

Longcroft Wind Farm

Scoping Report



March 2023

Preface

Renewable Energy Systems Ltd. (the Applicant) has submitted this Scoping Report to the Scottish Government’s Energy Consents Unit (ECU) under Section 36 of the Electricity Act 1989. The purpose is to agree a scope with consultees for the Environmental Impact Assessment (EIA), as required by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, of a renewable electricity generating station including wind farm and battery at Longcroft, Scottish Borders.

A copy of this Scoping Report and general project information is available to view freely on the project’s website at www.longcroft-windfarm.co.uk and the ECU’s website <https://www.energyconsents.scot/ApplicationSearch.aspx>.

During the EIA process, public events will be held in the vicinity of the proposed development as part of pre-application consultation where the applicant will be on hand to provide project updates, answer questions and seek feedback from the public.

This Scoping Report consists of the following:

- Scoping Report
- Figure 1.1: Site Location
- Figure 1.2: Turbine Locations
- Figure 3.1: Landscape Policy Context
- Figure 3.2: ZTV Study - Bareground (45km)
- Figure 3.3: ZTV Study - Including Woodlands and Settlements (45km)
- Figure 3.4: Combined Landscape Policy Context & ZTV Study - Including Woodlands and Settlements
- Figure 3.5: Cumulative Developments Within 35km
- Figure 4.1: Heritage Designations
- Figure 4.2: Viewpoint 1 Wireline
- Figure 4.3: Viewpoint 2 Wireline
- Figure 4.4: Viewpoint 3 Wireline
- Figure 4.5: Viewpoint 4 Wireline
- Figure 4.6: Viewpoint 5 Wireline
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- Figure 5.1: Ornithological Survey Areas
- Figure 7.1: Hydrological Feature
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- Appendix 4.1: Heritage Appraisal of Designated Heritage
- Appendix 7.1: Ecology Desk Study
- Appendix 11.1: Aviation MOD Proforma

Defined Terms

Longcroft Wind Farm - the proposed development

Renewable Energy Systems Ltd - the Applicant

S36 Application - an application for consent made to Scottish Ministers under the Electricity Act 1989.

EIA Regs - the Electricity Works (Environmental Impact Assessment) Regulations (Scotland) 2017.

Site Boundary - Area within which development of wind farm infrastructure such as tracks will be made.

List of Abbreviations

ANO - Air Navigation Order	MOD - Ministry of Defence
ATC - Air Traffic Control	MW - Mega Watt
CAA - Civil Aviation Authority	MWh - Mega Watt hour
CEMP - Construction Environment Management Plan	NERL - NATS En Route Ltd
CIEEM - Chartered Institute of Ecology and Environmental Management	NHZ - Natural Heritage Zone
ECU - Energy Consents Unit	NSA - National Scenic Area
EIAR - Environmental Impact Assessment Report	RSPB - Royal Society for the Protection of Birds
GWDTE - Ground Water Dependent Terrestrial Ecosystem	RVAA - Residential Visual Amenity Assessment
HRA - Habitats Regulations Appraisal	SEPA - Scottish Environment Protection Agency
IFP - Instrument Flight Procedure	SNH - Scottish Natural Heritage (now known as NatureScot)
km - kilometre	SPA - Special Protection Area
LVIA - Landscape & Visual Impact Assessment	SSSI - Site of Special Scientific Interest
LLA - Local Landscape Area	TO - Transmission Owner
m - metre	ZTV - Zone of Theoretical Visibility

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1 Introduction

Scoping

- 1.1 A Preface to this report provides a list of abbreviations and defined terms which should be referenced when reading this Scoping Report.
- 1.2 This Scoping Report aims to provide details to consultees of a proposed wind farm with the purpose of agreeing a scope of EIA which will be used to produce an EIA Report (EIAR) to accompany the submission of an S36 Application.
- 1.3 This section of the report will provide high level details of the site's location, preliminary site layout and associated infrastructure.
- 1.4 Subsequent sections shall identify the baseline conditions related to the relevant EIA topics and highlight any survey work undertaken to date. Elements to be covered by the EIA will be presented at a high level. It will justify where certain features can be reasonably scoped out of the EIA. Consultees should respond to confirm agreement with the proposed scope. If there is a disagreement/difference of opinion, consultees should explain why something should be reasonably included within or excluded from the scope of the EIA.
- 1.5 The purpose of the EIA is not to assess all effects a project may have but to focus on the project's likely significant effects on the environment.
- 1.6 The above paragraphs set out the framework of this report and in doing so will satisfy the requirements of the EIA Regs.

Proposed Development

Site Location

- 1.7 Longcroft Wind Farm is located in the southwest of the Lammermuir Hills, approximately 8.5km north of Lauder, Scottish Borders, see Image 1.1. Its central co-ordinates are E 354410, N 655930.

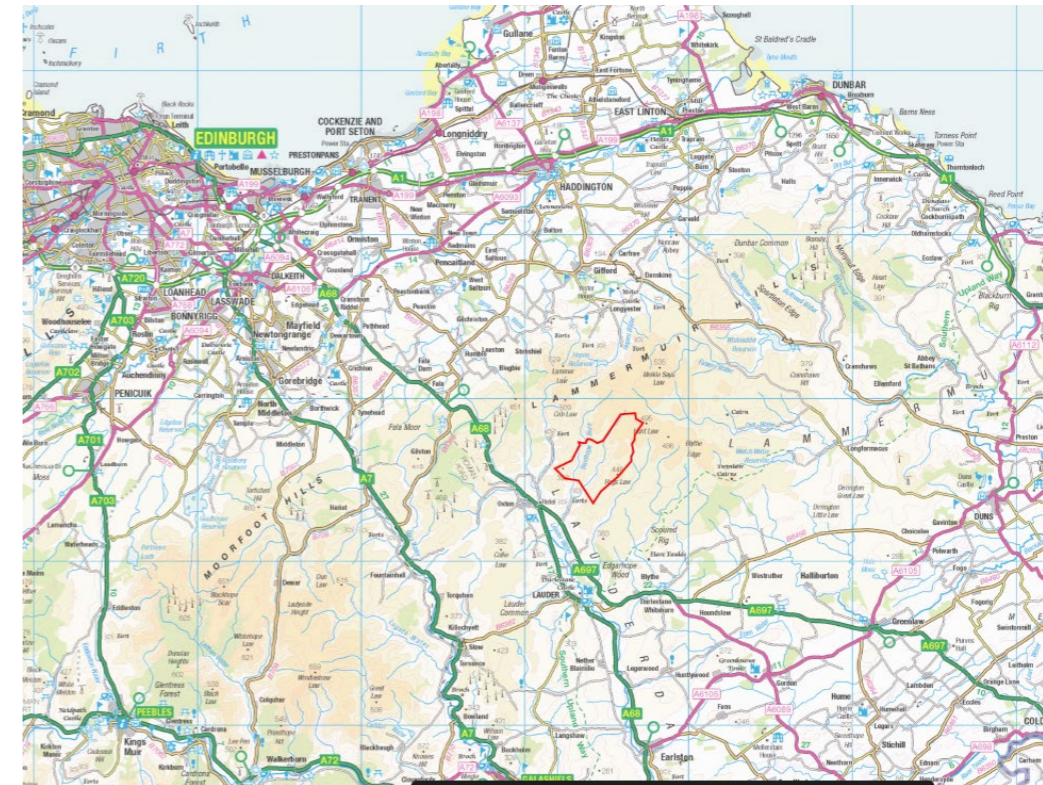


Image 1.1: Site Location (see full scale figure of Site Location in Figure 1.1)

Site Design and the Proposed Development

- 1.8 The initial design and layout of the proposed development, as presented in this Scoping Report, has been developed through an iterative process which has avoided known potential impacts as far as possible. The layout will continue to be refined during the EIA process and through further consultation. Any amendments to the design scoped here are unlikely to increase the likelihood of a significant effect. However, should any changes occur that are likely to result in a significant or unknown effect on an important feature previously scoped out, then this feature will be scoped back into the EIA process. Any changes will first be discussed with the relevant consultees, to ensure that they are in agreement before altering the scope of the EIA.
- 1.9 The proposed development is **scoped** on a layout of **24 turbines at 220m in height** from the ground the blade tip. This layout is presented in Image 1.2 and will evolve as more site constraints are understood through the ongoing EIA process.

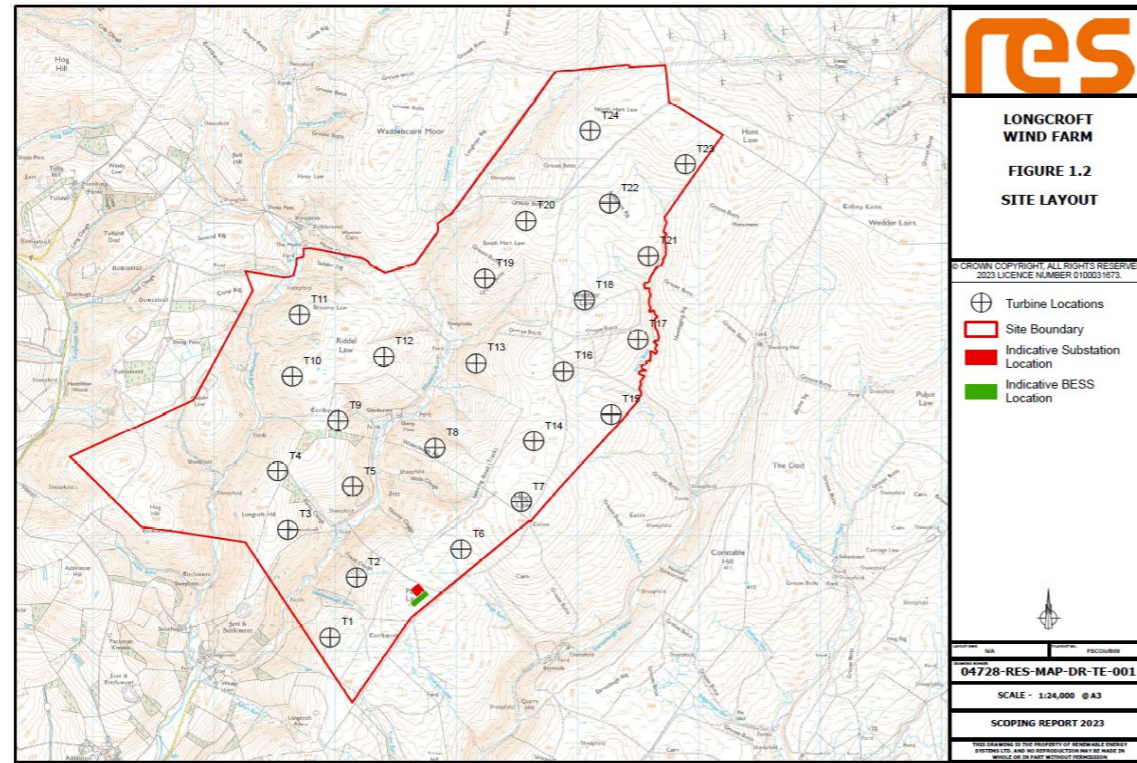


Image 1.2: Preliminary Site Layout (see Figure 1.2 for full scale plan)

- 1.10 The proposed development presented in this Scoping Report comprises the largest extent of land and greatest number of turbines expected to be submitted for planning permission. It therefore represents what is likely to provide the highest energy yield and be the ‘worst case’ regarding potential significant adverse environmental effects. The site boundary may change to accommodate the final routing of access from the public road on to site, which at this time is expected to be from the south-west. This is also touched upon in sections 8 & 13 of this Scoping Report. Altering the site boundary accordingly will not change the nature or scale of the proposed development nor require it to be re-scoped. In any case, consultees will be consulted through the EIA process of any fundamental changes in scope of assessment.
- 1.11 The proposed development is likely to comprise:
- 24 wind turbines, approximately 220m tall.
 - associated turbine foundations.
 - crane pads.
 - upgraded and new access tracks.
 - underground electricity cables.
 - anemometry mast.
 - control building and substation.
 - energy storage/battery compound.
 - signage.

- temporary borrow pits.
- drainage and drainage attenuation measures (as required).
- temporary construction and storage compounds, laydown areas.

1.12 The specific turbine model has not yet been selected but it is expected to be a horizontal axis machine with three rotor blades. The turbine models being considered at this stage have rotor diameters of 170m and hub heights of 135m. Current models being investigated have 6.5MW generating capacity and therefore the proposed development stands to offer in excess of 100MW of renewable electricity.

1.13 Current locations of proposed turbines are listed in Table 1.1.

Table 1.1 Scoping Layout Wind Turbine Co-ordinates

Turbine ID	Easting	Northing	Turbine ID	Easting	Northing
T1	353960	654124	T13	355166	656490
T2	354179	654639	T14	355641	655815
T3	353612	655050	T15	356278	656046
T4	353530	655556	T16	355885	656421
T5	354147	655424	T17	356501	656695
T6	355042	654881	T18	356059	657035
T7	355539	655292	T19	355237	657222
T8	354826	655756	T20	355575	657715
T9	354027	655993	T21	356587	657413
T10	353649	656378	T22	356266	657865
T11	353708	656908	T23	356890	658206
T12	354406	656547	T24	356106	658494

1.14 Crane pads will be left in-situ for use during operation to allow for maintenance and replacement of turbine parts as required.

1.15 The battery is anticipated to have a storage capacity akin to the wind farm, power output of ~150MW and a stored energy capacity of ~300MWh. This size of energy storage might require a compound up to ~100m x 150m. An indicative drawing of what the compound could look like is shown in Image 1.3.



Image 1.3 Photograph of Minety battery storage; an example of a 100MW site

- 1.16 Temporary compound areas might be suitable after construction for use permanently as public car parking for example. This will be dependent upon both the location and need for such use and will be examined during the EIA process.
- 1.17 Any S36 Application submitted for the proposed development will seek permission in for an operating lifespan of 50 years as is now typical for other onshore wind farms.
- 1.18 An application has been made by the applicant to the Transmission Owner (TO) for connection to the national grid to export the electricity generated. This application is separate from the application for consent to develop the proposed development. The TO will then undertake a separate process for consent to develop the grid connection.

Access

- 1.19 Access onto the Site will be via a network of private tracks leading from Longcroft Farm. Longcroft Farm itself is accessed via a public road leading from the A697 at Addleston, approximately 2km southwest of the roundabout between the A697 and the A68.
- 1.20 Turbines are intended to be delivered via traditional blade transporter, or if necessary delivered to a holding yard, to be developed further down the A697, and transferred on to a blade lifter for delivery to site.

Consultation

- 1.21 The applicant will submit this Scoping Report to a wide range of statutory and non-statutory consultees who are encouraged to engage with the applicant and with whom the applicant will liaise and update accordingly.

- 1.22 Although there is no statutory requirement to undertake public pre-application consultation, the applicant considers it to be a crucial part of the wind farm development process and will engage with the local community throughout the application process. Public consultation will be undertaken to provide information to, and seek feedback from, interested parties and help inform the evolution of the design. This will include public exhibition events within the local community.
- 1.23 The applicant will also encourage feedback from the local community during pre-application consultation with regard to ideas for projects/suggestions for community benefits that the proposed development might be able to provide such as enhanced recreational access, electric charging points etc.

EIA Report

- 1.24 The EIA process will result in production of the EIAR and is likely to follow the structure below:
- Chapter 1: Introduction
 - Chapter 2: Proposed Development Description
 - Chapter 3: Site Selection and Design Evolution
 - Chapter 4: Planning, Climate Change and Energy Supply Policy
 - Chapter 5: Landscape and Visual Impact Assessment (LVIA)
 - Chapter 6: Cultural Heritage
 - Chapter 7: Ornithology
 - Chapter 8: Ecology
 - Chapter 9: Geology, Hydrology and Hydrogeology
 - Chapter 10: Traffic and Transport
 - Chapter 11: Acoustics
 - Chapter 12: Socio-economic Assessment
 - Chapter 13: Aviation, Radar and Infrastructure
 - Chapter 14: Technical (Shadow Flicker, Climate Change and Other Issues)
 - Chapter 15*: Synergistic Effects and Summary of Mitigation and Residual Effects
- *The assessment of population and human health includes consideration of noise, shadow flicker, ice throw, lightning, private water supplies and socio-economics. Such factors are assessed throughout different areas of the EIAR and will be summarised in Chapter 15.
- 1.25 The following sections of this report will discuss these chapter topics with regard to scope of the EIA.

2 Climate Change & Energy Supply

- 2.1 This section presents the legislative and policy context that frames the proposed development and that will be considered in the preparation of the EIAR and associated design development.

Legislative Context

The Electricity Act 1989

- 2.2 Section 36 of the Electricity Act 1989 provides that a generating station with a capacity in excess of 50 megawatts (MW) shall not be constructed, extended, or operated except in accordance with a consent granted by the Scottish Ministers.
- 2.3 Paragraph 3(2) of Schedule 9 of the Act requires the Scottish Ministers, in considering any relevant proposals for which their consent is required under Section 36, to have regard to:
- the desirability of the matters mentioned in paragraph 3(1)(a) of the Schedule; and,
 - the extent to which the person by whom the proposals were formulated has complied with his duty.
- 2.4 The matters mentioned in paragraph 3(1)(a) are: the desirability of preserving natural beauty, conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historical or archaeological interest.
- 2.5 The duty under paragraph 3(1)(b) requires the person who formulated the proposals to do what they reasonably can to mitigate any effect that the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects. Sub-paragraph 1 can be relevant to an applicant if they hold a License at the date a Section 36 application is made.
- 2.6 The Act does not say that these are the only matters to be considered. Scottish Ministers will take into account other matters which would be material to their decision. These will include national energy policy, national and local planning policy as well as the full scope of the environmental information submitted with the application.

The Town and Country Planning (Scotland) Act 1997

- 2.7 The principal planning statute in Scotland is the Town and Country Planning Act (Scotland) 1997 (as amended) (the 'Planning Act'). That Act has recently been amended by the Planning (Scotland) Act 2019, however not all provisions within this piece of legislation are in force.

- 2.8 Section 57 of the Planning Act addresses development with Government authorisation. When granting consent under Section 36 of the Electricity Act, Scottish Ministers may, under section 57 (2) direct that planning permission is deemed to be granted.
- 2.9 Section 57 (2) states that: "On granting or varying a consent under section 36 or 37 of the Electricity Act 1989, the Scottish Ministers may give a direction for planning permission to be deemed to be granted, subject to such conditions (if any) as may be specified in the direction, for - (a) so much of the operation or change of use to which the consent relates as constitutes development; (b) any development ancillary to the operational change of use to which the consent relates".
- 2.10 As an application under the Electricity Act, the duty under Section 25 of the Planning Act, to determine the application in accordance with the provisions of the development plan unless material considerations indicate otherwise, does not apply. The Development Plan is however a relevant and important consideration.

Climate Change Acts

- 2.11 The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 amends the Climate Change (Scotland) Act 2009 (the '2009 Act'). This legislation introduced legally binding targets to reduce Scotland's net greenhouse gas emissions and sets a target date for net-zero emissions of all greenhouse gases by 2045 at the latest. Interim targets for reductions are also established with targets of 75% by 2030 and 90% by 2040.
- 2.12 Together, these legislative Acts represent the Government's intended energy and climate change strategy for the period to 2050. Detailed reference to associated renewable energy and climate change policy will be provided in the EIAR.

Energy and Climate Change Policy

- 2.13 The commitment to increase the amount of electricity generated from renewable sources is a vital response to climate change. Renewable energy generation will contribute to more secure and diverse energy supplies and support sustainable economic growth.
- 2.14 The renewable energy policy framework at the international and national level applies to renewable electricity generation and related climate change action and is an important consideration for the proposed development.
- 2.15 The EIAR will highlight these policy documents and set out the hierarchy of EU, UK and Scottish Government energy policy.

- 2.16 In terms of the relevant policy framework at the International and European level, the following key documents are of relevance at this stage:
- The Conference of Parties (COP) 26 Glasgow Climate Pact (2021);
 - The COP 21 UN Paris Agreement (2015); and
 - Intergovernmental Panel on Climate Change (IPCC) Reports on the Impacts of Global Warming (2016 and 2021).
- 2.17 In terms of UK renewable energy policy, the following documents are of most significant relevance:
- Committee on Climate Change (CCC) Progress Reporting on Reducing Emissions (2019-2022);
 - The UK Government’s Energy Security Strategy (2022); and,
 - The UK Government’s Energy White Paper Powering our Net Zero Future (2020).
- 2.18 The most relevant policy documents published by the Scottish Government include:
- Scotland’s Draft Energy Strategy and Just Transition Plan (2023);
 - Scotland’s Onshore Wind Policy Statement (2022);
 - Scottish Government’s Response to the 2021 CCC Progress Report (2022);
 - Scottish Energy Strategy (2017) and associated Position Statement (2021); and,
 - The Climate Change Plan (2018) and associated update: Securing a Green Recovery on a Path to Net Zero (2020).

Planning Policy

- 2.1 The planning policy review provided as part of the EIAR will consider the national, regional and local policy documents of relevance. The EIAR will describe the applicable planning policy framework insofar as it relates to onshore wind energy developments as well as other national policy documents which are relevant to the consideration of the proposed development.

National Planning Framework (NPF) 4

- 2.2 On 13 February 2023, the Scottish Government adopted National Planning Framework (NPF) 4, which has incorporated Scottish Planning Policy. It sets out the Government’s spatial principles, regional priorities, national developments and national planning policy up to 2045. It replaces NPF3 and Scottish Planning Policy and has the status of the development plan for planning purposes.
- 2.3 It is also highlighted that the adoption of NPF 4 has resulted in Strategic Development Plans (SDPs) and associated supplementary guidance relevant to SDPs ceasing to have effect and as such no longer being part of the Development Plan. This was highlighted in the Chief Planner’s Letter of 8 February 2023, ‘Transitional arrangements for National

Planning Framework 4’. As a result of this, SES Plan will not be considered further as part of the proposed development.

- 2.4 The response to the climate emergency has a prominent position in NPF 4, which makes it clear that Scotland must make significant progress by 2030 in order to achieve net zero emissions target by 2045. It also provides clear support for continued expansion of renewable energy, confirming that *“every decision on our future development must contribute to making Scotland a more sustainable place. We will encourage low and zero carbon design and energy efficiency, development that is accessible by sustainable travel, and expansion of renewable energy generation”* (Pg.7).
- 2.5 Policy 11 - ‘Energy’ seeks to “encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure and emerging low-carbon and zero emissions technologies.” The overall policy outcome is the “expansion of renewable, low-carbon and zero emissions technologies”.
- 2.6 In addition to the key policy principles discussed above, there are a number of further primary policy provisions within NPF 4 which will be considered as part of the EIA process and design development. These include:
- Policy 1, Tackling the climate and nature crises;
 - Policy 3, Biodiversity;
 - Policy 4, Natural Places;
 - Policy 5, Soils;
 - Policy 6, Forestry, Woodland and Trees;
 - Policy 7, Historic Assets and Places;
 - Policy 12, Zero Waste;
 - Policy 13, Sustainable Transport;
 - Policy 22, Flood Risk and Water Management;
 - Policy 23, Health and Safety; and,
 - Policy 25, Community Wealth Building.
- 2.7 As well as establishing a policy framework to guide development decision-making, NPF 4 also identifies 18 ‘National Developments’. These are *“significant developments of national importance that will help to deliver the spatial strategy”* (p97).
- 2.8 National development status does not grant planning permission for the development and all relevant consents are required. However, designation as National significance does mean that the principle of development does not need to be agreed in later consenting processes, in turn *“providing more certainty to communities, business and investors”* (p97).

- 2.9 National Development 3, ‘Strategic Renewable Electricity Generation and Transmission Infrastructure’ supports renewables electricity generation, re-powering, and expansion of the electricity grid. Specifically, onshore electricity generation exceeding 50 megawatts (MW) capacity in nature will be considered of National significance.
- 2.10 As such, the principle of the proposed development is established and a needs case does not require to be presented.
- 2.11 In the NPF 4 Delivery Programme (Scottish Government, November 2022), the Scottish Government has committed to progress work on a new suite of guidance and advice that will support activity to deliver the policy intent of NPF 4. Any guidance coming forward through the proposed development design and life-cycle will be appropriately considered and afforded appropriate weight in decision-making.

Planning Advice Notes

- 2.12 Where applicable, national planning policy advice will be considered in the preparation of the EIAR. These include but are not limited to the following documents:
- PAN 1/2011 Planning and Noise (2011);
 - PAN 2/2011 Planning and Archaeology (2011);
 - PAN 1/2013 Environmental Impact Assessment (2013);
 - PAN 60 Planning for Natural Heritage (2000);
 - PAN 61 Planning and Sustainable Urban drainage Systems (2001);
 - PAN 69 Planning & Building Standards Advice on Flooding (2004);
 - PAN 75 Planning for Transport (2005); and
 - PAN 3/2010 Community Engagement (2010).

The Local Development Plan

- 2.13 In addition to NPF 4, the Development Plan applicable to the proposed development comprises:
- Scottish Borders Local Development Plan (LDP) (2016); and
 - Relevant Supplementary Guidance, including:
 - Renewable Energy Supplementary Guidance (July 2018);
 - Local Biodiversity Action Plan (September 2018);
 - Wind Energy Landscape Capacity and Cumulative Impact (July 2013);
 - Local Landscape Designations (August 2012);
 - Landscape and development (March 2008);
 - Biodiversity (December 2005); and,
 - Visibility mapping for windfarm development (October 2003).

- 2.14 The LDP was adopted on 12 May 2016 and sets out the Authority’s policies on development and land use within the region. The LDP is focussed on a number of ‘Key Outcomes’ which are specifically identified to assist in meeting the associated challenges in the region.
- 2.15 Key Outcome 10 seeks to support the “development of the area’s full potential for electricity and heat from renewables sources, in line with national climate change targets, giving due regard to relevant environmental, community and cumulative impact considerations” (p14).
- 2.16 Policy ED9, ‘Renewable Energy Development’ also seeks to “support proposals for both large scale and community scale renewable energy development including commercial wind farms...where they can be accommodated without unacceptable significant adverse impacts or effects, giving due regard to relevant environmental, community and cumulative impact considerations”.
- 2.17 Policy ED9 specifically refers to the associated Scottish Planning Policy (SPP) Spatial Framework for onshore wind developments which is now replaced by NPF 4. There is also a list of environmental and land use effects criteria within the Policy which will be used to consider wind energy proposals.
- 2.18 Policy ED9 is supported by a spatial framework for Renewable Energy which is established in the Renewable Energy Supplementary Guidance (July 2018). The Site Boundary is identified as an ‘Area for potential windfarm development’ in this Guidance.
- 2.19 The Site Boundary is also partly within an established Special Landscape Area (Lammermuir Hills) and as such Policy EP5, ‘Special Landscape Areas’ will be a primary consideration. The Policy states that, “Proposals that have a significant adverse impact will only be permitted where the landscape impact is clearly outweighed by social or economic benefits of national or local importance”.
- 2.20 In addition to the policy principles discussed above, there are a number of further primary policy provisions within the LDP which will be considered as part of the EIA process and design development. These include:
- Policy PMD1, Sustainability;
 - Policy PMD2, Quality Standards;
 - Policy PMD4, Development Outwith Development Boundaries;
 - Policy ED10, Protection of Prime Quality Agricultural Land and Carbon Rich Soils;
 - Policy EP2, National Nature Conservation and Protected Species;
 - Policy EP3, Local Biodiversity;
 - Policy EP8, Archaeology;
 - Policy EP13, Trees, Woodlands and Hedgerows;
 - Policy IS5, Protection of Access Routes; and,
 - Policy IS8, Flooding.

The Emerging Local Development Plan

- 2.21 The Proposed LDP which sets out land use proposals and planning policies which are intended to guide development and inform planning decisions within the Scottish Borders over the next ten years was submitted to Scottish Ministers on 14 July 2022.
- 2.22 The examination of the Proposed Plan is progressing and the Ministers target date to conclude the examination is 30 May 2023. However, it should be recognised that for proposed LDPs prepared prior to the adoption and publication of NPF 4, it is possible that identified inconsistencies with NPF 4 may be addressed through the examination process. This may cause delay to adoption of the Proposed Plan.
- 2.23 Policy ED9 of the Proposed Plan relating to Renewable Energy remains largely unchanged from the currently adopted Policy. Overall, it is recognised that as the Proposed Plan draws closer to adoption, it will gain material weight in the decision-making process and as such it will be considered as part of the EIA process and associated design approach.

Conclusions

- 2.24 The legislation, policy and guidance discussed throughout this section will inform the approach of the EIA for the proposed development and shape the design development.
- 2.25 Upon submission of the Section 36 application, the EIAR will include a comprehensive overview of the up to date planning and energy policy. The application will also be accompanied by a Planning Statement which will assess the proposed development's accordance against these policy provisions.

3 LVIA

Introduction

- 3.1 The landscape and visual impact assessment will define the existing landscape and visual baseline environments; assess their sensitivity to change; describe the key landscape and visual related aspects of the proposed development; describe the nature of the anticipated change upon both the landscape and visual environments; and assess the effects during construction and operation.

Baseline Description

- 3.2 The proposed development lies in the Scottish Borders, adjacent to the existing Fallago Rig Wind Farm. The site extends across an area of level-topped hills separated by steep sided valleys, along the course of Soonhope Burn and Whalplaw Burn which run through the site from north-east to the south-west. Small patches of woodland exist on site, but the majority of the landscape is comprised of open moorland managed for shooting.

Landscape Designations

- 3.3 Landscape designations are shown on Figure 3.1. The site lies within the Lammermuir Hills Local Landscape Area (LLA) designation. No other landscape designations cover the site.
- 3.4 National designations within the study area consist of Eildon and Leaderfoot National Scenic Area (NSA), located 16.8km south of the closest proposed turbine, and the Upper Tweeddale NSA, located at the south-western edge of the study area, approximately 32.9km from the closest proposed turbine.
- 3.5 At a regional level the Pentland Hills Regional Park is located 30.1km east of the closest proposed turbine.
- 3.6 At a local level there are a large number of LLAs within the study area.

Legislation, Policy and Guidance

- 3.7 The assessment will be undertaken in accordance with current best practice guidance for Landscape and Visual Impact Assessments. The assessment will be undertaken in cognisance of the following guidance and policy documents:
- City of Edinburgh (2016). *Local Development Plan*.
 - East Lothian (2018). *Local Development Plan*.

- East Lothian (2005). *Landscape Capacity Study for Wind Turbine Development in East Lothian*.
- Landscape Institute and Institute of Environmental Management & Assessment (2013). *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)*. Routledge.
- Landscape Institute (2019). *Technical Guidance Note 02/19: Residential Visual Amenity Assessment (RVAA)*.
- Landscape Institute (2021). *Technical Guidance Note 02-21: Assessing Landscape Value Outside National Designations*.
- Landscape Institute (2019). *Visual Representation of Development Proposals Technical Guidance Note 06/19*.
- Midlothian (2017). *Midlothian Local Development Plan*.
- Natural England (2014). *An Approach to Landscape Character Assessment*.
- NatureScot (2017). *Visual Representation of Wind Farms*.
- NatureScot (2017). *Siting and designing wind farms in the landscape - version 3a*.
- NatureScot (2021). *Assessing the cumulative impact of onshore wind energy developments*.
- NatureScot (2022). *General pre-application and scoping advice for onshore wind farms*.
- NatureScot (2019). *Landscape Character Assessment*.
- Northumberland County Council. (March 2022). *Northumberland Local Plan 2016 - 2036*.
- Northumberland County Council. (2010). *Landscape Character Assessment*.
- Scottish Borders Council. (2016). *Local Development Plan*.
- Scottish Borders Council. (2020). *Proposed Local Development Plan*.
- Scottish Borders Council. (July 2013). *Wind Energy Consultancy Landscape Capacity and Cumulative Impact Report*.
- Scottish Government (2023). *National Planning Framework 4*.

Landscape Character

- 3.8 NatureScot's 2019 Landscape Character Assessment¹ shows the proposed development to be within Landscape Character Type (LCT) 90 - Dissected Plateau Moorland. LCT90 is described as "an upland plateau landscape characterised by level-topped hills of heather and coarse grassland, dissected by distinct steep-sided valleys", with a very low settlement density of an isolated, dispersed pattern.

¹ NatureScot (2019). *Landscape Character Assessment*. [Online]. Available at: <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions>

- 3.9 The landform within LCT90 ranges mainly between 300m and 500m AOD. From the plateau tops the landscape is described as one of “*wide horizons and distant unobstructed views ... creating the impression considerable wildness and remoteness*”. However, it is noted that views from within the hills are “*punctuated by the presence of windfarms*” with existing operational wind farms forming “*notable features in many open views across the hills*”.
- 3.10 The assessment notes that views from within the valleys are restricted by topography and woodland features.

Method of Assessment and Reporting

- 3.11 “Landscape and Visual Impact Assessment is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and people’s views and visual amenity.” (Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3), 2013, para 1.1)².
- 3.12 Sections 2.20 - 2.22 of the same guidance indicate that the two components (assessment of landscape effects, and assessment of visual effects) are “*related but very different considerations*”.
- 3.13 The assessment method will draw upon the established GLVIA3 and other recognised guidelines, as identified above.

Landscape Character

- 3.14 The European Landscape Convention (2000)³ provides the following definition:
“*Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.*”
- 3.15 And notes also in Article 2 that landscape includes “natural, rural, urban and peri-urban areas. It includes land, inland water and marine areas”.
- 3.16 An Approach to Landscape Character Assessment (Natural England, 2014)⁴ defines landscape character as:
“*a distinct and recognisable pattern of elements, or characteristics, in the landscape that make one landscape different from another, rather than better or worse.*”

- 3.17 The susceptibility of landscape character areas is judged based on both the attributes of the receiving environment and the characteristics of the proposed development. Thus, the key characteristics of the landscape character types/areas are considered, along with scale, openness, topography; the absence of, or presence of, nature and patterns of development, settlement, landcover, the contribution of heritage assets and historic landscape elements and patterns, and land uses in forming the character. The condition of the receiving landscape, i.e. the intactness of the existing character will also be relevant in determining susceptibility. The likelihood of material effects on the landscape character areas can be judged based on the scale and layout of the proposal and how this relates to the characteristics of the receiving landscape.

- 3.18 The introduction of any development into a landscape adds a new feature which can affect the ‘sense of place’ in its near vicinity, but with distance, the existing characteristics reassert themselves.

- 3.19 The baseline is informed by desk study of published landscape character assessments and field survey. It is specifically noted within An Approach to Landscape Character Assessment (Natural England) that:

“Our landscapes have evolved over time, and they will continue to evolve - change is a constant but outcomes vary. The management of change is essential to ensure that we achieve sustainable outcomes - social, environmental and economic. Decision makers need to understand the baseline and the implications of their decisions for that baseline.”

- 3.20 At page 51 it describes the function of Key Characteristics in landscape assessment, as follows:

“Key characteristics are those combinations of elements which help to give an area its distinctive sense of place. If these characteristics change, or are lost, there would be significant consequences for the current character of the landscape. Key characteristics are particularly important in the development of planning and management policies. They are important for monitoring change and can provide a useful reference point against which landscape change can be assessed. They can be used as indicators to inform thinking about whether and how the landscape is changing and whether, or not, particular policies - for example - are effective and having the desired effect on landscape character.”

² Landscape Institute and Institute of Environmental Management & Assessment (2013). *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)*. Routledge.

³ Council of Europe (2000) *European Landscape Convention*.

⁴ Natural England (2014). *An Approach to Landscape Character Assessment*. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/691184/landscape-characterassessment.pdf

3.21 It follows from the above that in order to assess whether landscape character is significantly affected by a development, it should be determined how each of the key characteristics would be affected. The judgement of magnitude therefore reflects the degree to which the key characteristics and elements which form those characteristics will be altered by the proposals. The size of the development, the nature and susceptibility of the receiving landscape, and local ‘barriers’ in the landscape (such as breaks of topography, woodlands, settlements, and roads or rivers) will determine the exact extent of effects for each development, but in practice significant effects related to this proposed development are unlikely beyond 15 km.

Visual Receptors

3.22 A wide variety of visual receptors can reasonably be anticipated to be affected by the proposed development. Within the baseline assessment, the ZTV study and site visits are used to determine which visual receptors are likely to be significantly affected and therefore merit detailed assessment. In line with GLVIA3; both representative and specific viewpoints may be identified to inform the assessment. In general, the majority of viewpoints will be representative - representing the visual receptors at the distance and direction in which they are located and of the type(s) that would be present at that location. The representative viewpoints have generally been selected in locations where significant effects would be anticipated; though some may be selected outside of that zone - either to demonstrate the reduction of effects with distance; or to specifically ensure the representation of a particularly sensitive receptor.

3.23 The types of visual receptors likely to be included with the assessment are:

- Users of walking routes or accessible landscapes including Public Rights of Way, National and Regional Trails and other long-distance routes, Common Land, Open Access Land, permissive paths, land held in trust (e.g. Woodland Trust, National Trust) offering free public access, and other regularly used, permitted walking routes;
- Visitors to and residents of settlements;
- Visitors to specific valued viewpoints;
- Visitors to attractions or heritage assets for which landscape and views contribute to the experience; and
- Users of roads or identified scenic routes.

3.24 Visual receptors are grouped for assessment into areas which include all of the routes, public spaces and homes within that area. Groups are selected as follows:

- Based around settlements in order to describe effects on that community e.g. a settlement and routes radiating from that settlement; or
- An area of open countryside encompassing a number of routes, accessible spaces and individual dwellings; or
- An area of accessible landscape and routes within and around it e.g. a country park; and

- such that effects within a single visual receptor group are similar enough to be readily described and assessed.

3.25 With the exception of specific viewpoints, each route, settlement or location will encompass a range of possible views, which might vary from no view of the development to very clear, close views. Therefore, effects are described in such a way as to identify where views towards the development are likely to arise and what the scale, duration and extent of those views are likely to be. In some cases, this will be further informed by a nearby viewpoint and in others it will be informed with reference to the ZTV, aerial photography and site visits. Each of these individual effects are then considered together in order to reach a judgement of the effects on the visual receptors along that route, or in that place.

3.26 The representative viewpoints are used as ‘samples’ on which to base judgements of the scale of effects on visual receptors. The viewpoints represent multiple visual receptors, and duration and extent are judged when assessing impacts on the visual receptors.

3.27 For specific viewpoints (key and sometimes promoted viewpoints within the landscape), duration and extent are assessed, with extent reflecting the extent to which the development affects the valued qualities of the view from the specific viewpoint.

Designated Landscapes

3.28 In considering the effects on designated areas, a number of factors need to be considered. The effects on the component landscape character areas and the effects on views from within and towards the designated area need to be understood. These effects will then be considered in the light of the documented special qualities, valued elements or characteristics, and the purposes of the designation to arrive at a judgement of the effects on the designated landscape or landscape element.

Night Time Assessment

3.29 Onshore wind turbines of over 150m in height require mandatory visible spectrum aviation lighting. Night-time assessment of visible aviation lighting for onshore wind turbines on landscape and visual receptors is a relatively new area and there is as yet no specific policy or guidance on the subject, although emerging best-practice (including as noted within Annex 2 of ‘General preapplication and scoping advice for onshore wind.

Potential Effects

- 3.30 Potential landscape and visual effects arising from the proposed development will mainly derive from the following factors:
- During construction:
 - movement of machinery and traffic to and around the construction site;
 - removal of vegetation as part of site clearance;
 - earthworks to prepare the site for construction;
 - construction working areas, including storage and offices;
 - construction of the proposed development; and
 - effects at night may also be experienced as a result of security and other lighting.
 - During operation:
 - effects will result from the elements of the proposed development, including wind turbines, on-site substation, battery energy storage system compound, wind farm control building with welfare facility, permanent communications mast, and on-site access tracks; and
 - effects at night may also be experienced as a result of aviation lighting.
- 3.31 The introduction of the proposed development would have an effect on landscape character; visual receptors such as residents, pedestrians, cyclists, and road users; and on designated landscapes.

Effects on Landscape Character

- 3.32 For landscape character areas, susceptibility is judged based on the degree to which they are currently characterised by darkness and/or an absence of development. Value is judged based on the same factors as for the daytime assessment unless particular factors suggest otherwise. For example, identification of a Dark Sky Park which would increase value; or where factors that contribute to value in daytime are irrelevant at night - which may reduce value at night.

Effects on Visual Receptors

- 3.33 For visual receptors, the assessment will take account of the different importance attached to views in the night-time environment. Generally, the value attached to night-time views is considered to be low unless there is a particular feature that can be best appreciated in the hours of darkness. This may include views of stars and the night

sky that are only possible in particularly dark areas or views of well-known landmarks that are lit up at night.

- 3.34 The susceptibility of receptors also differs at night reflecting the different activities people undertake in the hours of darkness. For example, drivers using roads at night tend to be more focused on the road and the area illuminated by their headlights than during the day and may have oncoming headlights, cat's eyes or other reflective signage drawing their attention, resulting in lower susceptibility. This is particularly the case on unlit rural roads that may be narrow and winding. On the other hand, people taking part in activities requiring darkness, such as stargazing, would be of higher susceptibility. The LVIA will provide full detail on the approach taken to visual receptor sensitivity at night.

Proposed Scope of Survey and Assessment

Wind Farm Design and Development

- 3.35 The initial layout/options for the proposed development, as well as turbine choice(s) and 'mitigation by design' options, will be reviewed as part of the initial stages of the LVIA process. The turbine layout and heights will be carefully optimised in terms of achieving a coherent relationship with the existing operational wind farms within the wider landscape that lie within close proximity to the site, as well as ensuring that guidance within both the NatureScot guidance on 'Siting and designing wind farms in the landscape'⁵ and design guidance listed previously is adhered to.
- 3.36 Consideration will also be given to the location of the tracks, substation, control building, battery energy storage system compound and borrow pits, and how those fit within the landscape.

Study Areas

- 3.37 A study area of 45km from the outermost turbines of the proposed development in all directions is proposed to initially cover all potentially material landscape and visual impacts, as per the suggested study area proposed within NatureScot's 'Visual Representation of Wind Farms'⁶ guidance. However, it is likely that significant effects are most likely to be located closer to the proposed development. Theoretical visibility beyond 35km, as shown on the initial ZTV study (refer to Figure 3.2), is either sporadic or quick to diminish beyond 35km and desk-based analysis indicates that the proposed development would be seen as a minor element within views beyond 35km.

⁵ NatureScot (2017). *Siting and designing wind farms in the landscape - version 3a*. [Online]. Available at: <https://www.nature.scot/doc/siting-and-designing-wind-farms-landscape-version-3a>

⁶ NatureScot (2017). *Visual Representation of Wind Farms*. [Online]. Available at: <https://www.nature.scot/visual-representation-wind-farms-guidance>

3.38 Following further assessment work, including site visits, it is anticipated that it is likely that the detailed study area for visual effects could be reduced to 35km.

3.39 In addition, the following study areas are proposed for different aspects of the LVIA:

- 15km for night-time effects;
- 15km for the detailed assessment of effects on landscape character (daytime);
- 35km for cumulative effects; and
- 2.5km for the residential visual amenity assessment.

Zones of Theoretical Visibility

3.40 Draft ZTV studies have been prepared based on the initial turbine layout and sizes. These are shown on Figure 3.2 - ZTV Study Bare Ground and Figure 3.3 - ZTV Study Including Woodlands and Settlements and indicate areas of potential visibility for the proposed hub height and blade tip heights of the turbines. The analysis was carried out using a topographic model alone, in accordance with NatureScot's 'Visualisation of Wind Farms Best Practice' guidance (Figure 3.2); and including settlements and woodlands (with heights derived from NEXTMAP 25 surface mapping data) as visual barriers to provide a more realistic indication of potential visibility (Figure 3.3).

3.41 ZTV studies will be used to aid the identification of receptors which are likely to be significantly affected by the proposed development and those which may be scoped out.

Landscape Character

3.42 The majority of the study area lies within Scotland, with a small area in the south-east within Northumberland County Council, England.

3.43 It is proposed that NatureScot's 2019 Landscape Character Assessment⁷ is used as the basis to assess effects on landscape character within Scotland. This assessment reviewed, consolidated and updated previous regional assessments, superseding those commissioned between 1994 and 1999.

3.44 As previously stated, a 15km study area is proposed for detailed assessment on landscape character. At its nearest point, Northumberland lies approximately 29km south-east of the nearest proposed turbine, outwith the 15km study area for detailed assessment of effects on landscape character. It is proposed that the baseline assessment of effects on Northumberland's landscape character utilises Northumberland's 2010 Landscape Character Assessment.⁸

Proposed LVIA Viewpoint Locations

3.45 The draft ZTV studies referred to above and shown on Figures 3.2 and 3.3 have been used to identify suggested viewpoint locations for use in the LVIA. Consideration has also been given to East Lothian's 2005 report 'Landscape Capacity Study for Wind Turbine Development in East Lothian'⁹ which identifies key viewpoints within the study area, alongside viewpoints identified in the recent Ditcher Law Wind Farm (ECU Ref: ECU00002173) and Dunside Wind Farm (ECU Ref: ECU00003436) scoping applications to account for potential cumulative effects.

3.46 It is proposed that the 18 locations set out in Table 3.1 are included as viewpoints in the LVIA. The locations, which are illustrated on Figure 3.3, represent visual receptors and character types at a range of distances and directions from the site. These representative viewpoints will be used as 'samples' on which to base judgements of the scale of effects on visual receptors and represent a wide range of receptors - including not only those actually at the viewpoint, but also those nearby, at a similar distance and/or direction.

Table 3.1 Proposed LVIA Viewpoints

Viewpoint	Distance and direction from closest proposed turbine	View / receptors represented
Viewpoint 1: Lylestone Hill, Core Path 16 (353857 E 653043 N)	1.1km, south	Represents recreational users travelling along Core Path 16 as it passes through the site.
Viewpoint 2: Station Road, Oxton (349796 E 653570 N)	4.1km west	Represents the experience of visitors and residents within the settlement of Oxton.
Viewpoint 3: A68 North of Lauder (351925 E 649597 N)	5.0km, south	Represents users of the A68, visitors and residents on the outskirts of Lauder and the edge of Thirlestane Castle Garden and Designed Landscape.
Viewpoint 4: Lammer Law (352364 E 661844 N)	5.0km, north	Represents recreational users of Lammer Law and adjacent hills to the north of the proposed development.
Viewpoint 5: A68 South of Dun Law Wind Farm (347711 E 657213 N)	6.0km, west	Represents users of the A68 travelling south towards the proposed development.
Viewpoint 6: Southern Upland Way, Twin Law Cairns (362456 E 654822 N)	6.2km, east	Represents recreational users of the Southern Upland Way long distance route.

⁷ NatureScot (2019). *Landscape Character Assessment*. [Online]. Available at: <https://www.nature.scot/professionaladvice/landscape/landscape-character-assessment>

⁸ Northumberland County Council. (2010). *Landscape Character Assessment*. [Online]. Available at: <https://www.northumberland.gov.uk/Planning/Reports.aspx>

⁹ East Lothian Council (2005). *Landscape Capacity Study for Wind Turbine Development in East Lothian*. [Online]. Available at: https://www.eastlothian.gov.uk/downloads/download/12844/other_planning_guidance

Viewpoint	Distance and direction from closest proposed turbine	View / receptors represented
Viewpoint 7: Thirlestane Castle GDL, Southern Upland Way (353497 E 647506 N)	6.6km, south	Represents Thirlestane Castle Garden and Designed Landscape alongside recreational users around Lauder and on the Southern Upland Way.
Viewpoint 8: B368 North-East Soutra Aisle (345209 E 658596 N)	8.7km, west	Represents users of the minor roads and recreational sites to the west.
Viewpoint 9: Minor Road to Longformacus (365029 E 661010 N)	8.6km, east	Represents users of the minor roads and recreational landscape to the east.
Viewpoint 10: A6105 East of Gordon (366477 E 643671 N)	16.0km, south-west	Represents users of the roads and minor settlements to the south-east.
Viewpoint 11: A1 North-East of Haddington (353089 E 675123 N)	16.9km, north	Represents views experienced along the A1, and the minor roads and settlements on the outskirts of Haddington.
Viewpoint 12: Minor Road South of Gorebridge (335924 E 660922 N)	18.2km, west	Represents views for visitors and residents on the outskirts of Edinburgh on the minor road networks.
Viewpoint 13: B7007 & NCN1 near Broad Law (334853 E 653404 N)	18.8km, west	Represents users of the minor roads, national cycle route and recreational landscape to the west of the proposed development.
Viewpoint 14: Eildon Hills (354817 E 632301 N)	21.8km, south	Represents users of the recreational landscape to the south of Melrose at a designated viewpoint, alongside the effects on Eildon and Leaderfoot National Scenic Area.
Viewpoint 15: North Berwick Law (355635 E 684232 N)	25.8km, north	Represents longer distance views from the designated viewpoint on North Berwick Law, south of North Berwick.
Viewpoint 16: A6112/B6470 Junction East of Swinton (384621 E 647155 N)	29.7km, east	Represents longer distance views from the east for users of the minor roads, alongside local residents in and around the minor settlements and scattered residential properties.
Viewpoint 17: Arthur's Seat (327562 E 673016 N)	30.7km, north-west	Represents longer distance views from the City of Edinburgh at the designated viewpoint on Arthur's Seat.
Viewpoint 18: Allermuir Hills, Pentland Hills Regional Park (322711 E 666212 N)	32.4km, north-west	Represents the longer distance views of recreational users within Pentland Hills Regional Park.

Visualisations

- 3.47 Visualisations will be prepared in accordance with NatureScot's 'Visualisation of Wind Farms Best Practice'. Wirelines and photomontage visualisations will be used to aid the assessment. These will be generated from a 3-dimensional model of the proposed wind turbines, site and surrounding topography, using key landmarks and compass bearings to match the modelled views to the photographs.
- 3.48 Photographs, wirelines and photomontages will be shown on figures supporting the LVIA. It is anticipated that a baseline panorama and wireline (including cumulative schemes) and a wireline of the proposed development will be provided for all suggested viewpoints. Photomontages will be prepared for all viewpoints within 5km of the proposed development, and a selection of the more distant viewpoints. Night-time wirelines and photomontages will be prepared to support the night-time assessment, utilising a selection of the daytime viewpoints that would be most likely to be significantly affected by lighting. These are likely to include settlements.

Cumulative Effects

- 3.49 Cumulative assessment relates to the assessment of the effects of more than one development. A 35 km search area from the site is proposed for this LVIA. In terms of selecting which wind turbine proposals within the study area should be included, NatureScot Guidance 'Assessing the Cumulative Impact of Onshore Wind Energy Developments'¹⁰ advises that:

"An assessment of cumulative impacts associated with a specific development proposal should encompass the effects of the proposal in combination with:

- existing development, either built or under construction;
- approved development, awaiting implementation; and
- proposals awaiting determination within the planning process with design information in the public domain. Proposals and design information may be deemed to be in the public domain once an application has been lodged, and the decision-making authority has formally registered the application." [para. 26] - note that this category also includes recently refused applications which may yet be appealed.

¹⁰ NatureScot (2021). *Assessing the cumulative impact of onshore wind energy developments*. [Online]. Available at: <https://www.nature.scot/doc/guidance-assessing-cumulative-landscape-and-visual-impact-onshore-wind-energy-developments>

3.50 For each of these schemes, we would seek agreement as to whether they should be included in the assessment. Initial cumulative ZTVs, showing the likely areas where schemes may be visible, may be used to inform such discussions. For this assessment, the following detailed criteria are suggested to ensure that the cumulative assessment is proportionate:

- a) The location of wind farm schemes of 3 turbines (or more) and 70m to tip (or greater) are identified within the 35km LVIA study area for context. These are listed within the cumulative assessment and identified on plans, including their planning status.
- b) Full detail (including turbine locations and heights) are included for wind farms of 3 turbines (or more) and 70m to tip (or greater) within a 15km study area. The 15km radius would be applied flexibly such that wind farms only just beyond this distance and/or those that are judged to be particularly relevant to the assessment based on the assessed effects of the proposed development are also included in full detail.
- c) Full details of all wind development of 50m tip (or greater) within 5km would also be included in the assessment.
- d) The visualisations only model those developments identified within items b and c above.

3.51 Schemes which are in scoping will also be noted for context but will not be included within the assessment unless they become active applications before the LVIA is submitted, with occasional exceptions for schemes where reliable information is available with respect to the scheme design, and the application is known to be imminent.

3.52 The cumulative assessment will examine the same landscape and visual receptors as the assessment for the proposed development. The assessment will be informed by cumulative ZTVs, showing the extent of visual effects of the schemes in different colours to illustrate where visibility of more than one development is likely to arise. Cumulative wireframes will be prepared which show each of the developments in different colours so that they are each readily identifiable. Cumulative photomontages will also be prepared.

3.53 In addition, the effects on users of routes through the area, from which wind farms may be sequentially visible as one passes through the landscape are also considered. This assessment will be based on the desk study of ZTVs and aerial photography, and site visits to travel along the routes being assessed.

3.54 It is important to note the following:

- Operational and consented wind farms are treated as being part of the landscape and visual baseline. i.e. it is assumed that consented schemes will be built except for occasional exceptions where there is good reason to assume that they will not be constructed. Reflecting this, the main LVIA assesses effects on the basis that these developments are (and will be for consented developments) in place as part of the baseline.
- Schemes ‘in planning’ are assessed via a series of scenarios involving one or several of the other developments being consented along with (or before) the proposed development. Assessment ratings are provided for each scenario which indicate the additional effects that consenting the proposed development would have if the other schemes were already consented (incremental effects).

3.55 For each assessed receptor, additional effects may be the same as for the proposed development or reduced (where the influence of other schemes in planning would be such that were they consented and considered to be part of the baseline, the incremental change arising from the addition of the proposed Development would be less).

3.56 It is proposed that the final list of cumulative sites is ‘frozen’ 6 weeks before the submission of the application to allow the report and visualisations to be finalised.

3.57 Current cumulative sites within the proposed 35km study area are detailed within Table 3.2 below and shown on Figure 3.5.

Table 3.2 - Cumulative Sites within 35km

Site	Blade tip height of turbines (metres)	Number of turbines
Operational		
Aikengall	125	16
Aikengall II	145	19
Aikengall IIa	145	19
Barmoor	110	6
Black Hill	78	22
Bowbeat	80	24
Brockholes	79	3
Carcant	107	3
Crystal Rig I/IA	100	25
Crystal Rig II/IIA	36no. at 110, 24no. at 125	60
Crystal Rig III	4no. at 100, 2no. at 110	6
Drone Hill	76	22
Dun Law I	68	26
Dun Law II	75	35
Fallago Rig	7no. at 110, 41no. at 125	48

Site	Blade tip height of turbines (metres)	Number of turbines
Ferneylea	71	2
Hoprigshiels	115	3
Howpark	100	8
Keith Hill	76	5
Langhope Rig	121.2	10
Longpark	100	19
Penmanshiel	100	14
Pogbie	76	6
Pogbie II	74	6
Toddleburn	125	12
Quixwood	10no. at 115, 3no. at 100	13
Consented / Under Construction		
Cloch	115	18
Crystal Rig IV	4no. at 200, 4no. at 149.9, 3no. at 174.5	11
In Planning		
Cloch Variation	149.9	12
Greystone Knowe	180	14
Scawd Law	180	8
Wull Muir	150	8
Scoping		
Ditcher Law	220	15
Dunside	260	20
Lees Hill	200	7
Leithenwater	200	13

Residential Visual Amenity Assessment

3.58 Wind farms are generally regarded as being a form of development for which it is appropriate to undertake a residential visual amenity assessment, as the scale of development is such that the turbines may lead to effects being perceived as ‘overbearing’ or ‘overwhelming’ as set out within Residential Visual Amenity Assessment Guidance (LI TGN 02/19)¹¹.

3.59 For the proposed development a 2.5km study area is proposed for the Residential Visual Amenity Assessment (RVAA). The full methodology for the study, in line with LI TGN 02/19, and results will be included as an appendix to the LVIA. The RVAA will follow the stages outlined in LI TGN 02/19:

- Definition of study area and scope of the assessment - informed by the description of the proposed development, defining the study area extent and scope of the assessment with respect to the properties to be included.
- Evaluation of baseline visual amenity at properties to be included having regard to the landscape and visual context and the development proposed.
- Assessment of likely change to visual amenity of included properties in accordance with GLVIA3 principles and processes.
- Further assessment of predicted change to visual amenity of properties to be included forming a judgement with respect to the Residential Visual Amenity Threshold.

3.60 Cross references will be made between the LVIA and the RVAA as follows:

- where viewpoints are located close to properties, this will be noted in the residential visual amenity assessment;
- the availability of views from properties towards the development will be noted where relevant within the LVIA (for example in respect of effects on settlements); and
- an overview of visual effects on the properties covered by the residential visual amenity assessment will be provided within the summary.

Matters Scoped Out

3.61 Where the ZTV studies indicate no potential visibility of the proposed development, landscape and visual receptors, as well as any designated landscapes, will be scoped out of detailed assessment. Refer to Figure 3.4 which presents a combined ZTV and policy figure.

3.62 Upper Tweeddale National Scenic Area (NSA), located at the edge of the study area, approximately 32.9km south-west from the closest proposed turbine will be scoped out of detailed assessment due to the lack of theoretical visibility within the study area and the minimal areas of theoretical visibility in areas of the NSA beyond the study area. Adverse effects of this NSA are therefore unlikely to occur.

¹¹ Landscape Institute (2019). *Technical Guidance Note 02/19: Residential Visual Amenity Assessment (RVAA)*. [Online]. Available at: <https://www.landscapeinstitute.org/technical-resource/rvaa/>

- 3.63 It is proposed that the National Cycle Routes (NCRs) are scoped out of the detailed assessment due to a lack of theoretical visibility along the majority of the routes. NCRs 1, 75, 76, 196 and 754 pass within the study area. In general, these routes would experience very little to no theoretical visibility, especially those to the east, south and west of the proposed development (refer to Figure 3.4). The initial ZTV study shows the greatest visibility along routes to the north of the proposed development around the settlement of Haddington on NCR76 and NCR196; NCR76 runs along a former railway line in a sunken, tree lined cutting to the north of Haddington and visibility is unlikely to occur. Should NCR76 and NCR196 experience visibility within this area, the proposed development would be seen behind, and in the context of, the operational wind farm of Pogbie I & II, Dunlaw I & II, Keith Hill and Fallago Rig. For these reasons, the NCRs would not be considered within the detailed assessment as part of the EIAR.
- 3.64 The East Coast Main Line (ECML) railway line and local branch lines, which serve the outskirts of Edinburgh and provides a link to North Berwick off the ECML, will be scoped out of the detailed assessment due to a lack of theoretical visibility along the majority of the routes (refer to Figure 3.4). These routes pass east to west along the north of the study area and at their closest point are located approximately 18.8km north of the nearest proposed turbine. As with the NCRs, should visibility occur from these rail routes, the proposed development would be seen behind and in the context of existing operational wind farms.

Visual Amenity

- 3.65 Key views are likely to include those experienced by residential, recreational, and travelling receptors on key transport routes located:
- within the settlement of Oxton to the west of the proposed development;
 - to the west and south along major road corridors, including the A68 and A697;
 - within the recreational landscape to the south and east of the site along the Southern Upland Way; and
 - on hills within the recreational landscape to north of the proposed development, such as Lammer Law.

Consultation

- 3.66 Consultation will be undertaken with NatureScot and Scottish Borders Council to agree the requirements for visualisations, including which viewpoints to include within the night time assessment.

Questions for Consultees

- 3.67 Do consultees agree with the proposed approach?
- 3.68 Do consultees agree with the proposed study areas?
- 3.69 Do consultees agree with the proposed viewpoint list?
- 3.70 Do consultees agree with the matters scoped out?
- 3.71 Are there any additional guidance documents that should be taken into consideration in relation to landscape and visual matters?
- 3.72 Can Consultees confirm that they are content with the cumulative LVIA assessing the Cloich Variation scheme, rather than the original consented Cloich and the Cloich Variation?

Figures

Figure 3.1: Landscape Policy Context

Figure 3.2: ZTV Study - Bareground (45km)

Figure 3.3: ZTV Study - Including Woodlands and Settlements (45km)

Figure 3.4: Combined Landscape Policy Context & ZTV Study- Including Woodlands and Settlements

Figure 3.5: Cumulative Developments Within 35km

4 Cultural Heritage

Introduction

- 4.1 The ‘cultural heritage’ of an area comprises archaeological sites, historic buildings, Inventoried Gardens and Designed Landscapes (GDLs), Inventoried Battlefields and other historic environment features. Alongside its inherent values, the ‘setting’ of an asset may also contribute to its cultural heritage significance.
- 4.2 The cultural heritage impact assessment will: identify cultural heritage assets that may be subject to significant effects, both within the limits of the proposed development and within a surrounding radius of 5km; establish the potential for currently unknown archaeological assets to survive buried within the Site; assess the predicted effects on these assets; and propose a programme of mitigation where appropriate. It will consider direct effects (such as physical disturbance), indirect effects (such as might result from change to setting), and cumulative effects (where assets affected by the proposed development are also likely to be affected by other unrelated development proposals).
- 4.3 The proposed approach to the assessment of effects on cultural heritage is set out below. The assessment would be undertaken by SLR Consulting Ltd.

Baseline Description and Potential Sources of Impact

Within the Site Boundary

- 4.4 Within the Site Boundary there are two designated assets, **SM4473** and **SM4480**. Within the context of the current design, **SM4480** is located 200m to the north-east of Turbine 7 and **SM4473** is located 295m to the north-east of Turbine 3.
- 4.5 A preliminary site visit was conducted to determine the contribution made by the monuments’ settings to their significance, to inform a conclusion on whether the proposals might adversely affect their cultural significance.

Glenburnie Fort (SM4473)

- 4.6 Glenburnie Fort (**SM4473**) is an Iron Age promontory hill fort located on Wallace’s Knowe to the west of Hogs Hill. It comprises a heavily defended structure with two significant ramparts to the south-east (approximately 1.5m high) and an external ditch. Approaches to the south-east allow clear views of the fort and an understanding of its defensive nature overlooking the valley of Whaplaw Burn to the north and south (Plate 4.1). The asset has clear associations with the other monuments within the valley, with visibility towards Longcroft Homestead (**SM4480**) and Longcroft Fort (**SM372**), as well as beyond the valley to the south-west.

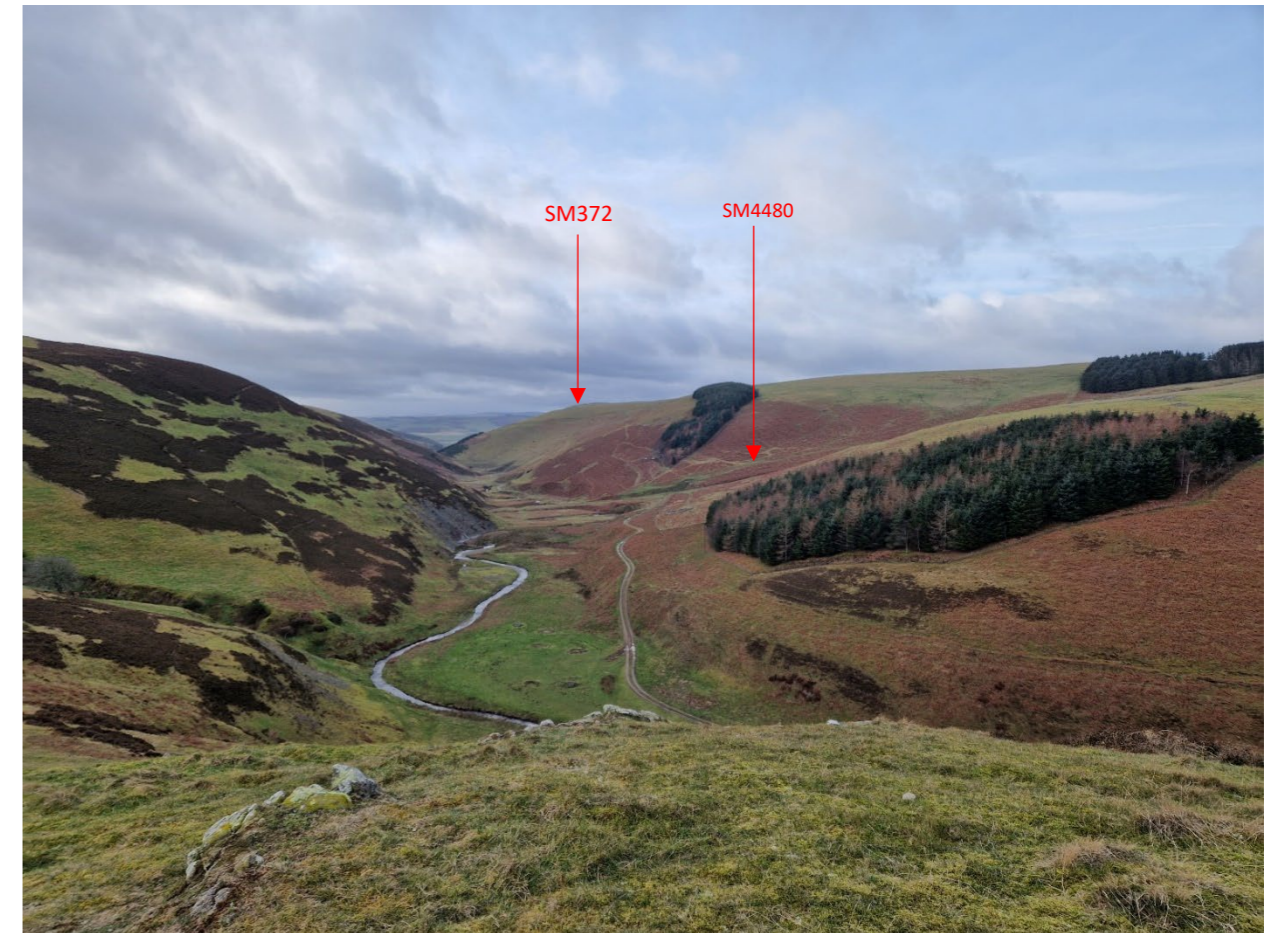


Plate 4.1: Views towards Longcroft Homestead and Longcroft Fort, above Whaplaw Burn.

Longcroft Homestead (SM4480)

- 4.7 Longcroft Homestead (**SM4480**) was also inspected during the preliminary visit. The monument comprises a scooped settlement, encompassing three obvious scoops, with the entrance to the southeast. It is sited on the easterly slope of Longcroft Hill, above Whaplaw Burn. The asset has clear views of Glenburnie Fort (**SM4473**) (Plate 4.2), a contemporaneous site forming the most northerly Iron Age defensive site along the Whaplaw Burn valley. Due to the prominence of the easterly scarp of Longcroft Hill, there is no intervisibility between Longcroft Homestead and Longcroft Hill Fort (**SM372**).



Plate 4.2: Relationship with Glenburnie (SM4473).

4.8 An online review of Scottish Borders online HER (Historic Environment Record), and the Canmore database, has revealed that there are 16 non-designated cultural heritage assets within the Red Line Boundary (Table 4.1). All of these non-designated cultural heritage assets are of local importance.

Table 4.1: HER Sites within the Red Line Boundary

HER/Canmore Ref	Name	Description
SM4473/55970	Wallace's Knowe	Fort
SM4480/ 55971	Longcroft Hill	Rig and Furrow, Scooped Settlement
55975	Glenburnie	Linear Earthwork
55981	Longcroft	Short Cist
56014	Edgehope Moor	Palisaded Enclosure
56034	Longcroft	Findspot
56056	Gladescleugh Burn	Linear Earthwork
99831	Glenburnie	Farmstead

HER/Canmore Ref	Name	Description
181444	Soonhope Burn	Enclosure
343082	Herring Road	Road
343409	Cadam Law	Plantation Bank
343410	Wide Cleugh	Stock Enclosure
343411	Longcroft Hill	Stock Enclosure
343415	Whalplaw Burn	Stock Enclosure
343417	Soonhope Burn	Stock Enclosure
343418	Soonhope Burn	Stock Enclosure

Outwith the Site Boundary

4.9 The following key cultural heritage assets in the vicinity of the proposed development have been identified for detailed setting assessment. This is because there is the potential for the proposed development to have a significant effect upon their cultural significance as a result of change to setting:

- Longcroft Hill Fort (SM372);
- Addinston Hill Fort (SM362) ; and
- Thirlestane Castle and Inventoried Garden and Designed Landscape (LB8203/ GDL00371).

Longcroft Hill Fort (SM372)

4.10 Longcroft Hill Fort (SM372) was also visited during the preliminary site visit. It is located in a commanding position, overlooking the confluence of Whaplaw Burn and Sonhope Burn, with far-reaching views to the south over the valley of Cleekhimin Burn and beyond to Leader Water valley. The asset comprises a multiphase hill fort with four ramparts, two of these being of a later date and larger stone construction. A series of stone hut circles are located within the fort as well as an enclosure, which is located between the two phases of the ramparts. The asset has clear commanding views across the south and south easterly valleys, as well as sharing intervisibility with Addinston Hill Fort (SM362) (Plate 4.3) and Glenburnie (SM4473) (Plate 4.4) and numerous other sites across the Leader Water Valley.



Plate 4.3: Relationship with Addinston (SM362) and the Leader Water Valley.



Plate 4.4: Relationship with Glenburnie (SM4473).

Key Considerations

- 4.11 Due to the potential for significant effects, preliminary wirelines for the following assets have been appended for consultee comment:
- Viewpoint 1 - Longcroft Hill, Homestead, (SM4480);
 - Viewpoint 2 - Glenburnie, Fort (SM4473);
 - Viewpoint 3 - Longcroft, Fort, (SM372);
 - Viewpoint 4 - Addinston, Fort (SM362);
 - Viewpoint 5 - Dabshead Hill, Fort (SM4657); and
 - Viewpoint 6 - Thirlestane, Castle (LB8203)
- 4.12 Certain assets have been grouped together for purposes of setting assessment; this is due to their proximity to one another and the resulting similarity of their settings. The groupings are as follows:
- Hillforts comprising of Hillhouse Burn:
 - Tollishill Dod, Homestead (SM4598)
 - Tollishill Dod, Homestead (SM4616)
 - Hillhouse, Fort (SM4627)
 - Lauder Barns, Palisaded Enclosure (SM3805)
 - Tollis Hill, Fort (SM380)
 - Dodcleugh, Fort and Settlement, (SM4478)
 - Dodcleugh, Homestead and Enclosure (SM4479)
 - Thirelstane Castle and Designed Landscape (LB8203/GDL00371)
- 4.13 A high-level heritage appraisal has been carried out in relation to all nationally significant designated heritage assets within 10km of the proposed turbine locations, which are shown in Figure 4.1.
- 4.14 The Scheduled Monuments within 10km of the proposed turbine locations are listed within Appendix 4.1: Table 1, the Category A Listed Buildings within 10km of the proposed turbine locations are listed within Appendix 4.1: Table 2, and the Inventoried Gardens and Designed Landscapes within 10km of the proposed turbine locations are listed within Appendix 4.1: Table 3.
- 4.15 Category B Listed Buildings within 5km of the proposed turbines have been scoped out of any further assessment, with the exception of those for which specific views are considered to contribute to their significance and/or to the ability to understand, appreciate and experience them. All Category B Listed Buildings outwith 5km of the proposed turbines have been scoped out of any further assessment.
- 4.16 There are no Conservation Areas within 5km of the proposed turbine locations, and Conservation Areas have therefore been scoped out of further assessment.

- 4.17 There are no Inventoried Battlefield or World Heritage Sites within 10km of the proposed development.

Legislation, Policy and Guidance

Legislation

- 4.18 The assessment will be undertaken in accordance with the following principal relevant legislation:
- The Ancient Monuments and Archaeological Areas Act 1979;
 - The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997;
 - The Historic Environment (Amendment) (Scotland) Act 2011; and
 - Scottish Statutory Instrument No. 101 The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

Planning Policy

- 4.19 The Scottish Government and HES have issued a number of statements of policy with respect to dealing with the historic environment in the planning system:
- National Planning Framework 4 (NPF4; 2023);
 - Onshore Wind Policy Statement (2022);
 - Planning Advice Note 2/2011: Planning and Archaeology;
 - Our Place in Time (OPiT; 2014); and
 - Historic Environment Policy for Scotland (HEPS 2019)
 - Scottish Borders Local Development Plan (2016).
 - Scottish Borders Draft Local Development Plan (2022).

Guidelines and Technical Standards

- 4.20 Relevant guidance and technical standard documents comprise:
- Historic Environment Scotland Guidance on Managing Change in the Historic Environment: Setting (2020);
 - A Guide to Climate Change Impact: On Scotland's Historic Environment (2019);
 - Scottish National Heritage and Historic Environment Scotland Environmental Impact Assessment Handbook: Guidance for competent authorities, consultation bodies, and others involved in the Environmental Impact Assessment Process in Scotland (2019); and
 - Chartered Institute for Archaeologists Standard and Guidance for Historic Environment Desk Based Assessment (2014, updated 2017).

Method of Assessment and Reporting

Study Area

- 4.21 There is no guidance from HES which defines a required study area for the archaeological and cultural heritage assessment of wind farms.
- 4.22 For purposes of this assessment, a Study Area has been defined extending 10km from the proposed turbines. All nationally significant designated assets (Appendix 4.1) within this Study Area have been subject to setting appraisal in order to determine any indirect impacts. Non-Designated assets within the Site will be assessed for direct impacts.
- 4.23 Should the Scottish Borders Archaeological Officer (SBC) identify any non-designated assets that they consider to be of national/regional significance, and which they consider to derive significance from their setting, these should be made known to the Applicant via consultation.

Consultation

- 4.24 Based on the results of the baseline study, constraint mapping will be generated using GIS software to show mapped heritage assets in relation to a Zone of Theoretical Visibility (ZTV). This will filter out those assets that do not require further assessment and will be used to identify and agree the most potentially sensitive assets; these may then require computer-generated visualisations as part of their assessment, in liaison with consultees. Consultation will be undertaken with HES with respect to the method of assessment employed and those heritage assets within their remit, including:
- Scheduled Monuments.
 - Category A Listed Buildings.
 - Inventoried Gardens and Designed Landscapes (GDL's).
 - Inventoried Battlefields.
- 4.25 SBC will be consulted for designated heritage assets of regional and local significance, and any undesignated assets they consider to be of higher significance.

Field Surveys

- 4.26 A targeted site inspection will be carried out in relation to those recorded assets likely to be impacted by the proposed development, and the readily accessible elements of the proposed infrastructure; the aim of this would be to establish the condition of any recorded assets and identify the potential for the existence of additional assets not currently recorded.

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

Assessment of Impact

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

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

4.30 Assessment will be undertaken separately for direct impact and indirect impact. Direct impacts are those which would change the heritage significance of an asset through physical alteration; indirect impacts are those which would affect the heritage significance of an asset by causing change within its setting.

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

4.32 Indirect impacts on the significance of heritage assets will be identified and assessed with reference to Managing Change in the Historic Environment: Setting (HES 2020) and the guidance set out by NatureScot and HES (2019). Assessment will be carried out in the following stages:

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

4.33 The settings assessment will be assisted by a ZTV calculation and presented in Figure 4.1. The ZTV calculation will map the predicted degree of visibility of the proposed development from all points within a proportionate, defined study area around the site, as would be seen from an average observer’s eye level (two metres above ground level). The ZTV model presented in Figure 4.1 is based on the maximum height of the blade tips of the proposed development.

Cultural Heritage Significance

4.34 The categories of cultural heritage significance to be referred to are presented in Table 4.2, which will act as an aid to consistency in the exercise of professional judgement and provide a degree of transparency for others in evaluating the conclusions drawn.

Table 4.2: Cultural Heritage Significance

Cultural Heritage Significance	Criteria
Highest	Sites of international importance, including: <ul style="list-style-type: none"> • World Heritage Sites.
High	Site of National importance, including: <ul style="list-style-type: none"> • Scheduled Monuments; • Category A Listed Buildings; • Gardens and Designed Landscapes included on the national inventory; • Designated Battlefields; and • Non-designated assets of equivalent significance.
Medium	Sites of Regional/local importance, including: <ul style="list-style-type: none"> • Category B and C Listed Buildings; • Some Conservation Areas; and • Non-designated assets of equivalent significance.
Low	Sites of minor importance or with little of the asset remaining to justify a higher importance.
None	Sites that are of no heritage significance.
Unknown	Further information is required to assess the significance of these assets.

- 4.35 The significance categories have been defined with regard to factors such as: designation, status and grading. For undesignated assets, consideration will be given to their inherent heritage interests, intrinsic, contextual, and associative characteristics as defined in Annex 1 of HEPS (2019b). In relation to these assets, this assessment will focus on the assets' inherent capability to contribute to our understanding of the past; the character of their structural, decorative and field characteristics as determined from the HER and Canmore records and / or site visits; the contribution of an asset to their class of monument, or the diminution of that class should an asset be lost; how a site relates to people, practices, events, and/or historical or social movements.
- 4.36 Assessments of the significance of specific assets, where recorded within the HER, will be taken into account where appropriate.

Magnitude of Impact

- 4.37 Determining the magnitude of any likely impacts will include consideration of the nature of the activities proposed during the construction and operational phases of the proposed Development.
- 4.38 Changes could potentially include direct change (e.g. ground disturbance), and indirect change (e.g. change to setting); this latter might include visual change, as well as noise, vibration, smell, dust, traffic movements etc. Effects may be beneficial or adverse, and may be short term, long term or permanent. The magnitude of any effects will be assessed using professional judgment, with reference to the criteria set out in Table 4.3.

Table 4.3: Magnitude of Impact

Magnitude of impact	Explanatory criteria
High Beneficial	The proposed Development would considerably enhance the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Medium Beneficial	The proposed Development would enhance, to a clearly discernible extent, the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Low Beneficial	The proposed Development would enhance, to a minor extent, the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Very Low Beneficial	The proposed Development would enhance, to a very minor extent, the cultural heritage significance of the affected asset, or the ability understand, appreciate and experience it.
Neutral/None	The proposed Development would not affect (or would have harmful and enhancing effects of equal magnitude upon) the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it.
Very Low Adverse	The proposed Development would erode, to a very minor extent, the cultural heritage significance of the affected asset, or the ability to understand,

Magnitude of impact	Explanatory criteria
	appreciate and experience it. This level of indirect effect would not be considered to affect the integrity of the asset's setting.
Low Adverse	The proposed Development would erode, to a minor extent, the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect effect would rarely be considered to affect the integrity of the asset's setting.
Medium Adverse	The proposed Development would erode, to a clearly discernible extent, the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect effect might be considered to affect the integrity of the asset's setting.
High Adverse	The proposed Development would considerably erode the cultural heritage significance of the affected asset, or the ability to understand, appreciate and experience it. This level of indirect effect would probably be considered to affect the integrity of the asset's setting.

Level of Impact

- 4.39 The categories of impact referred to, and the criteria used in their determination, are presented in Table 4.4.

Table 4.4: Level of Impact

Impact	Criteria
Major	Severe harm or enhancement, such as total loss of significance of the asset or of the integrity of its setting, or exceptional improvement of the cultural heritage significance of the asset and/or the ability to understand, appreciate and experience it.
Moderate	Harm or enhancement, such as the introduction or removal of an element that would affect the Cultural heritage significance of the asset and the ability to understand, appreciate and experience it to a clearly discernible extent.
Minor	Harm or enhancement to the asset's cultural heritage significance and/or to the ability to understand, appreciate and experience it to a modest extent, such that the majority of the asset's inherent interests and aspects of setting would be preserved.
Very Minor	Harm or enhancement to the asset's cultural heritage significance and/or to the ability to understand, appreciate and experience it, that is barely discernible.
Nil	The development would not affect the cultural heritage significance of the asset and/or the ability to understand, appreciate and experience it, or would have harmful and enhancing effects of equal magnitude.

- 4.40 Table 4.5 provides a matrix that relates the cultural heritage significance of the asset to the magnitude of impact on its significance, to produce the overall level of impact. This assessment will be undertaken separately for direct effects and indirect effects, the latter being principally concerned with effects resulting from change to the setting of heritage assets.

Table 4.5: Level of Effect Matrix

Magnitude of Impact	Cultural Heritage Significance (excluding unknown)			
	Highest	High	Medium	Low
High beneficial	Major	Major	Moderate	Minor
Medium beneficial	Major	Moderate	Minor	Very Minor
Low beneficial	Moderate	Minor	Very Minor	Very Minor
Very low beneficial	Minor	Very Minor	Negligible	Negligible
Neutral/None	Neutral/Nil	Neutral/Nil	Neutral/Nil	Neutral/Nil
Very low adverse	Minor	Very Minor	Negligible	Negligible
Low adverse	Moderate	Minor	Very Minor	Very Minor
Medium adverse	Major	Moderate	Minor	Very Minor
High adverse	Major	Major	Moderate	Minor

Mitigation

- 4.41 Where adverse effects on cultural heritage assets are identified, measures to prevent, reduce and/or, where possible, offset these effects, will be proposed. Potential mitigation measures can be discussed in terms of Direct and Indirect impact.
- 4.42 Suitable measures for mitigating direct impacts might include:
- the micro-siting of proposed development infrastructure away from sensitive locations;
 - the fencing off or marking out of heritage assets or features in proximity to construction activity in order avoid disturbance where possible;
 - a programme of archaeological work where required, such as an archaeological watching brief during construction activities in or in proximity to areas of archaeological sensitivity, or excavation and recording where impact is unavoidable; and/or
 - a working protocol to be implemented should unrecorded archaeological features be discovered.
- 4.43 Suitable measures for mitigating any indirect impacts might include:
- alteration of the proposed turbine layout;
 - reduction of proposed turbine heights; and/or
 - changing the proposed colour of select turbines.

Residual Effects

- 4.44 Residual impacts are those that remain even after the implementation of suitable mitigation measures. Residual impacts will be identified, and the level of those residual impacts defined with reference to Tables 4.4 and 4.5.
- 4.45 The significance of those residual impacts for purposes of EIA would then be defined as either ‘Significant’ or ‘Not Significant’.

Cumulative Effects

- 4.46 A cumulative effect is considered to occur when there is a combination of:
- an impact on an asset or group of assets due to changes resulting from the development subject of assessment; and
 - an impact on the same asset or group of assets resulting from another development (consented or proposed) within the surrounding landscape.
- 4.47 Consideration of the other developments will be limited to:
- wind farm planning applications that have been submitted and have a decision pending; and
 - wind farm planning applications that have been granted permission but not yet constructed.
- 4.48 Any impact resulting from operational wind farms would be considered as part of the baseline impact assessment. Cumulative impact would be considered in two stages:
- assessment of the combined impact of the developments, including the proposed; and
 - assessment of the extent to which the proposed development contributes to the combined impact.

Significance of Effects

- 4.49 Professional judgment will be used in the determination of whether any effects are ‘Significant’ or ‘Not Significant’ for purposes of EIA.
- 4.50 With reference to the matrix presented in Table 4.5, any impacts identified as ‘Substantial’ within the matrix would almost certainly be considered ‘Significant’, while any impacts identified as ‘Moderate’ within the matrix might be considered ‘Significant’.
- 4.51 A clear statement will be made as to whether any identified impacts are ‘Significant’ or ‘Not Significant’ for purposes of EIA.

Matters Scoped Out

- 4.52 On the basis of the work undertaken to date, the professional judgement of the cultural heritage team, and experience of other comparable projects, it is considered that indirect and cumulative impacts of the proposed development on Conservation Areas, and on Category B and C Listed Buildings can be scoped out of the EIA in relation to cultural heritage. As per best practice guidance within NatureScot and HES (2019), Category C Listed Buildings are of local rather than national or regional importance, unless in the opinion of an assessor the designation should be higher.
- 4.53 It is also considered that any assets that fall outwith the ZTV (and where those assets' approaches also fall outwith the ZTV) can be scoped out of the EIA in relation to cultural heritage.

Questions for Consultees

- 4.54 Do consultees agree with the methodology set out?
- 4.55 Do consultees agree with assets and matters scoped out?
- 4.56 Are there any assets, not listed in the appraisal, that key consideration should be given too?
- 4.57 Do consultees have any specifications on visualisations and their locations?

Figures

Figure 4.1: Heritage Designations

Figure 4.2: Viewpoint 1:

Figure 4.3: Viewpoint 2:

Figure 4.4: Viewpoint 3:

Figure 4.5: Viewpoint 4:

5 Ornithology

Introduction

- 5.1 This chapter sets out the proposed approach to assessing the potential effects of the proposed development on ornithology during its construction and operation.
- 5.2 The assessment will be completed by Dr Steve Percival of Ecology Consulting, in accordance with relevant best practice documents. He has undertaken ornithological assessments for over 200 wind farm developments

Baseline Description

Baseline Surveys

Field Surveys

- 5.3 A comprehensive range of bird surveys is being undertaken at this site. Specific surveys are being undertaken over two years (2021/22 and 2022/23 winters and 2022 and 2023 breeding seasons), to give two full years of baseline bird data, in line with the current NatureScot survey guidance (SNH 2017a).
- 5.4 **Vantage Point (VP) Surveys (year-round):** these surveys are being carried out to determine flight activity within the proposed development site to assess collision risk. The VP surveys will quantify the bird numbers that could potentially be at risk of collision (including roost flight observations at dawn/dusk). All flight lines of target species are being mapped, and the flight height of each flock recorded.
- 5.5 Three VPs are being used, to give sufficient coverage of the site. The computer-generated viewsheds are shown in Figure 5.1. For each VP, the following surveys are being undertaken:
- Breeding season:
 - 2022 - April-August - 36 hours/VP.
 - 2023 - April-August - 36 hours/VP.
 - Autumn/winter:
 - 2021-22 - September - March - 42 hours/VP.

- 2022-23 - September - March - 42 hours/VP.

- 5.6 **Breeding Bird Surveys:** the main breeding bird walkover survey is following the standard Brown and Shepherd (Brown and Shepherd, 1993)¹² moorland survey method but with two additional visits (Calladine et al. 2009)¹³, as recommended in NatureScot guidance (SNH, 2017)¹⁴. These surveys are covering the proposed development plus a 500 m buffer (see Figure 7.1), where access is possible. Access has not been allowed into the buffer (except to the south-west of the site), surveys in this location are restricted to viewing only available from the adjacent land. Surveys will cover:
- 2022 - four visits, April-July.
 - 2023 - four visits, April-July.
- 5.7 All bird locations and behaviour are being mapped to 1:10,000 scale, using the standard British Trust for Ornithology (BTO) Common Birds Census notation. All species are being recorded. In addition, the survey effort per unit area is being standardised to make the surveys as repeatable as possible, recording systematically for approximately 2 hours per km². A route is chosen to ensure that all parts of the Study Area are covered within approximately 100 m of the observer, where access is possible. The survey route is being plotted onto the survey map as it is carried out.
- 5.8 The surveys are avoiding days with strong winds, heavy rain, fog and low cloud for safety reasons. Birds are located by walking, listening and scanning by eye and with binoculars. Standard BTO notation is used to record the birds' activities; singing, calling, carrying nest material, nests or young found, repetitively alarmed adults, disturbance displaying, carrying food or in territorial dispute.
- 5.9 Raptor and Black Grouse Breeding Surveys: as the survey area may be used by a range of scarce raptors and black grouse, species-specific surveys were undertaken during April-August 2022, and are being repeated in 2023. This includes surveys for black grouse, hen harrier, short-eared owl, red kite, peregrine and merlin, following the standard methodologies given in Gilbert et al. (1998)¹⁵ and Hardey et al. (2013)¹⁶.

¹² Brown, A. F. and K. B. Shepherd. (1993). A method for censusing upland breeding waders. *Bird Study* 40: 189-195.

¹³ Calladine, J., G. Garner, C. Wernham, and Thiel, A. (2009). The influence of survey frequency on population estimates of moorland breeding birds. *Bird Study* 56: 381-388.

¹⁴ Scottish Natural Heritage. 2017a. Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH Guidance. SNH, Battleby.

¹⁵ Gilbert, G., D. W. Gibbons, and J. Evans. 1998. *Bird Monitoring Methods: a manual of techniques for key UK species*. RSPB /BTO/WWT/JNCC/ITE/ The Seabird Group.

¹⁶ Hardey, J., H. Q. P. Crick, C. V. Wernham, H. T. Riley, B. Etheridge, and D. B. A. Thompson. 2013. *Raptors: a field guide to survey and monitoring*. 3rd Edition. The Stationary Office Ltd, Edinburgh.

- 5.10 Raptor surveys comprised walkovers where access was allowed (restricted to the site land ownership - access onto neighbouring land has not been possible to date), supplemented by a series of mini-VPs (shorter watches from additional VPs) to cover other areas (looking out from the site itself), to detect displaying or nesting behaviour during the breeding season of raptor species following the methods described in Gilbert et al. (1998) and Hardey et al. (2013). Similarly for black grouse, areas of suitable habitat outwith the site to which access was not possible were scanned with binoculars from the site boundary, publicly accessible locations and suitable vantage points within the site.
- 5.11 Winter Walkover Surveys: whilst the winter VP surveys provide information on key species flight activity over the site outside the breeding season, additional survey work is being undertaken to provide further information on any important bird populations using the area at this time of year. This comprises walkover mapping surveys of the wintering birds within the proposed development site and viewing out over a 500 m buffer (see Figure 5.1 - access was not possible outside the landowner boundary). These include surveys at dawn and dusk to check the area specifically for roosting hen harriers and other important raptors, and are being carried out as follows:
- 2021-22 - monthly surveys, September-March;
 - 2022-23 - monthly surveys, September-March.
- 5.12 Wider areas surveys for wintering waterfowl were not undertaken as there was no important waterfowl habitat within 2 km.

Consultation

- 5.13 It is proposed that the following stakeholders will be consulted in relation to the assessment:
- NatureScot;
 - Lothian and Borders Raptor Study Group;
 - The Wildlife Information Centre for Lothian and the Borders;
 - South of Scotland Golden Eagle Group; and
 - RSPB.

Desk Study

- 5.14 The ornithological assessment will include a full desk study detailing the designated sites that could be affected by the proposed development (as set out above), and available bird records from the stakeholders. The desk study is using a 5 km search area for nationally important sites and 20 km for internationally important sites.

- 5.15 There are two statutory designated nature conservation sites with ornithological interest features in the search area around the proposed development (5 km for nationally important SSSI and 20 km for internationally important European Protected Special Protection Areas SPA and Ramsar Sites) - see Figure 5.2:
- Fala Flow SPA/Ramsar/SSSI - 7.9 km north-west - designated for its internationally important wintering population of pink-footed geese. Blanket bog habitat is also a key feature of the SSSI.
 - Greenlaw Moor SPA/Ramsar/SSSI - 16 km south-east - designated for its internationally important wintering population of pink-footed geese. The SSSI is also notified for its breeding bird assemblage (including golden plover, red grouse, short eared owl and black grouse), and active raised bog habitat.
- 5.16 The following statutory designated nature conservation sites are located within the search but have no ornithological interest features:
- River Tweed SAC - within the site boundary - designated for its fish and otter populations, and for its wet woodland and riverine habitats.
 - Lammer Law SSSI - 1.5 km north - notified for its blanket bog, sub-alpine dry heath and juniper woodland habitat, and for its mosaic of upland habitats present.
 - Airhouse Wood SSSI - 4.1 km south-west - notified for its upland oak woodland habitat (and also adjoins the River Tweed SAC).

Baseline Survey Results

- 5.17 The 2021-2022 wintering bird surveys found a range of wintering bird populations of conservation importance but with generally only low numbers within, or in proximity to, the proposed development in numerical terms and/or in the context of their regional (NHZ) populations. Key wintering bird populations recorded include:
- **Over-flying pink-footed geese** - pink-footed geese were occasionally seen over-flying through the winter (nine flocks in total). None were seen on the ground during any of the surveys. The only impact of the development on this species would be collision risk, which, given the numbers observed, would be unlikely to be significant. There was no evidence of any clear link to the Fala Flow or Greenlaw Moor SPAs. The results to date indicate that the proposed development does not lie on any important spring migration route for pink-footed geese or any other waterfowl species.
 - **Red kite** - there were occasional records of this species (six during the VP surveys and five during the walkover surveys), including flights over the site, but no evidence that the site was of particular importance to the species.
 - **Red grouse** - the site supports a high resident population of red grouse for commercial shooting. These birds were distributed widely across all of the higher heather-dominated habitat within the survey area, with no notable concentrations.

- **Golden plover** - there were occasional records through the winter (and most frequently in early spring), but numbers recorded were low (peak 42).
 - Other scarce raptors - **hen harrier**, **goshawk**, **merlin** and **peregrine** were all recorded during the winter surveys, but only infrequently in low numbers. No evidence was found of any raptor night roosts in the survey area. There was no indication that the survey area was important to any of these species.
- 5.18 Collision risk modelling will be carried out to inform the impacts of the proposed development on these species (Band et al. 2007, SNH 2017b)¹⁷, but no specific spatial constraints for them have been identified from the surveys to date.
- 5.19 As the proposed development lies within the potential connectivity distance of the Fala Flow and Greenlaw Moor SPA/Ramsar sites (SNH 2016a)¹⁸, a Habitats Regulations Appraisal (HRA) will be undertaken to determine the effects of the proposal in terms of the EU Birds Directive.
- 5.20 The initial 2022 breeding bird surveys showed that the survey area supports an assemblage of upland breeding species of national importance, including one species specially protected from disturbance under Schedule 1 of the 1981 Wildlife and Countryside Act (merlin), two additional EU Birds Directive Annex 1 species (short-eared owl and golden plover) and curlew, a species that could be vulnerable to displacement. No evidence was found of any lekking black grouse.
- 5.21 Spatial constraints to reduce impacts on breeding birds will be implemented as required, though the precise locations of these constraints will be informed by further breeding bird surveys in 2023 (as breeding areas may change between years).
- 5.22 The site supports important numbers/species of breeding waders, including golden plover, curlew, lapwing and snipe. Their widespread distribution will make it impossible to avoid them in the site design, so instead a habitat management plan will be implemented to accommodate any displaced birds.
- 5.23 Several additional high value Schedule 1 species were seen during the surveys, though the survey data did not indicate any evidence of nesting by any of them within the core or wider survey areas. These included red kite, hen harrier and osprey. None of these would be likely to be a major issue for a wind farm at this site.

- 5.24 The site was also used by a tagged golden eagle, likely to have been a bird from the South of Scotland Golden Eagle Group release scheme. This group will be contacted to request data on their tagged birds using this area to further inform the ornithological assessment.

Legislation, Policy and Guidance

- 5.25 The ornithological assessment will be undertaken following the guidance produced by NatureScot (SNH 2017a)¹⁹. Additionally, the following documents will be taken into account in the assessment:
- The Wildlife and Countryside Act 1981, as amended;
 - EU Council Directive 79/409/EEC and 2009/147/EC on the Conservation of wild birds (the 'Birds Directive');
 - EU Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive');
 - The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004 (as amended), which translates the Birds and Habitats Directives into Scottish Law;
 - Environmental Impact Assessment Directive 85/337/EEC (the EIA Directive);
 - The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2012;
 - The Nature Conservation (Scotland) Act 2004;
 - The Wildlife and Natural Environment (Scotland) Act 2011; and
 - The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended).
 - National Planning Framework 4 (2023)
 - Planning Advice Note (PAN) 1/2013 - Environmental Impact Assessment (Scottish Government 2013);
 - PAN 51: Planning, Environmental Protection and Regulation (revised 2006);
 - PAN 60: Planning for Natural Heritage (Scottish Government 2000);
 - Nature Conservation: Implementation in Scotland of the Habitats and Birds Directives: Scottish Executive Circular 6/1995 as amended (June 2000);
 - 'Managing Natura 2000 Sites' (European Communities 2000), which gives guidance on the implementation of the Birds and Habitats Directives;
 - Guidelines for Ecological Impact Assessment in the UK and Ireland; Terrestrial, Freshwater and Coastal (CIEEM 2018);

¹⁷ Band, W, Madders, M, and Whitfield, D.P. 2007. Developing field and analytical methods to assess avian collision risk at wind farms. In: Janss, G, de Lucas, M and Ferrer, M (eds.) Birds and Wind Farms. Quercus, Madrid.

¹⁸ Scottish Natural Heritage. 2016a. Assessing Connectivity with Special Protection Areas (SPAs) - Version 3. Vol. Version 3. SNH Guidance.

¹⁹ Scottish Natural Heritage. 2017a. Recommended bird survey methods to inform impact assessment of onshore wind farms. SNH Guidance. SNH, Battleby.

- Recommended bird survey methods to inform impact assessment of onshore wind farms (SNH 2017a);
- Developing field and analytical methods to assess avian collision risk at wind farms (Band et al. 2007);
- Assessing significance of impacts from onshore windfarms on birds outwith designated areas: version 2 (SNH 2018a);
- Avoidance rates for the onshore SNH collision risk model (SNH 2017b);
- Assessing the cumulative impact of onshore wind energy developments (SNH 2018b);
- Assessing connectivity with Special Protection Areas (SPAs) (SNH 2016a);
- Environmental Statements and Annexes of Environmentally Sensitive Bird Information Guidance for Developers, Consultants and Consultees. Version 2 (SNH 2016b);
- Good Practice during Wind Farm Construction (Scottish Renewables et al. 2015);
- Birds of Conservation Concern (BoCC) 5: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man (Stanbury et al. 2021);
- The UK Post-2010 Biodiversity Framework; and
- The Scottish Biodiversity List (SBL).

Assessment Methodology

- 5.26 The key issues for the assessment of potential ornithological effects relating to the proposed development were identified as the following (after SNH 2018a²⁰):
- Direct loss of bird habitat through construction of wind farm infrastructure;
 - Disturbance of birds during construction and operation (including displacement of flight activity through barrier effects);
 - Mortality of birds through collision with turbine blades or towers during operation; and
 - Cumulative effects of wind farm operational disturbance and collision mortality, on the national and Natural Heritage Zone (NHZ) populations of key target species.
- 5.27 The assessment will include a full evaluation of the ornithological importance of the site’s bird populations and identification of any particularly sensitive areas. Collision risk will be estimated for bird species of conservation importance regularly over-flying the proposed development site (based on the results of the vantage point surveys). This will be calculated using a standard modelling process, applying NatureScot-recommended avoidance rates. Possible disturbance effects will be assessed by determining the bird populations of importance within the wind farm area and its surrounds (based on the field surveys and any additional information available), and by reference to the current literature on bird-wind farm interactions.

- 5.28 The assessment will be carried out with reference to the assessment methodologies produced by NatureScot (SNH 2018a) for the wider countryside, and the Chartered Institute for Ecological and Environmental Management (CIEEM 2018)²¹.
- 5.29 The conservation value (as defined in Table 5.1) of the receptors present in the Study Area will be identified, then the magnitude of the possible effect on those receptors determined (as described in Table 5.2).

Table 5.1: Conservation Value of bird species

Value	Definitions
Very High	Cited interest of SPAs, Special Areas of Conservation (SACs) and SSSIs. Cited means mentioned in the citation text for those protected sites as a species for which the site is designated (SPAs/SACs) or notified (SSSIs).
High	Other species that contribute to the integrity of an SPA or SSSI.
Medium	A local population of more than 1% of the national population of a species.
Low	Any ecologically sensitive species, e.g. large birds of prey or rare birds (<300 breeding pairs in the UK).
Nil	EU Birds Directive Annex 1, EU Habitats Directive priority habitat/species and/or Wildlife and Countryside Act Schedule 1 species (if not covered above). Other specially protected species.

Table 5.2: Definition of terms relating to the magnitude of ornithological impacts

Magnitude	Definitions
Very High	Total loss or very major alteration to key elements/ features of the baseline conditions such that post development character/ composition/ attributes will be fundamentally changed and may be lost from the site altogether.
High	Guide: >80% of population/habitat lost
Medium	Major alteration to key elements/ features of the baseline conditions such that post development character/composition/attributes will be fundamentally changed.

²⁰ Scottish Natural Heritage. 2018a. Assessing Significance of Impacts from Onshore Wind Farms outwith Designated Areas. SNH Guidance.

²¹ CIEEM. 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Winchester: Chartered Institute of Ecology and Environmental Management.

Magnitude	Definitions
Low	Guide: 20-80% of population/habitat lost
Negligible	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/ composition/ attributes of baseline will be partially changed.

5.30 The combined assessment of the magnitude of an impact and the value of the receptor will be used to determine whether or not an adverse effect is significant. These two criteria have been cross-tabulated to assess the overall significance of that effect (Table 5.3). The significance category of each combination is shown in each cell. Shaded cells indicate potentially significant effects in terms of the EIA Regulations. This gives a guide as to the determination of significance, though a final assessment should still be subject to professional judgment.

Table 5.3: Matrix of magnitude of impact and value used to test the significance of effects.

Magnitude	Sensitivity					
		Very high	High	Medium	Low	Nil
Very high	Major	Major	Major-moderate	Moderate	Negligible	Negligible
High	Major	Major	Moderate	Minor	Negligible	Negligible
Medium	Major	Major-moderate	Minor	Negligible	Negligible	Negligible
Low	Moderate	Minor	Minor	Negligible	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible

5.31 The interpretation of these significance categories which may be adverse or positive will be as follows:

- **Negligible** and **minor** are not significant;
- **Moderate** represents a potentially significant effect on which professional judgment has to be made; and

- **Major** and **major/moderate** represent significant effects on bird populations which are regarded as significant for the purposes of EIA.

5.32 The NatureScot (SNH 2018a)²² wider countryside assessment guidance defines the key significance test as follows: “An impact should be judged as of concern where it would adversely affect the favourable conservation status of a species, or stop a recovering species from reaching favourable conservation status, at international or national level or regionally.” It notes that the key baseline population against which the assessment should be made for breeding birds is the SNH NHZ population. The site lies within the ‘Border Hills’ NatureScot Natural Heritage Zone (NHZ20).

5.33 As the survey area is likely to support specially protected species Schedule 1 of the 1981 Wildlife and Countryside Act, information on the breeding sites and associated flight activity of the species listed on that Schedule will only be provided in a Confidential Appendix. It is important that their breeding locations are kept confidential to minimise the risk of persecution and disturbance. Following NatureScot guidance, the amount of information contained in that Appendix will be kept to a minimum but will include any more detailed data that indicate breeding locations. The assessment of the effects that the proposed development may have on these species will be included within the Ornithology chapter (but without identifying nesting locations).

Cumulative Assessment

5.34 A cumulative ornithological assessment will be undertaken following the NatureScot (SNH 2018b)²³ guidance on ‘Assessing Significance of Impacts from Onshore Windfarms on Birds outwith Designated Areas’, considering impacts on the favourable conservation status of key species within the relevant Natural Heritage Zone.

Proposed Mitigation

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

²² Scottish Natural Heritage. 2018a. Assessing Significance of Impacts from Onshore Wind Farms outwith Designated Areas. SNH Guidance.

²³ Scottish Natural Heritage. 2018b. Assessing the cumulative impacts of onshore wind farms on birds. Guidance. SNH Guidance.

Features/Impacts Scoped In or Out of Assessment

Scoped in Features/Impacts

- 5.36 No ornithological issues have been Scoped Out from this assessment, though, following NatureScot (SNH, 2018a) guidance, the assessment will focus on the key species likely to be affected by the proposed development. Key species are being defined using the following criteria:
- species listed on Annex 1 of the EU Birds Directive;
 - species listed on Schedule 1 of the 1981 Wildlife & Countryside Act;
 - species identified by SNH (2018a) as ‘Priority bird species for assessment when considering the development of onshore wind farms in Scotland’. These include (a) species that are widespread across Scotland which utilise habitats or have flight behaviours that may be adversely affected by a wind farm, and (b) as ‘restricted range’ species; and
 - red-listed species on the Birds of Conservation Concern list.

Questions for Consultees

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

Figures

Figure 5.1. Ornithology Survey Area

6 Ecology

Introduction

- 6.1 Wind energy developments can influence non-avian ecology both directly through habitat loss and indirectly through disturbance or displacement effects on habitats and species. The Ecology chapter of the EIAR will identify the baseline (non-avian) ecology of the proposed development Site and the surrounding area and will assess the potential effects on ecological features. National and local planning policies, best practice guidance, consultation and any mitigation requirements identified will be taken into account in the ecological impact assessment. Potential impacts on birds are considered separately in Chapter 5: Ornithology.
- 6.2 The ecology assessment will be undertaken by experienced ecologists (members of the Chartered Institute of Ecology and Environmental Management (CIEEM))

Baseline Description

- 6.3 The Site consists primarily of upland moorland that is extensively managed for shooting. Found within the site are a number of small tree plantations which are used for shelter by birds being raised for shooting.

Designated Sites

- 6.4 The River Tweed SAC/SSSI is a Statutory designated site within the Site boundary. There are five other statutory designated sites within 10km of the Site. There are no non-statutory designated sites or areas of ancient woodland within the site boundary or 2km of the site, see Table 6.1 for full details.

Table 6.1: Statutory Designated Sites

Site Name	Designation	Approximate Distance and Direction from Site	Reason for Designation
River Tweed	SAC, SSSI	Within Site	Freshwater habitats: Trophic range river/stream Otter (<i>Lutra lutra</i>), Atlantic Salmon (<i>Salmo salar</i>), Brook lamprey (<i>Lampetra planeri</i>), River lamprey (<i>Lampetra fluviatili</i>), Sea lamprey (<i>Petromyzon marinus</i>) Vascular plant, beetle and fly assemblage.

Site Name	Designation	Approximate Distance and Direction from Site	Reason for Designation
Lammer Law	SSSI	800m N	Bogs: Blanket bog Dwarf shrub heath: Sub-alpine dry heath Broad-leaved, mixed and yew woodland: Juniper scrub Mosaic: Upland assemblage
Airhouse Wood	SSSI	4.5km SW	Woodlands: Upland oak woodland
Danskine Loch	SSSI	7.5km N	Fens: Fen woodland
Papana Water	SSSI	8.4km N	Woodlands: Upland mixed ash woodland
Fala Flow	Ramsar, SPA, SAC	8.9km	Bogs: Blanket bog

Legislation, Policy and Guidance

- 6.5 The following policy and guidance documents will be used to inform the Ecology Chapter:
- Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)
 - Under the conservation (Natural Habitats, &c.) Regulations 1994 (The Habitats Regulations) (as amended in Scotland) it is an offence to deliberately capture, kill or disturb wild animals listed under Schedule 2 of the Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time). Otter, wildcat and all bat species are listed under Schedule 2 of the Habitat Regulations.
 - The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2019
 - These Regulations amend the Conservation (Natural Habitats, &c.) Regulations 1994, which make provision for the transposition of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora.
 - Regulation 2 amends schedule 2 of the 1994 Regulations to add the Eurasian beaver (otherwise known as the European beaver) to the list of European Protected Species of Animals that are given protection under the 1994 Regulations.
 - Wildlife and Countryside Act 1981 (as amended)

- Under the Wildlife and Countryside Act 1981 (as amended in Scotland) it is an offence to intentionally or recklessly:
 - Kill, injure or take a wild animal listed under Schedule 5 to the Act;
 - Damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; and
 - Disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection.
 - Otter, water vole, pine marten, red squirrel, wildcat and all bat species are listed under Schedule 5 of the Act.
 - Water voles receive partial protection of their places of shelter only; this has long since been expected to change with water vole receiving full protection in future to align with their steep populations declines and increasing risk of extinction on mainland Great Britain.
- Nature Conservation (Scotland) Act 2004 (as amended)
 - The Nature Conservation (Scotland) Act 2004 places duties on public bodies in relation to the conservation of biodiversity, increases protection of Sites of Special Scientific Interest (SSSI), amends legislation on Nature Conservation Orders, provides for Land Management Orders for SSSIs and associated land and strengthens wildlife enforcement legislation, among other requirements. It also amends the legislation for protected species, introducing new conditions to the 'incidental results of a lawful operation' defence for all wild birds and certain species of animal and plant.
 - The Act places a duty on every public body to further the conservation of biodiversity consistent with the proper exercise of their functions.
 - It also requires Scottish Ministers to designate one or more strategies for the conservation of biodiversity as the Scottish Biodiversity Strategy, and to publish lists of species of flora, fauna and habitats of principal importance. The lists of species of flora and fauna and habitats of principal importance in Scotland is known as the Scottish Biodiversity List (SBL).
- The Wildlife and Natural Environment (Scotland) Act 2011 (as amended)
 - The Wildlife and Natural Environment (WANE) (Scotland) Act 2011 (as amended) makes changes to existing legislation covering specific wild fauna (e.g., birds, rabbits, hare etc), deer management, game management/licensing, species licensing, snaring, protection of badgers, muirburn, invasive non-native species, protected areas and enforcement/liability in relation to certain offences. In relation to bats, the WANE Act:
 - Introduces the offence of 'knowingly causing or permitting' certain 'acts' within Sections 6, 7 and 15A as 'offences' under the W&C Act 1981;
 - Permits derogation of disturbance and/or destruction of bat roosts by the appropriate authority for development purposes, subject to specific requirements of licensing; and furthermore
 - Wildlife crime now requires to be documented in an annual report, as a result of Section 20 of the WANE Act, which inserted a new Section 26B into the W&C Act 1981. It prescribes that Ministers must lay a report every calendar year on offences which relate to wildlife, to include information on incidences and prosecutions during the year and on research and advice relevant to those offences.
- Protection of Badgers Act 1992 (as amended)
 - The Protection of Badgers Act 1992 (as amended in Scotland) makes it illegal to kill, injure or take a badger or to interfere with a badger sett intentionally or recklessly (i.e., damage/destroy a sett). Sett interference includes disturbing badgers whilst they are occupying a sett or obstructing access to it.
- Animals and Wildlife (Penalties, Protections and Powers) (Scotland) Act 2020
 - The Animals and Wildlife (Penalties, Protections and Powers) (Scotland) Act 2020 increases the maximum available sentences in relation to a range of offences concerning animal health and welfare and wildlife; provides regulatory powers for the issuing of fixed penalty notices; and provides authorised persons with new powers regarding animals taken into their possession.
 - Note that the Scottish Government has passed legislation to maintain the same levels of legal protections of wildlife in Scotland post EU-exit.

Assessment Methodology

Desk study

- 6.6 A desk study has been carried out to inform this scoping report (Appendix 7.1); a search was carried out for any relevant data collected from proposed developments within 2km for all receptors and 10km for bats were consulted for additional records. This includes the Gilston Hill EIA (SLR Consulting, 2016).
- 6.7 This section of the Scoping Report includes a review of relevant existing data from previous wind farm planning applications within 10km of the proposed layout in the past 20 years; notably:
- Gilston Hill Wind Farm Planning Application EIA Ecology Chapter (SLR Consulting, 2016)²⁴
 - Dunside Wind Farm EIA Scoping Report (LUC, 2022)²⁵

²⁴ SLR Consulting (2016) Gilston Hill Wind Farm Environmental Impact Assessment: Chapter 8 Ecology. Prepared for 2020 Renewables/ Forsa Energy

²⁵ LUC Consultants (2022) Dunside Wind Farm. EIA Scoping report. Prepared for EDF Energy Renewables Ltd. Available online: <https://dunsidewindfarm.co.uk/wp-content/uploads/2022/03/11838-Dunside-EIA-Scoping-Report-CLEAN.pdf>

- Dun Law Windfarm Life Extension (SPR, 2020)²⁶
- Keith Hill Wind Farm Environmental Report (The Energy Workshop, 2010)²⁷
- Fallago Rig Extension Planning Statement (JLL, 2015)²⁸

6.8 This scoping report is based on a review of relevant existing data; notably that provided in the following:

- The Wildlife Information Centre (TWIC);
- Aerial photographs (google earth);
- NatureScot SiteLink website;
- British Geological Survey;
- Ordnance Survey 1st and 2nd Edition Mapping; and
- The relevant Geographic Information System (GIS) databases for woodland recorded on the Ancient Woodland Inventory (AWI).

Extended National Vegetation Classification (NVC) survey

- 6.9 The habitat surveys will take account of the Site footprint plus, where accessible, a 250m buffer of the Site boundary to allow for identification of potential ground water dependent terrestrial ecosystem (GWDTE). Historically this level of habitat survey has been undertaken following Phase 1 methodology²⁹. This will be restricted to 100m buffer for any associated infrastructure that will not require a depth of more than 1m. Phase 1 survey is now being replaced with a more modern survey method, UKHab³⁰, which is better for identifying priority habitats. UKHab surveys will be completed to a minimum detail of Level 4.
- 6.10 Potential GWDTEs will be identified whilst undertaking the UKHab / NVC survey following SEPAs Guidance Note 31: Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems³¹. Potential GWDTE data will be provided to hydrology team for further assessment. Location/extent will be demonstrated within EIA and avoidance/mitigation measures defined if required.
- 6.11 NVC surveys will be undertaken in conjunction with UKHab surveys and will map in detail potentially important semi-natural vegetation communities onsite to allow identification of potential GWDTE and Annex 1 habitats.

- 6.12 Methods will follow NVC users' handbook³² and will focus on potentially important natural/semi-natural habitats only i.e., excluding improved grassland and any other artificial habitats.

Bat surveys

- 6.13 A small number of buildings are present within the Site and surrounding 2km, all of which are accessible by access track within the survey area. SLR will undertake review of survey data and reporting by McArthur Green as part of the planning application.

Protected mammal survey

- 6.14 From a desk-based assessment of aerial mapping, the Site constitutes an expanse of upland heath, grassland and bog habitats, with patches of coniferous woodland and a number of watercourses within the Site boundary. The habitat is considered unlikely to support high numbers of protected species, though otter may be present along tributaries associated with the Leader Water, as part of the River Tweed catchment, of which they are a designated listed species for conservation.
- 6.15 The combined protected mammal surveys will be undertaken within the Site footprint and a 100 m buffer (up to 250 m along watercourse either side of crossing sections to allow for the identification of otter resting sites within disturbance distances of proposed working areas), access permitting. The surveys will look for signs of otter and other protected or notable mammal species and follow standard methodology^{33,34,35}
- 6.16 Otter is a designated feature of the River Tweed catchment, of which the Leader Water connects and therefore are potentially present in the tributaries within the Site boundary.
- 6.17 Based on analysis of available imagery it is anticipated that water vole may be present within the Site boundary, particularly along Whalplaw Burn, Soonhope Burn, Hope Burn and the section of Earnscleugh Burn that originates within the Site.
- 6.18 Habitats on Site are likely to be boggy and not well suited to sett building in places as badger prefer areas of well drained soil for habitation. Drier and sloped ground may offer opportunities. Land management practices may also be a factor in presence / likely absence.

²⁶ Scottish Power Renewables (2020) Dun Law Windfarm Life Extension: Section 42 Application Supporting Information. https://www.scottishpowerrenewables.com/userfiles/file/Dun_Law_Windfarm_Life_Extension_-_Section_42_Application_Supporting_Information.pdf

²⁷ The Energy Workshop (2010) Environmental Report. Keith Hill Wind Farm.

²⁸ JLL (2015) Fallago Rig 2 Wind Farm and Fallago Rig Wind Farm Extension of Time. Prepared for EDF Energy Renewables

²⁹ Joint Nature Conservation Committee, 2010. Handbook for Phase 1 habitat survey - a technique for environmental audit: Revised Re-print. JNCC, Peterborough.

³⁰ <https://ecountability.co.uk/ukhabworkinggroup-ukhab/>

³¹ SEPA (2017) <https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions-and-groundwater-dependent-terrestrial-ecosystems.pdf>

³² Rodwell, JS, 2006. National Vegetation Classification: Users' Handbook. JNCC, Peterborough.

³³ Chanin P (2003a) Ecology of the European Otter. Conserving Natura 2000 Rivers, Ecology Series No. 10. English Nature, Peterborough.

³⁴ Chanin P (2003b) Monitoring the Otter. Conserving Natura 2000 Rivers Monitoring Series No 10. English Nature, Peterborough

³⁵ Strachan R (2002) Mammal Detective. Whittet Books Ltd. London

- 6.19 Badger benefit from woodland that allows for shelter (i.e., sett creation) within commutable distances to grassland and other suitable foraging habitats. Sections of coniferous woodland are found throughout the Site and may provide suitable habitat connectivity for small badger populations within proximity to Soonhope at the southern extent of the Site. These sections of woodland may also provide suitable habitat for red squirrels.
- 6.20 Upland heath, grassland and bog can provide suitable habitat for mountain and brown hares alongside reptile species such as adder and common lizard. During protected mammal surveys any signs or reptiles and amphibians will be recorded.

Fish Habitat Surveys

- 6.21 The desk-based assessment returned records of Atlantic salmon, brown/sea trout, European eel and lamprey within the River Tweed catchment within 2km of Site. As the potential impacts to the River Tweed SAC pose the most restricting of potential likely significant effects from the development, a fish / aquatic habitat assessment will be necessary.

Ecological Impact Assessment

- 6.22 The Ecological Impact Assessment that will be presented in the EIAR chapter will be based on current Chartered Institute of Ecological and Environmental Management (CIEEM) guidelines³⁶ which have been endorsed by NatureScot. It will also draw on other, more specific guidance as appropriate. Liaison with other technical specialist (e.g., hydrogeologists with respect to GWDTEs) will be carried out as required.
- 6.23 The impact assessment process will involve the following steps:
- Identifying important ecological receptors, i.e., receptors of sufficient value and/ or receptors subject to legal protection, for which detailed assessment is necessary;
 - Identifying and characterising impacts on important ecological receptors during the construction and operational phases: in accordance with CIEEM guidelines when describing impacts, reference will be made to the following: (area or number of individuals to be impacted); extent; duration; and reversibility (i.e., will the impact be permanent or reversible over a given timescale);
 - Assessing the significance of effects by considering unmitigated impacts using appropriate guidance and professional judgement;
 - Incorporating measures to avoid and mitigate (reduce) potentially significant effects;
 - Assessing the significance of any residual effects after mitigation;
 - Identifying appropriate compensation measures to offset significant residual effects (if required);

- Identifying opportunities for biodiversity enhancements; and
- Cumulative impact assessment along with other developments (operational and planned).

- 6.24 The ecological impact assessment will include cumulative assessment to assess the impact of the proposed development along with other developments (operational and planned) in proximity of the proposed development.

Potential Effects

- 6.25 During construction of the proposed development, in the absence of mitigation, it is anticipated that impacts may arise from:
- Habitat loss or damage (permanent or temporary) due to ground/excavation works (e.g., borrow pits, underground electricity cables) and construction of access tracks, turbine foundations, battery compound/energy storage and other wind farm infrastructure; including, drainage impacts to bog and other water sensitive habitats and impacts of airborne pollution (i.e., dust);
 - Severance of habitat connectivity (e.g., access tracks over watercourses);
 - Possible changes to groundwater flows affecting potential groundwater dependent terrestrial ecosystems (GWDTEs), especially where deep excavations are required (e.g., at proposed borrow pit locations);
 - Loss of places of shelter for protected and notable species (e.g., otter, hares, bats, badgers, reptiles and amphibians) due to construction in and near suitable habitats;
 - Disturbance to, displacement and mortality of protected or notable fauna due to vehicular traffic, operating plant and the presence of construction workers (e.g., disturbance of an otter using a place or rest during construction));
 - Air quality and dust impacts to habitats due to stone extraction, plant/machinery use and vehicular movements; and
 - Sedimentation or other pollution of watercourses due to run off from construction activities and vehicular traffic (including indirect impacts to aquatic species).
- 6.26 During operation of the proposed development, in the absence of mitigation it is anticipated that impacts may arise from:
- Disturbance, displacement and mortality of fauna due to vehicular traffic, presence of site operatives and turbine operation (e.g., otter road collision);
 - Environmental incidents and accidents (e.g., spillages) on freshwater habitats, fish and aquatic invertebrates;

³⁶ CIEEM (2019). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.

- Vehicular traffic and presence of Site operatives (e.g., for maintenance) have potential to cause disturbance, displacement and inadvertent mortality/injury of fauna (e.g., road collision risk to otter/badger); and
- Moving turbine blades leading to mortality due to collision or barotrauma (bats only).

Mitigation and Enhancement

- 6.27 Mitigation and enhancement measures will be developed as appropriate, and details will be provided in the ecology chapter of the EIAR. The primary form of mitigation will be avoidance by design, (e.g., the avoidance where practical of important habitats such as blanket bog located on deep peat). A range of ‘standard’ good practice measures will be implemented during construction to avoid and reduce potential impacts. Where possible measures to enhance the environment during operation of the wind farm will be proposed.

Cumulative Assessment

- 6.28 The effects of the proposed development will be assessed in isolation and in combination with predicted effects of other consented wind farm development within 10km of the Site boundary.

Receptors and Impacts Scoped Out of Assessment

- 6.29 Based on the information currently available and the project description, a number of matters are proposed to be scoped out of the EIA for this topic. The matters are described below, together with a concise justification for scoping them out:
- The need for pine marten, red squirrel and beaver are not considered to be necessary as these species have not yet been recorded within 10km of the site and there is a lack of suitable woodland habitat for the habitation of pine marten, and red squirrel has not been recorded within the site and study area in the past 25 years.
 - No records of great crested newt (GCN) are known within 2km of Site at present, with one unconfirmed record provided in 2019 in a residential pond by a member of the public 3.9km west of the site boundary. No eDNA surveys or activity surveys are included for at present. The results of desk study will determine whether this is necessary and whether great crested newt Habitat Suitability Assessments are a requirement (this should be determined prior to protected species surveys commencing).

Questions for Consultees

- 6.30 Do consultees agree that the methodology and scope of the assessment is appropriate?

- 6.31 Do consultees agree that pine marten, red squirrel and beaver can be scoped out of further assessment?
- 6.32 Are there any other relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ecological assessment?

References

- 6.33 The ecology assessment will be carried out in accordance with the principles contained within the following guidance documents:
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, Freshwater, Coastal and Marine (V1.1);
 - Scottish Executive (2017). Planning Circular 1/2017: Environmental Impact Assessment regulations. Guidance on The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017;
 - Scottish Executive Rural Affairs Department (SERAD) (2000). Habitats and Birds Directives, Nature Conservation: Implementation in Scotland of EC Directives on the Conservation of Natural Habitats and of Wild Flora and Fauna and the Conservation of Wild Birds (“The Habitats and Birds Directives”). Revised Guidance Updating Scottish Office Circular No 6/1995;
 - Scottish Government (2001). European Protected Species, Development Sites and the Planning Systems: Interim guidance for local authorities on licensing arrangements;
 - Scottish Government (2010). Management of Carbon-Rich Soils;
 - Scottish Government (2016). Draft Peatland and Energy Policy Statement;
 - Scottish Government (2017). Draft Climate Change Plan - the draft Third Report on Policies and Proposals 2017 - 2032;
 - Scottish Environment Protection Agency (SEPA) (2017a). Guidance Note 4 - Planning guidance on onshore windfarm developments;
 - SEPA (2017b). Guidance Note 31 - Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems (GWDTE);
 - Scottish Government, SNH and SEPA (2017). Peatland Survey - Guidance on Developments on Peatland;
 - European Commission (EC) (2011). Wind energy developments and Natura 2000;
 - Scottish Renewables, SNH, SEPA, Forestry Commission (Scotland), Historic Scotland (2015). Good Practice During Windfarm Construction (3rd Edition);
 - SNH (2015). Scotland’s National Peatland Plan;
 - SNH (2012). Assessing the Cumulative Impact of Onshore Wind Energy Developments;

- Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition). Bat Conservation trust (BCT);
- Hundt, L. (2012). Bat Surveys: Good Practice Guidelines (3rd edition). BCT;
- Natural England (2014). Natural England Technical Information Note TIN 051. Bats and Onshore Wind Turbines - Interim Guidance (3rd Edition);
- Rodrigues et al. (2014). Guidelines for consideration of bats in wind farm projects. Revision 2014. EUROBATS Publication Series No. 6; and
- NatureScot, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Ecotricity Ltd., the University of Exeter and the BCT (2019). Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation.

7 Geology, Hydrology and Hydrogeology

Introduction

- 7.1 This chapter outlines the proposed scope of the EIAR to assess the significant effects from the proposed development on geology, hydrology, and hydrogeology.

Baseline Description

Site Location and Topography

- 7.2 The site is located approximately 10 km north of Lauder within the Lammermuir Hills. The site is characterised by a series of hills which include Longcroft Hill 381 m Above Ordnance Datum (AOD), Cadam Law 360 m AOD, Broomy Law 382 m AOD, Riddle Law 392 m AOD, South Hart Law 460 m AOD, and North Hart Law 480 m AOD.
- 7.3 The site primarily comprises heather moorland or rough grassland. On Longcroft Hill there are areas of coniferous plantation, as well as rectilinear fields boundaries. An existing track network runs through the centre of the site, and links to tracks to the west and east of the site boundary. Access to the site is currently along the track from Longcroft, from the A697 at Cleekhimin.

Surface Water

- 7.4 The site lies within the surface water catchment of the River Tweed within the Solway Tweed River basin district. The Whalplaw Burn (ID 5277) and the Soonhope Burn (ID 5276) transverse the site flowing from north to south, meeting at NGR 350790 654361 to become the Cleekhimin Burn. Cleekhimin Burn joins the River Tweed approx. 20 km south of the site in the town of Melrose. Whalplaw Burn and Soonhope Burn are classified by SEPA as having an overall condition of ‘Good’ under the Water Framework Directive (WFD). The hydrological features of the site are shown in Figure 7.1.
- 7.5 A review of SEPA flood mapping confirms a high likelihood of fluvial flooding on the site, this risk is concentrated to the area directly surrounding Whalplaw Burn and Soonhope Burns within the site. There is a high to medium likelihood of pluvial flooding on the site, which is confined to the burns and not widespread throughout the site. There is no risk of coastal flooding on this site.

Soils and Geology

Bedrock Geology

- 7.6 The proposed development is shown by the British Geological Survey (BGS) to be underlain almost entirely by Silurian age sedimentary bedrock of the Gala Group (wacke sandstone, with siltstone and mudstone in variable proportions).
- 7.7 There are numerous intrusive igneous rocks present across the site, ranging in age from Siluro-Devonian (predominately comprising felsic and granitic rocks) to Carboniferous (mafic rocks). The bedrock geology of the site is shown in Figure 7.2.

Superficial Deposits

- 7.8 BGS mapping indicate that superficial deposits are absent across much of the site, with bedrock anticipated to be at or near surface, the superficial geology of the site is shown in Figure 7.3. Alluvial deposits flank the numerous watercourses with Glacial Till mapped upslope of the watercourses but absent on hill tops. There are some localised areas of peat mapped in the north and east of the site.
- 7.9 Soil mapping indicates that the soils at the site comprise brown soils to the south of the site, alluvial soils central of the site and peat in the north of the site.
- 7.10 Published priority peatland mapping by NatureScot indicates that majority the site is not located within an area designated as priority peatland. To the north of the site there is a large area of Class 5 peatland. Class 5 peatland is considered that soil information takes precedence over vegetation data, there are no peatland habitats recorded, but may also include areas of bare soil and soils that are carbon-rich and deep peat. Peatland Classifications are shown in Figure 7.4.
- 7.11 Phase 1 peat probing within the developable area was undertaken at the site in February - March 2023. The results, detailed in Figure 7.5 show that although there are some localised areas of deep peat, peat deposits are absent across the majority of the site. Of the 848 probe depths recorded, 804 (~95%) probes did not record peat. 44 probes recorded peat (~5%), of which 12 comprised deep peat (>1 m) (<2%). Where peat was identified, the topography was flat lying and there was no evidence of instability.

Groundwater

- 7.12 The primary groundwater unit underlying the site is the Gala Group which is a low productivity aquifer. The unit is described as “*highly indurated greywackes with limited groundwater in near surface weathered zone and secondary fractures*”. Its primary source of flow is through these secondary fractures and other discontinuities.

- 7.13 The groundwater unit is located within the wider Peebles, Galashiels and Hawick groundwater body which has an overall condition classification of ‘Good’ under the Scotland River Basin Management Plan (RBMP) as required by the Water Framework Directive.

Water Supplies

- 7.14 Due to the rural location of the site, it is likely that surface and groundwater may support private and public water abstractions in the surrounding area. Consultation will be undertaken with SEPA, local councils and residents to determine any potential registered abstractions and private water supplies.
- 7.15 A review of Scottish Government Drinking Water Protected Areas (DWPA) online maps has shown a DWPA to be located 2.5 km north of the site. The surface water catchments of the site are hydrologically disconnected from the DWPA by the high topography of Crib Law and Lowrans Law.
- 7.16 The locations of DWPA's and any associated Scottish Water assets will be confirmed through consultation with Scottish Water.

Designated Sites

- 7.17 A review of the NatureScot SiteLink website confirms that the River Tweed is a Special Area of Conservation (Scotland) (SAC) due to its biological significance. The burns located on site (Soonhope, Whiplaw and Cleekhimin Burn) are tributaries of the River Tweed.
- 7.18 The Joint Nature Conservation Committee (JNCC) states the primary reasons for protection are due to the Annex I habitats, ‘Water courses of plain to montane levels with the Ranunculus fluitans and Callitriche-Batrachion vegetation’ and Annex II species, Atlantic Salmon (*Salmo salar*) and Otters (*Lutra lutra*).

Groundwater Dependent Terrestrial Ecosystems

- 7.19 Due to the upland nature of the site Groundwater Dependent Terrestrial Ecosystems (GWDTE) will be considered. A Phase 1 and National Vegetation Classification (NVC) survey will be carried out to identify potential GWDTEs.

Legislation, Policy and Guidance

- 7.20 The Geology, Hydrology and Hydrogeology chapter will be prepared with reference to best practice guidance and legislation, including (but not limited to):

Legislation

- EC Water Framework Directive (2000/60/EC);
- Water Environment and Water Services (Scotland) Act 2003;

- Water Environment (Controlled Activities) Regulations 2011; and
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017.

Policy

- National Planning Framework 4 (2023); and
- The Scottish Borders Local Development Plan (2016).

Guidance

- Good Practice during Windfarm Construction, 4th Edition (Scottish Renewables, Scottish Natural Heritage (now NatureScot), Scottish Environment Protection Agency, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and AEECoW, 2019);
- Land Use Planning System - SEPA Guidance Note 31 (Guidance on Assessing Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems), Version 3, (SEPA, 2017);
- Control of Water Pollution from Linear Construction Projects - Technical Guidance, C648 (CIRIA, 2006);
- The SuDS Manual C753 (CIRIA, 2015);
- Environmental Good Practice on Site C741 (CIRIA, 2015).
- Developments on Peat and Offsite Uses of Waste Peat (Scottish Environment Protection Agency, 2017);
- Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments (Scottish Government, 2017);
- Developments on Peatland - Guidance on the assessment of peat volumes, re-use of excavated peat and the minimisation of waste (Scottish Renewables & SEPA, 2012);
- Floating Roads on Peat - Report into Good Practice in Design, Construction and Use of Floating Roads on Peat with reference to Wind Farm Developments in Scotland (Forestry Commission Scotland & Scottish Natural Heritage, 2010);
- Managing Geotechnical Risk: Improving Productivity in UK Building and Construction (Institution of Civil Engineers, 2001);
- Ground Engineering Spoil: Good Management Practice CIRIA Report 179 (CIRIA, 1997);
- Scottish Roads Network Landslides Study Summary Report (Scottish Executive, 2005);
- Guidelines for the Risk Management of Peat Slips on the Construction of Low Volume/Low Cost Roads on Peat (Forestry Commission, 2006); and
- Peatland Survey Guidance (Scottish Environment Protection Agency, 2017)

Proposed Scope of Assessment

Desk Study

- 7.21 An initial desk study will be undertaken to determine and confirm the baseline characteristics by reviewing available information relating to; soils, peat, geology, hydrology and hydrogeology, including groundwater resources, licensed groundwater and surface water abstractions, public and private water supplies, surface water flows, flooding, rainfall data, water quality and soil data.
- 7.22 This will include review of relevant statutory and non-statutory resources including;
- Published geological maps, BGS online GeolIndex Map Viewer (2020)³⁷, Coal Authority Interactive Map Viewer and Scotland’s environment maps;
 - Ordnance Survey maps;
 - Aerial photographs, Google Earth;
 - Published hydrogeological and hydrological data, SEPA Water Environment and Classification Hubs, Scotland’s Environment online maps, Met Office and National River Flow Archive (NRFA) data;
 - Consultation with Scottish Borders Council, SEPA and Scottish Water to inform baseline information regarding private and public water supplies;
 - Consideration of the findings of site investigative reports (where available), historical site uses, industrial land use and permits, areas of determined or potential contaminated land, soil type and permeability, and contamination status of the site and surrounding area;
 - A review of the development proposals and reports from other technical studies being undertaken, including ecology surveys which may identify areas of GWDTE; and
 - Review of results of NVC survey and potential GWDTEs identified.
- 7.23 The desk study will identify sensitive features which may potentially be affected by the proposed development and will confirm the geological, hydrogeological, and hydrological environment.

Field Surveys

- 7.24 The desk study and field surveys will be used to identify potential development constraints and inform the site design.
- 7.25 Once the desk study is completed and sensitive soil and peat, geological and water features are confirmed an impact assessment will be undertaken to assess the potential

effects on soils and peat, geology, and the water environment resulting from the construction and operation of the proposed development.

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

Hydrological Survey

- 7.27 A detailed site visit and hydrological walkover survey will be undertaken, to:
- Verify the information collected during the desk and baseline study;
 - Undertake a visual assessment of the main surface watercourses and waterbodies and identify private water supplies;
 - Identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
 - Visit any identified GWDTEs (in consultation with the project ecologists); and
 - Visit Private Water Supply (PWS) sources that might be affected by the proposed development to confirm details of the location of the abstraction, its type and use, as required.

Peat Survey

- 7.28 A detailed site visit and walkover survey was undertaken in advance of scoping, to:
- Verify the information collected during the desk and baseline study;
 - Assess the site geomorphology and conduct peat depth probing in line with SEPA Peatland Survey Guidance (2017)³⁸ as required; and
 - Inspect rock exposures, establish by probing an estimate overburden thicknesses (a probe is pushed vertically into the ground to refusal and the depth is recorded).

Assessment of Effects

- 7.29 The purpose of this assessment will be to:
- Determine what the likely effects of the proposed development are on the hydrological regime, including water quality, flow, and drainage;
 - Allow an assessment of potential effects on identified licensed and private water supplies;
 - Assess potential effects on GWDTEs;
 - Determine suitable mitigation measures to prevent significant hydrological and hydrogeological effects;

³⁷ <https://www.bgs.ac.uk/map-viewers/geolindex-onshore/>

³⁸ Peatland Survey Guidance (Scottish Environment Protection Agency, 2017)

- Identify any areas susceptible to peat slide, using peat thickness and DTM data to analyse slopes;
 - Assist in the micro siting of turbines and tracks in areas of no peat or shallow and least hydrogeologically and hydrologically sensitive areas by applying buffer zones around watercourses and other hydrological features;
 - Assess potential effects on soils, peat and geology; and
 - Develop best practice mitigation measures for working on the site to be included within the Construction Environment Management Plan (CEMP). The CEMP will adopt best practice procedures, effective management, and control of onsite activities to reduce or offset any detrimental effects on the geological, hydrogeological and hydrological environment.
- 7.30 It is anticipated that the impact assessment might include the following technical appendices:
- Watercourse Crossing Schedule;
 - Private Water Supply Risk Assessment; and
 - Groundwater Dependent Terrestrial Ecosystems Risk Assessment.
- 7.31 A qualitative risk assessment methodology will be used to assess the significance of the potential effects. Two factors will be considered: the sensitivity of the receiving environment and the potential magnitude should that potential impact occur.
- 7.32 This approach provides a mechanism for identifying the areas where mitigation measures are required, and for identifying mitigation measures appropriate to the risk presented by the proposed development. This approach also allows effort to be focused on reducing risk where the greatest benefit may result.
- 7.33 The sensitivity of the receiving environment (i.e., the baseline quality of the receiving environment as well as its ability to absorb the effect without perceptible change) and the magnitude of impacts will each be considered through a set of pre-defined criteria.
- 7.34 The sensitivity of the receiving environment together with the magnitude of the effect defines the significance of the effect, which will be categorised into level of significance.
- 7.35 A review of other existing and proposed developments near the proposed development will be undertaken and potential impacts on hydrology, hydrogeology and geology will be assessed to identify cumulative impacts. Regarding the proposed development, it is likely that mitigation measures will be proposed that will have a neutral effect or provide betterment compared to baseline conditions. It is considered unlikely that there will be any significant residual or cumulative impact to report.

Potential Effects

Surface Water Flow and Level Alterations

- 7.36 Increased low permeability hardstanding from the construction of compounds, access tracks and turbines can limit surface water infiltration and increase surface water run-off and erosion within watercourses.
- 7.37 Poorly designed watercourse crossings, including culverts, can constrain and impede water flow. This can prevent natural river movement, flow of debris downstream and create a barrier to wildlife. This can lead to higher water level upstream of the crossing and erosion to the banks and streambed.

Groundwater Flow and Level Alterations

- 7.38 The installation of turbine foundations and permanent access tracks can result in the diversion of groundwater flows within the underlying aquifer by creating a barrier. If dewatering occurs at turbine foundations during construction, this can locally reduce groundwater quantity. This can change the groundwater quantity at nearby water abstractions, private water supplies and GWDTE.

Flooding

- 7.39 Increased hardstanding of the proposed development can limit infiltration of surface water run-off and can potentially increase surface water run-off. Infrastructure could also divert flows of surface water and near-surface groundwater. This could lead to alterations in surface water and groundwater flow and levels and could increase the flood risk probability of the site and any downstream receptors.

Sediment Discharges

- 7.40 Surface water run-off during construction can contain silt and other sediments and can discharge to watercourses connected to the site. Silt and sediment laden runoff can arise from excavations, exposed ground and temporary stockpiles. This sediment discharge to watercourses has the potential to cause temporary or long-term adverse effects to water quality. This can have an adverse effect on ecological receptors and the RBMP overall status of the watercourses.

Contaminant Discharges

- 7.41 Contaminant discharge has the potential to occur as the result of construction activities. These can include fuel spills from plant and vehicles, resulting in chemical polluted surface water run-off and near-surface groundwater. Chemical pollution is also possible directly to groundwater from mineral leaching when the turbine base is setting during construction. Potential pollution to surface water and groundwater can contaminate other receptors including GWDTE and Private Water Supplies.

Restoration

- 7.42 The residual effects of the decommissioning phase will be similar to those during construction, however, due to reduced site activity these will be of lesser magnitude.

Potential Mitigation

- 7.43 The proposed development will undergo design iterations and evolution in response to constraints identified as part of the baseline studies and field studies to avoid and/or minimise potential effects on receptors where possible.
- 7.44 It is expected that the following potential mitigation measures will be included in the design of the proposed development:
- Implementation of a 50 m construction buffer will be placed around all major watercourses and waterbodies (visible on 1:50,000 OS map) as standard to minimise impacts on surface waterbodies during construction and operational phases of the proposed development;
 - A 100 m and 250 m buffer will be placed around all confirmed groundwater dependent terrestrial ecosystems and groundwater abstractions (private water supplies) to minimise impacts during construction and operational phases of the proposed development;
 - A 2 km private water supply study area will be implemented to investigate water supplies that may be impacted by the proposed development to mitigate impacts during the construction and operational phases;
 - Site specific peat probing will be used to identify areas of potential deep peat, and these will be avoided where practical; and
- 7.45 There is much best practice guidance available to assist developers minimise the risks associated with wind farm construction and operation, and this will be used to develop site specific mitigation measures. Measures will be proposed to control and mitigate, for example, pollution risk (from anthropogenic and geogenic sources), flood risk, watercourse crossings, impacts on surface and groundwater flow paths, and management of peat soils.
- 7.46 Good practice measures will be applied in relation to pollution risk and management of surface run-off rates and volumes, the Contractor will operate under a Pollution Prevention Plan (PPP) following guidance listed in the NetRegs guidance resource. This will form part of the CEMP to be implemented for the proposed development.

Matters Scoped out

- 7.47 It is proposed that the potential effects outlined above will be assessed as part of the EIAR.
- 7.48 At this stage, it is proposed that the following can be scoped out of detailed assessment:
- Geological receptors are to be scoped out as while there will be effects arising from rock extraction for borrow pits, turbines, and crane pad areas, these are limited in area and do not extend beyond the immediate development footprint. No particularly sensitive geological features, including Geological Conservation Review (GCR) Sites have been identified within the site;
 - Published mapping confirms that the site is not located in an area of widespread fluvial, pluvial or coastal flood risk. It is proposed that a screening of potential flooding sources is presented within the EIAR with measures that would be used to control the rate and quality of runoff included within the CEMP;
 - Phase 1 peat depth survey data confirms that peat deposits are absent across the majority of the site, with only limited, localised deposits. The proposed layout avoids all peat areas and we therefore propose an early exit from further assessment and that the requirement for additional peat surveys, a peat management plan (PMP) and a peat landslide hazard and risk assessment (PLHRA) are scoped out; and
 - No peatland surveys will be undertaken along the route of the existing public road leading from the A697 at Addison up to Longcroft as the Carbon and Peatland map show this to be mineral soils, whilst the National Soil Map of Scotland shows it to be brown earths.

Questions for Consultees

- 7.49 Following a review desk-based resources the requirement for a standalone Flood Risk Assessment and Drainage Impact Assessment have been scoped out of further assessment. Is this approach acceptable?
- 7.50 Site investigations, including peat probing, have been undertaken as part of the proposed assessment. Should any additional investigation or data sources be considered when assessing baseline conditions?
- 7.51 Following a phase 1 peat depth survey the requirement for a phase 2 peat depth survey, PLHRA and PMP have been scoped out of further assessment. Is this approach acceptable?
- 7.52 Is there any additional mitigation you would expect to be required in the design of the proposed development?

8 Traffic & Transport

Introduction

- 8.1 The section covers the predicted transport and access issues that may arise from the construction of the proposed development, the significance of these effects and what suitable mitigation can be put in place to avoid, minimise or offset potential adverse effects.
- 8.2 The Transport and Access EIA Chapter will be supported by a Transport Assessment report, Abnormal Load Route Survey and technical figures.
- 8.3 The key issues for consideration as part of the assessment will include:
- The temporary change in traffic flows and the resultant, temporary effects on the study's road network during the construction phase;
 - The physical mitigation associated with the delivery of abnormal loads;
 - The design of new access infrastructure; and
 - The consideration of appropriate and practical mitigation measures to avoid, minimise or offset temporary effects.
- 8.4 The potential effects of these will be examined in detail.

Baseline Conditions

- 8.5 A desk review of the study area roads will be undertaken using Ordnance Survey maps and aerial photography to identify constraints and receptors in the area and to inform the wider study.
- 8.6 A site visit will be undertaken to review the access routes and identify constraints that will need to be assessed and considered in the Abnormal Indivisible Load (AIL) access study.
- 8.7 Construction traffic access for the proposed development will access the site from the minor road connecting Longcroft Farm with the A697. Loads will then proceed to the proposed turbine locations using upgraded and new access tracks.
- 8.8 Abnormal Indivisible Loads (AIL) for turbine components will be taken from the minor road network leading from the A697. A detailed Route Survey Report will support the application and will identify the necessary access improvements that will be required to enable loads to access the Site.
- 8.9 Locally sourced material will be used where feasible and traffic will avoid impacting on local communities as far as is possible.

- 8.10 Baseline traffic count data will be obtained from new Automatic Traffic Count surveys located on the A697 and Longcroft Farm Road.
- 8.11 Further traffic data for the local road network will be obtained from UK Government Department for Transport (DfT) traffic count data, the Traffic Scotland database or from specifically commissioned traffic surveys. National Road Traffic Forecast (NRTF) Low Traffic Growth assumptions will be used to provide a common future year baseline to coincide with the expected construction traffic peak.
- 8.12 Traffic accident data will be obtained from Crashmap UK for the study network to inform the accident review for the immediate road study area. Five years' worth of data will be collated for the A697 and Longcroft Farm Road.

Legislation, Policy and Guidance

- 8.13 The following policy and guidance documents will be used to inform the Transport and Access Chapter:
- Transport Assessment Guidance (Transport Scotland, 2012);
 - The Guidelines for the Environmental Assessment of Road Traffic (Institute of Environmental Assessment (IEA), 1993); and
 - Scottish Planning Policy (Scottish Government, 2014).

Proposed Scope of Assessment

- 8.14 The main transport impacts will be associated with the movement of general heavy goods vehicles (HGV) traffic travelling to and from the Site during the construction phase of the development.
- 8.15 The Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993) sets out a methodology for assessing potentially significant environmental effects. In accordance with this guidance, the scope of assessment will focus on:
- Potential impacts (of changes in traffic flows) on local roads and the users of those roads; and
 - Potential impacts (of changes in traffic flows) on land uses and environmental resources fronting these roads, including the relevant occupiers and users.
- 8.16 The following rules taken from the guidance will be used as a screening process to define the scale and extent of the assessment:
- Rule 1: Include highway links where traffic flows are predicted to increase by more than 30% (or where the number of HGVs is predicted to increase by more than 30%); and
 - Rule 2: Include any other specifically sensitive areas where traffic flows are predicted to increase by 10% or more.

- 8.17 Increases below these thresholds are generally considered to be insignificant given that daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flow below this level predicted as a consequence of the proposed development will therefore be assumed to result in no discernible environmental impact and as such, no further consideration will be given to the associated environment effects.
- 8.18 The estimated traffic generation of the proposed development will be compared with baseline traffic flows, obtained from existing traffic survey data, in order to determine the percentage increase in traffic.
- 8.19 Potentially significant environmental effects will then be assessed where the thresholds are exceeded. Suitable mitigation measures will be proposed, where appropriate.
- 8.20 It is not anticipated that a formal Transport Assessment will be required as these are not generally considered necessary for temporary construction works. A reduced scope Transport Assessment is therefore proposed.
- 8.21 Each turbine is likely to require between 11 and 14 abnormal loads to deliver the components to site. The components will be delivered on extendable trailers which will then be retracted to the size of a standard HGV for the return journey.
- 8.22 Detailed swept path analyses will be undertaken for the main constraint points on the route from the port of entry through to the Site access junction to demonstrate that the turbine components can be delivered to site and to identify any temporary road works which may be necessary.
- 8.23 Potential effects arising from the construction of the proposed development on road users and residents along the delivery route may include the following:
- Severance;
 - Driver delay;
 - Pedestrian delay;
 - Pedestrian amenity;
 - Fear and intimidation; and
 - Accidents and safety.
- 8.24 The effects to be considered in the assessment will be based upon percentage increases in traffic flow and reviewed against the impacts noted above.
- 8.25 The effects on receptors identified within the study area will be reviewed for the construction phase, with a peak construction period assessment undertaken. This will include a review of the maximum potential impact and therefore it is considered to provide a robust assessment of the effects of construction traffic on the local and trunk road networks.

Potential Mitigation

- 8.26 Standard mitigation measures that are likely to be included in the assessment are:
- Production of a Construction Traffic Management Plan;
 - The design of suitable access arrangements with full consideration given to the road safety of all road users;
 - A Staff Sustainable Access Plan; and
 - A Framework Abnormal Load Transport Management Plan.
- 8.27 Additional mitigation will be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.
- 8.28 Site specific mitigation, based upon experience of other schemes in the surrounding area, will include:
- Section 96 Agreement of the Roads (Scotland) Act to protect the public road against abnormal wear and tear in the study area;
 - Potential widening of local roads in the vicinity of the Site to allow for AIL and other construction deliveries; and
 - Enhanced temporary construction warning and direction signage.
- 8.29 Details of these measures will be included in the Transport Assessment.

Consultation

- 8.30 Consultation will be undertaken with the following statutory consultees:
- Transport Scotland (trunk road matters); and
 - Scottish Borders Council (for local road network matters)
- 8.31 Further consultation will be undertaken via the Electronic Service Delivery for Abnormal Loads (ESDAL) weight review for structures on the proposed AIL access route from Rosyth Docks to the Site via the strategic trunk road and local road networks.

Matters Scoped Out

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

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

Questions for Consultees

- 8.34 Is the proposed methodology considered acceptable?
- 8.35 Are the methods proposed for obtaining traffic flow data acceptable?
- 8.36 Is the use of Low National Road Traffic Forecasts (NRTF) acceptable for the whole of the study?
- 8.37 What cumulative traffic flows from committed developments should be included in the assessment?

9 Acoustics

Introduction

- 9.1 This section sets out the proposed approach to the assessment of potential effects of the proposed development in relation to sound and vibration during construction and operation.

Legislation, Policy and Guidance

- 9.2 Construction noise will be assessed in accordance with the procedures recommended by BS 5228-1:2009+A1:2014³⁹. This is consistent with the web-based Scottish Government technical advice on construction noise assessment in ‘Appendix 1: Legislative Background, Technical Standards and Codes of Practice’⁴⁰.
- 9.3 If blasting is required, vibration levels will be predicted in accordance with BS 5228-2:2009+A1:2014⁴¹ and assessed in accordance with BS 6472-2:2008⁴².
- 9.4 Operational noise limits from the wind farm shall be assessed in accordance with ETSU-R-97⁴³, and the Good Practice Guide to its application issued by the Institute of Acoustics⁴⁴. The proposed methodology is consistent with ‘Planning Advice Note 1/2011: Planning and Noise’⁴⁵ and the further guidance provided in onshore wind: policy statement⁴⁶.
- 9.5 Operational noise from the associated battery energy storage system will be assessed in line with BS 4142:2014+A1:2019 ‘Methods for assessing and rating industrial and commercial sound’⁴⁷.

Study Area

- 9.6 The study area shall be determined by the proximity of nearby properties to the proposed development and the location of any neighbouring wind farms being considered in the cumulative assessment.

- 9.7 The acoustic assessment shall include the nearest properties to the proposed development. Any properties that are in planning or consented shall be considered alongside those already existing.
- 9.8 The cumulative assessment shall consider any neighbouring wind farms that are close enough that there is potential for a significant cumulative effect on the identified properties. Any wind farms that are in planning shall be considered along with those that are already operational or consented.

Proposed Scope of Assessment

- 9.9 The assessment will consider the potential effects associated with construction and operation of the proposed development as detailed below.
- 9.10 An assessment of the potential effects due to construction noise, including associated traffic noise at the nearest properties will be undertaken. Vibration levels at the nearest properties will be assessed if blasting is required to extract material from any proposed borrow pits.
- 9.11 An assessment of potential effects of noise due to operation of the wind farm at the nearest properties will be undertaken. The operational noise assessment will be carried out on the basis of the sound pressure levels with penalties applied for tonality where applicable.
- 9.12 It is not proposed to carry out an assessment of the potential effects of noise from operation of the wind farm at specific frequencies, e.g. low frequency sound, or the potential effects of other sound and vibration characteristics due to operation, such as amplitude modulation and vibration.
- 9.13 An assessment of potential effects of noise due to the operation of the battery energy storage system associated with the windfarm will be undertaken at the nearest properties. The operational noise assessment will be carried out on the basis of the broadband sound pressure levels with penalties applied for certain acoustic features, as per BS 4142:2014+A1:2019.

³⁹ British Standards Institution (2014). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise. The British Standards Institution.

⁴⁰ Scottish Government (2011). Appendix 1: Legislative Background, Technical Standards and Codes of Practice. Scottish Government.

⁴¹ British Standards Institution (2014). BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. The British Standards Institution.

⁴² British Standards Institution (2008). BS 6472-2:2008 Guide to evaluation of human exposure to vibration in buildings – Part 2: Blast induced vibration. The British Standards Institution.

⁴³ The Working Group on Noise from Wind Turbines (1997). ETSU-R-97: The assessment and rating of noise from wind farms. The Department of Trade and Industry.

⁴⁴ Institute of Acoustics (2013). A good practice guide to the application of ETSU-R-97 for the assessment and rating of wind turbine noise. Institute of Acoustics

⁴⁵ Scottish Government (2011). Planning Advice Note 1/2011: Planning and Noise. Scottish Government.

⁴⁶ Scottish Government (2022). Onshore wind: Policy Statement. Scottish Government

⁴⁷ British Standards Institute (2019). BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound. The British Standards Institute

Baseline Conditions

- 9.14 The acoustic environment around the proposed site is expected to be typical of a rural area and consist of sounds generated by wind, farm machinery, birds, distant traffic and occasional overflying aircraft.
- 9.15 It is proposed to undertake background sound measurements at representative properties close to the site. The survey locations will be selected in consultation with the environmental health department of Scottish Borders Council, subject to permission being granted by the residents.

Potential Mitigation

- 9.16 Standard good practice measures to reduce noise during construction will be implemented in line with the 'best practicable means' defined by the Control of Pollution Act⁴⁸ 1974 (Her Majesty's Stationary Office, 1974). If additional mitigation measures are required, this will include a reduction in construction activities or traffic during certain periods if appropriate.
- 9.17 The potential effects of noise due to operation of the wind farm will be considered in the layout design process by the application of appropriate buffers within which turbines should not be placed.
- 9.18 The baseline sound monitoring results will also feed into the layout design with greater separation distances potentially being required for locations with lower background noise levels and corresponding lower noise limits.
- 9.19 Wind turbines will be operated in reduced noise modes should this be necessary to meet the noise limits derived in accordance with ETSU-R-97.
- 9.20 The potential operational noise impacts from the battery energy storage system associated with the wind farm are being considered in the layout design process by placing appropriate buffers between the battery energy storage system compound and nearby properties. Additional mitigation such as sound barriers will be implemented if deemed necessary to meet the required noise limits in accordance with BS 4142:2014+A1:2019.

Receptors and impacts scoped in or out of the assessment

- 9.21 The nearest planned, consented or existing properties are scoped into the assessment.
- 9.22 Impacts due to operational and construction noise are scoped into the assessment.

- 9.23 Specific assessments of low frequency noise, amplitude modulation or vibration due to operation of the proposed development are scoped out of the assessment.

Questions for Consultees

- 9.24 Do the consultees agree with the proposed acoustic assessment methodology?

⁴⁸ Her Majesty's Stationary Office (1974). Control of Pollution Act. Her Majesty's Stationary Office

10 Socio-economics

Introduction

- 10.1 This section considers the scope of work required to assess potential significant effects associated with socio-economics, tourism, recreation and land use during the construction and operational phases of the proposed development.
- 10.2 Impacts on socio-economics may come as a result of direct or indirect interaction between the proposed development and the socio-economics, the tourism and recreational assets, and the land use of the area/region and may be positive or adverse.
- 10.3 Socio-economic impacts during the construction phase of the proposed development include the temporary creation of employment opportunities, and potential adverse effects on recreational and tourism receptors.
- 10.4 Once operational, impacts on the local labour market arising from employment associated with operation and maintenance would be more limited. However, there is potential for further long-term socio-economic benefits to the community such as those arising from improved infrastructure. The potential for adverse effects during the operational phase on tourism and recreation assets is also considered.

Legislation, Policy and Guidance

- 10.5 The assessment will follow current best practice guidance as set out in the following documents:
- NPF4 (2023);
 - Onshore Wind Policy Statement (2022);
 - SNH (2013) A handbook on environmental impact assessment;
 - Scottish Government (2019) Good Practice Principles for Shared Ownership of Onshore Renewable Energy Developments;
 - Scottish Government (2019) Good Practice Principles for Community Benefits from Onshore Renewable Energy Developments;
 - Scottish Government (2016) Draft Advice on Net Economic Benefit and Planning;
 - SNH (2015) Good Practice During Wind Farm Construction; and
 - Tourism Scotland 2020.

Proposed Scope of Assessment

Study Area

- 10.6 A two-tiered study area is proposed for the assessment, defined as follows:

Wider Study Area (WSA)

- 10.7 The WSA is intended to encompass the area within which significant effects on employment and the local economy, including the tourism economy, could occur. The WSA is required for certain receptor groups because the majority of the business and labour market effects that could occur would be experienced by population and business centres located across a wide area. The WSA area will primarily be set at the area of the Scottish Borders administrative area, but effects are also considered within the rest of Scotland and the UK where relevant.

Local Area of Influence (LAI)

- 10.8 The LAI forms the focus for assessment of both direct and indirect effects on those receptors that are likely to experience effects at a more local level, particularly recreation and tourism assets, and the land use of the site. The LAI for such projects is generally defined by the site together with an area extending to 5km from the site boundary. This would encompass the Core Path 16, as well as further rights of way and a number of villages, recreational and tourism assets along the A68 and A697; with the latter including the proposed access route, taking account of the potential disruption to routes and venues used by tourists and recreational users. Land use, however, is considered an even more localised impact and is confined to land within the site boundary itself, where changes and/or impacts to land use are considered to occur.

Potential Sources of Impact

- 10.9 During construction there are likely to be beneficial effects on the regional and Scottish economy, including employment opportunities for construction businesses in the region, and increased spend on local services and accommodation for workers. The proposed development would lead to investment within the Scottish Borders region and Scotland and the assessment would identify the potential benefit to the regional supply chain and seek to quantify the potential effect on the WSA.
- 10.10 Construction activities may also have a temporary adverse impact on certain local receptors including walkers and other users of recreational routes, such as people travelling along the Core Path within the site, as well as the wider path network. Effects on local accommodation businesses are likely to be negligible, due to the site's relative location close to major population centres, such as Edinburgh.
- 10.11 Socio-economic effects during operation of the proposed development include employment associated with management and maintenance of the wind farm, albeit at relatively low staffing numbers.

- 10.12 A number of studies have examined whether there is a link between the development of wind farms and changes in patterns of tourism spend and behaviour, and generally the conclusion is that there is little effect. The assessment will draw upon the findings of these studies when examining whether the operational development may have an adverse effect on the local visitor economy. The presence of the wind farm may also affect individual tourism and recreational receptors through visual and other impacts; these will be assessed taking account of the findings of other assessments such as visual effects.

Matters Scoped Out of the Assessment

- 10.13 Based on past experience of onshore wind farm projects of this scale, it is not expected that there would be a large influx of workers' families to the area during the construction phase and those who would be working in the area would be there temporarily, for no more than 18-24 months; consequently it is not expected that there would be a significant effect on the demand for permanent housing, health or educational services.
- 10.14 Regarding broader impacts related to the competition between construction workers and potential tourists visiting the Scottish Borders, it is considered that the close proximity of the site to major population centres, such as Edinburgh (approximately under an hour's drive away), would result in a negligible increase in local accommodation demand and therefore effects on accommodation businesses would be scoped out of the assessment.
- 10.15 The number of permanent employees for the operation of the windfarm are expected to be low and, as such, the demand for permanent housing, health or educational services is expected to be low.
- 10.16 Recreational activities outwith the site will be scoped out unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.
- 10.17 The impacts during the decommissioning phase are expected to be largely the same as those during the construction phase, albeit to a lesser degree and in approximately 50 years. To avoid a repetition of the construction phase assessment, the impacts on socio-economics, recreation, tourism and land use during the decommissioning phase have been scoped out of the assessment.

Assessment Baseline

- 10.18 The assessment would use desk-based information sources to assess the likely effects, supplemented by consultation with relevant stakeholders where necessary, and professional judgement based on previous experience. Sources will be identified in citations throughout, and the schedule of data sources used would be contained in a reference list at the end of the EIA report.
- 10.19 The desktop baseline survey will cover the following topic areas:
- demographic and labour market characteristics (covering the occupational profile and the availability of skills within the labour force);
 - employment, economic activity and unemployment trends;
 - commuting and travel to work relationships;
 - business demography: the number, size profile and sectoral representation of the business base;
 - the tourism profile for the area, including tourism attractions and accommodation businesses;
 - recreational receptors such as footpaths and shooting; and
 - land use of the site.
- 10.20 The baseline research will then be used to identify the key receptors to be considered in the socio-economic, tourism, recreation and land use assessment. The key receptors considered to be impacted during the construction and operational phases are:
- local and national GVA during the construction phase;
 - local and national employment during the construction phase;
 - local supply chain effects during the construction phase;
 - land use of the site, including recreational assets, such as attractions or footpaths;
 - tourism assets and employment including regionally/nationally promoted recreational assets; and
 - local and national employment during the operational phase.

Assessment Methodology

- 10.21 There is no industry standard guidance for this assessment. The proposed method for the assessment, based on experience from similar projects, is detailed below and will take into consideration any matters raised in this scoping exercise. The assessment will:
- consider the social and economic policy context at the local, regional and national level;
 - review socio-economic and recreation baseline conditions within the relevant study areas;

- assess the likely scale, scope, permanence and significance of identified effects, taking account of any embedded environmental or social measures proposed within the application;
- recommend mitigation measures, where appropriate; and
- assess cumulative effects of the scheme with other proposed schemes.

Receptor Sensitivity

- 10.22 Receptor sensitivity will be based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects. For example, a receptor (such as the local construction supply chain or a right of way) is considered less sensitive if there are alternatives with capacity within the relevant study area. In assigning receptor sensitivity, consideration has been given to the following:
- the capacity of the receptor to absorb or tolerate change;
 - importance of the receptor e.g. local, regional, national, international;
 - the availability of comparable alternatives;
 - the ease at which the resource could be replaced; and
 - the level of usage and nature of users (e.g. sensitive groups such as people with disabilities).
- 10.23 In order to aid clear and robust identification of significant effects, specific and targeted criteria for defining the magnitude of impacts have been developed for this assessment based on experience on other similar projects. The following four levels of magnitude will be adopted using professional judgement: high; medium; low and negligible. These reflect the level of change relative to baseline conditions and /or whether the change would affect a large proportion of the existing resident population or would result in a major change to existing patterns of use.
- 10.24 These impacts can be beneficial, adverse or neutral.
- 10.25 The level of effect of an impact on socio-economic receptors is initially assessed by combining the magnitude of the impact and the sensitivity of the receptor. Where an effect is classified as major, this is considered to represent a ‘significant effect’ in terms of the EIA Regulations. Where an effect is classified as moderate, this may be considered to represent a ‘significant effect’ but would be subject to professional judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear or are borderline between categories or the impact is intermittent.
- 10.26 Effects can be beneficial, neutral or adverse and these would be specified where applicable. It should be noted that significant effects need not be unacceptable or irreversible.

- 10.27 A statement of residual effects, following consideration of any specific mitigation measures, will be provided.

Reporting

- 10.28 To identify and assess the impact of the proposed development, the report will:
- consider the social and economic policy context at the local, regional and national level;
 - review baseline conditions within the relevant study areas;
 - assess the likely scale, scope, permanence and significance of identified effects, taking account of any embedded environmental or social measures proposed within the application;
 - recommend mitigation measures, where appropriate; and
 - assess cumulative effects of the scheme with other proposed schemes.

Cumulative Assessment

- 10.29 In relation to economic effects, cumulative effects depend on the extent to which the supply chain and labour market within the WSA have the capacity to meet demand for construction services from a number of similar projects. An assessment would be made as to whether it is considered likely that the cumulative effect indicates a loss of benefit as a result of cumulative projects, or an enhancement of opportunity which would help to develop expertise and capacity in the market. The cumulative effects assessment would be able to make a quantitative judgement on potential loss of benefit due to cumulative projects. Enhancement of opportunity is identified only in qualitative terms.
- 10.30 Other cumulative effects may arise if the construction and/or operation of a number of wind farms were to affect receptors in the LAL.

Proposed Mitigation

- 10.31 The assessment will take account of environmental principles that are incorporated into the design of the proposed development. These could include good practice measures with regard to traffic management, control of noise and dust, signage and provisions for maintaining access for walkers, details of which would be set out in a Construction and Environmental Management Plan (CEMP) and/or Construction Traffic Management Plan (CTMP). Any additional mitigation measures that would reduce the level of any significant effects would be considered prior to assessing residual effects.

Consultation

- 10.32 The assessment will use desk-based information sources to assess the likely effects, supplemented by consultation with stakeholders if relevant. Information to inform the baseline will be sought from various sources, including:
- The Scottish Borders Council;
 - East Lothian Council;
 - Local Community Councils;
 - British Horse Society Scotland;
 - Cycling Scotland;
 - Scottish Association for Country Sports;
 - Scottish Rights of Way and Access Society;
 - Sustrans Scotland; and
 - VisitScotland.
- 10.33 Any consultation would have three key objectives:
- to verify published information;
 - to identify potential effects; and
 - to help assess significance of potential impacts.

Questions for Consultees

- 10.34 Do consultees agree with the focus of the baseline description and the key receptors to be considered?
- 10.35 Do consultees agree that the number and extent of the Study Areas are appropriate?
- 10.36 Do consultees agree with the proposed methodology?
- 10.37 Do consultees agree with the potential impacts that have been highlighted and those which have been scoped out of the assessment?

11 Aviation & Radar

Introduction

- 11.1 The EIAR will include a description of military and civilian aeronautical and radar issues relating to the proposed development. Consultation will continue with appropriate interested parties. The EIAR will present the findings of these consultations and all responses received, as well as any predicted impacts on aviation and mitigation required.
- 11.2 Radar systems can be susceptible to interference from wind turbines as the blade movement can cause intermittent detection by radars within their operating range. This is particularly relevant where there is a line of sight between the radar and the wind turbine development. Due to their height, wind turbines can also impact upon airports and airfields if they protrude into the safeguarding areas above and around them.

Aviation and Radar

- 11.3 There are a number of aviation interests in the area which could potentially be affected by the proposed development (see Diagram 11.1). Initial assessments indicate that the military Air Defence Radar at Buchan, situated approximately 73km from the site, and the military Air Traffic Control Radar, Deadwater Fell at RAF Spadeadam, situated approximately 58km from the site, have radar line of sight visibility to some of the turbines in the proposed development. Initial indications are that there is no visibility to the proposed development from the Lowther Hill, a NATS En Route Ltd (NERL) operated long-range radar, which is approximately 77km from the proposed development. The Air Traffic Control (ATC) radar at Edinburgh Airport is approximately 45km from the proposed development, which also has radar line of sight visibility to some of the turbines. Consultation will be undertaken with civil and military aviation stakeholders to agree appropriate mitigation measures.
- 11.4 A populated Aviation Ministry of Defence (MOD) Proforma is provided in Appendix 11.1 for MOD's reference.

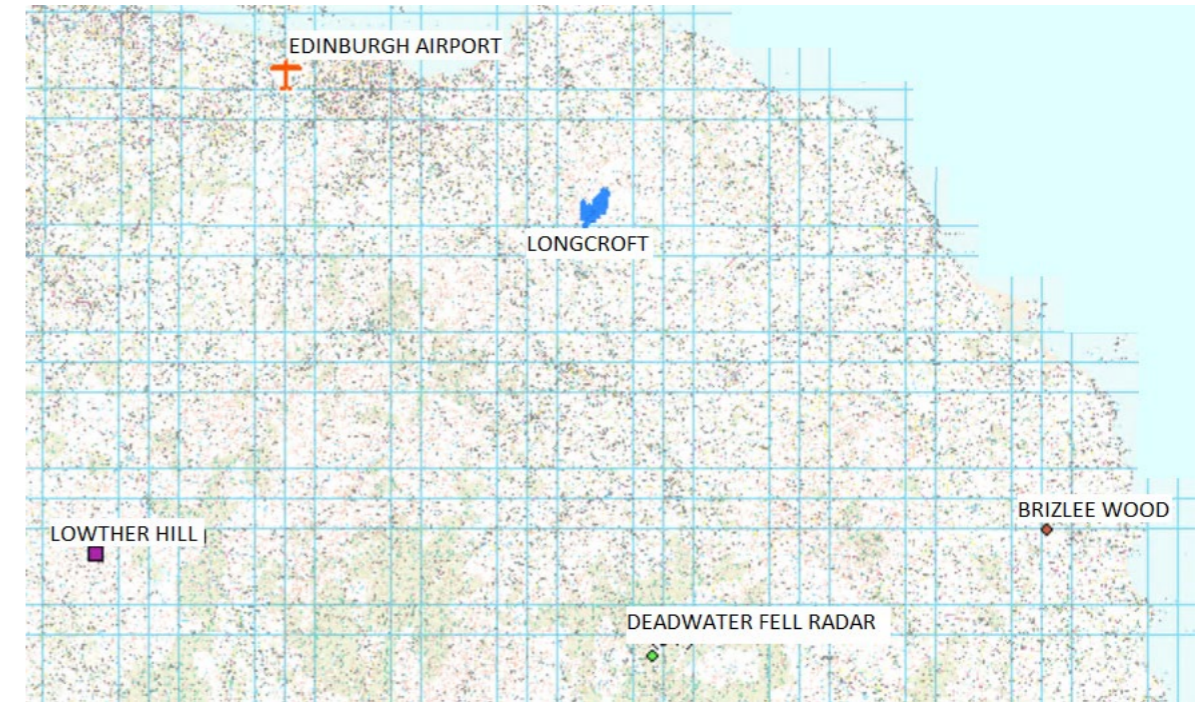


Diagram 11.1: Potential aviation impacts, receptor locations

- 11.1 The proposed development is expected to be outwith the area where there may be a physical breach of the Instrument Flight Procedures (IFPs) of Edinburgh Airport. Should Edinburgh raise concerns, an independent assessment will be commissioned.
- 11.2 The UK Air Navigation Order (ANO) 2016, Article 222, sets out the statutory requirement for the lighting on en-route obstacles, which applies to structures of 150 m or more above ground level. A visible lighting scheme will be agreed with the Civil Aviation Authority (CAA). The MOD is likely to request an infra-red lighting scheme for low flying military aircraft in the area and this will be agreed through consultation with the MOD.

12 Climate Change

Introduction

- 12.1 As a renewable energy project, the proposed development is likely to deliver significant carbon savings over its lifetime and will therefore benefit and make an important contribution to the Scottish Government's Climate Change targets. To illustrate this, an assessment will be undertaken that considers the likely magnitude of greenhouse gas (GHG) emissions and savings of the proposed development in comparison to the baseline scenario where no development takes place (i.e. where no emissions are produced as no construction would be taking place on peatland).
- 12.2 The NatureScot Carbon and Peatlands Map illustrates (and as described in Chapter 7 of this Scoping Report), that the site is located predominantly within a Class 3 and Class 5 peatland environment containing peaty soils.
- 12.3 Carbon emissions can result from the construction of the proposed development via impacts on peatland. Peat surveys described in section 7 of this Scoping Report will establish the extent and depth of peat deposits within the site. Where peat or carbon-rich soils are present, the ECU and SEPA require consent applications for onshore wind farms to include a systematic assessment of the likely effects to these features. This requirement aligns with the EIA Directive 2014/52/EU (as amended) which sets out that direct and indirect effects of development projects on climate (Article 3) and climatic factors (Annex IV) are considered. This assessment will be undertaken in accordance with Schedule IV of the EIA Regulations which transpose the EIA Directive into Scottish law. This will form an appendix to the Geology, Hydrology and Hydrogeology chapter of the EIAR.
- 12.4 Current best practice will include undertaking a carbon balance assessment which assesses climate effects with reference to the magnitude of carbon emissions released by the proposed development if any infrastructure is to be located on deep peat or peat habitats. Following ECU and SEPA guidance, the carbon balance assessment will be undertaken using the most recent version of the Carbon Calculator Tool that is available from the Scottish Government's website. This assessment will be based on the available information regarding the scale and nature of the proposed development and where data is unavailable, worst-case reasonable assumptions will be used.
- 12.5 If site-specific peat surveys reveal that the final design for infrastructure for the proposed development avoids peat or peat habitats, then it is proposed to scope out a carbon balance assessment from the EIA as there will not be any direct effects on peat receptors and the assessment tool is considered only relevant for calculating potential carbon losses and savings from wind farms on peatland.
- 12.6 If surveys identify that infrastructure does have potential to impact peat resources, the assessment will report the potential carbon emissions (from construction and operation) as well as the potential carbon gains (from any restoration opportunities), to calculate the resulting net carbon emissions.
- 12.7 The assessment will also quantify the carbon savings produced over the life of the proposed development, compared to the release of CO₂ produced from other energy generation methods.
- 12.8 Based on the net carbon emissions and savings figures, the assessment will report on the carbon payback time that the proposed development will take to repay the carbon losses or debt incurred by being built and operating. It will also report the number of years that the proposed development will be able to produce clean carbon free energy.
- 12.9 The appendix will present the findings of the carbon balance assessment and will contextualise these results through describing the climate benefits which are likely to occur through delivery of the proposed development. In broad terms, these benefits include contribution to mitigating the effects of climate change, contribution to, and security of, domestic energy supplies and to a sustainable energy mix within Scotland and more broadly within the United Kingdom. Considerations of climate change will also be considered as required in the individual topic chapters of the EIAR.
- 12.10 A climate resilience assessment is typically undertaken to ensure adequate resilience of major projects to the adverse impacts of climate change, for example flooding. It is based on a vulnerability and risk assessment. However, it is considered that many of key climate trends such as increased temperature, changes in rainfall events and sea level rise will not affect the proposed development due to its location and high elevation. During severe windstorms, turbines typically engage installed braking mechanisms to shut turbines down. These factors suggest that a detailed climate vulnerability and risk assessment would not be required and is proposed to be scoped out of the EIA.

Questions for Consultees

- 12.11 Do you agree that the proposed assessment approach with respect to climate change is appropriate?
- 12.12 It is proposed to scope out a carbon balance assessment from the EIA if site-specific peat surveys reveal that the final design for infrastructure for the proposed development avoids peat or peat habitats. This is because there will not be any effects on peat receptors and the assessment tool is considered only relevant for calculating potential carbon losses and savings from wind farms on peatland. Do you agree with this approach?
- 12.13 Do you agree the climate vulnerability and risk assessment can be scoped out of further assessment?

13 Other Issues

Introduction

13.1 A single chapter will be prepared to draw together the implications of the proposed development on other facets of the environment that have been scoped out of the EIA process, or to signpost readers to where they are dealt with within technical chapters of the EIAR. The chapter would also contain non-environmental elements often contained within EIAR. It is anticipated that this chapter would include discussion of the following issues:

- Infrastructure, Telecommunications and Broadcast Services;
- Shadow Flicker;
- Ice Throw;
- Air Quality;
- Population and Human Health;
- Major Accidents and Disasters;
- Waste and Environmental Management; and
- Public Access

Infrastructure, Telecommunications and Broadcast Services

Infrastructure

13.2 A range of investigations will be undertaken to establish the presence of existing infrastructure associated with utilities such as water, gas, electricity and telecommunication 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.

Telecommunications

13.3 Wind turbines have the capability of affecting electromagnetic transmissions by physically blocking or dispersing the transmission/signal. This means that telecommunications and/or broadcast signals could experience interference.

13.4 A microwave link communication tower is located on Warblaw Hill. The communication tower is not located within the site but nonetheless the microwave links originating from them will be considered during the design phase through liaison with the microwave link operators.

13.5 Consultation will be undertaken with Ofcom and key providers of these services in order to ascertain any potential telecommunications issues.

Television Reception

13.6 Wind turbines have the potential to adversely affect analogue television reception through either physical blocking of the transmitted signal or, more commonly, by introducing multi-path interference where some of the signal is reflected through different routes.

13.7 The proposed development is located in an area which is served by a digital transmitter and, therefore, television reception is unlikely to be affected by the development of the windfarm as digital signals are rarely affected. In the unlikely event that television signals are affected by the proposed development, mitigation measures will be considered by the applicant.

13.8 Television reception is, therefore, scoped out from further assessment in the EIA.

Other Terrestrial Broadcasts

13.9 Broadcast radio (FM, AM and DAB digital radio) are transmitted on lower frequencies than those used by terrestrial television signals. Lower frequency signals tend to pass through obstructions more easily than the higher frequency signals, and diffraction effects also become more significant at lower frequencies. Both these factors will tend to lessen the impact of new structures on broadcast radio (Ofcom, 2009).

13.10 It is therefore proposed that an assessment of potential effects on broadcast radio is scoped out of the EIA.

Fixed Links

13.11 Ofcom is responsible for the licensing of two-way radio transmitters. It holds a register of most fixed links and will therefore be consulted in order to establish baseline conditions. However, because not all fixed links are published, system operators will also be individually consulted on the potential for the proposed development to cause electromagnetic interference. The outcome of this consultation process, including any mitigation actions taken, will be detailed in the EIAR.

Shadow Flicker

13.12 Shadow flicker occurs when a certain combination of conditions prevail at a certain location, time of day and year. It firstly requires the sun to be at a certain level in the sky. The sun then shines onto a window of a residential dwelling from behind the wind turbine rotor. As the wind turbine blades rotate it causes the shadow of the turbine to flick on and off. This may have a negative effect on residents in affected properties. If

shadow flicker cannot be avoided through design, technical mitigation solutions are available, such as shutting down turbines when certain conditions prevail.

- 13.13 In the UK, significant shadow flicker is only likely to occur within a distance of ten times the rotor diameter (of a wind turbine), from an existing residential dwelling and within 130 degrees either side of north.
- 13.14 The rotor diameter of the proposed turbines would be up to 170 m; so the potential area in which shadow flicker could occur would be up to 1,700 m from the proposed turbine locations. Once the final turbine layout and parameters are fixed, the locations of residential properties in proximity to the site will be verified and if any are situated within ten rotor diameters from the proposed turbine positions, a shadow flicker model will be run to predict potential levels of effect. Shadow flicker is considered as an environmental constraint during the design process.
- 13.15 Based on the design of the proposed development undertaken to date, and the number of residential properties found in the surrounding area, it is likely that a full shadow flicker assessment will be required for the EIA, covering residential properties within 10 rotor diameters of turbines, within 130 degrees either side of north.

Ice Throw

- 13.16 Icing in Scotland is likely to be a rare occurrence, with the Icing Map of Europe (WECO, 2000)⁴⁹ showing Scotland to be within a light icing area with an annual average of only 2-7 icing days per year.
- 13.17 The risk associated with ice throw affecting members of the public is considered to be very low given the remote location of the proposed development.
- 13.18 This is reduced further as turbines are fitted with vibration sensors which shut the turbines down should any imbalance that might be caused by icing be detected.
- 13.19 To further minimise the risk, the following mitigation measures will be taken:
- Service crews will be trained regarding the potential for ice throw;
 - Ice risk conditions will be monitored by the wind farm operator; and
 - Public notices will be displayed at access points alerting members of the public and staff accessing the site of the possible risk of ice throw under certain weather conditions.
- 13.20 It is therefore proposed that ice throw is scoped out of the EIA.

Air Quality

- 13.21 Given the relatively remote location of the site, the generation of dust during construction activity is unlikely to have a direct impact on any human receptors and will be controlled by means of best practice to be described in the EIAR.
- 13.22 Consideration will be given within the Ecology and Hydrology Chapters to the potential impacts that dust generation could have on any identified sensitive ecological or hydrological receptors. If required, detailed mitigation measures will be proposed within these EIAR Chapters.

Population and Human Health

- 13.23 The potential effects on population and human health arising from the proposed development would be considered in the context of the other factors identified in Schedule 4(4) of the 2017 EIA Regulations, given that any environmentally related health issues (both beneficial and adverse) are likely to result from, for example, exposure to traffic, changes in living conditions resulting from noise and increased employment opportunities.
- 13.24 It is therefore proposed that population and human health effects of the proposed development are incorporated within the relevant chapter of the EIAR, as appropriate, under each of the other topic headings e.g. noise or socio-economic effects. Where no significant effects are likely these are scoped out of the assessment.

Major Accidents and Disasters

- 13.25 The scope for the EIA to consider major accidents and disasters has been initially considered in Table 13.1. Major accidents or disasters have been scoped in where they represent a risk to the proposed development, either from the proposed location or the project itself. A high risk is considered to be where there is reasonable likelihood of the accident or disaster occurring, or where the effect of the accident or disaster would lead to the requirement for mitigation which is beyond the usual scope of construction or operational activities.
- 13.26 Where an accident or disaster is scoped in, the EIAR chapter(s) identified would consider the matter in more detail. This further detail may show that no further assessment is needed, or it may lead onto an appropriate level of assessment and/or identification of mitigation.

⁴⁹ https://www.researchgate.net/figure/Icing-map-of-Europe-1_fig1_329418158

Table 13.1: Major Accidents and Disasters

Major Accident or Disaster	Risk due to location	Risk due to Project	Scoped in/out due to risk	Rationale	EIAR Chapter
Biological hazards: epidemics	Very Low	Very Low	Out	The probability of epidemics which would affect the construction or operation of the proposed development is considered to be very low.	n/a
Biological hazards: animal and insect infestation	Very Low	Very Low	Out	The probability of animal and insect infestations which would affect the construction or operation of the proposed development is considered to be very low	n/a
Earthquakes	No	No	Out	Any earthquakes in the vicinity of the proposed development would be of a very small magnitude and the design of turbine foundations etc. is adequate to withstand such low magnitude events.	n/a
Tsunamis	No	No	Out	The general location of the proposed development and its distance from the coast means there is no risk of these phenomena affecting the proposed development	n/a
Volcanic eruptions	No	No	Out	There are no active volcanos in the vicinity.	n/a
Famine / food insecurity	Negligible	Very Low	Out	The probability of famine/food insecurity which would affect the construction or operation of the proposed development is considered to be Negligible.	n/a
Displaced populations	Negligible	Very Low	Out	No population displacement.	n/a
Landslide/subsidence	Low	Low	In	A peat slide risk assessment would be undertaken if peat is identified on the site.	Peat Management, Carbon Balance
Severe Weather; storms	Medium	No	Out	Turbines are equipped with lightning conductors and automatically shut down	n/a

Major Accident or Disaster	Risk due to location	Risk due to Project	Scoped in/out due to risk	Rationale	EIAR Chapter
				when wind speeds are at a level which could damage components.	
Severe weather; droughts	Very low	No	Out	Turbines would be unaffected by drought conditions.	n/a
Severe weather; extreme temperatures	Low	Very low	Out	Location leads to relatively low icing risk, remote location, turbine sensors, mitigation as follows: <ul style="list-style-type: none"> • Service crews will be trained regarding the potential for ice throw; • Ice risk conditions will be monitored by the wind farm operator; and • Public notices will be displayed at access points alerting members of the public and staff accessing the site of the possible risk of ice throw under certain weather conditions. 	n/a
Floods	Low	Very Low	In	Damage to turbines or infrastructure from flooding, or increased flood risk elsewhere.	Site Selection and Design Evolution, Hydrology, Hydrogeology and Geology.
Terrorist Incidents	No	No	Out	n/a	N/a
Cyber attacks	No	No	Out	n/a	n/a
Disruptive industrial activities	No	No	Out	n/a	n/a
Public disorder	No	No	Out	n/a	n/a
Wildfires	No	No	Out	n/a	n/a
Poor Air Quality events	No	No	Out	n/a	n/a
Transport accidents	No	Yes	In - abnormal loads and increase in	Abnormal loads or an increase in traffic could lead to an increased risk of	Design evolution and

Major Accident or Disaster	Risk due to location	Risk due to Project	Scoped in/out due to risk	Rationale	EIAR Chapter
			traffic from construction.	accidents. Public road network may be unsuitable for such traffic, further increasing risk.	Traffic and Transport.
Industrial accidents	No	Yes	In - from construction and maintenance	Manual labour, working at height, working with high voltages and use of specialist plant all bring risk of industrial accidents. All relevant health and safety legislation and industry best practice followed.	Site Selection and Design Evolution, Utilities and Infrastructure.
Urban Fires	No	No	Out	n/a	n/a

Waste and Environmental Management

- 13.27 RES is committed to pollution prevention and environmental protection. As such an environmental management strategy to minimise environmental effects of the proposed development will be developed as part of the Outline Construction Environment Management Plan (CEMP).
- 13.28 An Outline Peat Management Plan will be prepared as a supporting technical appendix in line with the SEPA Regulatory Position Statement: Developments on Peat (2012). If significant peat deposits are proven, a Peat Landslide Hazard and Risk Assessment will be completed using the site survey data and slope analysis (using DTM data), highlighting areas that may be impacted by a peat slide so that appropriate mitigation measures and can be identified.
- 13.29 If granted planning permission, a site-specific Waste Management Plan which addresses storage and final disposal of surplus material will be produced as part of an anticipated planning condition. All potential waste streams will be identified and what construction practices can be incorporated into the development to minimise the use of raw materials and maximise the use of secondary aggregates.

Public Access

- 13.30 A desk-based study including review of the Scottish Borders Core Paths Plans indicate that the following are found across the Site:
- Core Path 016 - runs along the Herring Road approximately north-south in the eastern part of the site.
 - Permissive Right of Way running from Longcroft Farm to the Glenburnie Estate.

- 13.31 Options will be examined that may open up access to areas of the Site, such as linking up the Core Path to historic features found within the Site for example.

Matters Scoped Out

- 13.32 As discussed above, television reception, broadcast radio, ice throw and air quality assessment are proposed to be scoped out of the EIA. It is also proposed to scope out major accident and disasters not considered to be high risk as a result of the location of the proposed development or the nature of the works, as per Table 13.1.

Questions for Consultees

- 13.33 Consultees are requested to confirm that television reception, broadcast radio, ice throw, air quality and major accidents and disasters can be scoped out of the assessments.

14 Synergistic Effects and Summary of Mitigation and Residual Effects

- 14.1 This chapter will present the synergistic effects associated with the proposed development. An assessment of synergistic effects ensures that the assessments provided in the EIAR for each topic are not considered in isolation. Such effects are those which are a result of the combination of independent impacts.
- 14.2 The EIAR will consider potential synergistic effects upon the:
- physical environment (e.g. LVIA, Hydrology, Cultural Heritage, Forestry),
 - population and human health (e.g. LVIA, Noise, Shadow Flicker, Traffic, Socioeconomics, Aviation, Infrastructure)
 - biological environment (Ecology, Ornithology).
- 14.3 The EIAR chapter will also identify all mitigation, including the mitigation by design that will be undertaken to reduce any adverse effects and summarise the residual effects regarding all of the proposed work in relation to the construction, operation and decommissioning of the proposed development.

15 Responding to the Scoping Report

- 15.1 This document has been prepared in anticipation of an application under Section 36 of the Electricity Act 1989 for a renewable electricity generating station including wind farm and battery at Longcroft in the Scottish Borders.
- 15.2 Consultee responses to this report should be directed to the Energy Consents Unit which will form a Scoping Opinion.
- 15.3 The applicant will welcome such input and undertake further consultation as needs be with each consultee as the EIA progresses.

Appendices

Appendix 4.1: Cultural Heritage Appraisal

The appraisal below is an initial appraisal of the designated cultural heritage assets with potential to be affected by the proposed development. All assets which currently fall outwith the ZTV will be monitored throughout the design process for any potential impact due to changes in layout. All cultural heritage assets have been given a preliminary assessment in relation to the potential for impact, including preliminary consideration of the assets' settings and of any 'third points' (co-visibility) wherein they might contribute to the understanding, appreciation and experience of the assets.

Table 1: Scheduled Monuments

Designation Reference	Designation Title	Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
LB1893	Parish Church Of St Cuthbert & Churchyard, Channelkirk	A	24	5.5	West	The asset is a 19 th -century parish church, located adjacent to the hamlet of Kirktonhill and close to the village of Oxton. The asset's significance primarily derives from its architectural significance, due to its gothic style and noted architecture. The assets setting is intangible, formed from the parish it exists within. The connection between the asset and its setting is not anticipated to be impacted by the proposed development. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
LB7329	Danskine Gateway	A	0	8.9	North	The assets are included within the Yester House Inventoried Garden and Designed Landscape. Two of the assets fall outwith the ZTV, with a further two, LB14667 and LB14693, having potential visibility of one turbine. These potential views are not within any key views of the assets and are anticipated to be peripheral to any views between assets within the Garden and Designed Landscape. As such, these assets are scoped out of further assessment. They will be monitored for potential impact throughout the design process.
LB14667	Gifford, The Avenue, Yester House Gate Lodges, Gates And Gatepiers And Railings	A	1	9.6	North	
LB14693	Yester House With East Pavilion	A	1	8.9	North	
LB14695	Yester Chapel (Formerly St Cuthbert's Collegiate Church), Yester House, Gifford	A	0	8.8	North	
LB7342	Hopes House With Gates And Gatepiers	A	0	5.4	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, it has been established that any 3 rd viewpoints from which the asset can be appreciated or understood, such as along the approach from the west, will not have intervisibility with the proposed development. The asset will be monitored for potential impact throughout the design process.
LB8203	Thirlestane Castle (Including Eagle Gates And Boundary Walls)	A	20-24	6.2	South	Scoped In.
LB19740	Wedderlie House	A	1	8.9	South-east	The asset's setting comprises the surrounding Wedderlie House estate. Whilst a singular turbine is predicted to be visible from the assets, the proposed developments positioning and distance mean that this turbine be peripheral to any key views of the house or the estate. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
LB37200	East High Street, Lauder Church (Church Of Scotland), Including Entrance Gates And Churchyard Wall	A	24	6.6	South	The asset draws part of its significance from its immediate setting, which comprises Lauder village to the immediate northeast. It is anticipated that turbines will be visible in views to the north, given the elevation of the proposed development, however, these views will be long-distance. As such, the proposed development will be minor intrusions within long-distance views of the site that would not impact the appreciation, experience and understanding of the church and its setting. It is therefore scoped out of further assessment.
LB1894	Justicehall House	B	6-7	4.1	South-west	The asset is an 18 th -century house, located on the northern edge of Oxton Village. The asset primarily draws its significance from its mostly preserved architecture. Whilst its immediate setting and connection to the village of Oxton may contribute to the significance of the asset, the proposed development will only be visible in long-distance views to the northeast. As such, the proposed development will not impact intervisibility between the asset and the town and will be minor distractions within wider-ranging landscape views. Therefore, it is not anticipated that the proposed development would impact the ability to understand, appreciate, or experience the asset and its connection to its setting. It is scoped out of further assessment.

Table 2: Listed Buildings

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM6028	Penshiel Grange	Ecclesiastical: monastic settlement	0	8.8	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets in the factors which contribute to their significance.
SM5861	Witches Knowe, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	6.6	North-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM753, SM746, SM754) in the factors which contribute to their significance.
SM5921	Whitestone Cairn, cairn, Harestone Hill	Prehistoric ritual and funerary: cairn (type uncertain)	24	3.9	North	The asset's setting comprises its elevated position at the peak of Harestone Hill, above Hopes Water to the west and tributaries of Faseny Water to the east. The asset's setting contributes to its significance, as its elevated position makes it visible, especially along the valleys associated with the aforementioned watercourses. Whilst the turbines are predicted to be visible from the assets, their positioning and distance mean that they are likely to be peripheral to the key views along the watercourses or from any nearby 3 rd viewpoints. There are no nearby cairns that share intervisibility with the asset. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM5957	Yester Castle, fort NW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	1	8.3	North	The asset's setting comprises the valley of Hope Water, located on the river's western bank, and the valley of Gifford Water to the north. The asset's setting contributes to its significance, providing command over the converging valleys. Whilst one turbine has the potential to be visible from the asset, the turbine is likely to be peripheral to any key views along these valleys. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM6106	Snawdon, fort 600m WSW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	9.2	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM745, SM747) in the factors which contribute to their significance.
SM6457	Green Castle, enclosure 100m NE of fort	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	7.6	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM745, SM747) in the factors which contribute to their significance.
SM5751	Ewingston, enclosure 200m WNW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	9.5	South-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5756, SM5886, SM1754) in the factors which contribute to their significance.
SM5792	Quarryford House, enclosures, souterrain and pit alignment SW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	6.4	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5827) in the factors which contribute to their significance.
SM5827	Longyester, palisaded enclosures and pit alignments 600m SE of	Prehistoric domestic and defensive: palisaded enclosure	0	6.3	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5792) in the factors which contribute to their significance.
SM5828	Knockhill Wood, enclosure 500m W of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	5.2	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM750, SM5760) in the factors which contribute to their significance.
SM5886	Stobshiel Cottages, enclosure 350m NNW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	8.4	North-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM754, SM5756, SM5751) in the factors which contribute to their significance.
SM12507	Dunside Hill, cairn 1225m S of Byreclough	Prehistoric ritual and funerary: cairn (type uncertain)	23	6.3	East	The asset's setting comprises its elevated position at the peak of Dunside Hill, above Dye Water to the north and Watch Water to the south. The asset's setting contributes to its significance, as its elevated position makes it visible, especially along the valleys associated with the aforementioned watercourses. Whilst the turbines are predicted to be visible from the assets, their positioning and distance mean that they are likely to be peripheral to the key views along the watercourses or from any nearby 3 rd viewpoints. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4468	Blythe, fort 300m SW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	23	6.3	South-east	The asset's setting comprises a ridge above the valley of Blythe Water. The asset's significance is formed in part by its setting, as it commands the Blythe Water valley. It sits within a wider landscape of Iron Age hill forts (e.g., SM370, SM4657, SM362), which form part of the significance of the asset. The proposed development is not anticipated to be visible in any views towards the asset from these 3 rd viewpoints, however, the proposed development may be visible from the asset when viewing the associated hill forts. Due to the distance and orientation of the proposed development, it is anticipated that the turbines will be peripheral to any key views. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM4467	Blythe, settlement 1150m SSW of	Prehistoric domestic and defensive: settlement	0	7	South-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM4612, SM4611, SM4468) in the factors which contribute to their significance.
SM4611	Thirlstane, fort 350m NE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	6.6	South-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM4612, SM4468) in the factors which contribute to their significance.
SM4629	Trabrown, settlement 600m SW of	Prehistoric domestic and defensive: settlement	24	6.5	South-west	The asset is situated atop a hill, to the north of Harry Burn and its associated valley. The assets setting forms part of its significance, with its hilltop location providing a defensive position and command along the Harry Burn. Due to the distance and orientation of the proposed development, it is anticipated that the turbines will be peripheral to any key views along this burn. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4554	Hartside, scooped homesteads 330m SSE of	Prehistoric domestic and defensive: scooped homestead	13	6.8	South-west	The asset is situated along the west bank of Mountmill Burn, with an elevated position allowing views along the valley to the south and northeast. The asset's setting forms part of its significance, with its position providing command over the burn. The asset is situated within a wider prehistoric landscape, with nearby contemporary assets (e.g., SM4628). Whilst some of the proposed turbines are anticipated to be visible from the asset, they do not feature in key views along Mountmill Burn and are not within key views from the aforementioned nearby prehistoric assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4555	Over Hartside, enclosure 300m N of	Secular: enclosure	11	7	West	The asset is a medieval defended enclosure, situated at an elevated position on the west bank of Raughy Burn. Whilst the precise nature of the asset is unknown, it most likely utilised Raughy Burn as a form of natural defence and had command over the associated landscape. The proposed development is not anticipated to be within key views along the burn. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4481	Hog Hill, settlement 250m SW of	Prehistoric domestic and defensive: scooped settlement	5	1.2	West	The asset is located to the north of a tributary of Soonhope Burn, in an elevated position on the southwest of Hog Hill. The asset is situated within a wider prehistoric landscape, including nearby settlements (SM4476) and hill forts (SM372). Whilst some of the proposed turbines are anticipated to be visible from the asset, they are likely to be peripheral to key views along the tributary to the southeast and will not infringe on any key views of the settlement from any associated assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4504	Cathpair, hut circles and field system 2500m and 2600m ESE of	Prehistoric domestic and defensive: field or field system	24	9.2	South-west	The asset is located on the southern side of a hill, within an open agricultural landscape, to the north of the B6362 road. The asset is approximately 300m northeast of Allan Water, a small burn. The asset's setting contributes to its significance, with the asset utilising the orientation of the landscape and the proximity to water for agricultural uses. Whilst the connection to the local landscape is important to understand the asset, the wider Lammermuir Hills do not contribute to the asset's significance. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4612	Thirlestane Hill, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	7	6.5	South-east	The asset is situated on a spur of Thirlestane Hill, on the northern bank of Thirlestane Burn. The assets setting contributes in part to its significance, providing command along the burn and a natural defensive position. The asset is situated in a wider prehistoric landscape including nearby settlements (SM4611) and hill forts (SM4686). Whilst some of the proposed turbines are anticipated to be visible from the asset, they are not predicted to be visible within key approaches along Thirlestane Burn or from the other associated assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4628	Kirktonhill, fort 400m WSW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	3-24	6.6	West	The asset is located along the eastern bank of Raughy Burn, on a steep-sided west-facing hill spur. The asset is situated in a wider landscape of contemporary assets, with a homestead located to the south (SM4554) and roman assets located to the east and north (SM4378, SM2837, SM2962). The assets setting contributes to its significance, with the asset commanding the Raughy Burn and having a potential connection to the nearby roman assets. Due to the orientation of the proposed development, it is not anticipated to be visible within key views along the valley or between the associated assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4726	Wanside, farmstead 1300m S of	Secular: farmstead	0	5.6	North-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets in the factors which contribute to their significance.
SM4919	Mainslaughter Law, cairn	Prehistoric ritual and funerary: cairn (type uncertain)	24	9.5	North-east	The asset is situated on Mainslaughter Ridge, a high point within the eastern Lammermuir Hills. The asset is not in close proximity to any distinctive watercourses or valleys. Its setting contributes in part to its significance, as its prominent position on the ridge would have allowed for it to be viewed from a distance in all directions. Whilst the turbines are predicted to be visible from the asset, their positioning and distance means that they are likely to be peripheral to the key views from the asset. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM5826	Blinkbonny Wood, enclosures 200m N of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	6.7	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5828, SM5760) in the factors which contribute to their significance.

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM5760	Kingside Rig, enclosure	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	4.5	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5826, SM5827) in the factors which contribute to their significance.
SM5793	Newlands, enclosure 500m S of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	7.6	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5794, SM5795) in the factors which contribute to their significance.
SM5794	Park, fort 800m SE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	7.1	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM745, SM5795) in the factors which contribute to their significance.
SM5795	Park, fort 900m SSE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	6.8	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5794, SM745) in the factors which contribute to their significance.
SM5822	Swallow Cleugh, palisaded enclosure	Prehistoric domestic and defensive: palisaded enclosure	0	8	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5826, SM5957) in the factors which contribute to their significance.
SM5756	Blacklaw Wood, enclosure	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	9.5	North-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5751, SM5886) in the factors which contribute to their significance.
SM4581	Evelaw, farmstead and cultivation remains 650m WSW of	Secular: farmstead	4	9.9	South-east	The asset is agricultural in nature, with the immediate agricultural setting contributing to its significance. Due to the distance and orientation of the proposed development, any visible turbines are not anticipated to infringe on this setting. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4508	Byreclough, farmstead and cultivation remains 300m SSW of	Secular: farmstead	0	5.8	East	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets in the factors which contribute to their significance.
SM4549	Byreclough, farmstead 1900m WNW of	Secular: farmstead	0	4.3	East	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets in the factors which contribute to their significance.
SM4476	Soonhope, homestead 500m NNE of	Prehistoric domestic and defensive: scooped homestead	4	0.8	West/South-west	<p>The asset is located in the valley along the western bank of Soonhope Burn, within a wider prehistoric landscape of similar assets (SM4481, SM4480) and hill forts (SM372, SM362). The assets setting contributes in part to its significance, with its positioning within the valley providing views to the north and south and including potential visibility of the aforementioned hillforts.</p> <p>Whilst some of the turbines are predicted to be visible from the asset, they are not anticipated to be present in key views or approaches along the Burn to the north and south. Furthermore, the positioning of the asset means that when viewing the asset from the aforementioned associated assets, the turbines are likely to be peripheral to these views. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.</p>
SM4557	Lylestone, settlement 1200m NE of	Prehistoric domestic and defensive: settlement	1	1.6	South	<p>The asset is located at the confluence of two tributaries of Cleekhimin Burn, on the southwest side of Lylestone Hill. within a wider prehistoric landscape, including Iron Age hill forts (SM4657, SM4557, SM362). The assets setting contributes in part to its significance, with its positioning within the valley providing views to the north and south and including potential visibility of the aforementioned hillforts.</p> <p>Whilst some of the turbines are predicted to be visible from the asset, they are not anticipated to be present in key views or approaches along the tributary. Furthermore, the positioning of the asset means that when viewing the asset from the aforementioned associated assets, the turbines are likely to be peripheral to these views. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.</p>
SM4656	Burncastle, fort 400m NNE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	21	2.4	South	Scoped In.
SM4657	Dabshead Hill, fort and standing stone	Prehistoric domestic and defensive: fort (includes hill and promontory fort); Prehistoric ritual and funerary: cupmarks or cup-and-ring marks and similar rock art	24	3	South	Scoped In.

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM4655	Borrowston Rig, linear earthwork and hut circles	Prehistoric domestic and defensive: hut circle, roundhouse	24	2.2	South	The asset's setting comprises high ground to the southeast of Earnscleugh Water. The asset sits within a wider prehistoric landscape, with connections to other contemporary assets in the vicinity including SM359 and SM4657. The asset's setting contributes in part to its significance, with its position providing command over the Earnscleugh Water valley and the proximity and intervisibility with other contemporary assets providing information about prehistoric society. Whilst all of the proposed turbines are anticipated to be visible from the asset, they are not positioned within key views along the Earnscleugh Water. Furthermore, due to their distance, they would be a minor distraction in views from and to contemporary assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4473	Glenburnie, fort 600m S of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	18	0.3	N/A	Scoped In.
SM4480	Longcroft Hill, homestead 480m ESE of	Prehistoric domestic and defensive: scooped homestead	24	0.3	N/A	Scoped In.
SM4556	Kelhope, settlement 1200m N of	Prehistoric domestic and defensive: settlement	10	3.6	North-west	The asset is situated on a spur, overlooking Kelhope Burn to the west. The asset's setting contributes in part to its significance, using its position to command the Kelhope Burn valley. Whilst some proposed turbines are anticipated to be visible from the asset, they are not anticipated to be visible in views and approaches along the burn. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4595	The Howe, settlement 100m NNE of	Prehistoric domestic and defensive: settlement	20	0.7	North-west	Scoped In.
SM4598	Tollishill, homestead 550m SW of	Prehistoric domestic and defensive: scooped homestead	16	2.3	West	The asset is situated on the southwest slope of Tollis Hill, overlooking Kelhope Burn to the west. The asset's setting contributes in part to its significance, using its position to command the Kelhope Burn valley. Whilst some proposed turbines are anticipated to be visible from the asset, they are not anticipated to be visible in views and approaches along the burn to the north and south. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4616	Tollishill Dod, homestead 250m SSW of	Prehistoric domestic and defensive: scooped homestead	24	1.6	West	Assets scoped in but assessed as part of Hillhouse Burn grouping.
SM4627	Hillhouse, fort 250m NNW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	23	3	South-west	
SM3805	Lauder Barns, palisaded enclosure 550m SSW of	Prehistoric domestic and defensive: palisaded enclosure	19	7.9	South	
SM380	Tollis Hill, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	2.4	West North-West	
SM4478	Dodcleugh, fort and settlement 650m S of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	1.6	West	
SM4479	Dodcleugh, homestead and enclosure 300m E of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0	1.4	West	
SM4642	Tollishill, enclosure 50m NW of	Secular: enclosure	24	2.2	West	The asset is located at the summit of Tollis Hill, comprising a pre-improvement enclosure. The asset is agricultural in nature, and as such the agricultural qualities of the surrounding landscape, including the proximity to small burns to the east and south, contribute to its significance. Whilst all of the proposed turbines are anticipated to be visible from the asset, the wider landscape does not contribute to this significance. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM7872	Table Rings, cairn 500m WSW of Penshiel	Prehistoric ritual and funerary: cairn (type uncertain)	0	8.7	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM7973) in the factors which contribute to their significance.
SM7873	Blue House, cairns 720m ESE of	Prehistoric ritual and funerary: cairn (type uncertain)	0	8.7	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM7972) in the factors which contribute to their significance.
SM7573	Soutra Aisle, part of site of medieval hospital	Ecclesiastical: hospital/hospice	24	8.6	West	Scoped In.

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM3769	Townhead of Duncanlaw, enclosure & cross-base, Cross Hill	Crosses and carved stones: cross (free-standing); Prehistoric domestic and defensive: enclosure (domestic or defensive)	4	9.8	North	The asset is situated on a gentle west-facing slope, approximately 1.2km north of Gifford Water. The enclosures setting contributes to their significance, with the positioning of the asset proving command over the Gifford Water valley. Whilst some proposed turbines are anticipated to be visible from the asset, they are not anticipated to be visible in views and approaches along Gifford Water to the east and west. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM8766	Penshiel, cairn and stone setting 540m NNE of	Prehistoric ritual and funerary: cairn (type uncertain)	0	9.6	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM7874, SM7872) in the factors which contribute to their significance.
SM740	Kingside Hill, stone circle	Prehistoric ritual and funerary: stone circle or ring	0	8.9	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM4423) in the factors which contribute to their significance.
SM361	Mutiny Stones, long cairn 1100m NNW of Byreclough	Prehistoric ritual and funerary: long cairn	0	5.4	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM12507) in the factors which contribute to their significance.
SM746	The Castles, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	6.5	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5861, SM753) in the factors which contribute to their significance.
SM750	Hare Law, fort, Yester	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	1	4.8	North	The asset is located on a north-facing spur on Harelaw, overlooking the convergence of tributaries of Harelaw Burn. Due to its positioning, the assets focus is clearly to the north. The asset is also situated within a wider prehistoric landscape, surrounded by contemporary assets (e.g., SM5760, SM5828). The asset's setting does contribute to its significance, as the asset commands the valley to the north. Whilst a turbine is anticipated to be visible from the asset, it is not anticipated to be visible in key views to the north and would not be intervisible with any contemporary assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM753	Kidlaw, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	7.5	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM746, SM5826) in the factors which contribute to their significance.
SM751	Hopes, fort, Long Yester	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	5.2	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM5795, SM747) in the factors which contribute to their significance.
SM745	Black Castle, fort, Newlands	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	7.9	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM747, SM5795, SM751) in the factors which contribute to their significance.
SM747	Green Castle, fort, Newlands	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	7.5	North	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM745, SM5795, SM751) in the factors which contribute to their significance.
SM780	Yester Castle & Hobgoblin Ha' vaulted chamber	Secular: castle	1	8.2	North	The asset is located along the west bank of Hopes Water, with a tributary of the river surrounding the asset on the north and west side. The assets setting contributes in part to its significance, with its positioning along Hopes Water providing command over the valley and its location at the convergence of tributaries providing a natural defensive position. Whilst a turbine is anticipated to be visible from the asset, it is not anticipated to be visible in key views and approaches along the valley to the north and south. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM362	Addinston, fort 500m NNE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	1.7	South-West	Scoped In.
SM364	Blackchester, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	4.8	South-west	Scoped In.
SM372	Longcroft, fort 500m NE of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	0.8	West South-west	Scoped In
SM359	Borrowston Rig, stone circles and cairns	Prehistoric ritual and funerary: cairn (type uncertain)	24	2.5	South-east	Scoped In.

Designation Reference	Designation Title	Scheduled Monument Category	Turbines Visible (Bare Earth ZTV)	Distance from Nearest Turbine (km)	Direction to Nearest Turbine	Appraisal Comments
SM754	Stobshiel, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	7.9	North-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM753, SM746) in the factors which contribute to their significance.
SM2155	Overhowden, henge	Prehistoric ritual and funerary: henge	24	5.6	South-west	The setting of the asset comprises an elevated position, above Leader Water which runs approximately 2km to the northeast. Excavation showed an entrance at the northwest of the asset. It is assumed that the alignment of this entrance is indicative of the main approach to the asset. The proposed development is expected to be peripheral to the views from this key approach. As such the proposed development would not be expected to impact the setting of the asset that contributes to its significance. It is scoped out of further assessment.
SM1176	Middlehill, fort	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	0	9.8	South-west	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM4628) in the factors which contribute to their significance.
SM365	Bowerhouse, fort 480m NW of	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	24	5.8	South-west	Scoped In.
SM370	Hare Faulds, fort 2000m NNW of Dod Mill	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	3	5.4	South-east	The asset is located at the top of a southwest-facing slope, along the northeast bank of Blythe Water. The asset's setting contributes in part to its significance, with its orientation showing command over the valley to the south. The asset is located 1km northwest of Blythe Fort (SM4468), with which it shares intervisibility. The assets contribute to each other's significance through a shared defence of Blythe Water. Whilst some of the proposed turbines are anticipated to be visible from the asset and within views of the asset from Blythe Fort, they are anticipated to be peripheral to key views along Blythe Water. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM3067	Soutra Aisle, burial aisle and part of site of medieval hospital	Ecclesiastical: hospital/hospice	24	8.5	West	Scoped In.
SM8880	Whitslaid Tower	Secular: tower	20	9.7	South	The asset is located along the eastern bank of Leader Water. The asset's setting forms part of its significance, as it uses its placement within the natural landscape to control the valley. Whilst some of the turbines are predicted to be visible from the asset, they are not anticipated to be present in key views or approaches along the water. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4423	Johnscleugh, stone settings 1790m SW of, 1360m SSW of, 1105m SSW of	Prehistoric ritual and funerary: stone circle or ring	0	8.7	North-east	Due to the asset falling outwith the ZTV, it is currently scoped out of further assessment. In addition, the proposed development is not anticipated to impact on the ability to understand or appreciate the shared intervisibility between contemporary assets (e.g., SM740, SM7873) in the factors which contribute to their significance.
SM4035	Thirlestane Castle, old castle 510m SSW of Thirlestane	Secular: castle	2	7.2	South-east	The asset is located along the western bank of Boondreigh Water. The asset's setting forms part of its significance, as it uses its placement within the natural landscape to control the valley. Whilst some of the turbines are predicted to be visible from the asset, they are not anticipated to be present in key views or approaches along the water. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM2837	Oxton, Roman fortlet and annexes 230m NNE of Braefoot Cottage	Roman: annexe	5	4.5	West	The assets comprise Romano-British camps, located at a confluence of the Mountmill Burn and Headshaw Burn, at the head of Leader Water. The assets once sat along the route of the Romano British Dere Street. The assets setting forms part of their significance, as they use their placement within the natural landscape to control the converging valleys. In addition, they are associated with the nearby Dere Street (SM4378) which runs to the northwest. Whilst it is anticipated that there will be views of the proposed development from the assets, they are anticipated to be peripheral to views between the assets. In addition, they are anticipated to be peripheral to key views between the assets and nearby Dere Street. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.
SM4378	Oxton, Roman camps	Roman: camp	24	5	South-west	
SM2962	Dere Street, Roman road, Soutra Aisle to Turf Law	Roman: road	0-24	7.5	West	The asset provides a clear routeway through the Lammermuir Hills, which form its setting. The asset runs from Soutra Aisle to the north, towards Turf Law in the south, using natural landform as well as turf constructions to provide an easy route through the landscape. Due to its utilisation of the natural landscape, the asset's setting forms a large part of its significance. The majority of the asset is not anticipated to provide views of the proposed development, especially in views along the length of the routeway. As such, any views of the proposed development from the asset are predicted to be peripheral and not impact the ability to understand the connection between the asset and its setting. Furthermore, the asset is associated with nearby Romano-British assets (SM4378, SM2847). The orientation of the assets means that intervisibility is not anticipated between the proposed development and the associated Romano-British assets. It is scoped out of further assessment.
SM4498	Prehistoric settlement, 470m NE of Andrew's Wood	Prehistoric domestic and defensive: scooped settlement	24	3.3	West	The asset is located on high ground above Hillhouse Burn which runs to the west. The assets setting contributes in part to its significance, using its position to command Hillhouse Burn. The asset is part of a wider prehistoric landscape, with similar assets within close proximity (SM4642, SM4598). Whilst some proposed turbines are anticipated to be visible from the asset, they are not anticipated to be visible in views and approaches along the burn to the north and south. In addition, they are anticipated to be peripheral to views to and from the associated assets. As such, the proposed development is not predicted to impact the ability to understand, appreciate, and experience the asset. It is excluded from further assessment.

Table 3: Inventory Gardens and Designed Landscape

Designation Reference	Designation Title of Gardens and Designed Landscapes	Turbines Visible	Distance to proposed development	Direction to the nearest turbine	Appraisal Comments
GDL00388	Yester House	0-6	7.3km	North	The asset is a Garden and Designed Landscape, located to the north of the Lammermuir Hills in the valley of the Gifford Water. This valley encloses the asset and forms the immediate setting of the associated house. Key approaches to the house through the landscape run along the river valley, which is orientated east to west. As such, any views of the proposed turbines from these approaches would be peripheral and would not be anticipated to impact the ability to appreciate, understand, and experience the asset. Furthermore, whilst the listing description states that long range views of the Lammermuir's to the south are significant to the designed landscape, these views are focussed on Meikle Says Law and Lammer Law, approximately 5km south of the asset. The distance of the proposed development means that any views of turbines from the asset will be a minor distraction in appreciating and understanding the connection of the asset to the wider Lammermuir Hills landscape. As such, the asset is scoped out of further assessment.
GDL00371	Thirlestane Castle	0-24	4km	South	Scoped in.

Appendix 7.1 Ecology Desk Study

LONGCROFT WIND FARM

Ecology Desk Study Report

Prepared for: **RES**

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APPENDICES

- Appendix 01: Summary of Protected/Notable Species Records
- Appendix 02: Glossary of Codes for Species Protection/Conservation Status

1.0 Introduction

SLR was commissioned by RES to undertake a non-avian ecology desk study for the proposed Longcroft Wind Farm (the Site) with Oxton as the closest settlement to the Site, located approximately 3.5km to the west at its nearest point with the town of Lauder located approximately 6km to the south. This desk study was undertaken in February 2023 and the results have been used to inform plans for the proposed Development and the associated Scoping and Environmental Impact Assessment (EIA) Report.

1.1 Site Description

The Site is centred on grid reference NT 54935 55991, and is located at its closest point, 3.2km east of where the A68 road joins the A697 to the south of the village of Oxton. The Site sits entirely within the Scottish Borders Council administrative boundary.

The Site is covered predominantly by upland heath and bordered on the west and east sides by commercial forestry. The majority of the site is currently used for sheep grazing and for recreation as part of the Lammermuir plateau. Elevations in the Site include Riddle Law at the centre (392m Above Ordinance Datum), Wedder Law to the east (447m), Cadam Law to the west (360m) and Hogs Law (449m) and Peat Law (414m) at the south of the site.

Tributaries of the Leader Water, including the Soonhope Burn and Whalplaw Burn flow through the site from north to south as part of the larger River Tweed catchment.

1.2 Surrounding Area

The surrounding area is rural in nature, with land predominantly used for upland grazing, recreation and there are some operational wind farms nearby to the immediate northeast and west of the Site. The nearest settlement to the Site is Oxton. The nearest properties to the Site are: Longcroft (800m); Sooncroft (900m) and other properties found along the A697 road, all of which are located at least 1.5km away.

1.3 Desk Study Scope

This desk study is designed to give an overview of relevant existing ecological data, including data for protected and notable (e.g., rare or invasive), species and designated sites nearby (up to 10km for statutory designated sites and up to 2km for species and for non-statutory designated sites). The desk study summarises the results of data obtained from The Wildlife Information Centre (TWIC) and data provided within Environmental Statements for other nearby development proposals.

2.0 Methods

2.1 Protected and Notable Species

Desk study data were acquired for protected and notable species from the following sources:

- The Wildlife Information Centre¹ (TWIC)
- EIA reports as part of planning applications and any post consent/construction information for wind farms and other developments within 10km of the Site (where available), including:
 - Amec Foster Wheeler. 2015. Fallago Rig 2 – Bat Survey Report²
 - SLR Consulting. 2016. Gilston Hill Wind Farm – Ecological Impact Assessment³.
 - LUC. 2022. Dunside Wind Farm – EIA Scoping Report⁴

Searches for protected and notable species data from TWIC were limited to:

- Data from all years; and
- From within 2km of the Site for all species.

2.2 Designated Sites

Information regarding designated sites in the area surrounding the Site was obtained from the MAGIC online GIS tool⁵ and the NatureScot⁶ (NS) Sitelink website⁷. Sites designated for their ecological interests were searched for within 10km for statutory designated sites, an up to 2km for locally designated sites. Designation types searched for included:

- Ramsar sites;
- Special Areas of Conservation (SACs);
- Special Protection Area (SPA);
- Sites of Special Scientific Interest (SSSIs);
- Locally designated sites such as Local Nature Conservation Sites (LNCS) or Local Wildlife Sites (LWS); and
- Local Nature Reserves (LNR), National Nature Reserves (NNR) and RSPB and Wildlife Trust Reserves.

In addition, the search included woodlands listed on the Ancient Woodland Inventory within 2km.

¹The Wildlife Information Centre. Available online at: <http://www.wildlifeinformation.co.uk/>

² Amex Foster Wheeler (2015). Fallago Rig 2: Bat Survey report. Prepared for EDF Energy Renewables Ltd.

³ Scottish Borders Council (2017) 17/00226/FUL | Erection of a windfarm comprising of 7 wind turbines 126.5m high to tip, associated infrastructure, ancillary buildings and temporary borrow pits | Land North West Of Gilston Farm Heriot Scottish Borders. Available online: <https://eplanning.scotborders.gov.uk/online-applications/applicationDetails.do?activeTab=documents&keyVal=OLEKRMNTJS500>

⁴ LUC Consultants (2022) Dunside Wind Farm. EIA Scoping report. Prepared for EDF Energy Renewables Ltd. Available online: <https://dunsidewindfarm.co.uk/wp-content/uploads/2022/03/11838-Dunside-EIA-Scoping-Report-CLEAN.pdf>

⁵ DFREA MAGIC online GIS Tool. Available at: [MAGIC \(defra.gov.uk\)](https://magic.defra.gov.uk/)

⁶ SNH were renamed to NatureScot on 24 August 2020.

⁷ NatureScot Sitelink. Available at: [SiteLink \(nature.scot\)](https://sitelink.nature.scot/)

2.3 Nomenclature

Scientific (Latin) names are provided on first mention within the main body of the report.

3.0 Results

The information below summarises information on records of all protected/notable species (refer to **Appendix 01**), statutory designated sites within 10km of the Site (refer to **Figure 1**) and non-statutory sites, designations, and consultation zones.

3.1.1 Statutory Designated Sites

There are six statutory designated sites within 2km of the Site (see **Figure 1**) and are detailed in Table 3-1 below.

Table 3-1
Statutory Designated Sites within 10km of the Site

Site Name	Designation	Approximate Distance and Direction from Site Boundary	Reasons for Designation
River Tweed	SAC	Within site	Trophic range river/stream, Otter (<i>Lutra lutra</i>), Atlantic Salmon (<i>Salmo salar</i>), Brook lamprey (<i>Lampetra planeri</i>), River lamprey (<i>Lampetra fluviatili</i>), Sea lamprey (<i>Petromyzon marinus</i>), vascular plant, beetle and fly assemblage.
	SSSI		
Lammer Law	SSSI	800m N	Blanket bog and juniper scrub
Airhouse Wood	SSSI	4.5km SW	Upland oak ancient woodland
Danskine Loch	SSSI	7.5km N	Fens and fen woodland
Papana Water	SSSI	8.4km N	Upland mixed ash woodland
Fala Flow	Ramsar	8.9km	Blanket bog
	SSSI		

3.1.2 Non-statutory Designated Sites

No non-statutory designated sites or ancient woodlands were found within 2km of the site. Ancient woodlands were found within 10km (See **Figure 1**).

3.2 Protected and Notable Species

Detailed of species recorded within 2km of the proposed site can be found in Appendix 01, Table 1-1.

The desk study data (from the local records centre and relevant ecological reports), includes records for the following protected or notable species from within 2km of the Site:

- Six species of plants;

- 20 species of insect;
- One species of amphibian and one species of reptile;
- Four species of fish; and
- Eight species of mammals, including the legally protected species of Eurasian otter (*Lutra lutra*), Eurasian badger (*Meles meles*) and Eurasian red squirrel (*Sciurus vulgaris*).

No species of bat were recorded within 2km of the Site. Note that a forthcoming bat report for the Site will be reviewed at a future date when made available.

Within 10km of the Site, eight bat species were recorded, including Daubenton's bat (*Myotis Daubentonii*), Natterer's bat (*Myotis nattereri*), common noctule (*Nyctalus noctule*), Leisler's bat (*Nyctalus leiseri*), Nathusius' pipistrelle (*Pipistrellus nathusii*), common pipistrelle (*Pipistrellus pipistrellus*), Soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritusall*).

3.3 Invasive/Non-native Species

3.3.1 Flora

Records for three invasive plant species were included in the desk study data:

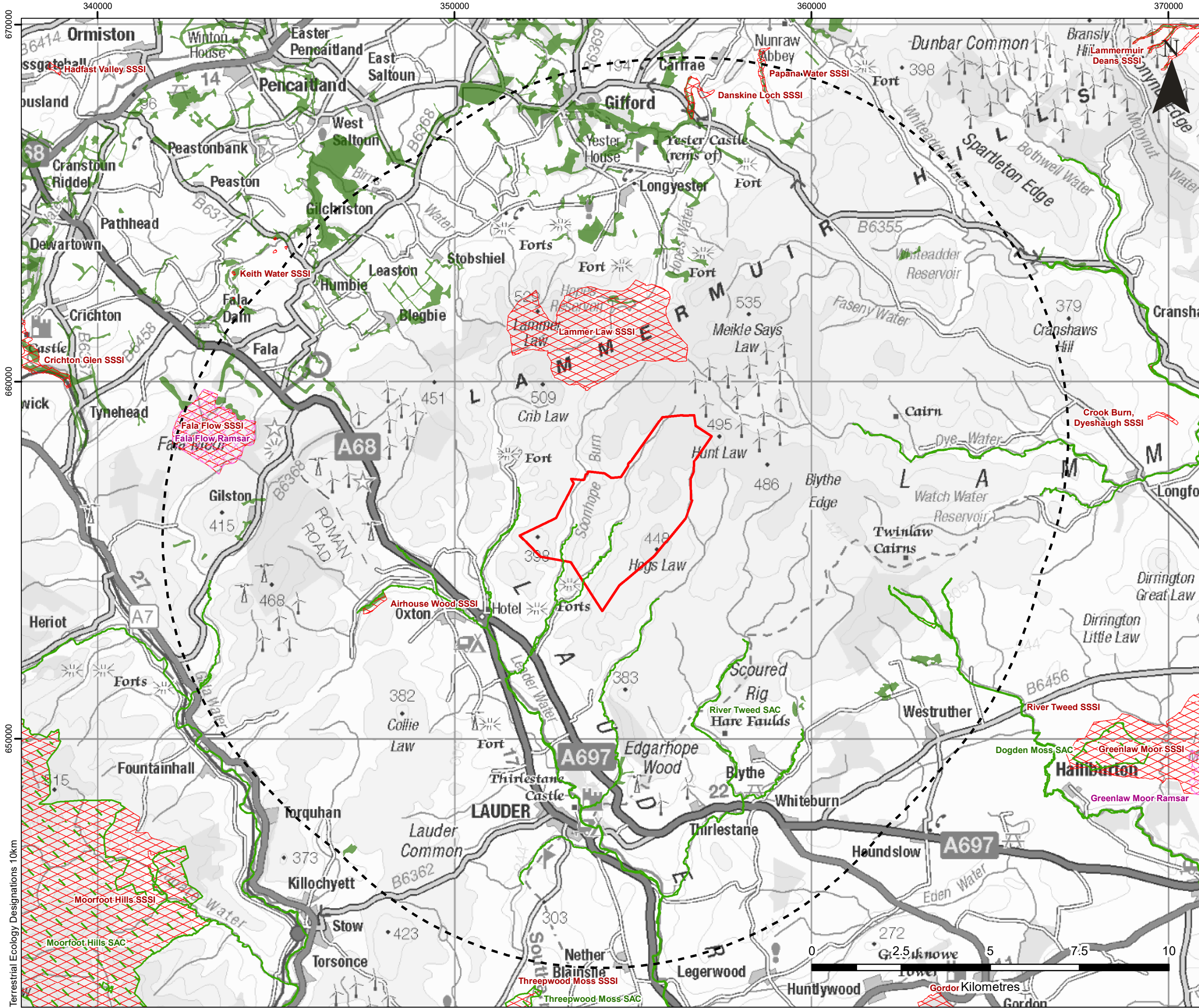
- Hybrid bluebell (*Hyacinthoides non-scripta x hispanica = H. x massartiana*);
- Seep monkeyflower (*Mimulus guttatus*); and
- Common snowberry (*Symphoricarpos albus*).

3.3.2 Fauna

Records of one invasive mammal species, Eurasian grey squirrel (*Sciurus carolinensis*), were included in the desk study data.







Figures

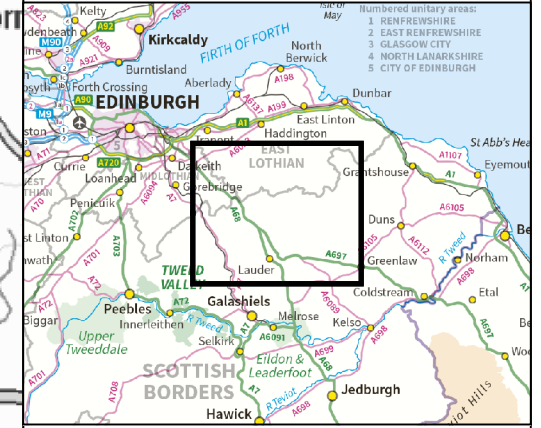
Figure 01: Statutory Designated Sites within 10km



NOTES
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LEGEND

-  Site Area
-  Site Area 10 km Buffer
-  Special Area of Conservation (SAC)
-  Ramsar
-  Site of Special Scientific Interest (SSSI)
-  Ancient Woodland



SLR
 4/5 LOCHSIDE VIEW
 EDINBURGH PARK
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**LONG CROFT WIND FARM
 ECOLOGY
 TERRESTRIAL ECOLOGY
 DESIGNATIONS WITHIN 10 KM
 FIGURE 1**

Scale 1:100,000 @ A3 Date NOVEMBER 2022

Appendices

APPENDIX 01

Protected/Notable Species Records

Table 1- 1 Summary of Protected/Notable Species Records

Species	Nearest Location to Site	Data Source	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
Flora				
<i>Diphysastrum alpinum</i>	0.3km W	Botanical Society of Britain and Ireland (vc81) 2000	24/06/2011	HSD5
<i>Gymnocarpium dryopteris</i>	Within site	Botanical Society of Britain and Ireland (vc81) 2000	07/08/2009	ScotBL
<i>Chenopodium bonus-henricus</i>	1km SW	Botanical Society of Britain and Ireland (vc82)	08/07/2009	RLGB.VU, ScotBL
<i>Euphrasia arctica subsp. borealis</i>	Within site	Botanical Society of Britain and Ireland (vc81) 2000	24/06/2011	RLGB.DD
<i>Euphrasia micrantha</i>	0.1km W	Botanical Society of Britain and Ireland (vc81) 2000	07/08/2009	RLGB.DD
<i>Sedum villosum</i>	0.2km W	Botanical Society of Britain and Ireland (vc81) 2000	24/06/2011	NS-excludes, RLGB.Lr(NT)
Invertebrates				
<i>Aricia artaxerxes</i>	0.4km W	Butterfly Conservation - Scottish Borders Butterflies	15/07/2014	RLGB.VU, ScotBL, UKBAP

Species	Nearest Location to Site	Data Source	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
<i>Coenonympha pamphilus</i>	Within site	Butterfly Conservation - Scottish Borders Butterflies	03/07/2019	PS(RO), RLGB.Lr(NT), ScotBL
<i>Acronicta rumicis</i>	1.4km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	07/07/2015	PS(RO), ScotBL(WB)
<i>Amphipoea oculea</i>	0.6km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	19/09/2015	PS(RO), ScotBL(WB)
<i>Arctia caja</i>	0.9km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	06/08/2015	PS(RO), ScotBL(WB)
<i>Caradrina morpheus</i>	2.3km S	Butterfly Conservation National Moth Recording Scheme (vc81)	25/07/2010	PS(RO), ScotBL(WB)
<i>Celaena haworthii</i>	Within site	Butterfly Conservation National Moth Recording Scheme (vc81)	22/08/2018	PS(RO), ScotBL
<i>Ceramica pisi</i>	0.5km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	13/09/2016	PS(RO), ScotBL
<i>Chiasmia clathrata</i>	2.2km S	Butterfly Conservation National Moth Recording Scheme (vc81)	08/07/2015	PS(RO), ScotBL(WB)

Species	Nearest Location to Site	Data Source	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
<i>Cirrhia icteritia</i>	2.3km S	Butterfly Conservation National Moth Recording Scheme (vc81)	19/09/2015	PS(RO), ScotBL
<i>Dasytopia templi</i>	1.6km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	27/10/2015	PS(RO), ScotBL(WB)
<i>Ecliptopera silaceata</i>	2.3km S	Butterfly Conservation National Moth Recording Scheme (vc81)	31/08/2015	PS(RO), ScotBL(WB)
<i>Entephria caesiata</i>	Within site	Butterfly Conservation National Moth Recording Scheme (vc81)	02/08/2018	PS(RO), ScotBL(WB)
<i>Eugnorisma glareosa</i>	0.5km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	22/08/2018	PS(RO), ScotBL(WB)
<i>Hydraecia micacea</i>	1.6km S	Butterfly Conservation National Moth Recording Scheme (vc81)	13/09/2016	PS(RO), ScotBL(WB)
<i>Spilosoma lubricipeda</i>	0.9km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	19/09/2015	PS(RO), ScotBL(WB)
<i>Stilbia anomala</i>	0.5km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	30/07/2018	PS(RO), ScotBL(WB)

Species	Nearest Location to Site	Data Source	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
<i>Trichiura crataegi</i>	0.5km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	22/08/2018	PS(RO), ScotBL(WB)
<i>Xanthorhoe decoloraria</i>	0.8km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	30/07/2018	PS(RO), ScotBL(WB)
<i>Xestia agathina</i>	0.8km SE	Butterfly Conservation National Moth Recording Scheme (vc81)	22/08/2018	PS(RO), ScotBL(WB)
Reptiles & Amphibians				
Newt sp <i>Triturus</i>	1.4km W	Mercer, J.	21/09/2003	
Adder <i>Vipera berus</i>	Within Site	ARG-UK and ARC Record Pool data	12/05/2012	Bern3, ScotBL, UKBAP, WCA5/9.1k/l
Mammals				
Brown hare	0.2km NW	Biological Re	08/07/2017	ScotBL, UKBAP
Eurasian badger <i>Meles Meles</i>	Within Site	TWIC	08/05/2015	Bern3, PBA
Eurasian otter <i>Lutra lutra</i>	2.2km S	SNH (NatureScot)	09/11/2011	Bern2, HabRegs2, HSD2p, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
Eurasian red squirrel <i>Sciurus vulgaris</i>	Within Site	SBBRC	09/1994	Bern3, RLGB.EN, ScotBL, UKBAP, WCA5/9.1k/l, WCA5/9.1t, WCA5/9.4.a, WCA5/9.4b, WCA5/9.4c
European rabbit <i>Oryctolagus cuniculus</i>	0.4km NW	BTO	05/05/2018	

Species	Nearest Location to Site	Data Source	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
Mountain hare	Within Site	BTO	23/06/2019	Bern3, HabRegs4, HSD5, RLGB.Lr(NT), ScotBL, UKBAP
Roe deer <i>Capreolus capreolus</i>	1.8km NW	BTO	23/06/2019	Bern3
Stoat <i>Mustela erminea</i>	2.5km SW	Recorder - Mercer, J.	08/12/2002	Bern3
Fish				
European eel <i>Anguilla anguilla</i>	0.7km W	Tweed Foundation	10/07/2003	OSPAR, RLGLB.CR, ScotBL, UKBAP, FFFCE
Atlantic salmon <i>Salmo salar</i>	0.5km E	Tweed Foundation	10/07/2003	Bern3, HabRegs4, HSD2p, HSD5, OSPAR, ScotBL, UKBAP, SFFA
Brown trout <i>Salmo trutta</i>	Within Site	SNH – Lamprey survey	25/08/2004	ScotBL, UKBAP, SFFA
Lamprey sp <i>Lampetra</i>	2.6 km W	Tweed Foundation	24/07/2001	SFFA

Table 1- 2 Summary of Bat Species within 10km of Site within the past 15 years

Species	Nearest Location to Site	Last Record	Protection/Conservation Status (see Table 3 for Definitions)
<i>Myotis spp.</i>	5.2km W	19/04/2018	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD2p, HSD4, RLGB.CR, RLGB.DD, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Myotis Daubentonii</i>	6.2km SE	04/08/2016	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, WCA5/9.4b, WCA5/9.4c
<i>Myotis nattereri</i>	3.9km W	06/08/2016	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, WCA5/9.4b, WCA5/9.4c
<i>Nyctalus noctula</i>	6.2km NW	19/08/2016	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Nyctalus leiseri</i>	9km W	2015	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Pipistrellus spp.</i>	6.2km W	25/03/2018	Bern2, Bern3, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, RLGB.Lr(NT), ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Pipistrellus pipistrellus</i>	5.2km W	19/04/2018	CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, WCA5/9.4b, WCA5/9.4c
<i>Pipistrellus nathusii</i>	9km W	2015	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Pipistrellus pygmaeus</i>	5.2km W	19/04/2018	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c
<i>Plecotus auritus</i>	6.2km NW	19/04/2018	Bern2, CMS_A2, CMS_EUROBATS-A1, HabRegs2, HSD4, ScotBL, UKBAP, WCA5/9.4b, WCA5/9.4c

APPENDIX 3

Invasive Non-native Species

Table 1- 3. Summary of Invasive non-native species recorded within 2km of the site in the past 15 years

Species	Nearest Location to Site	Last Record	International and National Status
Hybrid Bluebell <i>Hyacinthoides non-scripta x hispanica</i> = <i>H. x massartiana</i>	Within Site	20/06/2010	N/A
Seep Monkeyflower <i>Mimulus guttatus</i>	0.2km W	07/08/2009	N/A
Common Snowberry <i>Symphoricarpos albus</i>	3.9km SW	30/07/2009	N/A
Eurasian grey squirrel <i>Sciurus carolinensis</i>	0.4km W	27/11/2014	N/A

APPENDIX 4

Legislation and Guidance

Table 1- 4. Glossary of Codes for Species Protection/Conservation Status

Abbreviation	Full Designation	Type	Description
Bern-A3	Bern Convention Appendix 3	International	Special protection through 'appropriate and necessary legislative and administrative measures', of the listed wild fauna species.
FFFCE	The Freshwater Fish Conservation (Prohibition on Fishing for Eels) (Scotland) Regulations 2008	Scotland	Protection for European Eels
HabRegs2	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 2)	National Legislation	Schedule 2- European protected species of animals.
HabRegs4	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 4)	Legislation	Schedule 4- Animals which may not be taken or killed in certain ways.
HabRegs5	The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (Schedule 5)	National Legislation	Schedule 5- European protected species of plants.
Protection of Badgers Act (1992)	Protection of Badgers Act (1992)	National Legislation	The Protection of Badgers Act 1992 protects badgers from taking, injuring, killing, cruel treatment, selling, possessing, marking and having their setts interfered with, subject to exceptions.
ScotBL	Scottish Biodiversity List of species of principal importance for biodiversity conservation	National	The Scottish Biodiversity List is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation. The development of the list has been a collaborative effort involving a great many stakeholders.
SFFA	Salmon and Freshwater Fisheries (Consolidation) (Scotland) Act 2003	Scotland	Protection for salmonid and other freshwater fish in Scotland.
UKPS	UK Priority Habitats and Priority Species	UKPS	The UK List of Priority Species and Habitats contains 1150 species and 65 habitats that have been listed as priorities for conservation action. The UKPS is no longer extant but many of the priority habitats and species remain conservation priorities.

Abbreviation	Full Designation	Type	Description
WCA5/9.1k/l	Wildlife and Countryside Act 1981 (as amended in Scotland)(Schedule 5 Section 9.1 (killing/injuring))	National Legislation	Section 9.1. Animals which are protected from intentional killing or injuring.
WCA5/9.1t	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.1 (taking))	National Legislation	Section 9.1 Animals which are protected from taking.
WCA5/9.2	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.2)	National Legislation	Section 9.2 Animals which are protected from being possessed or controlled (live or dead).
WCA5/9.4a	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4, subdivision a)	National Legislation	Section 9.4 subdivision a - Animals which are protected from intentional damage or destruction to any structure or place used for shelter or protection.
WCA5/9.4b	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4b)	National Legislation	Section 9.4 Animals which are protected from intentional disturbance while occupying a structure or place used for shelter or protection.
WCA5/9.4c	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.4c)	National Legislation	Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed.
WCA5/9.5a	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.5a)	National Legislation	Section 9.5 Animals which are protected from being sold, offered for sale or being held or transported for sale either live or dead, whole or part.
WCA5/9.5b	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 5 Section 9.5b)	National Legislation	Section 9.5 Animals which are protected from being published or advertised as being for sale.
WCA8	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 8)	National Legislation	Plants which are protected from intentional picking, uprooting or destruction (Section 13 1a); selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a); advertising (any of these) for sale.
WCA9/INV	Wildlife and Countryside Act 1981 (as amended in Scotland) (Schedule 9)	National Legislation	Includes all non-native species listed in Schedule 9 (parts 1 and 2) covering animals and plants which may not be released or allowed to escape into the wild plus additional invasive non-native species.

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Appendix 11.1 MOD Proforma

Ministry of Defence Safeguarding

NOTICE TO WIND FARM DEVELOPERS

Please submit a completed application form for all new or revised onshore and offshore wind farm plans. Its purpose is to standardise the information provided and to expedite the assessment of your proposed wind farm development. Assessment is made against the safeguarding requirement of MOD assets and operations, including MOD radars, through evaluation of the possible effects on air traffic systems, defence systems and low flying needs.

WHAT TO DO WITH THIS FORM

Please provide as much detail as possible by **filling in the shaded areas**. If the specific turbine and/or exact positions have yet to be established then fill in the likely turbine size (hub height, rotor diameter) and boundary points as a minimum. On completion send copies to following address.

CONFIDENTIALITY

Unless directed otherwise, the Ministry of Defence will treat all pre-application information in confidence and the information will only be used or disclosed in accordance with the wishes of the confider.

Safeguarding
Defence Infrastructure Organisation
Kingston Road
Sutton Coldfield
B75 7RL

Or to the following email address:

DIO-Safeguarding-Wind@mod.uk

It is important that a copy of this form is retained for inclusion with subsequent planning applications at the same site. It should also be included with any subsequent planning application.

DISCLAIMER

On the basis of the information included in this form the MOD will carry out an assessment of the potential technical impact of the proposed development on defence interests. Whilst this consultation will identify the MOD assets and operations, if any, affected by the wind farm proposal, it will not necessarily be able to give definitive information regarding the operational impact of the development. This is because the operational impact of the development, in many instances, will depend on a number of variable constraints. These include the number of built and consented turbines, and the number of proposed turbine developments in the planning system in the vicinity of the proposal. As MOD cannot predict what this will be at any point in the future, in many instances, MOD will not be able to comment on whether a development will have an acceptable or unacceptable operational impact at the pre-application stage.

Wind Farm Pre-Application Consultation

Wind Farm Name
Longcroft

Developers reference	PSCOlcf009_220
Related/previous applications (at or near this site): Provide reference names or numbers	

Developer Information

Company name: RES Ltd

Address: Beaufort Court, Egg Farm Lane
Kings Langley, Hertfordshire
WD4 8LR

Contact: Sam Johnson

Telephone: 07799 903098

Facsimile: 01923 299462

e-mail: sam.johnson@res-group.com

Relevant Wind Turbine Details

Wind farm generation capacity (MW)	156	Number of turbines	24
---------------------------------------	-----	--------------------	----

Number of blades 3

Rotor diameter 170 Meters

Wind turbine hub height 135 Metres

Tower design (* delete as required) * Tubular

Comments

Are there any details or uncertainties that it may be helpful to add?

Wind Farm Pre-Application Consultation

Turbine Locations

Please provide as much information as you can. The position of every machine if available, the site boundary if not.

Copy this page as necessary to account for all turbines or boundary points

**Wind farm
Name & Address:**

Longcroft
North of Lauder
Berwickshire
Scotland

Turbine Number	Grid Ref	Easting	Northing	Latitude	Longitude
T1		353960	654124	55.778231003635000	-2.735554007512020
T2		354179	654639	55.782885594169400	-2.732157777716880
T3		353612	655050	55.786525046202500	-2.741256047583760
T4		353530	655556	55.791060140505300	-2.742660244103670
T5		354147	655424	55.789928453484700	-2.732802800928740
T6		355042	654881	55.785136689760200	-2.718438024480180
T7		355539	655292	55.788876500739600	-2.710580932157080
T8		354826	655756	55.792979391144400	-2.722020182535020
T9		354027	655993	55.795036812233200	-2.734807066014160
T10		353649	656378	55.798455329625700	-2.740904947888680
T11		353708	656908	55.803223855738300	-2.740048153356200
T12		354406	656547	55.800047961170400	-2.728859959289830
T13		355166	656490	55.799604153168200	-2.716728274074270
T14		355641	655815	55.793585906721000	-2.709039803723610
T15		356278	656046	55.795721004045700	-2.698908413287090
T16		355885	656421	55.799052528662900	-2.705238417051700
T17		356501	656695	55.801572366142400	-2.695469909018350
T18		356059	657035	55.804584117371200	-2.702574414803640
T19		355237	657222	55.806186806368800	-2.715714657792850
T20		355575	657715	55.810650738355500	-2.710398669387600
T21		356587	657413	55.808026444069000	-2.694208711526490
T22		356266	657865	55.812056241391200	-2.699396477347870
T23		356890	658206	55.815179332700700	-2.689495539141820
T24		356106	658494	55.817692297059900	-2.702054342817620