside to the south-east. To the north and west, there are several isolated properties and small property groupings within the study area. The small settlements of Kirkmichael and Straiton are located to the west and south-west respectively, both approximately 4km from the Development Site boundary. To the south is un-inhabited forestry land which is the site of the proposed Sclenteuch Wind Farm (see below).

11.4.10. The noise environment at the closest receptors is expected to include contribution from both manmade and natural sources, with their relative contribution changing based on proximity.

11.4.11. Local manmade sources include the A713 Dalmellington Road which is located to the east of the Development Site, passing through Waterside and Patna and continuing north towards Ayr. Fullerton Place / Patna Road, a minor route, is located north of the Development Site linking Patna in the east with Kirkmichael in the west. There is also the Doon Valley Railway line, a registered charity organisation, based at Waterside, who operate local steam and diesel heritage train services

at half hour intervals during their opening times[135]. This railway extends north from Waterside, through Patna. Potential forestry operations within and around the Development Site are also potential manmade noise sources.

11.4.12. The closest existing wind farm to the Development Site is Dersalloch Wind Farm to the south (approximately 3.6km from the Development Site boundary to closest Dersalloch turbine), see below. Given the distance, it is therefore considered unlikely to have any significant contribution to the noise environment at the closest receptors to the Proposed Development, but there is the potential for a cumulative impact to arise at receptors between the Proposed Development and Dersalloch Wind Farm and Sclenteuch Wind Farm. These two wind farms have been scoped-in to the assessment (see below).

11.4.13. Natural noise sources include the River Doon (and its tributaries), which passes through Patna, as well as other local water courses, noise of the wind and moving vegetation (with levels depending upon wind speed), and bird song etc.

FUTURE BASELINE

11.4.14. Existing noise sources in the vicinity of the Development Site are considered unlikely to change significantly in the foreseeable future.

11.4.15. Potential new sources that could be introduced to the area include other wind turbines / wind farms as considered below.

CUMULATIVE DEVELOPMENTS

11.4.16. A review of other identified wind turbine and wind farm developments in the vicinity of the Development Site has been undertaken.

Developments Scoped-In

11.4.17. The following developments have been identified within the 5km study area and are considered to have the potential to give rise to a cumulative noise impact with the Proposed Development. These have therefore been 'scoped-in' for consideration in the assessment of cumulative operational turbine noise:

Wind Farms

- Sclenteuch Wind Farm – A proposed nine-turbine development, 200m tip, to the immediate south, ECU application reference: ECU00003318 – Application SUBMITTED.
- Dersalloch Wind Farm – A 23 turbine development, seven with tip height of 115m and 16 with tip height of 125m, approximately 3.5km south, ECU application reference: EC00004192 – OPERATIONAL.
- Knockkippen Wind Farm – A proposed 12 turbine development approximately 2km to the east, ECU application reference: ECU00004523 – Application APPROVED.

[135] https://doonvalleyrailway.co.uk/timetable-%26-tickets [Accessed March 2025]

Single or Smaller Wind Turbines

- None

11.4.18. The locations of the wind turbine / wind farm developments that have been scoped-in for consideration are show in **Figure 11.1.**

Developments Scoped-Out

11.4.19. The following other wind farm and wind turbine developments have also been identified within the 5km study area, but have been scoped-out of the assessment of cumulative operational turbine noise for the reasons stated:

Wind Farms

- *Keirs Hill Wind Farm* – A 33 turbine proposal to the immediate south, site overlapping the Sclenteuch Wind Farm, ECU application reference EC00003110 – Application REFUSED.
- *Linfairn Wind Farm* – A 17 turbine proposal approximately 4.5km to the south-west, ECU application reference: EC00004192 – Appeal WITHDRAWN.
- *Burnhead (Chalmerston) Wind Farm (Application I)* – A 19 turbine proposal, approximately 4.5km to the east, EAC application reference: 09/0180/FL – Application WITHDRAWN.
- *Burnhead (Chalmerston) Wind Farm (Application II)* – An eight turbine proposal, approximately 4.5km to the east, EAC application reference: 11/0868/PP – Appeal DISMISSED.
- *Benwhat Hill Wind Farm* – A six turbine proposal, approximately 4.5km to the east, EAC planning application reference: 00/0530/FL – Application WITHDRAWN.
- *Knockshinnoch Wind Farm* – A two turbine proposal, 80m hub / 125m tip, approximately 3.5km north-east, EAC planning application reference: 20/0004/EIASCP (Request for Screening Opinion) – EIA REQUIRED. Scoped-out based on size and distance.

Single or Smaller Wind Turbines

SAC Area

- Dalmaca Farm – A single turbine proposal, 50m hub / 78m tip, approximately 5km north-east, SAC application reference: 11/00713/APP – Application WITHDRAWN.
- High Woodston – A two x 225kW turbine proposal, 32m hub / 46.5m tip, approximately 2.5km north, SAC application reference: 12/00499/APP – Application REFUSED.
- Drumbowie Farm (Application I) – A single6kW turbine proposal, 10m hub / 12.8m tip, approximately 2.5km north-west, SAC application reference: 09/01146/APP – Application APPROVED. Scoped-out based on size and distance.
- Drumbowie Farm (Application II) – A two x 225kW turbine proposal, 32m hub / 45.9m tip, approximately 2.5km north-west, SAC application reference: 12/00442/APP – Application REFUSED.
- Guiltreemill – A single100kW turbine proposal, 36.8m hub / 48.5m tip, approximately 3km west, SAC application reference: 12/00627/APP – Application WITHDRAWN.
- Goosehill Farm (Application I) – A 500kw turbine proposal, 50m hub / 77m tip, approximately 3km west, SAC application reference: 11/0141/APP - Application WITHDRAWN.
- Goosehill Farm (Application II) – A 225kw turbine proposal, 32m hub / 45.9m tip, approximately 3km west, SAC application reference: 12/00955/APP - Application REFUSED.
- Drumore Farm (Application I) – A three turbine proposal, 19m, approximately 4.5km west, SAC application reference: 10/00465/APP - Application WITHDRAWN.

- Drumore Farm (Application II) – A two turbine proposal, 15m hub / 19.3m tip, approximately 4.5km west, SAC application reference: 11/00360/APP - Application APPROVED. Scoped-out based on size and distance.
- Cloncaird Mains – A 225kW turbine proposal, 32m hub / 45.7m tip, approximately 2km south-west, SAC application reference: 12/00793/APP - Application REFUSED.
- Barskelly – A single turbine development, 20.6m hub / 23.7m tip, approximately 4km south-west, SAC application reference: 11/00736/APP - Application APPROVED. Scoped-out based on size and distance.
- Three Thorns Farm - A 100kW turbine proposal, 36.8m hub / 48.6m tip, approximately 4.5km south-west, SAC application reference: 12/00866/APP – Application WITHDRAWN.

EAC Area

- Carclout House – A 6kW turbine proposal, 15m hub, towards the centre of the site, EAC application reference: 03/0185/FL – Application APPROVED. Scoped-out based on size. Also understood never to have been constructed.
- Dalmellington Farm – A single turbine proposal, approximately 3.3km to the south-east, EAC application reference: 18/0014/EIASCR ((Screening request)) – EIA REQUIRED. Scoped-out based on size and distance.
- Smithston Farm – A two x turbine proposal, 24.8m hub 36.6m tip, approximately 3km to the north, EAC application Reference: 14/0026/EIASCR (Screening Request) – EIA REQUIRED. Scoped-out based on size and distance.
- Drumgrange Farm – A single turbine proposal, 9m, approximately 1km east, EAC planning reference: 04/0203/FL - APPROVED. Scoped-out based on size and distance.

11.5 SCOPE OF ASSESSMENT

LIKELY SIGNIFICANT EFFECTS

Construction

11.5.1. The shortest distance between a sensitive receptor turbine forming part of the Proposed Development is approximately 1,070m (Patna wind turbine T2 and NSR 30 Carclout House). As such, no significant noise or vibration effects are anticipated to arise from turbine construction.

11.5.2. Operations at borrow pits can create noise and vibration i) from general stone winning operations, and ii) from blasting works (where required). Blasting can also cause air overpressures. The location of borrow pits (if required) is yet to be finalised, but it is expected that these can be located at a sufficient distance from receptors to avoid general stone winning operations giving rise to significant noise and vibration effects, this includes an existing borrow pit which is approximately 430m south of Carclout House. Where blasting works are required at borrow pits, and those works are proposed within 1km of a sensitive receptor, an assessment of blast induced ground borne vibration and air overpressures will be scoped-in. Noise from blasting is short term, temporary and instantaneous, so an assessment of blast induced noise is scoped-out.

11.5.3. Construction work will also be required for the formation of access tracks or other infrastructure, but their locations are yet to be finalised. Where such works are required within 300m of noise and vibration sensitive receptors, an assessment of construction noise and vibration will be scoped-in.

11.5.4. Localised road or junction improvement works may also be required to facilitate the delivery of turbine components to the Development Site. Where such works are proposed within 300m of noise

and vibration sensitive receptors, an assessment of construction noise and vibration will be scoped-in.

11.5.5. Construction traffic to and from the Development Site will be required to deliver plant and materials. The increase in road traffic movements has the potential to temporarily increase road traffic noise. The construction traffic numbers, and access routes are yet to be finalised. An assessment of construction traffic noise is scoped-in.

Operation

11.5.6. Development-generated traffic to and from the Development Site is anticipated to be low, it will include routine maintenance and service visits. The traffic numbers would not be sufficient to give rise to a significant effect. An assessment of operational traffic noise is scoped-out.

11.5.7. Fixed plant proposals are not currently confirmed, but it is expected that these can be located at a sufficient distance from receptors to avoid the potential for a significant noise effect to arise. Assessments of fixed plant noise is therefore scoped-out, but where fixed plant are proposed within 300m of sensitive receptors, this will be reversed.

11.5.8. Wind turbine noise has the potential to adversely affect noise sensitive receptors. The candidate turbine type for the development will be targeted to be appropriate for the Development Site and there will be flexibility in the final proposed number of turbines, the turbine locations. The candidate turbine will also be targeted to ensure that it can be operated under a noise management scheme in case required. These factors allow operational noise to be controlled. Whilst the final applicable noise level limits will depend upon the results of a detailed baseline noise survey, it is anticipated that with consideration to appropriate noise mitigation measures (where required), such limits are likely to be achievable. An assessment of operational turbine noise has therefore been scoped-in.

11.5.9. Current national policy on wind turbine noise assessment, as detailed in the Onshore Wind: Policy Statement 2022 is that the guidance in ETSU-R-97[125] should be applied in conjunction with the IoA GPG[126]. Assessments of turbine generated vibration, infrasound, low frequency noise and excess amplitude modulation (AM) all fall outside the scope of an ETSU-R-97 compliant assessment, but are considered further below.

11.5.10. The separation distances between the proposed turbines and receptors are sufficient that ground borne vibration from the turbines would not be perceptible. Furthermore, with regard to infrasound and low frequency noise, in December 2022, WSP published: *A review of noise guidance for onshore wind turbines* for the then Department for Business, Energy and Industrial Strategy[136] (The BEIS report). That report confirms that:

"*…the weight of evidence appears to indicate that wind turbine infrasound has no adverse effects on human health at typical exposure levels…*"

and that;

[136] WSP for the British Government Department for Business, Energy and Industrial Strategy. *A review of noise guidance for onshore wind turbines. 2022*

"*…due to the inherent characteristics of wind turbine sound, suitable controls on A-weighted sound levels are expected to also provide sufficient control for the potential impact of low frequency noise*".

11.5.11. With regards to AM (the variation in noise level associated with the wind turbine operation at the rate at which turbine blades pass a fixed point), the ETSU-R-97 assessment method accounts for this, up to a stated degree, it being a component part of typical wind turbine noise. The remaining potential issue is therefore only that associated with possible 'excess' AM, i.e. at a level above that already accounted for in the ETSU-R-97 assessment method. There is currently no reliable or recognised means to predict the likely occurrence of AM however. There are reported recommendations for its measurement and quantification, but at the time of writing there has been no endorsement of those approaches from any Scottish Minister or Departments. The current policy position is that an assessment is required in accordance with ETSU-R-97 and the IoA GPG and assessment of excess amplitude modulation (AM) (and turbine generated vibration, infrasound and low frequency noise) and all fall outside the scope of an ETSU-R-97 compliant assessment.

11.5.12. Assessments of turbine generated ground borne vibration, infrasound, low frequency noise and excess amplitude modulation (AM) are therefore scoped-out.

Decommissioning

11.5.13. It is expected that any noise or vibration from decommissioning activities would be no greater and potentially lesser than those generated during construction operations (e.g. no further borrow pit workings are expected etc.), but assessments of decommissioning noise and vibration have remained scoped-in and will be appraised with reference to the impacts, effects and mitigation measures identified for the construction phase assessments.

11.5.14. A summary of the potential noise and vibration impacts that are scoped-in and scoped-out of the assessment is presented within **Table 11-2**.

Table 11-3: Elements Scoped-In or Scoped-Out of Assessment

Element	Phase	Scoped In	Scoped Out	Justification
Construction noise and vibration (turbine installation)	Construction		✔	Existing receptors have been identified to be sufficiently removed from the wind turbine sites. An assessment of construction noise and vibration has therefore been scoped-out.
Construction noise and vibration (Access tracks and road and junction works)	Construction	✔		Access track works will be required. Localised road or junction improvement works may be required. An assessment of construction noise and vibration is scoped-in where such works are required within 300m of noise and vibration sensitive receptors.
Construction traffic noise	Construction	✔		Construction traffic has the potential to increase noise at sensitive receptors adjacent to

Element	Phase	Scoped In	Scoped Out	Justification
				the local road network. An assessment of construction traffic noise is scoped-in.
Borrow Pit - Noise and vibration from general works	Construction		✔	It is anticipated that borrow pits can be located at sufficient distance from receptors (i.e. greater than 300m) to ensure that significant effects would not arise. The final layout design will be checked, and this potential effect will be scoped back in if distances are found to be less than 300m.
Borrow Pits - Blast induced noise, vibration, air overpressures	Construction	✔ (ground borne vibration and air overpressures)	✔ (noise)	Assessment of blast induced vibration and air overpressures is scoped-in where blasting would be required at borrow pits within 1km of receptors. Noise from blasting is short term, temporary and instantaneous, so an assessment of blast induced noise is scoped-out.
Operational wind turbine noise	Operation	✔		Wind turbine noise has the potential to cause significant adverse effects. A detailed assessment will be required to demonstrate compliance with applicable noise limits. An assessment of operational wind turbine noise is scoped-in.
Operational wind turbine generated vibration, amplitude modulation, low frequency noise and infrasound	Operation		✔	Vibration, Amplitude Modulation, low frequency noise and infrasound are outside the scope of the assessment methodology required to be applied for compliance with national policy. Assessment of these elements has been scoped-out.
Operational fixed plant noise	Operation		✔	It is expected that any fixed plant items can be located at sufficient separation distances (e.g. greater than 300m form receptors) that a significant effect would not arise. The final layout design will be checked and this potential effect will be

Element	Phase	Scoped In	Scoped Out	Justification
				scoped back in if distances are found to be less than 300m.
Operational traffic noise	Operation		✔	Traffic movements to and from the Development Site once operational would be minimal and not sufficient to give rise to significant changes in road traffic noise levels along the existing local road network. An assessment of operational road traffic noise is therefore scoped-out.
Decommissioning noise and vibration	Decommissioning	✔		Noise and vibration from decommissioning activities would be no greater (and potentially lesser) than those generated during construction operations. An assessment of decommissioning noise and vibration is scoped-in, and will be completed with reference to the impacts, effects and mitigation measures identified for the construction phase assessments.

11.6 PROPSOED ASSESSMENT METHODOLOGY

RELEVANT LEGISALTION AND GUIDANCE

11.6.1. To assist in determining the appropriate assessment methodologies, consideration has been given to relevant legislation, policy and guidance.

Legislation

- Control of Pollution Act 1974 (CoPA)[137];

Policy

- National Planning Framework 4 (NPF4)[138];
- Onshore Wind Policy Statement 2022 (OnWPS)[139];
- South Ayrshire Council Local Development Plan 2[140]; and

[137] Control of Pollution Act 1974. HM Government, The Stationery Office. Control of Pollution Act 1974
[138] National Planning Framework 4. 2024. Scottish Government. National Planning Framework 4
[139] Onshore Wind Policy Statement 2022. 2022. Scottish Government. Onshore Wind Policy Statement
[140] South Ayrshire Council Local Development Plan 2. 2022. South Ayrshire Local Development Plan 2

- East Ayrshire Council Local Development Plan 2[141].

Guidance

- Planning Advice Note 1/2011: Planning and noise (PAN 1/2011)[142];
- Planning Advice Note 50: Controlling the environmental effects of surface mineral workings including Annex D: The Control of Blasting at Surface Mineral Workings[143];
- Assessment of noise: Technical advice note (TAN)[144];
- Onshore wind turbines: Planning advice (OWPA)[145];
- South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy[146]
- South Ayrshire Council Environmental Health, Wind Turbines Development: Submission Guidance Note[147]
- East Ayrshire Council Local Development Plan 2 Supplementary Guidance: *Energy and EV Charging* 2024[148].
- BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Noise (BS 5228-1)[149];
- BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Vibration (BS 5228-2)[150];
- ETSU-R-97; The assessment and rating of noise from wind farms[125].
- IoA GPG including Supplementary Guidance Notes (SGNs)[126];
- Calculation of road traffic noise (CRTN)[151]; and
- Design Manual for Roads and Bridges. LA 111. Noise and vibration (LA 111)[152].

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[141] East Ayrshire Local Development Plan 2. 2024. East Ayrshire Local Development Plan 2

[142] Planning Advice Note 1/2011: planning and noise. 2011. Scottish Government. Planning Advice Note 1/2011: planning and noise - gov.scot

[143] Planning Advice Note 50: controlling the environmental effects of surface mineral workings. 1996. Scottish Government. Planning Advice Note 50: controlling the environmental effects of surface mineral workings
PAN 50: Controlling the environmental effects of surface mineral workings. Annex D: The control of blasting at surface mineral workings. 2000. Scottish Government. PAN 50 Annex D The control of blasting at surface mineral workings

[144] Assessment of noise: technical advice note. 2011. Scottish Government. Assessment of noise: technical advice note

[145] *Onshore wind turbines: planning advice*. 2014. Scottish Government. Onshore wind turbines: planning advice

[146] South Ayrshire Council Local Development Plan Supplementary Guidance: Wind Energy. 2015. Supplementary Guidance: Wind Energy

[147] South Ayrshire Council Environmental Health, Wind Turbines Development: Submission Guidance Note. Submission Guidance Note

[148] East Ayrshire Council Local Development Plan 2 Supplementary Guidance: *Energy and EV Charging* 2024. Energy and EV Charging

[149] British Standard BS 5228-1:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Noise

[150] British Standard BS 5228-2:2009+A1:2014: Code of practice for noise and vibration control on construction and open sites. Vibration

[151] Calculation of road traffic noise memorandum. 1988. Department of Transport and Welsh Office. HMSO

[152] Design Manual for Roads and Bridges. LA 111 Noise and vibration. Revision 2. 2020. LA 111 - Noise and vibration

National Planning Policy

National Planning Framework 4 (NPF4)

11.6.2. NPF4 is part of the statutory development plan and sets out the national spatial strategy for Scotland. Sections of policies relevant to noise and vibration are reproduced below.

Policy 11: Energy

"… e) In addition, project design and mitigation will demonstrate how the following impact are addressed:

> *i) impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker."*

Policy 23: Health and safety

"… e) Development proposals that are likely to raise unacceptable noise issues will not be supported. The agent of change principle applies to noise sensitive development. A Noise Impact Assessment may be required where the nature of the proposal or its location suggests that significant effects are likely."

Policy 33: Minerals

"… d) Development proposals for the sustainable extraction of minerals will only be supported where they:

> *… iv. demonstrate acceptable levels (including cumulative impact) of noise, dust, vibration and potential pollution of land, air and water;…*

e) Development proposals for borrow pits will only be supported where:

> *i. the proposal is tied to a specific project and is time-limited;*
>
> *ii. the proposal complies with the above mineral extraction criteria taking into account the temporary nature of the development;.."*

Onshore Wind Policy Statement 2022

11.6.3. This document sets out the national policy for onshore wind development. Section 3.7 is concerned with noise and states:

"3.7.1. 'The Assessment and Rating of Noise from Wind Farms' (Final Report, Sept 1996, DTI), (ETSU-R-97) provides the framework for the measurement of wind turbine noise, and all applicants are required to follow the framework and use it to assess and rate noise from wind energy developments.

3.7.2. The Institute of Acoustics (IOA) Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise was published in May 2013 to support the use of ETSU-R-97 when designing potential windfarm schemes, and the monitoring of noise levels from generating sites. The Scottish Government recognises this guide as a useful tool which developers can use in conjunction with ETSU-R-97."

11.6.4. It goes on to state that ETSU-R-97 should continue to be applied until such time that new guidance is produced.

Planning and Advice Note (PAN) 1/2011: Planning and noise

11.6.5. Published in March 2011, PAN 1/2011[142] provides advice on the role of the planning system in helping to prevent and limit adverse effects of noise. Information and advice on noise assessment methods are provided in the accompanying Technical Advice Note (TAN): *Assessment of noise*[144]. With regards to noise from wind turbines, paragraph 29 of PAN 1/2011 states the following:

"*There are two sources of noise from wind turbines – the mechanical noise from the turbines and the aerodynamic noise from the blades. Mechanical noise is related to engineering design. Aerodynamic noise varies with rotor design and wind speed, and is generally greatest at low speeds. Good acoustical design and siting of turbines is essential to minimise the potential to generate noise. Web based planning advice on renewable technologies for onshore wind turbines provides advice on 'The Assessment and Rating of Noise from Wind Farms' (ETSU-R-97) published by the former Department of Trade and Industry (DTI) and the findings of the Salford University report into Aerodynamic Modulation of Wind Turbine Noise.*"

11.6.6. With regards to appropriate assessment methods, the 'web-based planning advice' referred to in PAN 1/2011[142] is contained in the online planning resource entitled 'Onshore wind turbines: *Planning advice*'[145]. This guidance references the use of ETSU-R-97[Error! Bookmark not defined.] for the assessment of noise from wind farms and confirms that the IoA GPG[126] provides significant support on technical issues for all users of ETSU-R-97[125]. It is also confirmed that the Scottish Government accepts that use of this guidance represents current industry good practice.

11.6.7. The accompanying TAN to PAN 1/2011[144] also refers to ETSU-R-97[125], including a summary of the associated assessment approach.

11.6.8. With regards to the assessment and control of noise and vibration from construction sites, the use of BS 5228-1 and BS 5228-2 1997 is discussed. This version of BS 5228 was superseded in 2009 and amended in 2014[149 & 150].

11.6.9. PAN 1/2011[142] and its associated TAN[144] also refer to PAN 50: *Controlling the effects of surface mineral workings* which includes Annex D: *The control of blasting at surface mineral workings*[143]. These include consideration to potential noise, vibration and air overpressure impacts that can arise as a result of blasting works associated with minerals extraction. They also include a summary of good practice measures that can be employed to minimise potential effects and references the use of BS 5228[150] for the prediction of blast induced vibration.

Local Planning Policy

South Ayrshire Council Local Development Plan 2

11.6.10. Adopted in August 2022, this document[140] is the policy framework against which all planning applications within the SAC area are assessed.

11.6.11. The following policies are relevant to this chapter and the proposed Development:

LDP Policy: Air, noise and light pollution

"We will not allow development which would expose people to unacceptable levels of air, noise or light pollution.

Note: In determining planning applications for development that might generate pollution, we'll take the advice of the Council's Environmental Health Service, as local pollution regulator, as to whether

the development would be likely to generate unacceptable levels of pollution. The Council may seek additional relevant impact assessments to demonstrate impacts on, or from proposed development on air, noise or light pollution."

LDP Policy: Minerals and aggregates

"*… We will accept proposals for extracting and working minerals if they accord with the following criteria:…*

… b. They ensure that the environmental impacts on local communities, including from noise, blasting and vibration, and potential pollution of land, air and water, are adequately controlled or mitigated…"

LDP Policy: Wind energy

"*We will support proposals for wind energy development (including repowering or extensions) comprising one or more wind turbine greater than 15 metres to blade tip. Proposals for wind farms on sites that are not within Group 1 or Group 2 areas, as described in Scottish Planning Policy Table 1, are likely to be acceptable subject to detailed consideration against the criteria set out below.*

All proposals will be assessed against the following criteria…

… e. They would have no other unacceptably detrimental effect upon the amenity of nearby residents, including from noise and shadow flicker."

East Ayrshire Council Local Development Plan 2

11.6.12. Published in 2024, this document[141] confirms that, as a whole with the Supplementary Guidance and NPF 4, it comprises the Development Plan for East Ayrshire, and that it will be used to guide, assess and determine planning applications.

11.6.13. The following policies are relevant to this chapter and the proposed Development:

Policy NE12: Water, air light and noise pollution

"…Noise

All new development must take full account of any Noise Action Plan and Noise Management Areas that are in operation in the area and ensure that significant adverse noise impacts on surrounding properties and uses are avoided. A noise impact assessment may be required in this regard and noise mitigation measures may be required through planning conditions and/or Section 75 Obligations."

Policy RE1: Renewable Energy

"*Proposals for the generation, storage and utilisation of renewable energy, including proposals for the co-location of these technologies, in the form of new build development, infrastructure or retrofit projects are encouraged and will be supported in standalone locations and as integral parts of new and existing developments, where they are acceptable when assessed against all relevant criteria set out in the Renewable Energy Assessment Criteria table below…*

…• Impacts on communities and individual dwellings, including visual impact, residential amenity, noise and shadow flicker."

Policy MIN2: Extraction of minerals

"The extraction of minerals will be supported where there will be no unacceptable and significant adverse impact on local communities and the environment. The following criteria will be used to assess applications, and applicants should provide supporting information and mitigation measures accordingly….

…• impacts in terms of noise, dust, vibration, odour, and potential pollution of land, air and water;"

Policy MIN5: Protecting residential amenity

"*The Council will seek to ensure that all applications for mineral development will not create an unacceptable impact through the generation of noise, dust, vibration, air and light pollution particularly where they affect local communities and individual houses.*

Applicants should submit supporting information with all minerals related applications which demonstrates that they have considered, minimised and if necessary mitigated:

(i) potential effects of the operational working of the site on existing residential properties and nearby communities, including noise, dust and vibrations;"

Guidance

National Guidance

11.6.14. There are several national and local guidance documents which provide advice on assessment, good practice and relevant information to wind farm developments. These include the TAN[144] and PAN 1/2011[142] as discussed above.

South Ayrshire Local Development Plan Supplementary Guidance: Wind Energy

11.6.15. This Supplementary Guidance document[146], dated December 2015, was prepared following adoption of the previous LDP, and provides additional planning guidance on the LDP policy for wind energy.

11.6.16. It is stated that a noise impact assessment would be required for all wind farm proposals with the scale of information submitted being appropriate to the size and capacity of the development, e.g. a desktop assessment generally may only be appropriate for small wind turbines.

11.6.17. The need for a cumulative assessment is confirmed with a requirement for this to consider any proposed, consented or existing wind turbines within a search radius of 5km. Reference is made to ETSU-R-97[125] and the IoA GPG[126] as being the appropriate guidance for noise assessment to follow.

11.6.18. It is also stated that further guidance on the information required to be submitted as part of any noise assessment is contained in Environmental Health document entitled: Noise Impact Assessment Requirements for Wind Turbine Developments[147]', which is based on ETSU-R-97[125] and the IoA GPG[126].

South Ayrshire Council Environmental Health, Wind Turbines Development: Submission Guidance Note

11.6.19. This note[147] has been published by the Environmental Health Department of South Ayrshire Council to provide guidance to applicants seeking consent for a wind turbine development. Guidance is provided for development of both large scale (e.g. wind farms), and small scale (defined as a wind turbine of 50kW or less with a rotor swept area of 200m^2 or less). For large scale development, as is

the case here, the provided guidance is based on that contained within ETSU-R-97[125] and the IoA GPG[126]. It is stated that:

"*All planning applications for wind turbine development must be accompanied by a site specific noise impact assessment. It is expected that the noise impact assessment will be undertaken in accordance with ETSU-R-97, the IoA Good Practice Guide to the Application of ETSU (May 2013) and the IoA SGNs that accompany these documents.*"

East Ayrshire Council Local Development Plan 2 Supplementary Guidance: Energy and EV Charging 2024

11.6.20. Published in 2024, this guidance[148] confirms that if not carefully sited and designed, wind energy development has the potential to have a significant impact, both on their own and cumulatively, on the amenity of communities and residents living close by. It is confirmed that an assessment undertaken in accordance with ETSU-R-97[Error! Bookmark not defined.] will be required for the proposed development stating:

"*All proposals for turbines of over 50 metres to blade tip should be accompanied by a full detailed assessment of the noise impacts of the proposal, in line with ETSU-R-97 standards. Applicants should refer to the most up-to-date available guidance on the application of ETSU-R-97[6]. The Council will only support proposals where it can be clearly evidenced that the noise levels will not significantly impact on residential amenity. As part of any planning consent granted, there may be a requirement, based on the site-specific circumstances, for regular noise monitoring to be undertaken for a limited period to demonstrate that the wind energy development is complying with its conditions in terms of noise*."

11.6.21. The footnote reference '6' in the above quote is to the IoA GPG[Error! Bookmark not defined.]

SURVEY METHODOLOGY

11.6.22. Prevailing baseline noise levels are proposed to be measured at five monitoring locations, which will be selected to be representative of the closest noise sensitive receptors to the Proposed Development. The currently proposed monitoring locations are detailed in **Table 11-3** and in **Figure 11.1.**

Table 11-4: Proposed Baseline Noise Surveys

Measurement Location	X	Y	Representative Receptors
01	240062	609994	NSR 30 Carclout House Selected as representative of receptors to the north of the Proposed Development, including Carclout House.
02	241810	609464	NSR 9 41 Kilmein Avenue (Patna) Selected as representative of receptors to the east / north-east of the Proposed Development including at Patna.
03	242958	608102	NSR 13 Higher Keirs Cottage

Measurement Location	X	Y	Representative Receptors
			Selected as representative of receptors to the east / south-east of the Proposed Development, including at Keirs and Higher Keirs.
04	237360	606683	NSR 20 Altizeurie Selected as representative of receptors to the south-west of the Proposed Development, including at Altizeurie.
05	237481	608914	NSR 23 Glenside Farm Selected as representative of receptors to the west of the Proposed Development, including at Glenside, Torquhain, Barneil Farm and Glenbar Cottage etc.

11.6.23. The final measurement locations will be dependent upon obtaining landowner approvals. The final siting for equipment installation will be determined by the site engineer following a review of local conditions, including consideration to the presence of foliage, water courses and any other potential noise sources, as well as the orientation of buildings and the location of external amenity spaces (The coordinates in **Table 11-3** are indicative only at this stage). Where possible, all measurements will be undertaken under free-field conditions at a height of 1.5m above ground.

11.6.24. The noise survey will be undertaken to fulfil the requirements of ETSU-R-97[125] and the IoA GPG, including its associated SGNs[126]. The survey will be undertaken over a period of approximately three weeks to obtain the prevailing levels under the requisite range of wind speed conditions. The survey will be undertaken with simultaneous measurement of wind speed and direction on the Development Site, obtained either through use of a SoDAR or LiDAR system or telemetry installed on a meteorological mast. Rainfall measurements will also be obtained for the duration of the baseline noise survey.

11.6.25. The measured wind speed data will be corrected/standardised to a height of 10m above ground following current good practice, drawing upon guidance presented within the IoA GPG and associated SGNs[126]. This will allow due account of site-specific wind shear.

11.6.26. The baseline noise survey will be mostly unattended, as appropriate for long-term surveys, with all measurements carried out using sound level meters compliant with Class 1 specification, as set out in BS EN 61672-1[153], and using wind protection that conforms to the recommendations in ETSU R-97[125] and the IoA GPG[126] All measurement equipment will be installed by a consultant competent in environmental noise monitoring, in accordance with the principles of BS 7445-2[154].

[153] International Electrotechnical Commission (2002). IEC 61672-1:2002, Sound level meters - Part 1: Specifications.
[154] British Standard BS 7445-2:1991: Description and measurement of environmental noise. Guide to the acquisition of data pertinent to land use.

MITIGATION

Construction

11.6.27. During the construction phase, Best Practicable Means (BPM), as defined in Section 72 of the COPA[137], will be adopted to reduce the impact of noise and vibration.

11.6.28. A scheme of BPM will be written into a Construction Environmental Management Plan (CEMP). Compliance with specific measures and the principles of BPM can be ensured through a planning condition.

11.6.29. Measures in compliance with BPM include the adoption of appropriate construction working hours, keeping residents informed about the works, the careful selection of construction plant and working methods and the careful programming and timing of deliveries.

Operation

11.6.30. For operational wind turbine noise there are several mitigation measures that are available if required. These include flexibility on the number of turbines, the turbine locations and the turbine model to be installed. An appropriate turbine selection may be one that allows adoption of a noise management scheme, allowing individual turbines to be operated in reduced noise modes under prescribed meteorological conditions.

11.6.31. The development layout and design will be subject to an iterative design process allowing the incorporation of mitigation measures as necessary.

11.6.32. In addition, planning conditions can be used to specify derived noise level limits that shall not be exceeded once operational.

ASSESSMENT METHODOLOGY

Construction Noise

11.6.33. The locations at which the highway or junction improvement works will be necessary will be reviewed. Where noise-sensitive receptors are identified within 300m of these works, a series of noise level predictions will be carried out for the identified receptors. These will be completed accordance with the methodology presented in BS 5228-1[149]. Predictions will be undertaken for typical construction operations associated with the proposed improvement works and drawing upon the anticipated construction methodologies.

11.6.34. The predicted construction noise levels will be assessed by comparison against assessment criteria that will be determined following the guidance contained within BS 5228-1[149]. The assessment also will include account of the anticipated timing and duration of the works. The assessment results will form the basis of determining whether or not a significant effect would arise from the proposed works.

11.6.35. Where required, specific noise mitigation measures will be presented, and residual effects will be determined.

Construction Vibration

11.6.36. The assessment will be completed based on BS 5228-2[150]. A series of typical set-back distances will be determined, at which different threshold vibration levels are likely to arise for typical highway and junction improvement works. The distance of the receptors to the working areas will then be

compared against the derived separation distances to determine whether a significant effect would arise. The assessment will also include account of the anticipated timing and duration of the works.

11.6.37. Where required, appropriate vibration mitigation measures will be presented, and residual effects will be determined.

Construction Traffic Noise

11.6.38. The assessment will be completed based on the CRTN[151]. A series of noise level calculations will be undertaken for construction access routes to determine the Basic Noise Level (BNL) for scenarios both 'with' and 'without' construction traffic flows. The resulting noise level changes, identified to arise due to construction traffic, will be assessed with reference to the impact magnitude scales detailed within DMRB LA 111[152], with the resulting effects determined.

Blast Induced Vibration and Air Overpressures

11.6.39. Where blasting may be required within 1km of receptors, the potential for significant blast induced vibration and air overpressure effects will be considered following the guidance contained within BS 5228-2[150], PAN 50 including PAN 50 Annex D[143] . This assessment will consider the likelihood of impacts arising with reference to the location of any proposed on-site borrow pits, and the mitigation measures that would be available for incorporation into the working methods.

11.6.40. Where required, appropriate noise and vibration mitigation measures will be presented, and residual effects will be determined.

Operational Turbine Noise

11.6.41. A detailed assessment of operational turbine noise levels will be undertaken in accordance with ETSU-R-97[125] and the IoA GPG[126].

11.6.42. A review will be undertaken to identify the noise level limits that are imposed on the operational Dersalloch Wind Farm and the consented Knockkippen Wind Farm, and whether there are any planning conditions which limit the sound power levels of the turbines that are installed / proposed at these developments.

11.6.43. A review will also be undertaken of the noise assessment work that has been undertaken in support of the proposed Sclenteuch Wind Farm. The focus will be to establish the noise level limits that this development has been assessed against, and the candidate turbine type that the assessment is based on.

11.6.44. The results of the baseline noise survey, and simultaneously obtained meteorological measurements, will be analysed and assessed in accordance with ETSU-R-97[125] and the IoA GPG[126], to determine the applicable daytime and night-time noise level limits at each adopted measurement location. This process will also draw upon the detail of local planning policy / guidance as outlined above.

11.6.45. A suite of noise level limits will be selected for the assessment drawing on those determined from the baseline noise survey, those determined in the Sclenteuch noise assessment, and those conditioned for compliance with in the Dersalloch and Knockkippen Wind Farm consents.

11.6.46. The scheme noise model (see paragraphs 11.3.9 to 11.3.17) will updated to reflect the final Proposed Development layout design as well as the turbines associated with the cumulative

developments that have been scoped-in for assessment (Sclenteuch Wind Farm, Dersalloch Wind Farm and Knockkippen Wind Farm).

11.6.47. The noise model will be used to determine the operational noise levels that would arise at each of the receptors listed in **Table 11-1** for a range of wind speeds from cut-in to 12m/s. The calculation will apply the prediction method detailed in ISO 9613-2[127], as recommended for use in the IoA GPG[126], and will also apply the adaptations included in that guide (acoustic screening cap and valley corrections – see paragraph 11.3.9).

Proposed Development in Isolation

11.6.48. The predicted operational noise levels for the development operating in isolation will be compared against the suite of adopted noise level limits. Separate daytime and night-time assessments will be undertaken for each receptor.

Cumulative Turbine Noise

11.6.49. It is recognised that the ETSU-R-97[126] noise level limits apply cumulatively, so the results of the cumulative noise assessment will be used to determine whether or not a significant effect would arise.

11.6.50. The noise levels generated by the operational Dersalloch Wind Farm and Consented Knockkippen Wind Farm will be determined at each receptor. Predictions will account for whether Dersalloch and Knockkippen Wind Farms could reasonably generate higher noise levels in the future whilst still operating within their planning consents (i.e. by including an additional conservatism of +2dB, where considered necessary). Where it is identified that predicted levels from Dersalloch Wind Farm or Knockkippen Wind Farm exceed the noise limits to which they must comply, the predicted levels will be 'capped' at the consented limits.

11.6.51. The predicted levels for Dersalloch and Knockkippen Wind Farms will then be used to determine the Remaining Noise Budgets (RNB)[155] that are available to the Proposed Development and the proposed Sclenteuch Wind Farm. The RNB will be set either: a) by subtracting the predicted Dersalloch and Knockkippen Wind Farm noise levels from the suite of adopted cumulative noise limits (but with the result set to be no more than 10dB below the cumulative limits), or b) set at 10dB below the Dersalloch and Knockkippen Wind Farm predicted levels (but determined without including any additional prediction conservatism).

11.6.52. This approach is such that compliance with the RNB by the Proposed Development and proposed Sclenteuch Wind Farm, will ensure that either: a) the cumulative noise level limits will not be exceeded, or b) noise from the Proposed Development and the proposed Sclenteuch Wind Farm will not give rise to a significance increase over that already permitted to be generated by the Dersalloch and Knockkippen Wind Farms.

[155] Also sometime termed the 'residual' or 'remaining available' noise limits.

11.6.53. The modelled noise levels for the proposed Development and proposed Sclenteuch Wind Farm will be compared against the RNB. Where necessary, the RNB will be apportioned (split) fairly between these two developments with separate compliance assessments presented.

11.6.54. Where an exceedance of the noise level limits / RNB is identified, consideration will be given to the measures available to reduce noise levels from the Proposed Development and the proposed Sclenteuch Wind Farm such that the cumulative noise limits / RNB are achieved. This will include consideration to direction corrections and use of a noise management scheme where necessary.

11.6.55. Residual effects will then be determined. Compliance with the cumulative noise limits or RNB will indicate a not significant effect.

11.7 CONSULTATION QUESTIONS

11.7.1. Consultees are requested to respond to the following questions as part of their consultation response.

- Q11.1 - Do you agree with the proposed scope of the noise and vibration assessment, including those elements that are scoped-in and scoped-out of the assessment as detailed in **Section 11.5** including Table 11-3?
- Q11.2 - Do you agree with the proposed assessment methodologies as detailed in **Section 11.6.**
- Q11.3 - Do you agree with the approach and extent of the proposed baseline noise survey including the geographic spread of proposed baseline measurement locations as detailed in **paragraphs 11.6.22** to **11.6.26** including Table 11-4?
- Q11.4 - Do you agree with the proposed Study Areas for the assessment as detailed in **Section 11.3?**
- Q11.5 - Do you agree with the other wind farm developments that have been 'scoped-in' and 'scoped-out' of the proposed assessment of cumulative operational turbine noise, as detailed in **paragraphs 11.4.16** to **11.4.19**?

12 OTHER ISSUES (AVIATION, TELECOMMUNICATIONS, RECREATION, TOURISM & SHADOW FLICKER)

12.1 INTRODUCTION

12.1.1. This chapter details potential effects which may occur on aviation, telecommunications, and shadow flicker as a result of the Proposed Development.

12.1 AVIATION

12.1.1. Wind turbines within radar Line of Sight (LoS), and therefore detectable by radar systems, reflect radio waves that can interfere with the system. Turbine induced radar clutter appearing on radar displays can affect the safe provision of Air Traffic Services as it can mask unidentified aircraft from the air traffic controller and/or prevent the accurate continued identification of aircraft under control. In some cases, radar reflections from the turbines can affect the performance of the radar system itself. Additionally, due to their height, wind turbines could also potentially present a collision risk to low flying aircraft, therefore affecting military low-level training flights.

12.1.2. In the interests of aviation safety, structures of a height greater than 150m require visible aviation lighting.[156] Impacts in relation to this will be considered in the LVIA chapter of the EIA Report.

12.1.3. Given the Proposed Development's location, it is possible that there will be impacts on the Glasgow Prestwick Airport primary radar and the NATS en route radar at Lowther Hill.

12.1.4. Consultations will be undertaken with aviation stakeholders as part of this Scoping Opinion request to identify if the Proposed Development is likely to affect their operations. The responses provided will assist in guiding any required aviation assessment. If any issues are identified during the aviation assessment, negotiations would be undertaken to seek and agree appropriate mitigation.

12.2 EXISTING INFRASTRUCTURE, TELECOMMUNICATIONS AND BROADCAST SERVICES

12.2.1. Specific Advice Sheet Onshore Wind Turbines (Scottish Government, May 2014) identifies that wind turbines might impact on infrastructure, telecommunications, utilities and air safeguarding issues. Effects may, for example, include disruption of microwave rebroadcast links or local radio communication systems. The quality of television reception may also be affected, though to a lesser extent than prior to the switchover to digital transmissions, and viewers may suffer reduction of picture quality and acoustic interference.

12.2.2. A range of investigations will be undertaken to establish the presence of existing infrastructure associated with utilities such as water, gas, electricity and telecommunications links to establish either the absence of effects or to identify appropriate mitigation to overcome any effects. These matters would be addressed through consultation with the relevant system operators.

[156] Civil Aviation Authority (2016) CAP 764: CAA Policy and Guidelines on Wind Turbines

12.2.3. TV interference as a result of turbines is now considered to be a low risk due to analogue TV signals no longer being in use and so this aspect is proposed to be scoped out. In the unlikely instance that TV interference occurs, it is considered that this can be appropriately covered by a suitably worded planning condition and complaints procedure to implement any necessary mitigation.

12.3 RECREATION AND TOURISM

RECREATION

12.3.1. The entire Site Boundary is situated within a conifer plantation which is accessible to the public through a series of tracks, providing extensive views over the countryside. Patna is located along the River Doon, a popular river for anglers, mainly fishing for Salmon, Sea Trout and Brown Trout. Patna Community Woodland is also situated along the river Doon, providing a woodland walk which has undergone additional tree planting as part of the Millennium Forest Project. To the east of the Site Boundary, there are rights of way and core path routes, connecting the village of Patna to the surrounding land and forestry. This includes Straiton to Patna Hill track, which runs directly through the Proposed Development Site boundary. There is also an access track off Fullerton Place (road extending out of Patna) to reach Carclout House. There are no long-distance routes within 5km of the Proposed Development

12.3.2. The Old Road through Straiton heritage path runs across the Site Boundary. This heritage path starts 1km north of River Stinchar, just south of Dalquhairn Bridge before passing through Straiton. Stretching for 18.8km through developed forests, the track ends to the south of west of Patna.

Potential Effects

12.3.3. There is the potential for temporary adverse effects on the availability and accessibility to recreational destinations and activities during the construction of the Proposed Development. This is because the areas surrounding the construction and maintenance activities would be temporarily restricted. In addition, access to recreational destinations and activities may be adversely affected by construction traffic and activities.

12.3.4. The Proposed Development could also have an adverse effect on amenity experienced by users of the recreational destinations and activities during construction and operation.

TOURISM

12.3.5. Tourism provides an important contribution to economies at the local, regional and national level. The Ayrshire and Our Island Visitor Economy Strategy was published in 2024 and sets out the strategic vision for tourism within the Ayrshire region. Pre-pandemic, visitors spent £604 million in the region through a combination of overnight stays and day visits, with the employment sector employing 13,000 people in 2018. The strategy is designed to build a resilient visitor economy post-Covid-19 that benefits local communities and the natural environment[157].

[157] https://www.east-ayrshire.gov.uk/Resources/PDF/A/ayrshire-and-our-islands-visitor-economy-strategy.pdf

12.3.6. Local to the area is the Doon Valley Railway, a heritage railway with gift shop and cafe, which operates steam and diesel locomotive for tourists to experience.

12.3.7. Within Patna, there are limited facilities for those visiting the area, including Wheatsheaf Inn, a bakery and a fish and chip shop. The village does not offer any accommodation. However, within 5km, there are a few accommodation options, including Freedom Fields Bluebell glamping pod in Straiton and Orchard Farm Campsite and Yurts to the north-west of the Site Boundary. There are also multiple Airbnb's to rent within Straiton and the wider surrounding area.

Potential Effects

12.3.8. There is the potential for temporary adverse effects on tourism during the construction of the Proposed Development. The construction of the Proposed Development could affect the accessibility and amenity experienced by users of tourist attractions. The construction of the Proposed Development could also affect the availability of tourist accommodation due to an influx of construction workers residing near the locality of the Proposed Development.

12.4 SHADOW FLICKER

12.4.1. Shadow Flicker is a phenomenon that can occur in sunny weather when turbines are operating, and the rotating blades cause a flickering effect inside a building where sunlight passes through an opening such as a window or door.

12.4.2. For perceptible shadow flicker to occur which might be considered significant, the receptor (window or door opening) must be directly in line with the wind turbines when the sun is low in the sky and within 10 rotor diameters of a turbine where they are located within 130 degrees either side of north of any turbine[158]. In these circumstances, the moving turbine blade briefly blocks / reduces the intensity of light entering an opening to a room on each rotation, causing a flickering to be perceived. In the open, shadow flicker is generally not perceived as light outdoors is reflected from all directions.

12.4.3. Where properties meet the criteria noted and shadow flicker may potentially occur, the seasonal duration of this effect is calculated from the geometry of the turbine and the latitude of the Proposed Development Site to assess potential impacts upon the amenity of their residents. Mitigation measures will be proposed in the EIA Report should they be necessary.

12.4.4. **Table 13.1** identifies potentially sensitive receptors within 2km of a nearest turbine.

[158] DECC (2011) Update of UK Shadow Flicker Evidence Base report

Table 12-1 - Closest Potentially Sensitive Receptors

Identifier / Receptor name	Receptor type	Coordinates		Closest turbine	Distance to closest wind turbine (m)
		X	Y		
1. Patna (Fullerton Place)	Residential	241056	610742	T2	1,780
2. Patna (Carnshalloch Avenue (north))	Residential	241371	610154	T2	1,390
3. Patna (Carnshalloch Avenue (middle))	Residential	241386	610079	T2	1,340
4. Patna (Carnshalloch Avenue (south))	Residential	241535	609981	T2	1,370
5. Patna (Lethan Hill View)	Residential	241652	609738	T9	1,235
6. Patna (Clements Wynd)	Residential	241707	609632	T9	1,180
7. Patna (Meikleholm Drive)	Residential	241827	609431	T9	1,110
8. Patna (Kiers Crescent)	Residential	241965	609282	T9	1,130
9. Glenside	Residential	237481	608917	T5	1,165
10. Torquhain	Residential	237551	609231	T5	1,185
11. Glenburn Cottage	Residential	237781	610068	T5	1,570
12. Dalvennan	Residential	238343	610554	T7	1,790
13. Silver Birches	Residential	238624	610698	T7	1,765
14. Dallowie	Residential	239029	610688	T7	1,620
15. Carclout House	Residential	240060	609989	T2	1,070

12.4.5. If, after design development, these or other potentially sensitive receptors are within a 130-degree segment either side of due north relative to the turbines and within ten rotor diameters (as per guidance) they will be assessed for shadow flicker.

APPENDIX A – LVIA METHODOLOGY AND GLOSSARY

Introduction

This forms an appendix to Chapter 7 of this Scoping Report and describes the methodology proposed to be used within the landscape and visual impact assessment (LVIA) for the proposed Patna Wind Farm (the 'Proposed Development') which, at this stage, comprises up to nine turbines with a maximum blade tip height of 200m and associated infrastructure.

This appendix has been structured as follows:

- Overview of LVIA Methodology;
- Integrated Design and Assessment;
- Assessing Landscape Effects;
- Assessing Visual Effects;
- Assessing Cumulative Landscape and Visual Effects;
- Evaluation of Significance and Nature of Effect;
- Residential Visual Amenity Assessment;
- Night-time Assessment; and
- Production of Zone of Theoretical Visibility (ZTV)s and Visualisations.

Overview of LVIA Methodology

The LVIA will assesses the likely effects of the Proposed Development on the landscape and visual resource, encompassing effects on landscape elements, characteristics and landscape character, designated landscapes, visual effects and cumulative effects.

The landscape and visual effects (and whether they are significant) are determined by an assessment of the nature or 'sensitivity' of each receptor or group of receptors and the nature of the effect or 'magnitude of change' that would result from the Proposed Development. The evaluation of sensitivity takes account of the value and susceptibility of the receptor to the Proposed Development. This is combined with an assessment of the magnitude of change which takes account of factors such as the size and scale of the proposed change and the geographical extent. Other factors regarding the nature of the effect such as the duration of change and whether the effect is cumulative will also be noted. By combining assessments of sensitivity and magnitude of change, a level of landscape or visual effect as well as the nature of that effect can be evaluated and the significance of the effect determined.

The resulting level of effect is described in terms of whether it is significant or not significant and the type or nature of effect is described as either direct or indirect; temporary or permanent (reversible); cumulative; and positive, neutral or negative. The assessment will also considered the cumulative effects resulting from the Proposed Development in combination with other existing and consented wind farms, and wind farms at the planning application stage.

The time-period for the assessment covers phases of development related to the construction of the Proposed Development and associated infrastructure, its operation for a period of up to 30 years, and decommissioning.

LVIA unavoidably involves a combination of both quantitative and subjective assessment and wherever possible a consensus of professional opinion will be sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.

Technical Guidance and best practice

The methodology for the LVIA accords with the Landscape Institute and IEMA Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA 3), 2013, including Technical Guidance Note LITGN-2024-01 (see below). In addition to planning policy documents and other supporting technical guidance, the LVIA methodology includes, but is not limited to the following:

- Special Landscape Qualities - Guidance on assessing effects, NatureScot (NS), January 2025;
- Guidance on Aviation Lighting Impact Assessment, NS, November 2024;
- Notes and Clarifications on Aspects of Guidelines for Landscape and Visual Impact Assessment Third edition (GLVIA3) Technical Guidance Note LITGN-2024-01 Landscape Institute, 2024;
- Pre-application guidance for onshore wind farms, NS, November 2024;
- Guidance: Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments, Scottish Natural Heritage (SNH), 2021;
- Residential Visual Amenity Assessment Technical Note 2/19, Landscape Institute, 15 March 2019;
- Siting and Designing Windfarms in the Landscape, Version 3a, Scottish Natural Heritage SNH, August 2017;
- Visual Representation of Windfarms, Version 2.2, SNH, February 2017; and
- Guidance: Spatial Planning for Onshore Wind Turbines – natural heritage considerations, Version 3a, SNH, June 2015.

Defining the LVIA Study Area

The NatureScot (NS) guidance[1] advises that the LVIA Study Area for wind turbines of this height should be based on an area of 45km distance from each of the proposed turbine locations as illustrated in **Figure 7.1**. The LVIA Study Area covers a circular area of 46,525m radius from the Development Site centre (based on a minimum 45km distance from each of the proposed turbines) unless otherwise agreed through consultation.

It is important to note that the boundary of the LVIA Study Area is not the limit of potential visibility. Rather, it is an area defined by NS, on the basis of research, to determine a suitable LVIA Study Area for the assessment of wind farms which will contain all likely significant landscape and visual effects.

Desk-based and site survey work

The LVIA will be informed by desk-based studies and site and field survey work undertaken within the LVIA study area.

During scoping, a preliminary desk-based assessment was undertaken of landscape and visual receptors using a range of map-based data and related computer and digital analysis including ZTV, digital and / or surface terrain modelling and wireframe and street view software. This process will be continued through the LVIA to inform detailed assessments and focus the site and field survey work and likely locations for viewpoint photography and sequential route assessment.

The field studies will include visits to all relevant landscape and visual receptors to assess the likely effects of the Proposed Development in the field, checking data, ‘ground truthing’ and examining landscape elements, characteristics / character and views / visual amenity.

Site and field survey activities will include:

- Site survey verification of landscape elements within the Site Boundary where potentially significant effects are likely;
- Field survey verification of the ZTV from landscape and visual receptor locations and transport and recreational routes throughout the LVIA study area;
- Micro-siting of viewpoint locations and recording of panoramic baseline photography and subsequent visual assessment from the assessment viewpoints; and
- Field survey assessment and verification of likely landscape, visual and cumulative effects.

All site survey work will be undertaken in fair weather conditions with good to excellent visibility.

Integrated Design and Assessment

Design is an integrated and iterative part of the LVIA process. In particular the advice from the following documents, is relevant to the design in terms of the turbine scale, location / layout and where required aviation warning lights:

- Siting and Designing Windfarms in the Landscape, Version 3a, SNH, August 2017;
- Landscape Character Types and Descriptions, NS, 2019;
- Guidance on Aviation Lighting Impact Assessment, NS, November 2024; and
- Pre-application guidance for onshore wind farms, NS, November 2024.

Potential effects during construction

A range of potential effects on the landscape and visual resource are likely during the construction of the Proposed Development. An appraisal of the potential effects will help to define the scope of the LVIA and develop an integrated design and mitigation response which can be embedded into the Proposed Development. The potential effects likely to result from construction are described below.

Landscape Effects:

Effects on landscape elements, features and patterns (including, but not limited to soils, landform, ground vegetation, hedgerows / field boundaries, trees / forestry and buildings) as a result of land preparation including site clearance and earthworks.

Effects on landscape character and key characteristics, including perceptual characteristics and qualities as a result of construction activities. The construction activities are likely to include the presence of construction staff and machinery, cranes, vehicle movements, contractors' facilities and site access associated with the Proposed Development.

Effects on the special landscape qualities of designated landscapes as a result of the above construction activities.

Visual Effects:

Effects on the views and visual amenity experienced by people undertaking various activities at various locations, distances and directions from the proposed land preparation and construction activities. These visual effects could be experienced from one location or sequentially as part of a route through the landscape such as a cycle route or long-distance footpath.

Cumulative Effects:

Cumulative effects could occur as a result of multiple wind farm construction activities affecting a landscape or visual receptor.

Mitigation and design responses may include a range of design decisions about the location, form, process and timing of construction related infrastructure / operations to mitigate potential landscape and visual effects (avoid, reduce or compensate) as well as reference to a range of best practice behaviours and processes undertaken as part of construction site operation.

Potential effects during operation

The potential effects during operation relate principally to the presence of the Proposed Development and its on-going maintenance during the 30-year operational period. This is likely to lead to long-term (reversible) effects on landscape and visual receptors, which are also likely to be cumulative in this case.

Mitigation and design responses may include landscape / architectural design strategies which aim to control the physical appearance of the Proposed Development in terms of its scale, form, colour and number of components. Examples include Landscape Mitigation Plans, choice of project colour scheme, or focus on particular aspects such as a Lighting Strategy to reduce effects on the night-time environment.

Landscape Mitigation Plans illustrate and explain a range of landscape design and management techniques that may be employed to mitigate the effects of the Proposed Development by enhancing and controlling its landscape setting and visual appearance. Examples include landscape planting and management plans, habitat management plans and integrated forestry design and management plans, all of which can relate to 'on-site' and off-site' interventions.

Potential effects during decommissioning

The Proposed Development would be decommissioned and the land reinstated, leading to a whole or partial reversal of the landscape and visual effects.

Assessing Landscape Effects

Landscape Effects are defined by the Landscape Institute in GLVIA 3, paragraphs 5.1 and 5.2 as follows:

> *"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here. is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. ... The study area should include the site itself and the full extent of the wider landscape around it which the development may influence in a significant manner."*

In accordance with GLVIA 3 the term 'landscape' encompasses areas of 'townscape' and coastal areas of 'seascape'. Areas of landscape are relevant to this assessment and they are described as follows.

Landscape Character

GLVIA 3, paragraph 5.4, advises that Landscape Character Assessment should be regarded as the main source for baseline studies and identifies the following factors which combine to create areas of distinct landscape character:

- *"the elements that make up the landscape in the study area including:*
  - *physical influences – geology, soils, landform, drainage and water bodies;*
  - *landcover, including different types of vegetation and patterns and types of tree cover; and*

- *the influence of human activity, including landuse and management, the character of settlements and buildings, and pattern and type of fields and enclosure.*

- *The aesthetic and perceptual aspects of the landscape – such as, for example, its scale, complexity, openness, tranquillity or wildness;*
- *The overall character of the landscape in the study area, including any distinctive Landscape Character Types or Areas that can be identified, and the particular combinations of elements and aesthetic and perceptual aspects that make each distinctive, usually by identification as key characteristics of the landscape."*

Landscape effects

The potential landscape effects, occurring during the construction, operation and decommissioning periods of the Proposed Development may therefore include, but are not restricted to the following:

- **Changes to landscape elements:** The addition of new elements (wind turbines for example) or the removal of existing elements such as trees, vegetation and buildings and other characteristic elements or valued features of the landscape character;
- **Changes to landscape qualities:** Degradation or erosion of landscape elements and patterns and perceptual characteristics, particularly those that form key characteristic elements of the landscape character or contribute to the landscape value;
- **Changes to landscape character:** Landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities (including perceptual characteristics) and the addition of new features, the magnitude of which is sufficient to alter the overall landscape character within a particular area;
- **Changes to designated or other mapped landscapes:** Including nationally and locally designated landscapes and Wild Land Areas (WLA) that would affect the special landscape qualities underpinning these areas and their integrity; and
- **Cumulative landscape effects:** Where more than one development of a similar type may lead to a cumulative effect.

Development may have a direct effect on the landscape as well as an indirect effect which would be perceived from the wider landscape, outside the immediate site area and its associated landscape character/ designation. Landscape effects also should be recognised in the context of natural and man-made processes which can change or alter the landscape over time.

Evaluating landscape sensitivity to change

The assessment of sensitivity will take account of the landscape value and the susceptibility of the receptor to the Proposed Development.

Landscape sensitivity often varies in response to both the type and phase of the development proposed and its location, such that sensitivity needs to be considered on a case-by-case basis. It should not be confused with 'inherent sensitivity' where areas of the landscape may be referred to as inherently of 'high' or 'low' sensitivity. For example, a National Park may be described as inherently of high sensitivity on account of its designation and value, although it may prove to be less sensitive or susceptible to particular development, and of variable sensitivity across its geographical area. Alternatively, an undesignated landscape may be of high sensitivity to a particular development regardless of the lack of local or national designation.

Value of the Landscape Receptor

The value of a landscape receptor is a reflection of the value that society attaches to that landscape. The assessment of the landscape value is classified as high, medium or low and the basis for this assessment is made clear using evidence and professional judgement, based on the following range of factors:

- **Landscape designations:** A receptor that lies within the boundary of a recognised landscape related planning designation will be of increased value, depending the level of importance of the designation which may be international, national, regional or local. The absence of designation does not however preclude value, as an undesignated landscape receptor may be valued as a resource at a local level;
- **Landscape quality:** The quality of a landscape receptor is a reflection of its attributes, such as scenic quality, sense of place, rarity and representativeness and the extent to which its valued attributes have remained intact. A landscape with consistent, intact, well-defined and distinctive attributes is considered to be of higher quality and, in turn, higher value, than a landscape where the introduction of elements has detracted from its character; and
- **Landscape experience:** The experiential qualities that can be evoked by a landscape receptor can add to its value. These responses relate to a number of factors including cultural associations that may exist in art, literature or history; the recreational value of the landscape, or the iconic status of the landscape in its own right; and its contribution of other values such as nature conservation or archaeology.

Landscape Susceptibility to Change

The susceptibility of a landscape receptor to change is a reflection of its ability to accommodate the changes that will occur as a result of the Proposed Development without undue consequences for the maintenance of the baseline situation and / or the achievement of landscape planning policies and strategies. Some landscape receptors are better able to accommodate development than others due to certain characteristics that are indicative of capacity to accommodate change. These characteristics may or may not also be special landscape qualities that underpin designated landscapes.

The assessment of the susceptibility of the landscape receptor to change is classified as high, medium or low and the basis for this assessment is made clear using evidence and professional judgement. Indicators of landscape susceptibility to the type of development proposed (wind farm construction, operation and decommissioning) are based on the following criteria:

- **Strength and Robustness:** Collectively the overall characteristics and qualities of a particular landscape result in a strong and robust landscape that is capable of reasonably accommodating the Proposed Development without undue adverse effects on the special landscape qualities (in the case of a designated landscape) or the key characteristics for which an area of landscape character or a particular element it is valued.
- **Landscape Scale and Topography:** The scale and topography are large enough to physically accommodate the development footprint without the requirement of invasive earthworks or drainage. Topographical features such as narrow valleys or more complex and small-scale landforms such as drumlins, incised river valleys / gorges, cliffs or rock outcrops are likely to be more susceptible to this type of development than broad, homogenous topography.
- **Openness** in the landscape may increase susceptibility to change because it can result in wider visibility of the Proposed Development, however open landscape may also be larger in scale and

simple, which would decrease susceptibility. Conversely enclosed landscapes can offer more screening potential, limiting visibility to a smaller area, however they may also be smaller scale and more complex which would increase susceptibility.

- **Land Cover Pattern:** Ancient and mature or long-established vegetation such as mature trees, woodland and protected hedgerows are likely to be more susceptible to the Proposed Development, particularly where these elements form part of a valued characteristic landscape pattern or feature. Conversely grassland / or forestry are likely to be less susceptible to wind farm development.
- **Skyline:** Prominent and distinctive skylines and horizons with important landmark features that are identified in the landscape character assessment, are generally considered to be more susceptible to wind farm development in comparison to broad, simple skylines which lack landmark features or contain other infrastructure features.
- **Relationship with other Development and Landmarks:** Contemporary landscapes where there are existing wind energy developments or other forms of development (industry, mineral extraction or electrical grid connections) that already have a characterising influence result in a lower susceptibility to development in comparison to areas characterised by smaller scale, historic development and landmarks (historic villages with dense settlement patterns and associated buildings such as church towers). It should be noted that existing wind energy development is time limited and subject to decommissioning.
- **Rationale:** Some site locations have an obvious visual rationale for the Proposed Development in terms of the available space, access, simplicity and relationship to other similar forms of development. Conversely a site may appear overly constrained and require greater engineering or additional construction activity to accommodate the Proposed Development with lower design quality and few embedded environmental measures.
- **Remoteness, Naturalness, Wildness / Tranquillity:** Notably landscapes that are acknowledged to be particularly scenic, wild or tranquil are generally considered to be more susceptible to development in comparison to ordinary, cultivated or forested / developed landscapes where perceptions of ‘wildness’ are less tangible. Landscapes which are either remote or appear natural may vary in their susceptibility to development.
- **Landscape Context and Adjacent Landscapes:** The extent to which the Proposed Development will influence landscape receptors across the study area relates to the associations that exist between the landscape receptor within which the Proposed Development is located and the landscape receptor from which the Proposed Development is being experienced. In some situations, this association will be strong, where the landscapes are directly related. For example, adjacent areas of landscape character may share or ‘borrow’ a high number of common characteristics. Landscape elements may be linked to or associated with wider landscape patterns such as individual trees forming part of an avenue or pattern of woodland corpses, for example. In other situations, the association between adjacent landscapes will be weak. The context and visual connection to areas of adjacent landscape character or designations has a bearing on the susceptibility to development.

Landscape Sensitivity Rating

An overall sensitivity assessment of the landscape receptor is made by combining the assessment of the value of the landscape character receptor and its susceptibility to change. The evaluation of landscape sensitivity is described as ‘High’, ‘Medium’ or ‘Low’ and is drawn from the consideration of a range of criteria that indicate landscape value and susceptibility. The basis for the assessment is

made clear using evidence and professional judgement in the evaluation of sensitivity for each receptor.

Criteria that tend towards higher or lower sensitivity are set out in **Table A.1**.

Table A.1 Landscape Sensitivity to Change

Value/ Susceptibility Criteria	Level of value/ susceptibility ranging from 'High' to 'Medium' to 'Low'	
	High	Medium / Low
Value – Landscape Value is determined by a range of indicators/criteria with examples as follows:		
Designation	Designated landscapes/elements with national policy level protection or defined for their natural beauty. Evidence that the landscape/element is valued or used substantially for recreational activity.	Landscapes without formal designation. Despoiled or degraded landscape with little or no evidence of being valued by the community. Elements that are uncharacteristic such as non-natives or self-seeded vegetation that may need to be cleared.
Quality	Higher quality landscapes/elements with consistent, intact and well-defined, distinctive attributes.	Lower quality and indistinct landscapes/elements or features that detract from its inherent attributes.
Rarity	Rare or unique landscape character types, features or elements.	Widespread or 'common' landscape character types, features or elements.
Aesthetic/ scenic	Aesthetic/scenic or perceptual aspects of designated wildlife, ecological or cultural heritage features that contribute to landscape character.	Limited wildlife, ecological or cultural heritage features, or limited contribution to landscape character.
Perceptual qualities	Landscape with perceptual qualities of wildness, remoteness or tranquillity.	Limited or no evidence that the landscape is used for recreational activity.
Cultural associations	Landscape with strong cultural associations that contributes to scenic quality.	Landscape with few cultural associations.
Susceptibility – determined by a range of indicators / criteria with examples as follows:		
Strength and robustness	Fragile landscape vulnerable and lacking the ability to accommodate change.	Robust landscape, able to accommodate change or loss of features without undue adverse effects.
Landscape Scale	A smaller scale landscape that may require further engineering to accommodate the Proposed Development.	A landscape of a suitably large enough scale to accommodate the Proposed Development.
Openness/ Enclosure	An open landscape with limited screening and higher susceptibility to the Proposed Development.	An enclosed landscape with screening and lower susceptibility to the Proposed Development.
Reinstatement	Higher value, characteristic landcover and elements that cannot be easily reinstated or replaced.	Lower value, non-characteristic landcover and elements capable of rapid reinstatement or replacement.
Skyline	Distinctive undeveloped skylines with landmark features.	Developed, nondistinctive skylines.
Association	Weak and indirect association. Other development may be of a smaller scale or historic.	Strong or direct association other similar contemporary developments/landscape character.

Value/ Susceptibility Criteria	Level of value/ susceptibility ranging from 'High' to 'Medium' to 'Low'	
	High ⟷ Medium	Low
Rationale	Landscape with numerous environmental and technical constraints and fewer environmental measures.	Strong landscape rationale and opportunity with high degree of design quality and/or environmental measures.
Perceptual Qualities	Perceptual qualities associated with particular scenic qualities, wildness or tranquillity.	Contemporary, cultivated/settled or developed landscapes are likely to have a lower susceptibility.
Landscape Context	Adjacent landscape character context connected by borrowed character and views.	Host landscape character is separate from surrounding/adjacent landscape character
Sensitivity	**Sensitivity drawn from consideration of the Value and Susceptibility criteria with the final conclusion on the level of Sensitivity ranging from 'High' to 'Medium' to 'Low'.**	

Landscape Magnitude of Change

The magnitude of change affecting landscape receptors is an expression of the scale of change that would result from the Proposed Development. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary or permanent).

Size or Scale of Change

This criterion relates to the size or scale of change to the landscape that would arise as a result of the Proposed Development, based on the following factors:

- **Landscape Elements:** The degree to which the pattern of elements that makes up the landscape character would be altered by the Proposed Development, through the loss, alteration or addition of elements in the landscape. The magnitude of change would generally be higher if the features that make up the landscape character are extensively removed or altered, and / or if many new components are added to the landscape.
- **Landscape Characteristics:** The extent to which the effect of the Proposed Development change, (physically or perceptually) the key characteristics of the landscape which may be important to its distinctive character. This may include, for example, the scale of the landform, its relative simplicity, complexity or irregularity, the nature of the landscape context, the grain or orientation of the landscape, the degree to which the receptor is influenced by external features and the juxtaposition of the Proposed Development in relation to these key characteristics.
- **Landscape Character / Designation:** The degree to which landscape character receptors would be changed by the addition of the Proposed Development. If the Proposed Development is located in a landscape receptor that is already affected by other similar development, this may reduce the magnitude of change if there is a high level of integration and the developments form a unified and cohesive feature in the landscape. In the case of designated landscapes, the degree of change is considered in light of the effects on the special landscape qualities which underpin the designation and the effect on the integrity of the designation.

All landscapes change over time and much of that change is managed or planned. Often landscapes will have management objectives for 'protection' or 'accommodation' of development. The scale of change may be localised, or occurring over parts of an area, or more widespread

affecting whole landscape character areas and their overall integrity. Developmental change may be time limited or permanent.

- **Distance:** The size and scale of change is also strongly influenced by the proximity of the Proposed Development to the receptor and the extent to which the development can be seen as a characterising influence on the landscape. Consequently, the scale or magnitude of change is likely to be lower in respect of landscape receptors that are distant from the Proposed Development and / or screened by intervening landform, vegetation and built form to the extent that the scale of their influence on landscape receptors is small or limited. Conversely, landscapes closest to the Proposed Development are likely to be most affected. Host landscapes (where the Proposed Development is located within a 'host' landscape character unit) would be directly affected whilst adjacent areas of landscape character would be indirectly affected.

Geographical Extent

Landscape effects are described in terms of the geographical extent or physical area that would be affected (described as a linear or area measurement). This should not be confused with the scale of the development or its physical footprint. The manner in which the geographical extent of the landscape effect is described for different landscape receptors is explained as follows:

- **Landscape Elements:** The geographical extent of landscape elements may be objectively measured in terms of numbers, area or linear measurement. For example, the number of trees, area of woodland / or length of hedgerow affected may be recorded.
- **Landscape Character / Characteristics:** The extent of the effects on landscape character will vary depending on the specific nature of the Proposed Development. This is not simply an expression of visibility or the extent of the ZTV. It is a specific assessment of the extent of landscape character that would be changed by the Proposed Development in terms of its character, key characteristics and elements.
- **Landscape Designations and Wild land:** In the case of a designated landscape, this refers to the extent the special landscape qualities of the designation, or wild land qualities, are affected and whether this can be defined in terms of area or linear measurements, or subjectively (with the support of panel and / or peer review) and whether the integrity of the designation is affected.

Duration and Reversibility

The duration and reversibility of landscape effects is based on the period over which the Proposed Development is likely to exist (during construction and operation) and the extent to which it would be removed (during decommissioning) and the effects reversed at the end of that period. Long-term, medium-term and short-term landscape effects are defined as follows:

- Permanent Development: No decommissioning, removal or reinstatement is planned.
- Temporary Development: This includes time limited development, such as a longer period of operation where decommissioning for example forms part of the Proposed Development or temporary phases of the development such as construction or decommissioning works:
  - Long-term – more than 10 years – essentially assessed as though 'permanent';
  - Medium-term – 6 to 10 years; and
  - Short-term – 1 to 5 years.

Reversibility is a separate, but linked consideration concerning the prospects and practicality of a particular effect being reversed. Some forms of development, such as housing can be considered as

permanent, whereas other forms of development such as wind farms can be considered as reversible because they have a limited operational life and after their removal the land would be restored. Mineral workings for example may be partially reversible with the landscape restored, although not completed to the same state as the original. In the case of the Proposed Development, the application is for a 30 year operation period, beyond which the project would be decommissioned or a new application submitted, and many of the effects would be reversed.

Landscape Magnitude of Change Rating

The 'magnitude' or 'degree of change' resulting from the Proposed Development is described as 'High', 'High – Medium', 'Medium', 'Medium – Low', 'Low', 'Low – Very Low', 'Very Low' or 'Zero'. In assessing the magnitude of change the assessment will focus on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary or permanent). The basis for the assessment of magnitude for each receptor is made clear using evidence and professional judgement.

The levels of magnitude of change that can occur are defined in **Table A.2.**

Table A.2 Landscape Magnitude of Change Ratings

Magnitude of Landscape Change	Examples of Landscape Magnitude
High	Size / Scale: A large-scale change and major loss of key landscape elements / characteristics or the addition of large scale or numerous new and uncharacteristic features or elements that would affect the landscape character and the special landscape qualities of a landscape designation. Directly affecting a host landscape receptor or indirectly affecting a nearby receptor. Geographical extent: The size or scale of change would typically, but not always affect a large geographical extent or area and may be close to the Proposed Development.
High - Medium	Intermediate rating with combination of criteria from high or medium magnitude.
Medium	Size / Scale: A medium scale change and moderate loss of some key landscape elements / characteristics or the addition of some new medium scale uncharacteristic features or elements that could partially affect the landscape character and the special landscape qualities of a landscape designation. Directly affecting a host landscape receptor or indirectly affecting a nearby receptor. Geographical extent: The size or scale of landscape change would typically, but not always affect a more localised geographical extent at an intermediate distance from the Proposed Development.
Medium - Low	Intermediate rating with combination of criteria from medium or low magnitude.
Low	Size / Scale: A small-scale change and minor loss of a few landscape elements / non key characteristics, or the addition of some new small-scale features or elements of limited characterising influence on landscape character / designations. Geographical extent: There may be a small partial change in landscape character, typically, but not always affecting a localised geographical extent at some distance from the Proposed Development.
Low - Very Low	Intermediate rating with combination of criteria from low or very low magnitude.

Magnitude of Landscape Change	Examples of Landscape Magnitude
Very Low	Size / Scale: A very small-scale change that may include the loss or addition of some landscape elements of limited characterising influence. The landscape characteristics and character would be unaffected. Geographical extent: Typically affecting a very small geographical extent at greater distance from the Proposed Development.
Zero	There is no effect.

Evaluating Landscape Effects and Significance

The level of landscape effect is evaluated through the combination of landscape sensitivity and magnitude of change. Once the level of effect has been assessed, and the nature of the effect determined (whether this is direct / indirect; its duration, whether this is temporary / permanent; and whether it is beneficial / neutral / adverse or cumulative) a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix illustrated in **Table A.5** which is used to guide the assessment. The factors considered in the evaluation of the sensitivity and the magnitude of the change resulting from the Proposed Development and their conclusion, will be presented in a comprehensive, clear and transparent manner.

Significant Landscape Effects

A significant effect would occur where the combination of the variables results in the Proposed Development having a defining effect on the landscape receptor, or where changes of a lower magnitude affect a landscape receptor that is of particularly high sensitivity. A major loss or irreversible effect over an extensive area of landscape character, affecting landscape elements, characteristics and / or perceptual aspects that are key to a nationally valued landscape are likely to be significant as described in GLVIA 3 paragraph 5.56.

Non-Significant Landscape Effects

A non-significant effect would occur where the effect of the Proposed Development is not defining, and the landscape character of the receptor continues to be characterised principally by its baseline characteristics. Equally a small-scale change experienced by a receptor of high sensitivity may not significantly affect the special landscape quality of a designation. Reversible effects, on elements, characteristics and character that are of small-scale or affecting lower value receptors are unlikely to be significant as described in GLVIA 3 paragraph 5.56.

Assessing Visual Effects

Visual Effects are concerned wholly with the effect of the development on views, and the general visual amenity and are defined by the Landscape Institute in GLVIA 3, paragraphs 6.1 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern here. is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and / or introduction of new elements."

Visual effects are identified for different receptors (people) who would experience the view at their place of residence, within their community, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view; and

Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

The level of visual effect (and whether this is significant) is determined through consideration of the sensitivity of each visual receptor (or range of sensitivities for receptor groups) and the magnitude of change that would be brought about by the construction, operation and decommissioning of the Proposed Development.

Zone of Theoretical Visibility (ZTV)

Plans mapping the Zone of Theoretical Visibility (ZTV) are used to analyse the extent of theoretical visibility of development or part of a development, across the LVIA Study Area and to assist with viewpoint selection. The ZTV does not however, take account of the screening effects of buildings, localised landform and vegetation, unless specifically noted (see individual figures). As a result, there may be roads, tracks and footpaths within the study area which, although shown as falling within the ZTV, are screened or filtered by built form and vegetation, which would otherwise preclude visibility.

The ZTVs provide a starting point in the assessment process and accordingly tend towards giving a ‘worst case’ or greatest calculation of the theoretical visibility.

Viewpoint Analysis

Viewpoint analysis is used to assist the assessment and is conducted from selected viewpoints within the LVIA Study Area. The purpose of this is to assess both the level of visual effect for particular receptors and to help guide the design process and focus the assessment. A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect would occur. By considering the viewpoints in order of distance it is possible to define a threshold or outer geographical limit, beyond which it would be reasonable to assume that significant effects would be unlikely.

The assessment will involve visiting the viewpoint location and viewing wirelines and photomontages prepared for each viewpoint location. The fieldwork is conducted in periods of fine weather with good visibility and considers seasonal changes such as reduced leaf cover or hedgerow maintenance.

Viewpoint analysis prepared for each viewpoint will be presented as supporting evidence in an appendix to the LVIA. A summary table of the findings will also be provided in order of distance from the development site. This summary table assists in defining the direction, elevation, geographical spread and nature of the potential visual effects and identifies areas where significant effects are likely to occur. This approach seeks to provide clarity and confidence to consultees and decision makers by allowing the detailed judgements on the magnitude of visual change to be more readily scrutinised and understood.

Evaluating Visual Sensitivity to Change

In accordance with paragraphs 6.31-6.37 of GLVIA 3, the sensitivity of visual receptors is determined by a combination of the value of the view and the susceptibility of the visual receptors to the change likely to result from the Proposed Development on the view and visual amenity.

Value of the view

The value of a view or series of views reflects the recognition and importance attached either formally through identification on mapping or being subject to planning designations, or informally through the value which society attaches to the view(s). The value of a view is classified as high, medium or low and the basis for this assessment is made clear using evidence and professional judgement, based on the following criteria:

- **Formal recognition:** The value of views can be formally recognised through their identification on OS or tourist maps as formal viewpoints, sign-posted and with facilities provided to add to the enjoyment of the viewpoint such as parking, seating and interpretation boards. Specific views may be afforded protection in local planning policy and recognised as valued views. Specific views can also be cited as being of importance in relation to landscape or heritage planning designations, for example the value of a view would be increased if it presents an important vista from a designed landscape or lies within or overlooks a designated area, which implies a greater value to the visible landscape.
- **Informal recognition:** Views that are well-known at a local level and / or have particular scenic qualities can have an increased value, even if there is no formal recognition or designation. Views or viewpoints are sometimes informally recognised through references in art or literature and this can also add to their value. A viewpoint that is visited and appreciated by a large number of people would generally have greater importance than one gained by very few people.

Susceptibility to Change

Susceptibility relates to the nature of the viewer experiencing the view and how susceptible they are to the potential effects of the Proposed Development. A judgement to determine the level of susceptibility therefore relates to the nature of the viewer and their experience from that particular viewpoint or series of viewpoints, classified as high, medium or low and based on the following criteria:

- **Nature of the viewer:** The nature of the viewer is defined by the occupation or activity of the viewer at the viewpoint or series of viewpoints. The most common groups of viewers considered in the visual assessment include residents, motorists, and people taking part in recreational activity or working. Viewers, whose attention is focused on the landscape, or with static long-term views, are likely to have a higher sensitivity. Viewers travelling in cars or on trains would tend to have a lower sensitivity as their view is transient and moving. The least sensitive viewers are usually people at their place of work as they are generally less sensitive to changes in views.
- **Experience of the viewer:** The experience of the visual receptor relates to the extent to which the viewer's attention or interest may be focused on the view and the visual amenity they experience at a particular location. The susceptibility of the viewer to change arising from the Proposed Development may be influenced by the viewer's attention or interest in the view, which may be focused in a particular direction, from a static or transitory position and over a long or short duration. For example, if the principal outlook from a settlement is aligned directly towards the Proposed Development, the experience of the visual receptor would be altered more notably

than if the experience relates to a glimpsed view seen at an oblique angle from a car travelling at high speed. The visual amenity experienced by the viewer varies depending on the presence and relationship of visible elements, features or patterns experienced in the view and the degree to which the landscape in the view may accommodate the Proposed Development.

Visual Sensitivity Rating

An overall level of sensitivity is applied for each visual receptor or view, classified as 'High', 'Medium' or 'Low' by combining individual assessments of the value of the view and the susceptibility of the visual receptor to change. Each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, is assessed in terms of their sensitivity. The basis for the assessments is made clear using evidence and professional judgement in the evaluation of each receptor. Criteria that tend towards higher or lower sensitivity are set out in **Table A.3**.

Table A.3 Visual Sensitivity to Change

Value/ Susceptibility Criteria	Level of value/ susceptibility ranging from 'High' to 'Medium' to 'Low'	
	High	Medium / Low
Value – Visual Value is determined by a range of indicators/criteria with examples as follows:		
Map /tourist information	Specific viewpoint identified in OS maps and/or tourist information and signage.	Viewpoint not identified in OS maps or tourist information and signage.
Facilities	Facilities provided at viewpoint to aid the enjoyment of the view.	No facilities provided at viewpoint to aid enjoyment of the view.
Planning recognition	View afforded protection in planning policy.	View is not afforded protection in planning policy.
Landscape value	View is within or overlooks a designated landscape, which implies a higher value to the visible landscape.	View is not within, nor does it overlook, a designated landscape.
Recognition	View has informal recognition and well- known at a local level, as having particular scenic qualities. This could also be expressed in terms of higher numbers of visitors / popularity of the location, although care needs to be taken in respect of Wild Land Areas / other areas valued for their remoteness.	View has no informal recognition and is not known as having particular scenic qualities. This could also be expressed in terms of low numbers of visitors / visitor interest.
Art/ Literature	View or viewpoint is recognised through references in art or literature.	View or viewpoint is not recognised in references in art or literature.
Scenic Quality	View has high scenic qualities relating to the content and composition of the visible landscape.	View has low scenic qualities relating to the content and composition of the visible landscape.
Susceptibility – determined by a range of indicators / criteria with examples as follows:		
Activity of the viewer	Viewer who is likely or liable to be influenced by the Proposed Development such as residents, walkers, or tourists, whose main attention and interest may be on their surroundings.	Viewer who is un or less likely to be influenced by the Proposed Development such as viewers whose attention is not focused on their surroundings (e.g. people at work, or team sports).

Value/ Susceptibility Criteria	Level of value/ susceptibility ranging from 'High' to 'Medium' to 'Low'	
	High ⟷ Medium	Low
Nature of the View	Residents that gain static, long-term views of the development in their principal outlook.	Mobile viewers whose views are transient and dynamic (e.g. travelling in cars or on trains with glimpsed views).
Direction/ Field of View	A view that is focused in a specific directional vista, with notable features of interest in a particular part of the view.	Open views with no specific point of interest.
Visual amenity	Viewers are focused on the experience of a high level of visual amenity at the location due to its overall pleasantness as an attractive visual setting or backdrop to activities.	The visual amenity experienced at the location by viewers is less pleasant or attractive than might otherwise be the case.
Sensitivity	**Sensitivity drawn from consideration of the Value and Susceptibility criteria to level of Sensitivity ranging from 'High' to 'Medium' to 'Low'.**	

Visual Magnitude of Change

The visual magnitude of change is an expression of the scale of change that would result from the visibility of the Proposed Development. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary / permanent).

Size or Scale of Change

An assessment is made of the size or scale of change in the view that is likely to be experienced as a result of the Proposed Development, based on the following criteria:

- **Distance:** The distance between the visual receptor / viewpoint and the Proposed Development. Generally, the greater the distance, the lower the magnitude of change, as the Proposed Development would constitute a smaller-scale component of the view due to the effects of perspective.
- **Size:** The amount and size of the Proposed Development that would be seen. Visibility may range from small or partial to whole visibility of the Proposed Development. Generally, the larger and greater number of elements (wind turbines and access tracks) of the Proposed Development that appear in the view, the higher the magnitude of change.

This is also related to the degree to which development may be wholly or partly screened by landform, vegetation (seasonal) and / or built form. Conversely open views are likely to reveal more of a development, particularly where this is a key characteristic of the landscape.

- **Scale:** The scale of the change in the view, with respect to the loss or addition of features in the view and changes in its composition. The scale of the Proposed Development may appear larger or smaller relative to the scale of the receiving landscape.
- **Field of View:** The vertical / horizontal field of view and the proportion of view that is affected by the Proposed Development. Generally, the more of the proportion of a view that is affected, the higher the magnitude of change would be. If the Proposed Development extends across the whole of the view, the magnitude of change would generally be higher as the full view would be

affected. Conversely, if the Proposed Development extends over a narrow part of an open view, the magnitude of change is likely to be reduced as the Proposed Development would not affect the whole view or outlook. This can in part be described objectively by reference to the horizontal / vertical field of view affected, relative to the extent and proportion of the available view.

- **Contrast:** The character and context within which the Proposed Development would be seen and the degree of contrast or integration of any new features with existing landscape elements, in terms of scale, form, mass, line, height, colour, luminance and motion. Developments which contrast or appear incongruous in terms of colour, scale and form are likely to be more visible and have a higher magnitude of change.
- **Consistency of image:** The consistency of image of the Proposed Development in relation to other developments. The magnitude of change for the Proposed Development is likely to be lower if it appears broadly similar to other developments in the landscape in terms of its scale, form and general appearance. New development is more likely to appear as logical components of the landscape with a strong rationale for their location.
- **Skyline / Background:** Whether the Proposed Development would be viewed against the skyline or a background landscape may affect the level of contrast and magnitude. For example, skyline developments may appear more noticeable, particularly where they affect open and undeveloped horizons. Conversely, development may also appear more noticeable when viewed against a darker background landscape, such as forestry. In these cases, the magnitude of change would tend to be higher.

If the Proposed Development adds to an already developed skyline the magnitude of change would tend to be lower.

- **Number:** Generally, the greater the number of separate development components seen simultaneously or sequentially, the higher the magnitude of change and this may lead to whole project effects (for example the visual effect of the turbines and the substation). Further cumulative effects would occur in the case of separate, existing developments and their spatial relationship to each other would affect the magnitude of change. For example, development that appears as an extension to an existing development would tend to result in a lower magnitude of change than a separate, new development.
- **Nature of Visibility:** The nature of visibility is a further factor for consideration. The Proposed Development may be subject to various phases of development change and the manner in which the development may be viewed could be intermittent or continuous and / or seasonally, due to periodic management or leaf fall.

Geographical Extent

The geographic extent over which the visual effects would be experienced is also assessed. This is distinct from the size or scale of effect and is described in terms of the physical area or location over which it would be experienced (described as a linear or area measurement). The extent of the effects would vary according to the specific nature of the Proposed Development and is principally assessed through ZTV, field survey and viewpoint analysis of the extent of visibility likely to be experienced by visual receptors. The geographical extent of visual effects is described as per the following examples:

- The geographical extent can be described as an area measurement or proportion of the total receptor affected. For example, effects on people within a particular area such as a golf course or area of common land can be illustrated via a ‘representative viewpoint’ that represents a similar

visual effect, likely to be experienced by larger numbers of people within that area. The geographical extent of that visual effect can be expressed as approximately '5 hectares' or '10%' of the common land or a golf course area.

- The geographical extent can be described as a linear measurement (metres or kilometres) according to the length of route affected. For example, effects on people travelling on a route through the landscape such as a road or footpath can be illustrated via a 'representative viewpoint' that represents a similar visual effect, likely to be experienced by larger numbers of people along that route. The geographical extent of that visual effect can be expressed as approximately '2km' or '10%' of the total length of the route.
- The geographical extent of a visual effect experienced from a specific viewpoint may be limited to that location alone. (An example of a 'specific viewpoint' is a public viewpoint recommended in tourist literature such as a well visited hill summit. An example of an 'illustrative viewpoint' is a particular location within a built up or well vegetated area where an uncharacteristically open view exists).

Duration and Reversibility

The duration or time period over which a visual effect is likely to occur is judged on a scale of 'short', 'medium' or 'long' term and is assessed for the Proposed Development as per the method described in **Section 7.4**.

Reversibility is a separate, but linked consideration, also assessed for the Proposed Development as per the method described in **Section 7.4**.

Visual Magnitude of Change Rating

The 'magnitude' or 'degree of change' resulting from the Proposed Development is described as 'High', 'High – Medium', 'Medium', 'Medium – Low', 'Low', 'Low – Very Low', 'Very Low' or 'Zero'. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary / permanent). The basis for the assessment of magnitude for each receptor is made clear using evidence and professional judgement and some examples of the levels of magnitude of change that can occur on views are defined in **Table A.4**.

Table A.4 Visual Magnitude of Change Ratings

Magnitude of Visual Change	Examples of Landscape Magnitude	
High	Size and Scale: Number: Distance: Field of View: Nature of Visibility: Contrast:	A very large - large and dominant change to the view. Involving the loss/addition of a large number of features / elements. Typically appearing closer to the viewer in the fore to mid-ground. Affecting a large vertical and / or horizontal field of view. Multiple phase development, continuously and sequentially visible. Strong degree of contrast with surroundings, little / no screening. Visible on the skyline as a new feature. Contrasting with other developments, lacking in visual rationale.

Magnitude of Visual Change	Examples of Landscape Magnitude	
	Skyline: Consistency of Image:	
	Typically experienced from representative viewpoints illustrating a visual effect likely to be experienced by larger numbers of people, relative to the activity, affecting a large area or length / proportion of route. May also be experienced from a specific viewpoint.	
High - Medium	Intermediate rating with combination of criteria from high or medium magnitude of change category.	
Medium	Size and Scale: Number: Distance: Field of View: Nature of Visibility: Contrast: Skyline: Consistency of Image:	A medium and prominent change to the view. Involving the loss/addition of a number of features / elements. Typically appearing in the middle ground. Affecting a medium vertical and / or horizontal field of view. Multiple phase development, intermittently and sequentially visible. Contrast with surroundings and may benefit from some screening. Visible on the skyline along with other features. Different from other existing developments, some visual rationale.
	Typically experienced from representative viewpoints illustrating a visual effect likely to be experienced by a medium number of people, relative to the activity, affecting a medium area or length / proportion of route. May also be experienced from a specific viewpoint.	
Medium - Low	Intermediate rating with combination of criteria from medium or low magnitude of change category.	
Low	Size and Scale: Number: Distance: Field of View: Nature of Visibility: Contrast: Skyline: Consistency of Image:	A small/ noticeable change could be missed by the casual observer. Involving the loss/addition of a small number of features / elements. Typically appearing in the background. Affecting a small vertical and / or horizontal field of view. Simple, single development, intermittently and infrequently visible. Some parity / 'fits' with surroundings and some screening. Partly visible on a developed skyline or not visible on the skyline. Similar from other developments with visual rationale, appearing reasonably well accommodated within its surroundings.
	Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.	
Low - Very Low	Intermediate rating with combination of criteria from low or very low magnitude of change category.	
Very Low	Size and Scale: Number: Distance: Field of View:	A small or negligible change, need to 'look for it'. Involving the loss/addition of a small number of features / elements. Typically appearing in the far distance. Affecting a small vertical and / or horizontal field of view. Simple, single development, intermittently and infrequently visible. Blends with surroundings and / or is well screened. Partly visible on a developed skyline or not visible on the skyline.

Magnitude of Visual Change	Examples of Landscape Magnitude	
	Nature of Visibility: Contrast: Skyline: Consistency of Image:	Similar from other developments with strong visual rationale, appearing well accommodated within its surroundings.
	Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.	
Zero	There would be no view of the Proposed Development and no effect.	

Evaluating Visual Effects and Significance

The level of visual effect is evaluated through the combination of visual sensitivity and magnitude of change. Once the level of effect has been assessed, and the nature of the effect determined (whether this is direct / indirect; its duration, whether this is temporary / permanent; and whether it is beneficial / neutral / adverse or cumulative) a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix illustrated in **Table A.5** which is used to guide the assessment. The factors considered in the evaluation of the sensitivity and the magnitude of the change resulting from the Proposed Development and their conclusion, are then presented in a comprehensive, clear and transparent manner.

Significant Visual Effects

A significant effect is more likely to occur where a combination of the variables results in the Proposed Development having a defining effect on the view or visual amenity or where changes affect a visual receptor that is of high sensitivity as described in GLVIA 3 paragraph 6.44.

Non-Significant Visual Effects

A non-significant effect is more likely to occur where a combination of the variables results in the Proposed Development having a non-defining effect on the view or visual amenity or where changes affect a visual receptor that is of low sensitivity as described in GLVIA 3 paragraph 6.44.

Assessing Cumulative Landscape and Visual Effects

The assessment of cumulative effects is essentially the same as for the main assessment of the 'solus' or primary landscape and visual effects, in that the level of landscape and visual effect is determined by assessing the sensitivity of the landscape or visual receptor and the magnitude of change. Cumulative assessment, however, considers the magnitude of change posed by multiple developments.

A cumulative landscape or visual effect simply means that more than one type of development is present or visible within the landscape. Other forms of existing development and land-use such as woodland and forestry, patterns of agriculture, built form, and settlements already have a cumulative effect on the existing landscape that is already accepted or taken for granted. These features often contribute strongly to the existing character, forming a positive or adverse component of the local

landscape. Landscapes, however, will have a finite capacity for cumulative development, beyond which further new development would result in landscape character change and could result in the creation of a 'wind farm landscape' where wind farms have become the dominant characteristic.

Detailed guidance on the cumulative assessment of wind farm development is provided in the NS document 'Guidance: *Assessing the Cumulative Landscape and Visual Impact of Onshore Wind Energy Developments'* (2021). This assessment distinguishes between 'additional' cumulative effects that would result from adding the Proposed Development to other cumulative wind farm development and 'combined' cumulative effects that assess the total cumulative effect of the Proposed Development and other cumulative wind farm development. In the latter case a significant cumulative effect may result from the Proposed Development or one of more other existing, under-construction or consented wind farms, or other wind farm applications. In those cases, the main contributing wind farm(s) is identified in the assessment.

Types of cumulative effect are defined as follows:

- Cumulative Landscape Effects: Where more than one wind development may have an effect on a landscape designation or particular area of landscape character;
- Cumulative Visual Effects: the cumulative or incremental visibility of similar types of development that may combine to have a cumulative visual effect. These can be further defined as follows:
    - Simultaneous or combined: where two or more developments may be viewed from a single fixed viewpoint simultaneously, within the viewer's field of view and without requiring them to turn their head[2];
    - Successive or repetitive: where two or more developments may be viewed from a single viewpoint successively as the viewer turns their head or swivels through 360°; and
    - Sequential: where a number of developments may be viewed sequentially or repeatedly at increased frequency, from a range of locations when travelling along a route within the LVIA Study Area.

The SNH document *'Siting and Designing Wind farms in the Landscape'* (Version 3a) explains that the development of multiple wind farms within a particular area may create different types of cumulative effect, that can be described as follows:

- *"The wind farms are seen as separate isolated features within the landscape character type, too infrequent and of insufficient significance to be perceived as a characteristic of the area;*
- *The wind farms are seen as a key characteristic of the landscape, but not of sufficient dominance to be a defining characteristic of the area; [a landscape with wind farms] and*
- *The wind farms appear as a dominant characteristic of the area, seeming to define the character type as a 'wind farm landscape character type."*

Wind farm development that results in the creation of a '*wind farm landscape'* as opposed to a '*landscape with wind farms'* or '*landscape with occasional wind farms'* is likely to be assessed as significant. Equally the 'additional effect' of wind farm development, adding to a scenario where there are already a number of other existing or consented wind farms, may be less than the effect of the Proposed Development either on a 'solus' or primary basis or in an area where there are few or no wind farms existing. This is because wind farm development has already been established as a characterising influence and the additional effect of further development may or may not alter this.

Whilst the CLVIA considers other wind farm development, it should not be considered as a substitute for individual LVIA assessment in respect of each of the other cumulative developments included in the CLVIA.

Defining the Cumulative Study Area

The cumulative study area is the same as the LVIA Study Area**,** however it only includes other wind energy developments considered most relevant to the assessment, as agreed with consultees at Scoping. The cumulative assessment considers the effects of other existing, under-construction, consented and application wind energy sites on the landscape and visual receptors within the LVIA Study Area. In determining which wind energy developments should be included in the CLVIA the assessors may draw on the advice from consultees and other wind energy development within a wider search area (up to 60km radius from the proposed turbines).

Those developments at pre-planning or scoping stage are excluded in accordance with NS guidance (2021). Micro-generation turbines <50m in blade tip height are also usually excluded from the assessment, unless agreed otherwise with consultees.

Predicting Cumulative Landscape Effects

The assessment considers the extent to which the Proposed Development, in combination with others, may change landscape character through either an 'additional' or 'in combination' effect on characteristic elements, landscape characteristics and quality of the baseline landscape character. Identified cumulative landscape effects are described in relation to each individual Landscape Character Type/ Area and for any designated landscape areas assessed within the LVIA Study Area.

Predicting Cumulative Visual Effects

The assessment of cumulative visual effects involves reference to the cumulative visibility ZTV maps and the cumulative viewpoint analysis. The cumulative visibility of other existing and consented wind energy developments and applications is established in the first instance using the computer programme (Resoft Wind Farm© software) to identify areas where wind energy developments are theoretically visible. Cumulative visibility maps are analysed to identify the visual receptor locations and routes where cumulative visual effects on the landscape and people may occur as a result of the Proposed Development.

With potential receptor locations identified, cumulative effects on individual receptor groups are then explored through viewpoint analysis, which involves site visits informed by wireline illustrations that include other wind energy developments. The computer programme itself can also be used to 'drive' particular routes to assess the visibility of different wind energy developments and inform the assessment of sequential cumulative effects that may occur along a route or journey and compared to actual visibility experienced along a route on site.

Evaluating Cumulative Landscape and Visual Effects

The evaluation of cumulative effects is assisted by the matrix illustrated in **Table A.5,** which is used to guide the assessment.

The cumulative assessment has been prepared to ensure that, as well as the 'solus' or primary effect of the Proposed Development (LVIA) the 'additional' cumulative effects and the 'combined' cumulative effect (CLVIA) is also reported to account for two cumulative Scenarios as follows:

- **Proposed Development:** Assessed on an individual basis (the LVIA). This part of the assessment also takes account of other existing forms of wind farm development that may be present in the landscape, whilst recognising that their influence on landscape character is likely to be time limited. It does not consider the additional or combined cumulative effects and only reports of the effect of the Proposed Development alone;
- **Scenario 1: Existing + Consented + the Proposed Development:** The additional and combined cumulative effects of the existing and consented wind energy developments with the Proposed Development are assessed; and
- **Scenario 2: Existing + Consented + Applications + the Proposed Development:** The additional and combined cumulative effects of the existing and consented wind energy developments and proposed wind farm projects which are the subject of live applications, with the Proposed Development are assessed.

In addition, the cumulative assessment takes account of the timescales, as far as practicable, for the operation of the existing and consented developments.

Due to the numbers of other developments involved, the overall cumulative effects may be greater than for the primary effect or additional effect for the Proposed Development assessed in the main LVIA. The resulting level of cumulative effect may remain at the same level of effect or increase to a higher level of effect. The point at which these effects become significant or not significant in landscape and visual terms is still a matter for professional judgement, although four scenarios or combinations of cumulative effect, taking account of other wind energy development can occur as follows:

- A significant effect from the Proposed Development is predicted in addition or combination with another significant effect attributed to other development(s). The effect is still termed significant and cumulative but is a greater level of effect than for either development individually.
- A significant effect from the Proposed Development is predicted in addition or combination with another non-significant effect attributed to other development(s). The effect is still termed significant and cumulative but is attributed to the Proposed Development and is a greater level of effect than for either development individually.
- A non-significant effect from the Proposed Development is predicted in addition or combination with another significant effect attributed to other development(s). The effect is still termed significant and cumulative but is attributed to the other wind energy development(s) and is a greater level of effect than for either development individually.
- A non-significant effect from the Proposed Development is predicted in addition or combination with another non-significant effect attributed to other development(s). The effect is still termed cumulative and is a greater level of effect than for either development individually; the combined effect, however, is not significant.

The nature of a cumulative effect may also be described as direct / indirect, temporary / permanent, or beneficial / adverse. The probability of a cumulative effect occurring may also be described (certain, likely or uncertain / unknown) according to whether the developments in question are existing / under construction, consented or at the application stage.

Evaluating of Significance and Nature of Effect

The matrix presented in **Table A.5** is used as a guide to illustrate the LVIA process. In line with the emphasis placed in GLVIA 3 upon the application of professional judgement, an overly mechanistic

reliance upon a matrix is avoided through the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor. Such narrative assessments provide a level of detail over and above the outline assessment provided by use of the matrix alone.

The landscape and visual assessment unavoidably, involves a combination of quantitative and qualitative assessment and wherever possible cross references will be made to objective evidence, baseline figures and / or to photomontage visualisations to support the assessment conclusions. Often a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach. Importantly each effect results from its own unique set of circumstances and have been assessed on a case-by-case basis. The matrix should therefore be considered as a guide and any deviation from this guide will be clearly explained in the assessment.

In accordance with the relevant EIA Regulations, it is important to determine whether the effects, assessed as a result of the Proposed Development, are likely to be significant. Significant landscape and visual effects will be highlighted in bold in the text and in most cases, relate to all those effects that result in a '**Substantial**', '**Major**' or a '**Major to Moderate**' effect as indicated in **Table A.5** (and shaded dark grey). '**Moderate**' levels of effect (shaded grey) can also be assessed as significant, subject to application of the assessor's professional judgement that should be clearly explained as part of the assessment.

Table A.5 Evaluation of Landscape and Visual Effects

Magnitude of Change	Landscape and Visual Sensitivity		
	High	Medium	Low
High	**Substantial**	**Major**	Moderate
High-Medium	**Substantial to Major**	**Major to Moderate**	Moderate to Minor
Medium	**Major**	Moderate	Minor
Medium-Low	**Major to Moderate**	Moderate to Minor	Minor
Low	Moderate	Minor	Negligible
Low-Very Low	Moderate to Minor	Minor	Negligible
Very Low	Minor	Negligible	Negligible
Zero	None/ No View.		

White or un-shaded boxes in **Table A.5** indicate a non-significant effect. In those instances where there would be no effect, the magnitude has been recorded as 'Zero' and the level of effect as 'None' or 'No View'. Intermediate levels of magnitude or effect are also used in the LVIA, for example 'High – Medium' magnitude or 'Substantial to Major' level of effect.

Type or Nature of Effect

In accordance with the EIA Regulations the type or nature of effect is also described in terms of whether it is direct or indirect; its duration (temporary / permanent or reversible) cumulative; and whether the effect is positive, neutral or negative.

Transboundary effects are not relevant to this assessment as the LVIA Study Area for the Proposed Development would not overlap with the territory of another country.

Direct and Indirect Effects

GLVIA, paragraph 5.2 notes that landscape may be directly and indirectly affected by development and defines indirect effects as *"Effects that result indirectly from the proposed project as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in rime from the source of the effects".*

Direct landscape effects relate to the host landscape and concern both physical and perceptual effects on the receptor. Indirect landscape effects may also affect the host landscape as well as other landscapes, often separated by distance from the Proposed Development, as a consequence of views that affect the perceptual aspects of their character and key characteristics.

Visual effects are generally all considered as direct effects. An indirect visual effect may however be used to define a visual effect on a view that is not in the direction of the main view of the viewer as described by the following examples:

- Road users generally face the road directly ahead in the direction of travel and visual effects affecting those views may be described as direct effects. Where the visual effect is experienced in views oblique to the direction of travel they may be described as indirect; and
- Designed landscapes and vistas / viewpoints may be orientated in a particular direction and visual effects affecting those views may be described as direct effects. Where the visual effect is experienced in views oblique to the direction of the designed or main / primary view they may be described as indirect.

Secondary effects (or effects subsequent to an initial effect) are covered in this assessment by indirect effects.

Positive (beneficial) and negative (adverse) effects

Wind farms give rise to a wide range of opinions, from strongly adverse to strongly beneficial. However, LVIA is not an assessment of public opinion, although a precautionary approach has been taken, which assumes that the nature of the effects would be adverse or neutral unless otherwise stated.

Guidance provided by the in GLVIA 3 on the nature of effect (i.e. beneficial or adverse) states *that 'in the LVIA, 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 it does not provide guidance as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and, where applied, this involves reasoned professional opinion.

In relation to many forms of development, the LVIA will identify 'beneficial' and 'adverse' effects by assessing these under the term 'Nature of Effect'. The landscape and visual effects of large-scale infrastructure are difficult to categorise in either of these brackets as, unlike other disciplines, there are no definitive criteria by which the effects can be measured as being categorically 'beneficial' or 'adverse'. In some disciplines, such as noise or ecology, it is possible to quantify the effect in numeric terms, by objectively identifying or quantifying the proportion of a receptor that is affected and assessing the nature of that effect in justifiable terms. However, this is not the case in relation to

landscape and visual effects where the approach combines quantitative and qualitative assessment.

As a starting point, unless stated otherwise, the effects considered in the assessment will be considered to be adverse. However, in an area where there are numerous wind farms that are part of the baseline pattern, some effects may also be considered as neutral. Beneficial or neutral effects may, however, arise in certain situations and are stated in the assessment where relevant, based on the following definitions:

- Beneficial effects contribute to the landscape and visual resource through the enhancement of desirable characteristics or the introduction of new, beneficial attributes. The Proposed Development contributes to the landscape by virtue of good design or the introduction of new landscape planting. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components.
- Neutral effects occur where the Proposed Development fits with the existing landscape character or visual amenity. The Proposed Development neither contributes to or detracts from the landscape and visual resource and can be accommodated with neither beneficial or adverse effects, or where the effects are so limited that the change is hardly noticeable (very low magnitude). A change to the landscape and visual resource is not considered to be adverse simply because it constitutes an alteration to the existing situation.

Adverse effects are those that detract from the landscape character or quality of visual attributes experienced, through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

Probability of Effect

The probability of cumulative effects is variable. Those effects related to existing wind energy development and those under construction are considered as certain; effects related to development with planning consent are considered as likely. Wind energy development sites for which there is a submitted planning application are considered as uncertain.

Residential Visual Amenity Assessment

The assessment of Residential amenity is a planning matter that involves consideration of a number of effects (such as noise and shadow flicker), of which residential visual amenity is a single component. The RVAA is limited to the consideration of visual effects on the residential amenity of residential properties. Visual amenity is defined in GLVIA3 as: *'the overall pleasantness of the views they enjoy of their surroundings'*

Residential Visual Amenity means: *"the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from gardens and domestic curtilage. Residential Visual Amenity is one component of 'Residential Amenity"* (Landscape Institute, 2019).

Planning law contains a widely understood principle that the outlook or view from a private property is a private interest and not therefore protected by either the Scottish or UK planning system, which generally has a focus on the public interest. However, the planning system also recognises situations where the effects on residential visual amenity are so serious as to become a matter of public interest. This matter has been examined at a number of public inquiries in Scotland and the

rest of the UK where the key determining issue was not the identification of significant effects on views, but whether the proposal would have an effect on the residential visual amenity through an 'overbearing' and / or 'dominating' effect resulting in unsatisfactory living conditions, leading to a property being regarded, objectively, as an unattractive (as opposed to a less attractive) place in which to live. The effects on residential amenity are subsequently considered as part of the planning balance as part of the consent process.

Consequently, the RVAA methodology provides for a much more detailed assessment of the closest residential properties to the Proposed Development. This allows the assessor and consequently the determining authority to make a judgement as to whether the residents at these residential properties would be likely to sustain unsatisfactory living conditions which it would not be in the public interest to create. Reviews of decisions demonstrate that significant visual effects or changes to the views available from a residential property and its curtilage are not the decisive consideration, rather it is the residential amenity and, in this case, residential visual amenity that is determinate.

The methodology for RVAA accords with the advice in GLVIA3, and the Landscape Institute's Residential Visual Amenity Assessment Technical Note 2/19. It involves a four-step process as follows:

- *"1: Definition of the study area and scope of the assessment.*
- *2: Evaluation of baseline visual amenity at properties to be included having regard to the landscape and visual context and the development proposed.*
- *3: Assessment of likely change to visual amenity of included properties in accordance with GLVIA3 principles and processes.*
- *4: Further assessment of predicted change to visual amenity of properties to be included forming a judgement with respect to the Residential Visual Amenity Threshold."*

Other factors affecting residential amenity such as noise and shadow flicker are not considered as part of this assessment.

Step 1: Scope of Assessment

Based on the Landscape Institute's guidance and in consultation with the relevant planning authority, a study area of 2 km distance from the proposed turbines has been selected for the RVAA. This is because other infrastructure which forms part the proposed Development, such as access roads are unlikely to significantly affect residential properties. This study area is then reviewed against the site-specific conditions and layout of the Proposed Development and the ZTV which may indicate if a slightly smaller or larger study area is required.

A residential property, for the purposes of environmental impact assessment, should be one that was designed and built/converted for that purpose and currently (at the time of the assessment) remains in a habitable condition (is of a safe construction, wind and watertight with appropriate vehicle access, and services such as drinking water, sanitation, and power supply). Other buildings such as barns/ outbuildings, garages, sheds and derelict properties should generally be excluded from the assessment, unless they form part of the curtilage of an existing residence.

The assessment of residential properties or clusters of residential properties will be limited to those which appear on the Ordnance Survey 1:25,000 scale map and are overlapped by the blade tip ZTV. The assessment will be informed by site visits, observing the properties from public locations and through the examination of publicly available aerial and ground level photography as well as map-based data, the production of ZTV plots and visualisations such as wirelines. Some of the

properties will be accessed via private or gated roads and due to these access limitations, they will be assessed from the nearest public road or footpath which may be at greater distance from the property. As such the assessment will represent an informed judgement of the likely visual effects and the consequential effects on residential visual amenity.

Planning permissions for new residential properties and conversions which have not been built at the time of the assessment will not be included.

Step 2: Site Survey and Baseline Reporting

The assessment will be informed by site visits, observing the properties from public locations and through the examination of publicly available aerial and ground level photography as well as map-based data, the production of ZTV plots and visualisations such as wirelines. As such the assessment will represent an informed judgement of the likely visual effects and the consequential effects on residential visual amenity.

Each property including in the RVAA will be described in terms of the type, nature, extent and quality of the views that may be experienced 'in the round' from the dwelling itself and the domestic curtilage which includes the main living areas, usually the ground floor and the main garden and immediate driveway. The relationship of the property with the surrounding landscape and a description of the views in terms of whether they may be considered as primary, secondary or peripheral views.

The assessment allows for the screening effects of vegetation with the following caveats:

- Forestry screening is subject to forestry management and the assessment will allow for either no forestry screening or maximum forestry screening, representing the two extremes likely to affect the view during the 30 year operational period of the Proposed Development.
- Woodland and hedgerow screening – Where this includes mature, long standing mixed or broadleaved woodland a degree of permanence will be assumed in the assessment.
- Individual trees – Where these are mature a degree of permanence will be assumed in the assessment. However, this is subject to the long-term retention of individual trees that would need to be assessed on a case-by-case basis, which is beyond the scope of this assessment.
- Garden vegetation will be assumed to have a degree of permanence. In the event that it is removed and replanted, most garden shrubs / hedges are reasonably quick to re-establish or are replaced on a piecemeal basis.

The assessment will account of the likely views from the ground floors of properties and main garden areas but will exclude upper floors and other land that may relate to the property and is not part of the main living areas.

Cumulative wind farm development

The assessment will also take account of cumulative effects likely to result from the visibility of other wind energy development. In order to identify the likely significant effects and noting that the RVAA study area is 2km, the baseline of other wind energy development considered in this assessment will be limited to those wind farms within 10 km of the Proposed Development.

Step 3: Visual Assessment

A visual assessment will be undertaken to identify those properties where a significant visual effect on a view from the property is likely to occur. The methodology for this is set out previously under visual assessment and combines an assessment of 'sensitivity' with an assessment of 'magnitude.'

The sensitivity of individual residential receptors has been assessed as 'High' in each case due to the high susceptibility of residents in accordance with GLVIA 3, paragraph 6.33. The value of the view is also likely to be regarded as high by the residents themselves but should also reflect any national or local designations for scenic value.

The assessment will be supported by aerial and ground level photography as well as map-based data, the production of ZTV plots and visualisations such as wirelines and photographs where appropriate, which are illustrated for each property.

Step 4: Residential Visual Amenity Assessment

The second stage is to consider the residential visual amenity and whether, in terms of the wider public interest, the visual effects would result in unsatisfactory living conditions, leading to a property being regarded, objectively, as an unattractive (as opposed to a less attractive) place in which to live. Relevant information considered as part of the assessment may include, but is not limited to the following:

- Scale of Wind Farm:
  - Number and height of visible turbines;
  - The horizontal extent or Angle of View (AOV) of the visible turbine array;
  - Separation distance (closest and furthest visible turbines);
  - Consideration of the Proposed Development as a whole (including site infrastructure); and
  - Cumulative development.
- Description of Property, as far as this can be ascertained:
  - Orientation and size of property and whether views from the property towards the wind farm would be direct or oblique;
  - Location of principal rooms and main living areas such as living/dining rooms, kitchens and conservatories, as opposed to upstairs rooms (bedrooms / bathrooms), working areas such as farm buildings and utility areas;
  - Location of principal garden areas which may include patios and seating areas as opposed to less well used areas such as paddocks or garages; and
  - The effects of any screening by landform, vegetation or nearby built development.
- Location and Context:
  - The aspect of the property in terms of the overall use and relationship to the garden areas and surrounding landscape;
  - The principal direction of main views and visual amenity; and
  - The context and nature of any intervening structures e.g. other existing wind farm development, farm buildings or forestry.

A final assessment is then made to determine if, in the assessor's professional opinion, the residential visual amenity threshold would be breached by the Proposed Development.

Wild Land Assessment

If considered by consultees to be required a proportionate wild land assessment will be undertaken, based on the NatureScot Technical Guidance: Assessing Impacts on Wild Land Areas (September 2020). The method and general approach to the wild land assessment is succinctly described in paragraphs 4 and 12 as follows:

> *"The method described employs the general approach and principles set out within the Guidelines for Landscape and Visual Impact Assessment (GLVIA) . The assessment of effects of a proposal on a WLA is an exercise distinct from landscape and visual impact assessment (LVIA) that can draw on but should not duplicate its information. The assessment should consider effects on the physical attributes and perceptual responses that contribute to the WLA qualities identified in the WLA descriptions."*
>
> *"Each of the WLA descriptions set out their particular wild land qualities, with the physical attributes and perceptual responses contributing to it identified. These descriptions should form the starting point for an assessment of impacts on a WLA."*

The NatureScot guidance sets out a number of steps:

- *"Step 1 - Define the study area and scope of the assessment:*
- *Identify a study area appropriate to the scale of the proposal and extent of likely significant effects on the WLA.*
- *Step 2 – Verify the WLA baseline:*
- *Confirm the wild land qualities (set out in the WLA description) relevant to the study area, describing any major changes that have occurred since the description was prepared and the nature of their contribution to the WLA.*
- *Step 3 – Assess the sensitivity of the qualities:*
- *Through detailed field assessment within the study area, assess the sensitivity of the wild land qualities scoped in (including their physical attributes and perceptual responses), to the type and scale of change proposed.*
- *Step 4 – Assess the magnitude of the effects:*
- *Assess the effects on individual and / or combinations of qualities, drawing out which physical attributes and perceptual responses will be affected, how and to what degree. This should reflect the size or scale of change, its extent and duration.*
- *Step 5 – Judge the significance of the effects:*
- *Conclude on the overall significance (taking into account any mitigation), in terms of the study area and where relevant the wider WLA."*

Night-time Assessment

The Aviation Lighting Impact Assessment (ALIA) or 'night-time landscape and visual impact assessment' accords with the NatureScot (2024) Guidance on Aviation Lighting Impact Assessment, and their General pre-application and scoping advice for onshore wind farms Guidance, Annex 2. The ALIA follows the same methodology used for the assessment of day-time landscape, visual and cumulative effects. The main difference being the 'night-time' assessment period, which aligns with the operating period of the visible aviation warning lights between dusk and dawn.

The NatureScot Guidance on ALIA advises a Study Area of between approximately 10-20 km and in broad terms the assessment should follow three steps:

- Step 1: Defining the lighting proposal,
- Step 2: Understanding the baseline; and
- Step 3: Assessing the effects of the aviation lighting.

Importantly, the ALIA is not a technical lighting impact assessment based on quantitative measurement of light levels. Rather, the assessment draws form the Aviation Report produced by aviation / lighting professionals and relies on professional judgement and combines both qualitative analysis of what the human eye can reasonably perceive and quantitative analysis of the proposed light intensity at different distances and angles of elevation relative to the source. It also takes account of factors such as meteorological conditions and darkness adaptation at the viewpoint or receptor location. As with the day-time landscape and visual assessment, the sensitivity of the receptor to the Proposed Development (aviation warning lights) and the magnitude of change are combined to determine the level of effect likely to result from the aviation warning lights.

The sensitivity of the receptor and the magnitude of change are likely be different from the daytime assessment. For example, NatureScot advise that people in settlements may be considered as of Low susceptibility to the aviation warning lights, due to the number of light sources present in most settlements. This contrasts with High sensitivity of people in settlements to the daytime visibility of the wind farm.

The evaluation of significance and the nature of these effects is also described following the methodology used for the assessment of landscape, visual and cumulative effects.

The assessment will be supported by a baseline night-time environment or darkness survey and ZTV plots, baseline photography, wirelines and photomontages from selected viewpoints. These visualisations help to assess both the level of night-time visual impact for receptors and focus the assessment.

Baseline Night-time Environment or Darkness Survey

During site visits a baseline night-time environment survey or ‘darkness survey’ will be carried out at each viewpoint location. The purpose of the darkness survey is to establish the existing light levels perceived by the landscape architects at the viewpoints and determine their sensitivity to change. The following observations are recorded:

- Areas of darkness with no artificial light;
- Direct artificial lighting (where the light source is directly visible from the viewpoint);
- Indirect artificial lighting (where the light source is not visible but the light emanating from the light source is visible as in the case of ‘sky glow’);
- Static lighting, for example emanating from a residential property or street light; and
- Mobile or transient lighting, for example associated with moving vehicles, trains or aircraft.

Baseline photographs at each of the night-time assessment viewpoints will be recorded.

Night-time Viewpoint Analysis

A range of viewpoints will be examined in detail and analysed to determine whether a significant visual effect would occur. By arranging the viewpoints in order of distance it is possible to define a threshold or outer limit, beyond which there would be no further significant effects.

The night-time viewpoint analysis involves visiting the viewpoint locations during periods between dusk and dawn and viewing wirelines and photomontages prepared for each viewpoint location. The

fieldwork will be conducted in periods of fine weather and considers seasonal changes such as reduced leaf cover or hedgerow maintenance.

Assessment of Night-time Sensitivity

In terms of landscape effects, a key determinant of the value and susceptibility of a landscape is the degree to which the landscape character can be discerned at night and the quality of the baseline 'darkness' – essentially if the area unlit or lit. There is a limited period of the night, during the twilight periods just after sunset or just before dawn when the landscape character maybe partially perceived and during periods when there are clear skies and under conditions such as a full moon. During these limited periods, and allowing for full darkness adaptation, it may be possible to discern enough of the key landscape characteristics, in particular, topography / skyline and some of the perceptual qualities, although other features such as colour, pattern, texture will be muted or not discernible. As darkness progresses these features cease to be visible. The susceptibility of the landscape at night is therefore variable and reduces from its highest or most susceptible during the day, through the twilight period, until the night when susceptibility would be at its lowest, during periods of greatest darkness.

The value of the landscape at night is recognised in designations that include National Parks and Dark Sky Parks and more rarely in relation to local landscape designations and particular landscape character types, although the landscape value of non-designated landscapes is usually lower.

In terms of visual effects, the susceptibility of the receptor is primarily influenced by the activity of the viewer. Tourist locations are likely to be closed to the public during the hours of darkness, residents are most likely to be indoors, and people in settlements and road users may be influenced by the streetlights and vehicle lights, reducing their darkness adaptability and resulting in low susceptibility. Hill walkers and people viewing the landscape from hill summits are less likely or unlikely to be present at those locations during the night. Visitors / tourist at promoted night-time viewpoints in Dark Sky Parks for example would be of high susceptibility. Other groups such as campers in campsites with few or no lights, dog walkers in rural locations and people at accessible picnic sites or other viewpoints that can be safely accessed at night may also be considered as of high susceptibility subject to the level of baseline lighting and focus of the activity on an appreciation of the landscape at night.

The value of specific views and visual amenity at night is also recognised in designations that include National Parks and Dark Sky Parks but more rarely documented in local landscape designations, although in all cases the value is likely to be high.

Factors affecting the susceptibility and value of landscape and visual receptors are combined to determine the sensitivity of the receptor and afforded a rating of High, Medium, Low or Very Low in a similar manner to that set out in **Tables A.1** and **A.3**.

Assessment of Night-time Magnitude

The magnitude of change assessment is focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. short / medium / long-term and temporary or permanent).

The number of lights likely to be visible as well as their intensity is described in objective terms and ZTVs indicating the theoretical visibility of these criteria are mapped to assist the assessment process. Other objective factors include the field of view and the distance over which the lights may

be seen. More subjectively the Proposed Development will be considered against the baseline or darkness survey in terms of whether the proposed lighting would contrast with an unlit area or assimilate with other lights in a landscape or view that may already have multiple light sources. In this manner the assessment will consider the degree to which the Proposed Development would affect the landscape character or designation, as far as that can be perceived at night.

In visual terms, a further consideration is the numbers of viewers which are likely to experience the views and visual amenity at night. It is reasonable to assume that the numbers of tourists and hill walkers, viewing the landscape at night for example, will tend to be few or rare, with most tourist destinations closed during the hours of darkness for example. Exceptions may include specific viewpoints within a Dark Sky Park. Walkers and road users out at night, will also themselves tend to be sources of light from torches and vehicle headlights and thus affect the baseline or darkness survey.

The 'magnitude' or 'degree of change' resulting from the Proposed Development will be described as 'High', 'High – Medium', 'Medium', 'Medium – Low', 'Low', 'Low – Very Low', 'Very Low' or 'Zero'. in similar terms to the descriptions set out in **Tables A.2** and **A.4**.

Evaluation of Night-time Level of Effects and Significance

The level of effect is evaluated through the combination of sensitivity and magnitude of change. Once the level of effect has been assessed, and the nature of the effect is determined (whether this is direct / indirect; its duration, temporary / permanent; and whether it is beneficial / neutral / adverse or cumulative) a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix illustrated in Table 7.1.5 which is used to guide the assessment.

Production of ZTVs and Visualisations

Zones of Theoretical Visibility (ZTVs) and visualisations (wirelines / wirelines and photomontages) are graphical images produced to assist and illustrate the LVIA and the cumulative assessment. The methodology used for viewpoint photography and visualisations accords with the SNH guidance Visual Representation of Wind Farms, Version 2.2, February 2017 and the Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals, 17 September 2019.

Methodology for Production of ZTVs

The ZTVs are calculated using Resoft Wind Farm© software to generate the zone of theoretical visibility of the Proposed Development. This software creates a 3D computer model of the existing landscape and the Proposed Development using digital terrain data as follows:

- Ordnance Survey Terrain 50: Used to produce the main or standard ZTV plot and wirelines, these tiles provide a digital record of the existing landform of Great Britain, or Digital Terrain Model (DTM) at 10m elevation intervals based on 50m grid squares and models representing the specified geometry and position of the proposed turbines. The computer model includes the entire LVIA Study Area and takes account of the effects caused by atmospheric refraction and the Earth's curvature; and
- Ordnance Survey Terrain 5: Used to produce a more detailed ZTV plot or wireline for limited areas, often used where there are small undulations or crags within the landscape. These tiles provide a digital record of the existing landform of Great Britain based on 5m grid squares and

models representing the specified geometry and position of the proposed turbines. The computer model includes the central LVIA Study Area and takes account of atmospheric refraction and the Earth's curvature.

The resulting ZTV plots are overlaid on Ordnance Survey mapping at an appropriate scale and presented as figures using desktop publishing/graphic design software.

The same computer software is also used to calculate cumulative ZTV plots based on the intervisibility of the Proposed Development with other existing, consented and application wind farms included in the CLVIA. In addition to the methods as described above, the layouts and geometries of the surrounding existing, consented and application wind farms are loaded into the same computer programme.

Methodology for Baseline Photography

Once a view has been selected, the location is visited, confirmed, and assessed with the aid of a wireline or similar visualisation in the field. The viewpoint location is micro-sited to avoid as far as reasonable foreground clutter and photographed during fair weather and light conditions. A photographic record is taken to record the view and the details of the viewpoint location and associated data are recorded to assist in the production of visualisations and to validate their accuracy.

The following photographic information is recorded:

- Date, time, weather conditions and visual range;
- GPS recorded 12 figure grid reference accurate to ~5-10 m;
- GPS recorded Above Ordnance Datum (AOD) height data;
- The focal length of lens is confirmed;
- Horizontal field of view (in degrees); and
- Bearing to Target Site (proposed development).

All photographs included in this assessment will be recorded with a digital SLR camera set to produce photographs equivalent to that of a manual 35 mm SLR camera with a fixed 50mm or 75mm focal length lens as required.

All the resulting visualisations will be prepared to show other cumulative wind energy development in order that they may assist the cumulative assessment as well as the LVIA. Visualisations for selected viewpoints within 5-10km will also illustrate the site infrastructure such as access tracks, where visible. Whilst no two-dimensional image can fully represent the real viewing experience, the visualisations aim to provide a realistic representation of the Proposed Development, based on current information and photomontage methodology.

Weather Conditions

GLVIA 3 para 8.22 states:

> *"In preparing photomontages, weather conditions shown in the photographs should (with justification provided for the choice) be either:*
>
> - *representative of those generally prevailing in the area; or*
> - *taken in good visibility, seeking to represent a maximum visibility scenario when the development may be highly visible".*

In preparing photomontages for the LVIA, photographs will be taken in favourable weather conditions and where possible, will be taken during periods of 'good' or 'excellent' visibility conditions. There may be practical and health and safety limitations to recording photographs at particular times of day / night and in some cases, it is difficult to avoid foreground clutter or other vertical features such as telegraph poles, particularly where this is a true representation of the view from that viewpoint area.

A health and safety assessment will be conducted for all viewpoint locations and alternative safe and accessible locations may need to be agreed in some cases.

Methodology for Production of Visualisations

Each view will be illustrated with a photograph, a wireline and / or a photomontage indicating the Proposed Development. Definitions of each of these are described as follows:

- Baseline photograph: A photograph of the existing view recorded in fair weather conditions and usually presented as a panorama as required by the relevant guidance.
- Wireline or Wireframe: A computer-generated model of the landscape and the Proposed Development.
- Photomontage is a visualisation which superimposes an image of a Proposed Development (in this case the wireline or wireframe) upon the baseline photograph, which is then rendered by computer software to produce an image of how the Proposed Development would appear from that viewpoint. Photomontage is a widespread and popular visualisation technique, which allows changes in views and visual amenity to be illustrated and assessed.

Baseline Photograph Production

Photographs will be recorded using a digital SLR camera in combination with a panoramic head equipped tripod. Detailed information will be recorded on site to enable the accurate alignment of the photographs with the wireline model (data such as: GPS grid co-ordinates; ground level information; compass bearings; and any other known references and viewpoint information).

To create the baseline panorama, the photographs from the viewpoint will be digitally joined using Adobe Photoshop or PTGui software to form a planar or cylindrical projection image or panorama using computer software to remove 'barrel distortion' caused by the camera lens.

Wireline or Wireframe Production

The wirelines and photomontages are produced using Resoft Wind Farm© software to generate a perspective view of the wind farm. This software creates a 3D computer model of the existing landscape and the Proposed Development using digital terrain data and models representing the specified geometry and position of the proposed turbines.

The computer model includes the entire LVIA Study Area, and all visualisations take account of the effects caused by atmospheric refraction and the Earth's curvature. The computer model does not take account of the screening effects of any intervening objects and forestry, unless specified (see individual figures).

A wireline of the Proposed Development and the existing landform will be generated for each viewpoint within the LVIA Study Area. These wirelines are used to assist the assessment on location at each viewpoint, the position of which, if required, is adjusted on site to achieve the most visible vantage-point of the Proposed Development (e.g. to avoid buildings, forestry, other features, potentially interfering with the view).

Photomontage Production

Visualisations will be produced for the agreed viewpoints identified in the LVIA and photomontages will aim to provide a photorealistic image of the appearance of the Proposed Development. 3D model representations are combined with the baseline view photographs to create a photorealistic rendered photomontage image of the development.

Visualisations that illustrate the Proposed Development are produced using a range of computer software, most commonly in this case Resoft WindFarm©. Others such as True View and 3D AutoCAD or Studio Max are also used for example.

The photomontage is produced by digitally combining or superimposing the wireline / wireframe or computer generation 3D model of the landscape and the Proposed Development onto the baseline photograph and rendering this to add colour, texture and lighting effects.

To produce the photomontage, the wireline turbines will be rendered to appear 'life-like' taking into account the time of the photography and weather conditions occurring on the day.

The completed panoramas, wirelines, photomontages and accompanying data will be presented as figures using desktop publishing/graphic design software.

Limitations of Visualisations

The photomontage visualisations used in the LVIA are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments will be carried out from observations in the field and therefore may include elements that are not visible in the photographs. NS guidance advises that beyond 20km the visibility of turbines in the printed photomontages is difficult to see or reproduce realistically.

The photomontage visualisations of the Proposed Development have a number of limitations when using them to form a judgement on visual effect. These include:

- A visualisation can never show exactly what a Proposed Development will look like in reality due to factors such as: different lighting, weather and seasonal conditions which vary through time and the resolution of the image;
- The images provided give a reasonable impression of the scale and the distance to the Proposed Development but can never be 100% accurate to the as constructed effect;
- A static image cannot convey movement such as turbine blade rotation or other features such as the movement of water or the reflection from the sun. The assessment however will take account of turbine movement by examining animated versions of the photomontages on screen and / or other examples of existing wind farm development on site;
- The viewpoints illustrated are representative of views in the area but cannot represent visibility at all locations;
- To form the best impression of the effects, these images are best viewed at the viewpoint location shown;
- The visualisations must be printed and viewed at the correct size as indicated on the figures;
- Images should be held flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, stand at arm's length from the image presented to gain the best impression; and

- It is preferable to view printed images rather than view images on screen. Images on screen should be viewed using a normal PC screen with the image enlarged to the full screen height to give a realistic impression.

Printing of Maps and Visualisations

All electronic visualisations and maps should be printed out and viewed at the correct scale as noted on the document.

Glossary of Terms and Abbreviations

Descriptions marked with an asterisk are repeated from the GLVIA 3 glossary.

Term/ abbreviation	Definition
AOD	Above Ordnance Datum
AoV / FoV	Angle of View / Field of View
Artificial light	Light produced by electrical means.
Beneficial or Adverse Types of Landscape Effect	The landscape effects may be beneficial, neutral, or adverse. In landscape terms – a beneficial effect would require development to add to the landscape quality and character of an area. Neutral landscape effects would include low or negligible changes that may be considered as part of the 'normal' landscape processes such as maintenance or harvesting activities. An adverse effect may include the loss of landscape elements such as mature trees and hedgerows as part of construction leading to a reduction in the landscape quality and character of an area.
Beneficial or Adverse Types of Visual Effect	The visual effects may be beneficial, neutral, or adverse. In visual terms – beneficial or adverse effects are less easy to define or quantify and require a subjective consideration of a number of factors affecting the view, which may be beneficial, neutral, or adverse. Opinions as to the visual effects of wind energy developments vary widely, however it is not the assumption of this assessment that all change, including substantial levels of change is an adverse experience. Rather this assessment has considered factors such as the visual composition of the landscape in the view together with the design and composition, which may or may not be reasonably, accommodated within the scale and character of the landscape as perceived from the receptor location.
BT	Blade Tip
Candela (cd)	A unit of measure of luminous intensity, in a given direction.
CLVIA	Cumulative Landscape and Visual Impact Assessment
Constant light	Uninterrupted light source over a given time period.
Corbetts	Corbetts are a group of Scottish mountains that are between 2,500 and 3,000 feet (762 and 914.4 m) in height and have a drop of at least 500 feet (152.4 m) on all sides.
Cumulative effects	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (Scottish Natural Heritage, 2012)
Cumulative landscape effects	Effects that 'can impact on either the physical fabric or character of the landscape, or any special values attached to it' (Scottish Natural Heritage, 2012)
Cumulative visual effects: In combination In succession Sequentially	Effects that can be caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or sequential effects which 'occur when the observer has to move to another viewpoint to see different developments' (Scottish Natural Heritage 2012) **In combination:** Where two or more developments are or would be within the observer's arc of vision at the same time without moving his/her head (GLVIA 3, 2013 Table 7.1). **In succession:** Where the observer has to turn his/her head to see the various developments – actual and visualised (GLVIA 3, 2013 Table 7.1). **Sequential cumulative effect.** Occurs where the observer has to move to another viewpoint to see the same or different developments. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths (GLVIA 3, 2013 Table 7.1).
Darkness survey	Visual survey the night-time environment and the identification of artificial light sources.

Term/ abbreviation	Definition
Development*	Any proposal that results in change to the landscape and/or visual environment.
Degree of change	A combination of the scale, extent and duration of an effect also defined as 'magnitude'.
Designated Landscape*	Areas of landscape identified as being of importance at international, national or local levels, either defined by statue or identified in development plans or other documents.
Direct light	The artificial light source is visible. Note that light emanating from the window of a building is considered to be a 'direct' light source.
EIA	Environmental Impact Assessment
Elements*	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Enhancement*	Proposals that seek to improve the landscape resource of the site and its wider setting beyond its baseline condition.
Environmental fit	The relationship of a development to identified environmental opportunities and constraints in its setting.
Feature*	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
GDL	Garden and Designed Landscape
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
Grahams	Grahams are defined as Scottish hills between 600 and 762 m in height, with a minimum prominence, or drop, of 150 m.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
HH	Hub Height
Historic Landscape Characterisation (HLC) and Historic Land-use Assessment (HLA)	Historic characterisation is the identification and interpretation of the historic dimension of the present-day landscape or townscape within a given area. HLC is the term used in England and Wales, HLA is the term used in Scotland.
Indirect effects*	Direct effects relate to the host landscape and concern both physical and perceptual effects on the receptor. Indirect effects relate to those landscapes and receptors which separated by distance or remote from the development and therefore are only affected in terms of visual or perceptual effects. The Landscape Institute also defines indirect effects as those which are not a direct result of the development but are often produced away from it or as a result of a complex pathway.
Indirect light	The light source is not visible but the light emanating from the source is apparent.
Infrared light	A type of light not visible to the human eye.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.
Land cover	The surface cover of the land, usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the likely significance of the effects of change resulting from development both on the landscape as an environmental resource in its own right and on people's views and visual amenity.

Term/ abbreviation	Definition
Landscape Character Area (LCA)*	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Types (LCTs)*	Distinct types of landscape which are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement patterns, and perceptual and aesthetic attributes.
Landscape capacity	The amount of specified development or change which a particular landscape and the associated visual resource is able to accommodate without undue negative effects on its character and qualities. (NE 2019)
Landscape character*	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape classification	A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape.
Landscape constraints	Components of the landscape resource such as views or mature trees recognised as constraints to development. Often associated with landscape opportunities.
Landscape effects*	Effects on the landscape as a resource in its own right. An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. (GLVIA 3 2013, Para 5.1).
Landscape fit	The relationship of a development to identified landscape opportunities and constraints in its setting.
Landscape patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive, recognisable and describable e.g. hedgerows and stream patterns.
Landscape quality (condition)*	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape qualities	A term used to describe the aesthetic or perceptual and intangible characteristics of the landscape such as scenic quality, tranquillity, sense of wildness or remoteness. Cultural and artistic references may also be described here.
Landscape receptors *	Defined aspects of the landscape resource that have the potential to be affected by a proposal
Landscape resource	The combination of elements that contribute to landscape context, character, and value.
Landscape sensitivity	The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value.
Landscape strategy	The overall vision and objectives for what the landscape should be like in the future, and what is thought to be desirable for a particular landscape type or area as a whole, usually expressed in formally adopted plans and programmes or related documents.
Landscape value*	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons. The value of the Landscape Character Types or Areas that may be affected, based on review of any designations at both national and local levels, and, where there are no designations, judgements based on criteria that can be used to establish landscape value.
Level of effect	Determined through the combination of sensitivity of the receptor and the proposed magnitude of change brought about by the development.

Term/ abbreviation	Definition
LLA	Local Landscape Area
Lux	A unit of illumination, the amount of light on a surface per unit area.
Magnitude (of effect)*	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration.
Mitigation	Measures which are proposed to prevent, reduce and where possible offset any significant adverse effects (or to avoid, reduce and if possible remedy identified effects. (GLVIA 3, 2013 Para 3.37).
Munros	Munros are mountains in Scotland with a height of 3,000 feet (914.4 m) or more.
Natural light	Light supplied by the sun, directly or indirectly, the moon and stars.
NatureScot / SNH	NatureScot, previously known as Scottish Natural Heritage (SNH).
NSA	National Scenic Area
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Perceptual Aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity. (GLVIA 3, 2013 Box 5.1)
Photomontage*	A visualisation which superimposes an image of the Proposed Development upon a photograph or series of photographs.
Probability of Effect	The probability of a landscape and visual effect occurring as a result of this Development should be regarded as certain, subject to the stated project design and the continuance of the existing, baseline landscape resource, including known changes such as other permitted wind farm development. The probability of cumulative effects however is variable. Whereas those effects related to existing wind energy development and those under construction are considered as certain, effects related to development with planning consent are only considered as likely. Wind energy development sites for which there is a submitted planning application are considered as uncertain and other wind energy development for which no planning application has been made are considered as uncertain / unknown, as the level of uncertainty would be greater.
Proximity activated lighting	Lighting which is turned on by the detection of moving objects, such as aircraft detected by radar.
Rarity	The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type. (GLVIA 3 2013, Box 5.1)
RD	Rotor Diameter
Receptor	Physical landscape resource, special interest, or viewer group that will experience an effect.
Recreation Value*	Evidence that the landscape is valued for recreational activity where experience of the landscape is important. (GLVIA 3 2013, Box 5.1)
Representativeness*	Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
Residual effects	Likely environmental effects, remaining after mitigation.
Scale Indicators	Landscape elements and features of a known or recognisable scale such as houses, trees, and vehicles that may be compared to other objects, where the scale of height is less familiar, to indicate their true scale.
Scenic quality	Depends upon perception and reflects the particular combination and pattern of elements in the landscape, its aesthetic qualities, its more intangible sense of place or 'genius loci' and other more intangible qualities. (GLVIA 3 2013, Box 5.1)

Term/ abbreviation	Definition
Seascape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Sense of Place (genius loci)	The essential character and spirit of an area: 'genius loci' literally means 'spirit of the place'.
Sensitivity*	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
Significance	A measure of the importance or gravity of the environmental effect, defined by significance criteria specific to the environmental topic.
Significant Effects	It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. The significance of an effect gives an indication as to the degree of importance (based on the magnitude of the effect and the sensitivity of the receptor) that should be attached to the impact described. Whether or not an effect should be considered significant is not absolute and requires the application of professional judgement. Significant – 'noteworthy, of considerable amount or effect or importance, not insignificant or negligible'. The Concise Oxford Dictionary. Those levels and types of landscape and visual effect likely to have a major or important / noteworthy or special effect of which a decision maker should take particular note.
Sky glow	The brightness of the night sky in a built-up area as a result of light pollution, apparent as a diffuse artificial light in the sky above major towns and cities.
SNH	Scottish Natural Heritage Now known as NatureScot.
Susceptibility*	The ability of a defined landscape or visual receptor to accommodate the specific Proposed Development without undue negative consequences.
Sustainability*	The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.
Temporary or permanent effects	Effects may be considered as temporary or permanent. In the case of wind energy development the application is for a 50 year period after which the assessment assumes that decommissioning will occur and that the site will be restored. For these reasons the development is referred to as long term and reversible.
Time depth	Historical layering – the idea of landscape as a 'palimpsest', a much written-over asset of landscape.
Townscape	The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
True View Visuals	A mobile 3D augmented reality (AR) tool used to aid with the assessment. The True View Visuals tool indicates visibility of the Proposed Development to assist in confirming viewpoint positions as well as indicating limited or no visibility of turbines in particular locations. Whilst the images are indicative only, the AR tool provides a comparable image to the accurate wirelines produced.
Type or Nature of effect	Whether an effect is direct or indirect, temporary or permanent, beneficial (positive), neutral or adverse (negative) solus or cumulative.
Viewpoints	Selected for illustration of the visual effects fall broadly into three groups: Representative Viewpoints: selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the significant effects are unlikely to differ – for example certain points may be chosen to represent the view of users of particular public footpaths and bridleways. Specific Viewpoints: chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, such as

Term/ abbreviation	Definition
	landscapes with statutory landscape designations or viewpoints with particular cultural landscape associations. Illustrative Viewpoints: chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations. (GLVIA 3 2013, Para 6.19)
Visual amenity	The overall views and surroundings, which provide a visual setting or backdrop to the activities of people living, working, participating in recreational activities, visiting or travelling through an area.
Visual dominance	A visual effect often referred to in respect of residential properties that in relation to development would be subject to blocking of views, or reduction of light / shadowing, and high levels of visual intrusion.
Visual effect*	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors*	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visual sensitivity	The sensitivity of visual receptors such as residents, relative to their location and context, to visual change proposed by development.
Visualisation	Computer visualisation, photomontage, or other technique to illustrate the appearance of the development from a known location.
WLA	Wild Land Area
Wireline / Wireframe	A computer-generated line drawing of the DTM (digital terrain model) and the Proposed Development from a known location.
Zone of Theoretical Visibility (ZTV)*	A map, usually digitally produced, showing areas of land within which, a development is theoretical visible.

APPENDIX B CULTURAL HERITAGE GAZETTEER

This forms an appendix to Chapter 8 of the Scoping Report. The table below represents a gazetteer of known historic environment sites and finds within the study areas.

Table 1-B: Gazetteer of Known Historic Environment Sites

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
42598	240210	609100	Chapel Hill. A chapel is said to have stood at the base of Chapel Hill (NS 403 093), but the site is not precisely known. The foundations of a cot-house named Chapel survived in 1856 and Chapel Well is at NS 4021 0910. The neighbouring name 'Kirklafinn' (NS 400 094) may have some relevance.	N/A
41639	238920	610310	Dalvennan. A sub-circular enclosure situated on a hilltop, visible on aerial photographs (RAF/106G/Scot/UK90: 3073-4, flown 1946). This is apparently an old plantation bank.	N/A
42593	241600	608000	Keirs Hill. A D-shaped, banked enclosure, some 30m by 20m, visible on air photographs (RAF APs: 106G/Scot/UK 153: 3033-4, flown 1946), are post-medieval drainage ditches and banks.	N/A
42599	242300	608600	MacDonald suggests that "Knockannot" (name NS 423 086), the name of a small hill, incorporates the name "annait" - a 9th to 10th century term for a church-site of any kind abandoned during that period, and not subsequently re-used as the site of a focal church. The domed, pastured summit and northern slopes of Knockannot show nothing significant. Post medieval earthen field dykes cross the hillside.	N/A
42676	242200	610200	Dalmellington, Jellieston Pits. Mine associated with Dalmellington, Waterside Ironworks	N/A
78877	241210	610630	Patna Church. Built 1837, later additions.	N/A
78882	240550	610970	Patna Tower, demolished in 1854, was a plain wall 12ft high with a circular piece of masonry connected with the centre. It was erected to give greater elevation to a bonfire lit annually to commemorate that birthday of a neighbouring proprietor. The name Tower was not properly descriptive but was the locally known name.	N/A
124360	241750	611670	Polnessan. The farmstead in East Ayrshire have been identified and recorded during fieldwork carried out by the staff of WoSAS.	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
168295	241300	610660	Patna, 78 Main Street, Inn. Masonic Hall	N/A
168296	241330	610650	Patna, 70-74 Main Street, Cottage	N/A
168303	241631	610634	Patna, 66 Main Street, Doon Hotel	N/A
168304	241440	610580	Patna, 35 Main Street, Wheatsheaf Inn	N/A
168306	241450	610570	Patna, 29-33 Main Street, Shop and Office	N/A
168309	241691	610633	Patna Bridge	N/A
168312	241720	610670	Patna, 6-8 Ayr Road, Cottages	N/A
168316	241240	610690	Patna, Milestone	N/A
168321	241750	610640	Patna, 4 Ayr Road, Inn	N/A
168322	241610	610610	Patna, 2-24 Main Street, Council Houses	N/A
168326	241460	610560	Patna, 23-27 Main Street, Post Office and House	N/A
168328	241380	610630	Patna, 56 Main Street, Cottage	N/A
167961	240000	610000	Knockkippen Hill, Drilling Rig	N/A
170032	241070	609050	Carskeoch Hill. One unroofed structure annotated Old Sheep Ree is depicted on the 1st edition of the OS 6-inch map, but it is not shown on the current edition of the OS 1:10000 map	N/A
170033	242360	609800	Burnfoot. A farmstead comprising one unroofed and one roofed building is depicted on the 1st edition of the OS 6-inch map, but it is not shown on the current edition of the OS 1:10000 map	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
170034	241080	609990	Patna. A farmstead comprising two unroofed buildings, one of which has an attached enclosure, two roofed buildings and a further two enclosures is depicted on the 1st edition of the OS 6-inch map. Two unroofed buildings and one enclosure are shown on the current edition of the OS 1:10000 map	N/A
170037	241280	611080	Downieston. One unroofed T-shaped building is depicted on the 1st edition of the OS 6-inch map, but it is not shown on the current edition of the OS 1:10000 map	N/A
170052	240360	610900	Whitehill. First depicted on Ainslie's map of 1821, this settlement also appears on the later 1st Edition Ordnance Survey of 1860 where it is labelled as 'Ruins'. Here it is depicted as a rectilinear building of four compartments aligned WNE to ESE with a yard and enclosed field to the immediate S. The ruins include enclosures that remain visible on modern aerial imagery while no longer being depicted on modern mapping. The farmstead was located during field survey as a rectangular area of levelled ground measuring 50m NE-SW by 30m transversely. Traces of drystone walls could still be seen on the S and W sides: these were heavily ruinous, with a maximum height of 0.6m and a maximum width of 1.2m. No remains of the farmstead were located, but the unusually high number of stones across the extent of the levelled area may have derived from its structures.	N/A
169902	238120	609150	Wee Burn. One unroofed building annotated Ruin is depicted on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet xlv), but it is not shown on the current edition of the OS 1:10000 map	N/A
169903	238820	609630	Backglen Burn. A farmstead annotated Burnton (Ruin) and comprising one unroofed long building of two compartments and one enclosure is depicted on the 1st edition of the OS 6-inch map (Ayrshire 1859, sheet xlv), but it is not shown on the current edition of the OS 1:10000 map	N/A
169906	239270	611260	Keirsmill. One unroofed building annotated Keirs Mill (Corn. Ruins of) is depicted on the 1st edition of the OS 6-inch map (Ayrshire 1860, sheet xxxix) and on the current edition of the OS 1:10000 map	N/A
202655	239027	610686	Dallowie. Farmstead designed by Duncan McCulloch. 1948. Adds to Dairy, for John Moodie	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
205077	241673	610944	Patna Station. Railway station	N/A
205078	241390	610613	Patna, Main Street, General	N/A
205080	241498	610552	Patna, Main Street, U.F. Church. United Presbyterian Church situated on the S side of Main Street about 200m W of Patna Bridge (NS41SW 44). Steeple on NE side, sandstone building set back from road.	N/A
205081	241553	610555	Patna, Main Street, U.F. Church Manse	N/A
205082	241564	610563	Patna, Main Street, Parish Church Manse	N/A
205083	241381	610486	Patna, General	N/A
203898	240153	609902	Carclout. House Architects: Allan Stevenson & Cassells. 1938. Additions & alterations for Mrs. C.I. Gordon.	N/A
295670	240836	610028	Carnshalloch Limestone Works. Carnshalloch Lime Works (Disused) is named and depicted on the Ordnance Survey 1st edition 25-inch map (Stirlingshire, 1858). The kiln bank is shown (NS 40800 10058) with two kiln 'mouths' depicted (also shown on Ordnance Survey 2nd edition 25-inch map (Stirlingshire, 1896)). 'Old Limekilns' (presumably clamp kilns) are shown at NS 40964 10048, along with the 'Old Quarries Limestone' named at NS 40833 10020.	N/A
316582	241234	610674	Patna, 89 Main Street. 19th century house	N/A
374794	241598	610306	Patna, Whithill Avenue, Patna Primary School. A memorial plaque dedicated to William Fullerton.	N/A
363346	240660	610530	Whitehill. The 1st edition OS (1860) shows an ‘Old Quarry (Whinstone)’ to the south of Whitehill farm at Quarry Knowe. The quarry is shown on modern Ordnance Survey mapping and is also visible on modern aerial imagery. The quarry was located during the field survey as a linear depression in the side of Quarry Knowe. Rounded at the SW end, the quarry had a	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
			maximum width of 30m and was 95m long from ENE to WSW. It was heavily overgrown with several small areas of outcrop visible.	
377686	242912	609094	Memorial Stone Commemorating Hunger Strike. 20th century memorial	N/A
356377	237500	607690	House of the Hill. House of the Hill, comprising a single roofed rectangular building and two enclosures with a well to the southwest, is depicted on the 1st Edition Ordnance Survey six-inch map (1859). Field survey identified the remains of the building surviving in good to fair condition, within the commercial forestry plantation. The walls survive to a maximum of 2 m in height, with an internal doorway and stone window lintels remaining in place.	N/A
357711	242147	610198	Patna, Doon Valley Golf Club. Doon Valley Golf Course closed in 2017 but it is still depicted on the current edition of the OS 1:10000 map.	N/A
350498	237814	608760	Loch Spallander. A watching brief took place during construction of the Loch Spallander Hydro Electric Scheme, on the site of a new turbine house and the pipeline that connected this into Loch Spallander reservoir. No archaeological remains were uncovered.	N/A
363344	240030	610700	Whitehill. Comparison between modern and historic Ordnance Survey mapping identifies a relict stretch of the road from Patna to Dalveenan running along the S side of the northern tributary of the Dalowie Burn, to which it runs roughly parallel. Realignment has resulted in movement of the modern road to its current, more northerly, course, a change which appears to have occurred in the latter half of the 20th century. The site was located at its western end as a 2.5m wide dirt and stone path near the modern gate. It was heavily overgrown and became indistinct after running east approximately 70m. The site could not be located over its eastern extent.	N/A
363351	240110	610930	Whitehill. A group of linear field boundaries visible on modern aerial imagery but are not recorded on any historic mapping. Together, they create a now-fragmented group of rectilinear fields which are likely to represent an earlier phase of the current rectangular field system. The original dimensions of these fields cannot be established from the levels of information available, and – with the exception of rig block a, there do not appear to be any cultivation remains surviving in association. Whether this is because they were related to stock	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
			management rather than arable production or whether they have been eroded by later cultivation practices cannot, however, be ascertained.	
SM5787	230999	610395	Lyonston,standing stone 250m ESE of. The monument comprises a single standing stone, probably erected during the Bronze Age, which is situated on a slight rise in a field of improved pasture 250m SE of Lyonston farmsteading. The stone is grey granite, stands 1.4m high, and is broader at the top than at the base.	N/A
SM2864	233853	617983	Alloway,motte	N/A
SM4436	240035	619268	Highpark,enclosure 250m NW of. The monument is a settlement of the Iron Age. It is circular, enclosed by low, inner and outer ramparts, with a medial ditch up to 11m broad and 1.5m deep, enclosing an area c. 45m in diameter. No internal features are apparent. As it shows no signs of disturbance, well preserved structural remains should survive in the interior. Charred crop remains and animal bones are likely to survive, allowing an insight into the economy of the settlement.	N/A
SM5200	243761	603611	Munteoch, settlement and field systems. This post-medieval settlement complex comprises at least 2 phases of homestead with associated outbuildings, agricultural enclosures and several phase of cultivation remains. The north-west enclosure is 185m by 100m, including a house, stock pens and cultivation rigs. To the east of this there is a second stone-walled house with associated yard and kiln. An extensive field system lies to the west of this group. The complex is bounded by a headdyke, 2m wide and 1m in height, running for a total of c.700m.	N/A
SM4866	233768	616135	Craigmuir Mote, dun. The monument is dun of the Iron Age situated on a low knoll on the terrace overlooking the River Doon. The site is naturally defended by steep slopes on all sides except the WNW. The interior of the dun measures 19m NW-SE by 15.5m transversely within a wall reduced to a band of rubble up to 3.6m thick. Some facing stones are visible to the WNW, where there may be a second wall strengthening the easy line of approach. The area to be scheduled includes the dun and an area around it within which traces of activity associated with its use may be found. It measures 30m in diameter, centred on the monument, as marked in red on the attached map.	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
SM5268	233388	617683	Brigend Castle. The monument consists of the late medieval remains of Bridgend (also known as Doonside) Castle. All that survives is a small ruinous square tower of three storeys. The building is located on the S bank of the River Doon 200m upriver from the Old Bridge of Doon. The structure is rectangular on plan and has external dimensions of 7.3m NE-SW by 6m over walls 0.8m thick and between 3 and 8m high. The masonry is random rubble with free-stone dressings. The vaulting in the basement is intact. The first floor contains one large window in the NW wall. The second floor has a window in the NE wall. There are two opposed niches 1m from floor level close to the NE end. There is a recess in the NE wall running the height of the building which may have held a fireplace. The basement has two slit windows, one in the E and one in the N wall.	N/A
SM5280	239527	617315	Martnaham Castle. The monument consists of the remains of a defensive residence of 16th or 17th-century date called Martnaham Castle. It is situated on a low-lying promontory on the S side of Martnaham Loch. The castle is approached on the SW by a substantial boulder causeway (84m long and 3m wide) which protects the landward side from flooding. The castle is rectangular on plan measuring 15m SW-NE by 7.6m over walls 0.6-0.8m thick. The random-rubble walls are reduced to a height of between 1 and 2m. The building is divided into three rooms. The interior is rubble filled. The castle is surrounded by outworks which can be discerned beneath the undergrowth. There are remains of a courtyard to the NE, portions of walling to the SE and a retaining wall to the NW.	N/A
SM3009	248192	605816	Dalmellington, motte	N/A
SM3357	234264	600518	Knockinculloch, enclosures on E slope of,600m NW of Glenalla. This monument, consisting of a large enclosure containing 8 or 9 smaller enclosures, is situated on the SE flank of Knockinculloch, to the N of the Palmullan Burn. It is clearly of considerable antiquity but cannot with confidence be assigned to any particular prehistoric or medieval date. The main enclosure is subrectangular on plan and measures 125m by 95m within an earthen bank (1m wide and 0.4m high); its NE side is open. In its interior are eight, or possibly nine, P-shaped enclosures which measure about 26m in length over low banks (0.4m high and 0.9m wide). All the features share the same orientation (NW-SE) and a short stretch of bank is attached to the foot of each 'P' and springs to the E. The complex was first noted by Christison in 1892 and	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
			has changed little since. Its function is enigmatic, but it is more likely to relate to the penning of animals than to human settlement.	
SM3358	231118	603280	The Lady Chapel,640m NE of Kilkerran	N/A
SM2865	233774	613936	Mote Knowe, dun, Monkwood	N/A
SM2886	234777	612485	Dowan's Hill, dun, Dunree	N/A
SM7690	245009	608857	Laight Castle. The monument comprises the foundations of a tower house which stand on a steep-sided spur above the Dunaskin Burn in Dunaskin Glen. The turf-covered walls mark out a rectangular-shaped building with the surviving walling measuring 15m long on the N, 8m long on the E and 11m on the S. The remains of a staircase tower may be presented by the outline of a small structure on the N side of the building. To the N, W and S of the site steep cliffs mark the limits of the castle's defensive position while at the vulnerable E side lie the remains of a ditch, measuring 60m in length by 2.7m at maximum width, crossed at its centre by a causeway 3.5m wide.	N/A
SM7863	244077	610132	Waterside, miners' villages & mineral railways N of. The monument comprises the remains of the former mining villages of Benwhat, Corbie Craigs and Lethanhill, together with a network of tracks marking the site of former mineral railways, bings marking the site of former ironstone pits and adjacent shafts, all associated with the Dalmellington Ironworks.	N/A
SM7491	243756	601116	Knockdon, enclosure 700m NE of. The monument comprises a prehistoric enclosure which is situated in rough grazing 700m NE of Knockdon Farm. The enclosure is oval in shape, consisting of a stony bank up to 1.5m high and 2.6m wide, surrounding an area approximately 16m by 14.6m internally. There is a gap in the bank on the ESE, probably representing the original entrance. The enclosure probably dates to the later prehistoric period (about 2000-3000 years ago) and would not have been roofed over as a single building, but would, rather, have sheltered smaller roofed buildings.	N/A
SM90212	230165	609871	Maybole Collegiate Church. The monument consists of the remains of the collegiate church of St Mary, founded within a pre-existing chapel in 1382. It is suggested that this was	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
			substantially rebuilt during the early fifteenth century using coursed rubble with freestone dressings; most walls are preserved to near wallhead height.	
SM2176	229871	607393	Kildoon, fort	N/A
SM4390	246217	605440	Dalnean Hill, farmstead and field system. The monument comprises the remains of a medieval or later settlement and field system, situated on Dalnean Hill. The settlement remains consist of the stone footings of two parallel rectangular buildings, each divided into three rooms, and each measuring over 18m in length and up to 4m in width. The remains of a drain running out of the end wall of one of the buildings indicates that the end compartment had been used as a byre. A rectangular enclosure, possibly a kailyard or garden plot, is attached to the south-western building. To the NW of the two buildings is a small outbuilding, and to the N, on the other side of a small burn and sited on a break in slope, is a kiln-barn. There are extensive remains of turf banks and rig-and-furrow over the hillside, particularly on the upper slopes of the hill to the W and SW of the buildings. The settlement of 'Dalneen' is recorded on maps from 1650 onwards, but appears to have been deserted by the mid-nineteenth century.	N/A
SM4345	244319	608399	Waterside, Dalmellington Ironworks. The monument consists of the remains of the Dalmellington Iron Works and associated buildings and structures. This scheduling replaces an earlier scheduling of the core of the site and reflects a new appreciation of the importance of this complex. It includes the remains of the ironworks itself, its more important supporting buildings, the sites of some of the ironworkers' housing, the railway station, and some of the ore calcining hearths and stocking areas associated with the works, together with the water supply route from the Dunaskin Burn.	N/A
SM13693	247304	606074	Bogton Loch airfield, 175m SSE of Buchan's Bridge, Dalmellington. The monument comprises the remains of a First World War airfield, built in 1917 as part of the proposed Loch Doon Gunnery School. It is visible as the remains of a support area including the foundations of hangars, workshops, stores, taxiways, bridges and a railway loading dock. It is located on the western edge of the village of Dalmellington, around 160m above sea level. Bogton Loch airfield was part of the Loch Doon Gunnery School, partially constructed between 1916 and 1917 in and around Loch Doon to support the training of aerial gunnery. Bogton Loch airfield was the second airfield constructed as part of the project, as the first site chosen, on the western side of Loch Doon itself, was found to be wholly unsuitable after construction began.	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
			The airstrip at Bogton Loch was located on the west side of the Muck Water, with the support area on the east side, with bridges across the water between the two.	
SM7544	243925	608264	Waterside Bing, iron slag bing, Dalmellington Ironworks. The monument is an iron slag bing, a substantial area of iron production waste. The bing was formed as part of the operation of the former Dalmellington Ironworks. This waste material helps chart the stages of technological development in smelting iron at Dalmellington from 1850-1920. The lower layer contains slag material from the manufacture of common iron and the upper layer is composed of waste from the production of haematite iron. The bing was extended to the west in 1915 following the diversion of the River Doon and was regraded at the east and north in 1986/87.	N/A
SM2932	237220	616790	Two henges, 175m NE and 410m WSW of Lindston House. The monument comprises the remains of two henges. Henges are a form of ritual or ceremonial monument dating to the late Neolithic or early Bronze Age (around 3000-1500BC). The north-eastern henge measures around 50m across and it survives as a slight earthwork, with a ditch, bank, causeway and interior platform. The enclosing ditch is the most visible feature. The south-western henge measures around 55m across and is better preserved, with a visible bank, ditch, causeway and interior platform. The henges are located, around 540m apart in agricultural land at around 120m above sea level.	N/A
SM5786	233215	616578	Wallace's Stone, cross-incised stone. The monument comprises a cross-incised boulder thought to date to between the 10th and 12th centuries AD. The stone is set within a walled enclosure on the south side of a track 200m northwest of The Old Farmhouse at Blairston Mains. The irregular boulder is 1.8m long, up to 1m broad and 0.6m thick and is now recumbent. One face bears a cross in false relief, set slightly off centre with arms of uniform length, expanding terminals and a tapering shaft which drops from the centre of the head. The form of the cross suggests the stone was carved between the 10th to 12th centuries. However, it may be a prehistoric standing stone which was later adapted in the medieval period as a preaching site or way marker. There is the potential for buried archaeological remains in the ground surrounding it.	N/A
CA50	244048	608497	Waterside	N/A
CA88	234253	608929	Kirkmichael	N/A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
CA92	238201	604903	Straiton	N/A
GDL00111	246391	604198	Craigengillan. Craigengillan is a rare example of a complete and unfragmented estate landscape, started in the 16th century and held by one family (McAdam) for almost 400 years. The designed landscape dates from the late 18th/early 19th century and includes a Category A listed mansion house, and stables, formal gardens, a walled garden and a Japanese water garden, added in the early 20th century, incorporating Pulhamite rockwork, rockeries and waterfalls. Garden buildings and notable drystone walling, extensive policy woodland, a rocky gorge and industrial archaeological remnants are also elements of the designed landscape.	N/A
GDL00342	237375	613893	Skeldon House. A late 18th- / early 19th-century, medium-sized parkland landscape with riverside walks.	N/A
GDL00063	236452	606128	Blairquhan. The attractive parkland and woodland was first laid out in the 17th century and later remodelled. It forms an attractive setting for the category A listed house and also contains an interesting collection of trees.	N/A
GDL00238	230511	603044	Kilkerran. The designed landscape has remained similar in layout since the improvements undertaken in c.1814 from map evidence. Paintings at the house by John Wilson show the house before the Gillespie addition and those by Severn in 1873 show the old stable-block just to the south-west of the house.	N/A
LB1090	241691	610633	Patna Bridge Main Street, Patna	B
LB1092	244173	608383	Waterside Engine House	A
LB1093	243607	608815	Waterside Chapel of Ease	C
LB1094	244032	608660	Waterside, Ardoon House	B
LB1101	237750	613535	Skeldon House.	B
LB1103	237820	613853	The Old Castle and Remains of Skeldon Castle	B

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
LB1114	230464	603051	Kilkerran House	A
LB6595	243823	608626	Waterside, Waterside Institute	B
LB6596	243796	608652	Waterside, War Memorial	C
LB6623	243679	608609	Palace Bar, Waterside Village	B
LB7533	234232	608912	Fairholm 34 Patna Road Kirkmichael	C
LB7534	234542	608956	Kirkmichael Parish Church, (Church of Scotland)	B
LB7535	234543	608981	Lych Gate and Graveyard	B
LB7536	234440	608934	Bridge, Portcheck	B
LB7537	234458	608903	Portcheck 3 Bolestyle Road Kirkmichael	C
LB7538	234220	608932	31 Patna Road Kirkmichael	C
LB7539	234236	608935	Rose Cottage 37 Patna Road Kirkmichael	C
LB7540	234246	608937	Duniquaich 39 Patna Road Kirkmichael	B
LB7541	234259	608940	43 Patna Road Kirkmichael	B
LB7542	234275	608944	45 Patna Road Kirkmichael	B
LB7543	234282	608946	Myrtle Cottage 47 Patna Road Kirkmichael	B
LB7544	234095	608869	Kirkmichael Arms, The White House and Adjoining Joiner's Shop	B

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
LB7545	234304	609026	The Manse 63 Patna Road Kirkmichael	B
LB7546	234497	608958	81 Patna Road Kirkmichael	C
LB7547	234107	608881	8 Patna Road Kirkmichael	B
LB7548	234130	608886	16 Patna Road Kirkmichael	B
LB7549	234157	608893	20 Patna Road Kirkmichael	C
LB7550	234174	608898	Adjoining 20 Patna Road Kirkmichael	C
LB7551	234210	608907	30 Patna Road (Mr Mcculloch, Plasterer) Kirkmichael	C
LB7552	234222	608910	32 Patna Road Kirkmichael	C
LB7553	234508	608937	Hillburn 76 Patna Road Kirkmichael	C
LB7554	234351	608428	Gatepiers, Kirkmichael House	B
LB7555	235265	608050	Blairquhan Bridge	B
LB7557	235802	607558	Cloncaird Castle	B
LB7558	236123	608048	Dovecote, Drumfad	A
LB7560	234255	608918	Tolverne 38 Patna Road Kirkmichael	C
LB7561	234279	608924	42 Patna Road Kirkmichael	C
LB7562	234288	608925	Kirkmichael, 2 Burnside Row, The Auld Posthouse	C

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
LB7563	234325	608934	Almar 50 Patna Road Kirkmichael	C
LB7564	234335	608936	58 Patna Road (Now Belongs to 50) Kirkmichael	C
LB7565	234346	608935	60 Patna Road Kirkmichael	C
LB7566	234478	608937	74 Patna Road Kirkmichael	C
LB7588	228252	608760	Baltersan Castle	A
LB11738	235251	608033	Blairquhan Estate, Blairquhan Lodge	C
LB11740	235938	607683	Cloncaird Castle, Stable Block and Boundary Wall, Steps and Ancillary Structures	C
LB13653	234242	608915	36 Patna Road Kirkmichael	B
LB13654	234088	608440	Kirkmichael House	B
LB13655	234045	612819	Cassillis Castle	A
LB13656	234267	608921	40 Patna Road Kirkmichael	C
LB13657	234358	608933	62 Patna Road Kirkmichael	C
LB13782	235866	607622	Cloncaird Castle, Bridge	C
LB13783	235889	610715	Guiltreehill	C
LB18793	247350	602817	Craigengillan	A
LB18794	247365	602755	Stables, Craigengillan	A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
LB19089	238059	604907	Parish Church and Graveyard	A
LB19090	238413	604752	Traboyack House, Former Manse	B
LB19091	238137	604922	Straiton, 6-42 (Even Nos) Main Street	C
LB19092	238202	604859	Straiton, 1-19 (Odd Nos) Main Street	C
LB19093	238148	604890	Straiton, Black Bull Hotel	B
LB19094	236531	605468	Blairquhan	A
LB19095	236631	605488	Balirquhan, Stables	B
LB19096	236733	605496	Blairquhan Estate, Icehouse	C
LB19097	236944	605478	Blairquhan, Kennels	B
LB19099	236781	605333	Blairquhan Estate, Walled Garden, Greenhouse and Terrace	C
LB19100	237387	605299	Blairquhan Estate, Milton Lodge with Gatepiers	C
LB19101	235873	605257	Blairquhan Estate, Girvan Lodge with Gatepiers and Gates	C
LB19102	237421	605284	Old Bridge of Blairquhan	B
LB19104	239155	603948	Colonel Hunter Blair's Monument	B
LB19106	238163	604934	Straiton, Dalmellington Road, K6 Telephone Kiosk	B
LB37709	230130	610029	High Street, Maybole Castle, Garden Walls and Gatepiers	A

SNRHE (Canmore) / HES ref.	Easting	Northing	Description	Category
LB37718	230820	610179	St John's Cottage	A
LB50618	235926	607711	Cloncaird Castle, Former Garage and Store	C
LB52623	234128	608912	The McCosh Hall (former Kirkmichael Working Men's Club), 17/19 Patna Road, including boundary walls and railings, Kirkmichael, Maybole	C

110 Queen Street
Glasgow
G1 3BX

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