Oliver Forest Wind Farm

Environmental Impact Assessment Scoping Report

November 2022

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1. Introduction

1.1 Overview

1.1.1 Oliver Forest Wind Farm Limited (a company wholly owned by Statkraft UK Limited hereafter referred to as 'the Applicant') is planning to seek consent from Scottish Ministers under Section 36 of The Electricity Act 1989 (as amended) to construct and operate a wind farm and associated infrastructure (hereafter referred to as 'the Proposed Development') at land directly north-west of the A701 between Tweedsmuir and Glenbreck, approximately 12.5 km south of Broughton and approximately 19 km north of Moffat as shown on Figure 1.

1.1.2 It is anticipated that the Proposed Development would comprise of up to 10 turbines with associated infrastructure including: crane hardstandings; access tracks; cabling; temporary borrow pit(s); a temporary construction compound; a single substation including control building; a permanent anemometer mast and energy storage systems (if required). It is proposed that the blade tip height of the turbines would be up to 250 m. An indicative turbine layout is presented on Figure 2a. This is a preliminary turbine layout for the purposes of scoping, which considers the currently known ecological, ornithological, topographical, hydrological, hydrogeological, cultural heritage and landscape constraints at this early stage in the Environmental Impact Assessment (EIA) process. This indicative layout will be refined further during the EIA process. It should be noted that all turbines and infrastructure will be positioned on land north-west of the A701. No turbines or infrastructure will be positioned on land to the south-east of the A701.

1.1.3 The final operating capacity, turbine size and layout will be based on environmental and technical considerations, identified and evaluated during the scoping and EIA stage, along with input from feedback provided during public consultation and consultee responses and discussions.

1.1.4 This EIA Scoping Report seeks information from the Energy Consents Unit (ECU) in the form of an EIA Scoping Opinion. The EIA Scoping Opinion, consultation responses and the findings of the EIA process will be used to inform the final design of the Proposed Development and assess its predicted environmental effects. The results of the EIA will be presented in an Environmental Impact Assessment Report (EIA Report) that will be submitted with the Section 36 application to the Scottish Ministers.

1.2 The Applicant

1.2.1 The Applicant, Oliver Forest Wind Farm Limited, is a wholly owned subsidiary of Statkraft UK Limited (Statkraft).

1.2.2 Statkraft is a leading company in hydropower internationally and Europe's largest generator of renewable energy. The Group produces hydropower, wind power, solar power and supplies district heating. Statkraft is a global company in energy market operations. Statkraft has 4,800 employees in 20 countries. Across their UK businesses, Statkraft employ over 300 staff with offices in Scotland, England and Wales.

1.2.3 Statkraft has operated within the United Kingdom since 2006, developing, owning and operating renewable production facilities including wind farms in Wales and Scotland. Statkraft currently own or operate five onshore wind farms in Scotland, with a combined capacity of over 200 MW and has consent for two onshore wind farms in Scotland.

1.2.4 In addition, Statkraft are at the forefront of Greener Grid Parks, with an operational project in Keith and one currently in construction in Liverpool. These developments increase the amount of renewable energy transmitted through the National Grid by delivering grid stability and energy storage services. This forms part of the National Grids programme to decarbonise the grid by 2025.

1.2.5 Statkraft has invested £1.3 billion in the UK's renewable energy infrastructure and facilitated over 4 GW of new-build renewable energy generation through Power Purchase Agreements (PPAs).

1.2.6 Statkraft is well positioned to enable a net-zero future, Statraft is a solid, dependable partner, committed to playing a leading role in the UK energy market. The Proposed Development would make a very important contribution to Statkraft achieving this aim.

1.3 SLR Consulting Ltd

1.3.1 SLR Consulting Limited (SLR) has been appointed to undertake a Scoping study and prepare this EIA Scoping Report to accompany a request to the Scottish Ministers to adopt an EIA Scoping Opinion.

1.3.2 SLR is a Registered Environmental Impact Assessor and Member of the Institute of Environmental Management and Assessment (IEMA) and holder of the EIA Quality Mark (http://www.iema.net/qmark). SLR is also a Registered Organisation validated by the Institute for Archaeologists (IfA), a member of the Association of Geotechnical and Geoenvironmental Specialists, and a Landscape Institute (LI) Registered Practice.

1.3.3 The company has significant experience and expertise in the preparation of planning applications and undertaking EIA for a wide variety of projects. SLR's environmental specialists along with specialist consultants from MVGLA, David Bell Planning, Avian Ecology, AOC Archaeology Group, SSG Projects, Bow Acoustics, Pell Frischmann, WPAC and DGA Forestry have the skills and relevant competency, expertise and qualifications to undertake EIA for the Proposed Development.

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

1.4 Purpose of The EIA Scoping Report

1.4.1 Undertaking an EIA Scoping study is regarded as good practice and is considered to be an important step in EIA as it allows all parties involved in the process to agree on key environmental issues relevant to the Proposed Development and to agree on the methodology used for their assessment. The Scoping stage helps to engage the Scottish Ministers, relevant local planning authority (in this case Scottish Borders Council, SBC) and other stakeholders, at an early stage in the planning process; and ensures that key opinions, based on local understanding, are identified.

1.4.2 The specific aims of this EIA Scoping Report are to:

- identify the technical subject areas that may be subject to significant environmental effects as a result of the Proposed Development proceeding and therefore require further study;
- identify the technical subject areas that are unlikely to be subject to significant environmental effects and can be scoped out from further study;
- provide a basis for a consultation process to agree the scope and content of the EIA;
- provide a basis for agreeing methodologies for undertaking required studies, based upon currently available baseline data, site characteristics and best practice in individual technical disciplines; and
- provide all statutory consultees and stakeholders with an opportunity to comment on the Proposed Development at an early stage.

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

1.5 Environmental Impact Assessment

Introduction

1.5.1 The EIA will be undertaken in accordance with the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ("the EIA Regulations"), Electricity Act 1989 – Sections 36 and 37: Applications Guidance (Scottish Government, 23 February 2022), the best practice guidelines of the Institute of Environmental Management and Assessment (Guidelines for Environmental Impact Assessment) published in 2004; and the Scottish Natural Heritage (SNH) (now NatureScot) handbook on EIA 2018.

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

Approach to Scoping

1.5.3 This EIA Scoping Study has been based on a combination of desk based and site survey investigations. This has been complemented by the use of Geographic Information System (GIS) technology to collate and identify potential environmental receptors and environmental designations that may be affected by the Proposed Development. The GIS datasets comprise details of ecologically important sites, sites of archaeological and/or cultural heritage importance, landscape designations and other important receptors (watercourses etc.). The potential receptors and designated sites that have been identified are shown on Figures 4, 5, 7, 8, 10, 11 and 12.

1.5.4 The findings of the desk-based work and the GIS work have been augmented by some site reconnaissance and survey work, as well as discussion with consultees. Site work undertaken to date includes 9 months of ornithological surveys, ecology habitat and protected species surveys, a Phase 1 peat probing exercise, a cultural heritage visit of the site and surroundings and a landscape and visual site appraisal.

Potential Environmental Effects

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

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

(3) The factors are —

(a) population and human health;

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

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

(d) material assets, cultural heritage and the landscape.

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

1.5.6 Previous experience of other wind farm development sites, combined with the EIA requirements, the knowledge of the site and possible effects of the Proposed Development, has led to the identification of the following topics for consideration in the EIA. A summary of known baseline conditions of relevance, predicted effects, any outline mitigation measures that can be recommended at this stage and the proposed scope for the EIA is provided for each of the following topic areas in Sections 4.0 to 14.0:

- Landscape and Visual;
- Ecology;
- Ornithology;
- Cultural Heritage;
- Noise;
- Geology, Hydrology, Hydrogeology and Peat;
- Traffic and Transport;
- Socio-economics, Tourism and Recreation;
- Aviation and Radar;
- Shadow Flicker; and
- Other Considerations including Telecommunications and Climate

1.5.7 It is proposed that changes to the forestry structure as a result of implementing the Proposed Development would be set out in a Technical Appendix to the EIA Report rather than in a stand-alone forestry chapter. Any necessary felling would be considered as part of the Proposed Development. It is likely that there will be a requirement for compensatory planting measures which will be undertaken in line with best practice and to comply with the Scottish Government's Control of Woodland Policy.

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

1.5.9 The technical assessments will provide a detailed assessment of potential impacts, identification of mitigation measures and description of the significance of residual effects (those remaining after the mitigation measures have been implemented). The EIA will identify direct and indirect effects, positive (beneficial) and negative (adverse) effects, cumulative effects, and seek to identify, as far as possible, the duration of such effects, whether short term, long term, permanent, temporary, periodic, etc. during the construction and operational phases of the Proposed Development. The results of each technical assessment will be reported in the EIA Report structured as follows:

- Volume 1 – Non-Technical Summary (NTS)
- Volume 2 – Written Statement
- Volume 3 – Figures and Visualisations

- Volume 4 – Technical Appendices
- Volume 5 – Confidential information (if required)

Scoping Consultation

1.5.10 This EIA Scoping Report is issued to Scottish Ministers via the Energy Consents Unit (ECU). The ECU will then consult with key consultees and stakeholders before forming its EIA Scoping Opinion. It is anticipated that the agencies and bodies to be consulted will include those listed in Appendix 1; this list is not exhaustive and other agencies will be consulted during the EIA as and when required.

1.5.11 The purpose of the consultation is to identify:

- key issues and concerns;
- issues of environmental importance that may be affected by the Proposed Development and need to be considered in an EIA;
- methodolgies for undertaking studies and agreement of these methodologies;
- existing information that will be of assistance in the assessment of the environmental effects; and
- the need for further consultation.

Public Consultation

1.5.12 The Applicant is committed to undertaking meaningful consultation with the local community and stakeholders. During the development period, it is expected that engagement will include the use of a dedicated project website, mail drops and hybrid public exhibitions (virtual and in person) to distribute information and respond to the public, along with emails, phone calls and meetings (in person and/or virtual) with Community Councils. Consideration will be given to ensure that engagement methods reflect varying levels of access to technology.

1.5.13 The Applicant will contact local community councils, detailed on the consultee list around the time the EIA Scoping Report is published on the ECU Website, to introduce themselves, the project and to request the opportunity to meet with local community councils, should they wish. Following this, it is anticipated that the first round of in person public exhibitions will be held in Q1 2023. This will provide an opportunity for the public to learn about the Proposed Development directly from the project team in attendance and through information panels and visualisations present at the public exhibition venues. It will be an opportunity for the Applicant to encourage and hear first-hand feedback on the Proposed Development and to help shape development throughout the design process and delivery of the EIA Report.

1.5.14 The second public exhibition which is proposed to be held in late 2023 will provide the public with an update on progress, how feedback from stakeholders may have influenced the proposal, and provide further details about the proposed conceptual design of the Proposed Development, an update on the EIA, and further information on community benefits and submission timescales.

2. Proposed Development

2.1 Site Description

2.1.1 The site, centred on NGR 308275, 624390, is located in the Tweed Valley in the Southern Uplands of Scotland within the administrative boundary of SBC (Figure 1). The site is divided in two by the A701. The site comprises approximately 365 hectares (ha) of plantation forestry and open moorland, spread across the extent of three named hills, Upper Oliver Dod (490 m Above Ordnance Datum (AOD)); Weird Law (447 m AOD); and Glenmuck Height (472 m AOD). Elevation within the site decreases steeply from the north-east peak of Upper Oliver Dod to the River Tweed (south-east), at approximately 260 m AOD. The terrain is distinctly more elevated north-west of the site at Gathersnow Hill (688 m AOD) and Coombe Hill (640 m AOD).

2.1.2 The portion of the site located to the south-east of the A701 adjoins the River Tweed. A number of small tributary watercourses flow into the Tweed from the site including the Gala Burn, Rigs Burn, Bield Burn, Long Slack and Hallow Burn. Other tributaries, including the Menzion Burn and Glenrusco Burn, drain into the Tweed valley from the adjacent slopes of Cockiland Hill, Muckle Knowe Hill and the Rig. The Fruid, Talla and Meggett Reservoirs lie at approximate distances of 2 km, 1.7 km and 8 km (respectively) to the south and east of the A701.

2.1.3 The immediate surrounding area of the site is rural in nature, and residential properties are restricted to the village of Tweedsmuir and the lower elevations of the Tweed valley in proximity of the A701. There are several residential properties clustered just north of the four-way road junction at Tweedsmuir Outdoor Centre, east of the site boundary, and several others between Beild Burn and Tweedsmuir, north-east of the site boundary.

2.1.4 Outwith Tweedsmuir, the remote setting of the site means there are no other settlements within 10 km of the site. The village of Broughton is located approximately 12.5 km north of the site and provides services and facilities to the local area including a post office, village store and Broughton Primary School. The town of Moffat in Dumfriesshire (approximately 19 km south) according to Scottish Government statistics, has a population in the region of 3,770 and is separated by the expansive upland hills comprising the Southern Uplands. The transport network in the wider vicinity of the site and Southern Uplands are very much limited to the A74 motorway, A702, A701 and A708. These major roads all roughly follow a WSW-ESE alignment from Dumfries to Edinburgh and Selkirk, through the centre of the Southern Uplands range.

2.1.5 There are no statutory or non-statutory ecological designations within the site boundary. However, the River Tweed, which adjoins the site and into which tributaries of the site drain, is a Special Area of Conservation (SAC). Salmon, otter and aquatic vegetation are a primary reason and lamprey a qualifying reason for this designation status. The River Tweed is also designated as a Site of Special Scientific Interest (SSSI). Furthermore, salmon and lamprey are UK Biodiversity Action Plan species listed as priorities for conservation.

2.1.6 Other nearby natural heritage designations (within 10 km) are shown on Figures 7 and 8 and include:

- Tweedsmuir Hills SSSI, approximately 2.2 km to the north-east.
- Moffat Hills SAC, approximately 9.2 km to the south-east.
- Craigidilly SSSI, approximately 8.8 km to the south-east.

2.1.7 There are three Scheduled Monuments within the site boundary which are shown on Figure 10. These are:

- Weird Law, Platform Settlement (SM3529).
- Menzion Farm, Enclosed Cremation Cemetery (SM2702).
- Menzion Farmhouse, Two Enclosed Cremation Cemeteries (SM2748).

2.1.8 A number of Scheduled Monuments are also in close proximity outwith the site and in the wider area, the closest of which are Oliver Castle fort (SM3144) and Oliver Crags fort (SM2947). In addition, there are six Category B Listed Buildings and two Category C Listed Buildings within 5 km of the Site.

2.1.9 The Proposed Development does not lie within any nationally designated landscapes. The Upper Tweeddale National Scenic Area (NSA) covers approximately 12,770 ha and is located approximately 4 km north-west of the Proposed Development and encompasses the expanse including Broughton to Peebles north-east of the Proposed Development. Talla-Hart Fell Wild Land Area (WLA) lies approximately 5 km to the south of the Proposed Development.

2.1.10 The Proposed Development lies within the Tweedsmuir Uplands Special Landscape Area (SLA). SLAs are a local landscape designation and are areas that are considered to have particular landscape qualities that make them more sensitive to development. The designation statement for the Tweedsmuir Uplands describes the SLA as "*a highly scenic area of dramatic landform"* and having *"a significant degree of wildness'…..'The large reservoirs are the only substantive human incursion, but add variety rather than reducing remoteness*."

2.1.11 The predominant Landscape Character Types (LCTs) of the site are characterised as 'Upland Valley with Pastoral Floor' and 'Southern Uplands Borders'; whereby the indicative layout will mostly utilise the elevated fraction of the site known as Southern Uplands Borders LCT.

2.2 Cumulative Context

2.2.1 The cumulative wind farm context is shown on Figure 3. Cumulative assessment will be undertaken for wind farm developments that are operational, consented or in the planning system. Developments that are at Scoping stage would not be included.

2.2.2 The nearest operational wind farms to the Proposed Development are:

- Glenkerie Wind Farm, near Biggar – approximately 2.2 km north of the site, 11 turbines with a maximum height to blade tip between 100 m and 118 m; and
- Clyde Wind Farm and Extensions, near Abington – approximately 2.1 km west of the site, total of 206 turbines with height to blade tip between 125 m and 142 m.

2.2.3 There are four consented wind farms within 15 km of the site:

- Glenkerie Extension, near Biggar – approximately 2.2 km north of the site, 6 turbines with a height to blade tip of 100 m;

- Whitelaw Brae Wind Farm, near Moffat – approximately 2.3 km south of the site, 14 turbines with a height to blade tip of 133.5 m;
- Priestgill Wind Farm (variation), near Abington – approximately 10.5 km west of the site, 7 turbines with a height to blade tip between 180 m and 200 m; and
- Crookedstane Wind Farm, south-west of Clyde Wind Farm – approximately 14 km south-west of the site, 4 turbines with a height to blade tip of 126.5 m.

2.2.4 The proposed Grayside Wind Farm, the closest proposed turbines of which are approximately 2 km north-west of the site extends to the north and north-east of the Clyde Extension Wind Farm. It is a 21 turbine development (with a maximum height to blade tip of 200 m) currently being considered by the Scottish Ministers.

2.2.5 It is proposed that non-wind farm proposals be excluded from the cumulative assessment, unless the ECU can refer the Applicant to specific proposals in close proximity to the development that should be included (following consideration of input from consultees).

2.3 Proposed Development Description

2.3.1 The Proposed Development is being designed to maximise the production of renewable energy generation, whilst balancing the Applicant's duty to minimise environmental effects. This is in the context of the Scottish Government's declaration of a 'climate emergency' in May 2019 and the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019, which commits Scotland to a target of net zero emissions of all greenhouse gases by 2045, with interim targets to reduce emissions by 56 % by 2020, 70 % by 2030 and 90 % by 2040.

2.3.2 Initial feasibility and design work indicates that the site has the potential to accommodate in the region of 10 turbines of up to 250 m to blade tip height. An indicative layout (Figures 2a and 2b) has been prepared to illustrate how this number and scale of turbines could potentially be accommodated on-site.

2.3.3 In addition to the turbines, the associated infrastructure would include the following components:

- permanent foundations supporting each turbine;
- new on-site access tracks providing access from the public highway and to all turbine locations;
- widening/improvement works to existing tracks on-site;
- crane hardstandings adjacent to each turbine;
- underground cabling linking each turbine with the substation control building;
- a substation compound including a control building and energy storage systems if required;
- temporary borrow pit search areas for the extraction of construction aggregates on-site;
- a permanent anemometer mast; and
- a temporary site construction compound.

2.3.4 The EIA Report will provide a chapter detailing the design process followed and the reasonable alternatives considered in developing the Proposed Development layout and setting the physical parameters of the proposed turbines.

Wind Turbines

2.3.5 A candidate turbine manufacturer and model will be selected for each technical and environmental discipline for the purposes of the EIA. A competitive procurement process will be undertaken, should consent be forthcoming and prior to construction, to select the final turbine that would be installed on-site. The final turbine selected would have a blade tip height of up to 250 m.

2.3.6 The specification of the turbine would be a typical horizontal axis design, comprising of three rotor blades, a hub and a nacelle. The tower would be tubular and tapered in design and finished in a light grey semi-matt colour. The blades will be made from fibre-reinforced epoxy and the tower will be constructed from steel.

Substation

2.3.7 The Proposed Development would include a new on-site substation and control building. The substation and control building is anticipated to be a single storey building with a pitched roof. The building would also house switchgear, metering, protection and control equipment.

Electrical Layout

2.3.8 Underground cables would link the transformers to the on-site substation. Detailed construction and trenching specifications would depend on ground conditions at the site.

Anemometry Masts

2.3.9 At least one permanent anemometry mast would be required to provide key wind climatology statistics including; mean wind speed, wind direction, exceedance values, air density, wind shear and turbulence intensity. These masts typically reflect turbine hub height.

Access

2.3.10 The turbine components would be delivered to the site using the existing public road network, delivered from the port of King George V docks on the Clyde. It is anticipated that access to the site will be gained from the existing forestry access point from the A701.

Site Tracks

2.3.11 Each turbine would require access via a site track for construction, operation and decommissioning purposes. The construction of the track would depend upon local ground conditions: where the ground is firm, or where gradients are steep, the track would be of cut and fill type construction; where the ground is soft, i.e., in areas of peat, the track would have a floating construction. The site tracks would have a crest width of 5 m wide, with an additional 0.5 m on either side. Site tracks would widen at corners and passing places. Stone would be required for various purposes, primarily track construction, and this is likely to be sourced from on-site borrow pit(s).

Borrow Pits

2.3.12 It is anticipated that borrow pit search areas would be included as part of the Proposed Development.

2.3.13 A review of the suitability of materials on the site will be undertaken and borrow pit search areas will be identified as part of the Borrow Pit Assessment. If appropriate areas are identified, a description of likely materials, estimated borrow pit size and the ability to supply appropriate materials for the construction of the Proposed Development will be included. Final detailed design of the borrow pits would be provided through planning conditions after geotechnical investigation prior to construction.

2.3.14 Material for the construction of on-site access tracks would, where possible, be won on-site either derived from existing borrow pits, as tracks are constructed or from new borrow pits. This approach would minimise transportation movements of stone to site. The location and design of borrow pits will be defined as part of the EIA process and site design.

Grid Connection

2.3.15 A high-level assessment of the proposed grid connection will be provided in the EIA Report, although the grid connection will be subject to a separate consent under Section 37 of the Electricity Act 1989. Grid connection options are currently under investigation including overhead lines and underground cable.

Battery Storage

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

2.3.17 The Applicant will consider the prospective long-term use of the energy produced, in order to accommodate the requirements of a decarbonised energy provision. The application will include detail on how the development is likely to contribute to the Scottish Government Energy Efficient Scotland roadmap, including providing clean and secure electricity.

2.4 Forestry

2.4.1 The site contains approximately 250 ha of plantation forestry. As part of the Proposed Development, some felling will be required to accommodate turbines and associated infrastructure.

2.4.2 In the UK there is a strong presumption against permanent deforestation unless it addresses other environmental concerns. In Scotland, such deforestation is dealt with under the Scottish Government's Policy on Control of Woodland Removal (Forestry Commission Scotland, 2009). The purpose of the policy is to provide direction for decisions on woodland removal in Scotland. It will be essential that the Proposed Development addresses and satisfies the requirements of the Policy. The requirements of the Policy will be addressed within a forestry Technical Appendix whilst ensuring that the forestry proposals do not compromise the wind flow and yield of the Proposed Development. The integration of the Proposed Development into the forest design plan will be a key part of the development process.

2.4.3 As part of the application, compensatory planting measures will be developed in consultation with the relevant consultees to ensure that any proposed changes to the woodlands are appropriate and address the requirements of the Control of Woodland Removal Policy.

2.5 Construction Works

2.5.1 Typical construction activities and work methods will be set out in the EIA Report in accordance with the Good practice during Wind Farm Construction Guidance (NatureScot, 2019). Information will also be provided on an indicative construction programme, construction traffic generation and construction phasing. The EIA Report will also contain details of appropriate environmental management measures, including pollution prevention measures (in line with Scottish Environment Protection Agency (SEPA)'s Pollution Prevention Guidelines (PPGs) and Guidance for Pollution Prevention (GPPs)), and waste minimisation and management measures.

2.6 Proposed Development Lifecycle and Decommissioning

2.6.1 Once constructed it is anticipated that the Proposed Development would have an operational life of approximately to 40 years.

2.6.2 At the end of the operational life, the Proposed Development would be decommissioned or an application may be submitted to extend the life or repower the Proposed Development. The decommissioning period would take up to one year. Decommissioning effects would likely be similar to those assessed during construction.

2.6.3 The final decommissioning approach would be agreed with SBC and other appropriate regulatory authorities in line with best practice guidance and requirements of the time. This would be done through the preparation and agreement of a Decommission and Restoration Plan (DRP). Should the project gain consent, it is common for the financial provision for decommissioning to be in place before construction commences.

2.6.4 Over the period of operation of the Proposed Development it is recognised that there are likely to be changes in legislation and guidance, environmental designations, the status/condition of sensitive environmental receptors and stakeholder objectives that may affect decommissioning and restoration methodologies. The detailed DRP would reflect the scientific ideas and best practice current at the time of decommissioning and restoration.

2.6.5 Therefore, an assessment of the decommissioning of the Proposed Development will not be undertaken as part of the EIA. At this stage the future baseline conditions cannot be predicted accurately, the proposals for repowering/decommissioning are unknown, and the future regulatory context is unknown. Decommissioning is, therefore, scoped out for all environmental topics and is not discussed further.

3. Planning and Energy Policy Context

3.1 Introduction

3.1.1 This section presents a summary of relevant policy and guidance documents that will be taken into consideration to help inform the rationale for and design of the Proposed Development.

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

3.1.3 The EIA Report will also concisely reference climate change policy and the contribution of the Proposed Development to the UK and Scottish Government's climate change goals and policy targets.

3.2 Electricity Act 1989

3.2.1 The Proposed Development will be the subject of an application under Section 36 of the Electricity Act 1989 ("the 1989 Act"). As part of the Section 36 application process, the applicant will request that the Scottish Ministers issue a Direction under s.57(2) of the Town and Country Planning (Scotland) Act 1997 ("the 1997 Act") that deemed planning permission be granted for the Proposed Development.

3.2.2 An application under Section 36 of the 1989 Act for consent for the construction of an electricity generating station whose capacity exceeds 50 MW is significantly different from an application for planning permission for a similar station whose capacity is less than 50 MW.

3.2.3 Section 25 of the 1997 Act does not apply to the determination of applications under Section 36 of the 1989 Act as confirmed in the case of William Grant & Sons Distillers Ltd v Scottish Ministers [2012] CSOH 98 (paragraphs 17 and 18).

3.2.4 In addition, there are potentially certain environmental duties in relation to Preservation of Amenity and Fisheries Provisions in Schedule 9, paragraph 3 that are likely to apply.

3.2.5 The Applicant does not yet hold a generation licence and therefore the statutory duties set out in paragraph 3 of Schedule 9 to the 1989 Act will not apply to the Applicant when formulating proposals for consent under Section 36 of the 1989 Act. In that respect, the Applicant will have full regard to the matters set out in paragraph 3(1)(a) of Schedule 9, through the EIA process.

3.2.6 The EIA Report will show how various environmental factors have been considered in the formulation of the application.

3.2.7 The Scottish Ministers are obliged to consider whether the Applicant has provided sufficient information to enable them to address their duties under sub-paragraph 3(1)(a) of Schedule 9 to the 1989 Act. The duty on the Ministers is to have regard to the matters specified in Schedule 9, not a development management test.

3.2.8 In considering this application, the overall statutory and regulatory framework within which the Proposed Development is situated should be assessed. The statutory Development Plan is a material consideration which should be taken into account in the round with all other relevant material considerations. It is important to note however, that Section 25 of the 1997 Act is not engaged as there is no 'primacy' of the Development Plan in an application made under the 1989 Act.

3.3 Project Need and The Renewable Energy Policy Framework

3.3.1 The burning of fossil fuels to produce electricity is a major contributor to climate change through the release of atmospheric carbon dioxide (CO_2) and other harmful gases known collectively as greenhouse gases.

3.3.2 The Proposed Development relates to the generation of electricity from renewable energy sources and comes as a direct response to national planning and energy policy objectives. The clear objectives of the UK and Scottish Governments will be summarised, in relation to encouraging increased deployment and application of renewable energy technologies, consistent with sustainable development policy principles and national and international obligations on climate change.

3.3.3 The Scottish Government's Energy Strategy (2017) set a target for the equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied from renewable sources. As heat and transport become decarbonised, demand for electricity from renewable sources can be expected to increase.

3.3.4 Further deployment of renewable energy generating technology will be required throughout the following years in order to meet targets. As a mature technology, onshore wind has a continuing and important role to play, as confirmed by national planning and energy policy and most recently in the Revised Draft of National Planning Framework 4 (NPF4).

3.3.5 The Scottish Government's Energy Strategy and Onshore Wind Policy Statement (2017) (OWPS) set out inter alia that onshore wind is to play a vital role in Scotland's future – helping to substantively decarbonise electricity supplies and the technology is expected to play a material role in growing the economy.

3.3.6 Scotland's overarching statutory target is to achieve a 100% reduction in greenhouse gas emissions to net-zero by 2045, with interim targets of 75% by 2030 and 90% by 2040, now provided for in the Climate Change (Scotland) Act 2009 as amended by the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019 ("2019 Act") which came into force in March 2020.

3.3.7 The Scottish Government declared a climate emergency on 14 May 2019. The declaration of an 'emergency' is a reflection of both the seriousness of climate change and its potential effects and the need for urgent action to cut carbon dioxide emissions. The declaration is a material consideration which will be referenced.

3.3.8 The draft OWPS was published in 2021 and key points which can be drawn from it include:

- The central requirement for a rapid transition to net zero and the crucial role of further onshore wind development in achieving legally-binding targets, especially through the 2020s.
- Unequivocal Scottish Government policy support for the future role of onshore wind.
- The urgency of the Climate Emergency and the scale of the necessary ambition – there is express recognition in the draft OWPS of the need for 'meaningful action over the next 12 months', 'further and faster' delivery and that a 'consistently higher rate of onshore wind, and other renewables capacity, will be required year-on-year'. The scale of deployment required to be operational before 2030 is very considerable and way beyond what has happened in the past.
- The draft OWPS is clear (paragraph 4.4.2) that the 'most cherished landscapes' must be afforded the necessary protections, but climate change and net-zero require decisive action and this will inevitably change how Scotland looks. Combatting climate change requires modern and efficient turbines (which paragraph 2.2.3 of the draft OWPS confirms means taller turbines).

3.3.9 A large increase in the deployment of this renewable energy technology is supported through a number of UK level policy documents including the latest UK Energy White Paper (2020) and Net Zero Strategy (2021). Scottish Government policy commitments are also clear – most recently expressed in the draft OWPS and in the Revised Draft NPF4 which will be material to the energy and national planning policy positions to be considered for the determination of the application.

3.4 National Planning Policy and Guidance

National Planning Framework for Scotland (2014)

3.4.1 The National Planning Framework 3 (NPF3) is a long-term strategy for Scotland and is the current spatial expression of the Government's Economic Strategy and plans for development and investment in infrastructure. NPF3 identifies national developments and other strategically important development opportunities in Scotland. NPF3 will be replaced by NPF4 when it comes into force.

Scottish Planning Policy (2014)

3.4.2 Scottish Planning Policy (SPP) sets out national planning policies which reflect the Scottish Ministers' priorities for operation of the planning system and for land use and development. It aims to promote a sustainable place, supporting economic growth, regeneration and appropriately designed development.

3.4.3 The SPP principal policies include a presumption in favour of development that contributes to sustainable development, consideration of renewable energy, sustainable economic development, rural development, historic environment, landscape and natural heritage, transport, flooding and drainage and waste management. As with NPF3, SPP will be replaced by NPF4 when it comes into force.

Revised Draft National Planning Framework 4 (2022)

3.4.4 NPF4 has been subject to consultation and committee scrutiny over the last year and was first laid before the Scottish Parliament in November 2021. On 08 November 2022 the revised NFP4 was laid before Parliament for approval. It is accompanied by an Explanatory Report which explains how the Scottish Government has considered responses to the initial draft NPF4 received during the preceding period of Parliamentary scrutiny and consultation, in line with its statutory duty. There is no statutory requirement to consult further, and the Scottish Government has confirmed that no further consultation will take place.

3.4.5 NPF4 will form part of the statutory development plan on adoption and publication (assuming the Scottish Ministers commence the necessary provisions in the Planning Act). Until then, the Revised NPF4 is a material consideration in development management decision making.

3.4.6 Section 13 of the 2019 Act amends Section 24 of the 1997 Act regarding the meaning of 'development plan', such that for the purposes of the 1997 Act, the development plan for an area is taken as consisting of the provisions of:

- the National Planning Framework;
- any Strategic Development Plan; and
- any Local Development Plan.

3.4.7 NPF4 introduces centralised development management policies which are to be applied Scotland wide, and also provides guidance to Planning Authorities with regard to the content and preparation of LDPs.

3.4.8 Annex A adds that NPF4 is required by law to contribute to six outcomes. These relate to meeting housing needs, health and wellbeing, population of rural areas, addressing equality and also "meeting any targets relating to the reduction of emissions of greenhouses gases, and, securing positive effects for biodiversity".

3.4.9 The spatial strategy is to support the delivery of:

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

3.4.10 Page 6 of NPF4 addresses the delivery of sustainable places. Reference is made to the consequences of Scotland's changing climate, and it states, inter alia:

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

3.4.11 Part 2 of NPF4 (page 36) addresses national planning policy by topic under the three themes of sustainable, liveable and productive places.

3.4.12 NPF4 continues the approach set out in NPF3 of identifying national developments. Proposed National Development 3 (ND3) is entitled "Strategic Renewable Electricity Generation and Transmission Infrastructure"

3.4.13 Page 103 of NPF4 describes ND3 and it states:

"*This national development supports renewable electricity generation, repowering, and expansion of the electricity grid.*

A large and rapid increase in electricity generation from renewable sources will be essential for Scotland to meet its net zero emissions targets. Certain types of renewable electricity generation will also be required, which will include energy storage technology and capacity, to provide the vital services, including flexible response, that a zero carbon network will require. Generation is for domestic consumption as well as for export to the UK and beyond, with new capacity helping to decarbonise heat, transport and industrial energy demand. This has the potential to support jobs and business investment, with wider economic benefits.

The electricity transmission grid will need substantial reinforcement including the addition of new infrastructure to connect and transmit the output from new on and offshore capacity to consumers in Scotland, the rest of the UK and beyond. Delivery of this national development will be informed by market, policy and regulatory developments and decisions."

3.4.14 The location for ND3 is set out as being all of Scotland and in terms of need it is described as:

"*Additional electricity generation from renewables and electricity transmission capacity of scale is fundamental to achieving a net zero economy and supports improved network resilience in rural and island areas*."

3.4.15 Reference is made to the designation and classes of development which would qualify as ND3, and it states in this regard:

"*A development contributing to 'Strategic Renewable Electricity Generation and Transmission' in the location described, within one or more of the Classes of Development described below and that is of a scale or type that would otherwise have been classified as 'major' by 'The Town and Country Planning (Hierarchy of Developments) (Scotland) Regulations 2009', is designated a national development:*

(a) on and off shore electricity generation, including electricity storage, from renewables exceeding 50 megawatts capacity;

(b) new and/or replacement upgraded on and offshore high voltage electricity transmission lines, cables and interconnectors of 132kv or more; and

(c) new and/or upgraded Infrastructure directly supporting on and offshore high voltage electricity lines, cables and interconnectors including converter stations, switching stations and substations."

3.4.16 The Proposed Development would therefore have national development status as per these provisions of NPF4.

3.4.17 In terms development management and the application of the national levels policies, NPF4 states:

"*The policy sections are for use in the determination of planning applications. The policies should be read as a whole. Planning decisions must be made in accordance with the development plan, unless material considerations indicate otherwise. It is for the decision maker to determine what weight to attach to policies on a case by case basis. Where a policy states that development will be supported, it is in principle, and it is for the decision maker to take into account all other relevant policies*".

3.4.18 In terms of 'sustainable places' relevant policies include the following:

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

3.4.19 For the consideration of onshore wind energy development, Policy 11 is the lead policy.

3.4.20 The revised NPF4 contains various policies of relevance and is expected to come into force in December 2022 or early 2023. It will therefore be a key policy consideration for the determination of the Proposed Development as part of the statutory Development Plan.

3.5 The Development Plan & Supplementary Guidance

The Development Plan

3.5.1 The planning policy context applicable to the site will be taken into account in the iterative EIA design process. The relevant planning policy framework will also be described in the EIA Report.

3.5.2 The statutory Development Plan for the site comprises:

- The Strategic Development Planning Authority for Edinburgh and South East Scotland Strategic Development Plan (SDP) (adopted 27 June 2013) (SESplan); and
- The Scottish Borders Local Development Plan (adopted 12 May 2016) (LDP).

3.5.3 The policies from SESplan are of limited relevance for the consideration of the Proposed Development and include:

- Policy 10 'Sustainable Energy Technologies'; and
- Policy 1B 'The Spatial Strategy: Development Principles'.

3.5.4 The LDP is over five years old. The replacement SDP known as 'SDP2' has been through the Examination process. However, following Examination the Scottish Ministers rejected the proposed SDP2 and its provisions are of no relevance.

3.5.5 The LDP is under review and a Proposed LDP was presented to the Council in September 2020. The Proposed Plan was the subject of public consultation which ended on 25 January 2021. The Plan is now progressing to Examination (to address outstanding objections) in 2022 and is not likely to be adopted until late 2023 / early 2024. No or only very limited weight can be placed on its draft provisions at this time.

3.5.6 The policies from the LDP relevant to the consideration of the Proposed Development and for the purposes of a comprehensive policy assessment (which as noted will be contained in a separate Planning Statement) include:

- PMD1 Sustainability;
- PMD2 Quality Standards;
- ED9 Renewable Energy Development;
- ED10 Protection of Prime Quality Agricultural land & Carbon Rich Soil;
- HD3 Protection of Residential Amenity;
- EP1 International Nature Conservation Sites and Protected Species;
- EP2 National Nature Conservation and Protected Species;
- EP3 Local Biodiversity;
- EP4 National Scenic Areas;
- EP5 Special Landscape Areas;
- EP7 Listed Buildings;
- EP8 Archaeology;
- EP9 Conservation Areas;
- EP13 Trees, Woodlands & Hedgerows;
- EP15 Development Affecting the Water Environment; and
- IS5 Protection of Access Routes.

3.5.7 As explained above, it is expected that by the time the Section 36 application is submitted for the Proposed Development, NPF4 will be in force as part of the statutory Development Plan.

3.5.8 In considering the Development Plan overall, account will be taken of Section 13 of the Planning (Scotland) Act 2019 Act which amends Section 24 of the Town and Country Planning (Scotland) 1997 Act to provide that:

"in the event of any incompatibility between a provision of the National Planning Framework and a provision of a local development plan, whichever of them is the later in date is to prevail."

3.6 Supplementary Guidance

3.6.1 The 'Renewable Energy' Supplementary Guidance (July 2018) (SG) gives further advice and guidance relating to LDP Policy ED9 – 'Renewable Energy Developments'. It covers a wide range of renewable energy types and references SPP and Scottish Government advice setting out the need to accommodate renewable energy proposals where appropriate, whilst also taking cognisance of economic and other benefits a proposal may offer. It sets out a Spatial Framework for wind energy. It includes reference to the 2016 Ironside Farrar Landscape Capacity and Cumulative Impact Study as Appendix C.

3.6.2 The Scottish Borders Wind Energy Landscape Capacity and Cumulative Impact Study aims to identify landscape and visual sensitivities relative to the consideration and determination of proposals for wind farm developments across the region.

3.6.3 The SG sets out that if turbines are proposed which exceed the turbine heights identified within the Ironside Farrar Study 2016, the applicant will be required to demonstrate how the impacts of the proposal on the key constraints and any significant adverse effects can be mitigated.

3.7 Conclusions

3.7.1 The Proposed Development will clearly make a contribution to the attainment of renewable energy and electricity targets and emissions reduction at both the Scottish and UK levels and the quantification of this contribution would be described.

3.7.2 The EIA Report will summarise the renewable energy policy framework, but the detail will be provided in a supporting Planning Statement to accompany the Section 36 application which will also make reference to key policy documents such as the Scottish Energy Strategy (2017), the NPF4, the Onshore Wind Policy Statement (2017) and its Refresh which proposes an onshore wind target of an additional 8-12 Gigawatts (GW) of additional onshore wind capacity to be delivered by 2030.

3.8 Questions to Consultees

Q3.1: Do consultees agree with the extent of the planning policy and energy documents described?

Q3.2: Are there any additional planning and energy documents that consultees wish to be considered?

4. Landscape and Visual

4.1 Introduction

4.1.1 The purpose of the Landscape and Visual Impact Assessment (LVIA) is to identify, predict and evaluate potential landscape and visual effects arising from the Proposed Development. These include potential effects on landscape character and quality, visual amenity (including visual amenity of residents), and cumulative effects (including sequential views from key routes). The elements of the Proposed Development that could impact on the landscape fabric and character of the site and wider study area include the turbines and anemometer mast; access tracks; borrow pits, BESS and substation. The LVIA will address impacts on the site itself and potential impacts on receptors within the study area.

4.1.2 The LVIA input to this EIA Scoping Report has been undertaken by MVGLA landscape architects. The LVIA will be undertaken by a suitably qualified and experienced Chartered Landscape Architect in accordance with the relevant guidance.

4.2 Environmental Baseline

The Site

4.2.1 This site is located within the Southern Upland hills, immediately north and south of the A701 at Tweedsmuir, approximately 12.5 km south of Broughton and approximately 19 km north of Moffat in the Scottish Borders. The site is situated within an area of commercial forestry, on the southern side of the ridge between Weird Law, Ewelaw Rig and Upper Oliver Dod, which form part of the northern slopes of the Tweed Valley at Tweedsmuir. Elevation within the site decreases steeply from the north-east peak of Upper Oliver Dod (approximately 490 m AOD) to the River Tweed (south-east), at approximately 260 m AOD.

4.2.2 Several watercourses run through the site, and an access track which could be used for recreational use traverses the site from the A701, near Tweedsmuir, to the summit of Upper Oliver Dod. The western spur of this access track wraps around the northern slope of Weird Law before descending to re-join the A701 a couple of kilometres south of Tweedsmuir.

4.3 Potential Sources of Impact

Zone of Theoretical Visibility (ZTV)

4.3.1 The Zone of Theoretical Visibility (ZTV) shown on Figure 6 indicates locations from which the proposed turbines would be theoretically visible, that is, the maximum visibility of turbines of the Proposed Development to the blade tip height of up to 250 m. The ZTV does not take account of any vegetation or tree planting; built form or localised landforms e.g. roadside embankments. Therefore, it represents the absolute worst-case visibility and requires to be ground truthed during field work.

4.3.2 The areas of visibility illustrated on the ZTV (Figure 6) demonstrate that the potential for continuous views of the Proposed Development would be limited to approximately 20 km of the River of Tweed valley from north of the Devil's Beef Tub to just north of Stanhope. Within the wider study area there is potential for fragmented views of the Proposed Development from elevated hill slopes and summits, including Tinto (approximately 14 km north-west of the Proposed Development); the slopes of the Broughton Heights hills and Broomy Law to the north of the site (15.4 km and 17.8 km respectively); and some elevated slopes of the Lowther Hills which lies approximately 25.5 km to the south-west.

Visual Receptors

4.3.3 Visual effects would occur when the Proposed Development changes or influences the visual amenity and views experienced by people, from key visual receptors within the study area. Visual receptors include:

- residents in individual dwellings within a 2 km study area (and also some residences within 3 km of the proposed turbines where appropriate);
- roads within the study area from which there is potential for views; and
- recreational receptors including walkers on hills, core paths and visitors to tourist destinations where the visitor experience incorporates a focus on the surrounding landscape.

Residents

4.3.4 The ZTV illustrates that there is potential for views of the Proposed Development from settlements of Tweedsmuir and Stanhope at respective distances of approximately 1 km and 5.6 km. There is predicted to be no visibility of the Proposed Development from the settlement of Broughton. There are a number of other properties within the Tweedsmuir valley which may have potential views of the Proposed Development. These are noted as follows along with approximate distance to the Proposed Development:[1]

- Menzion Farm (0.6 km south);
- Glenbreck House (1.5 km south-west);
- Hawkshaw Farm (0.75 km south);
- Victoria Lodge by Talla Reservoir dam (1.8 km south);
- Glenriska (1.5 km east);
- Hearthstane Estate and holiday homes (2.5 km north-east); and
- Polmood Estate (3 km north-east).

Road and Rail Users

4.3.5 Main (classified) roads within the study area generally follow valleys with connecting minor roads crossing hills and higher ground. The ZTV indicates that there may be potential visual effects on the visual amenity of users of the A701 within 10 km of the site. The unclassified roads accessing Fruid Reservoir and Talla Reservoir would also have sections of sustained theoretical visibility within approximately 6 km of the site when travelling towards the site.

4.3.6 There is potential for limited and constrained views of the proposed turbines from the following roads:

- the A743, A708 and the A721 near Lanark at a distance of over 25 km north-west;
- the A72 near the junction with the A701 (at approximately 14 km north)
- the A721 aroun Elsrickle (approximately 18 km north);
- a short section of the B7016 near Broughton (12.5 km north); and
- the A74M near Crawford at around 16 km west.

4.3.7 The east-west rail link between Edinburgh and Glasgow clips the northern edge of the study area (over 35 km distance). The London to west coast north-south line follows the route of the A74M through the study area, coming to within approximately 13.8 km of the site. However, there would be virtually no potential views of the Proposed Development from rail routes, and any areas of theoretical visibility would be highly constrained and limited, and restricted to the following sections:

- near Lanark where the railway line is routed below the A70; and
- north of Crawford where the railway line is also in a cutting.

Recreational Routes

4.3.8 There are various public footpaths, including Core Paths, Rights of Way and long-distance paths, within the study area as well as established routes to popular hill summits. Those key routes within the areas of theoretical visibility include:

- The Southern Upland Way – sections of the route through the Lowther Hills and constrained visibility from near Beattock hill.
- The Annandale Way – along parts of the north-most section of the route over Flecket Hill, Great Hill and Chalk Rig Edge.
- The Cross Borders Drove Road – one small area of theoretical visiblity at Stewarton.
- Several local footpaths within 10 km of the site including the right of way from Hearthstone to Broad Law and from Friud Dam to the Annandale Way.

Designated Landscapes

4.3.9 Landscape designations within the study area are illustrated on Figure 4. The site area and its immediate surroundings are not subject to any nationally protected landscape designations.

[1] Measurements are from nearest site boundary to property.

4.3.10 There are two National Scenic Areas (NSA), namely the Upper Tweeddale NSA, the south-western boundary of which comes to within approximately 6 km of the Proposed Development, and the Eildon and Leaderfoot NSA, which clips the eastern edge of a 45 km study area. The ZTV indicates that there are limited areas of potential visibility from the Upper Tweeddale NSA, and given the relative proximity to the Proposed Development, the special qualities of this NSA will need to be considered in respect of potential landscape effects. However, the Eildon and Leaderfoot NSA is over 40 km distance from the Proposed Development.

4.3.11 The Talla Hart Fell Wild Land Area lies approximately 9 km to the south-west of the Proposed Development. The wild land qualities of this Wild Land Area will be assessed.

4.3.12 There are several local landscape designations within the study area and the site is situated within the Tweedsmuir Uplands Special Landscape Area (SLA1, Scottish Borders Council). Other local landscape-related designations within the study area, include:

- SLA2 Tweed Valley which bounds SLA1 to the east at approximately 20 km north-east of the Proposed Development.
- SLA3 Tweed, Ettrick and Yarrow Confluences also adjoining SLA1 to the east.
- RSA9 Moffat Hills in the Dumfries and Galloway Council (DGC) area extends to the south-western boundary of SLA1.
- SLA5 Teviot Valleys, the western boundary of which comes within the edge of the 45 km study area.
- SLA9 Pentland Hills which lies approximately 10.5 km north of the Proposed Development.

Landscape Character

4.3.13 The landscape character of the site and study area are described in the 2019 NatureScot review of the landscape character of Scotland and shown on Figure 5.

4.3.14 The Proposed Development site straddles the Southern Uplands – Borders (LCT95) and the Upland Valley with Pastoral Floor (LCT113). However, the proposed turbines would be located within the upland LCT95, and access would be from the lower extent of the site area which is located within LCT113.

4.3.15 The hills within the Southern Uplands LCT95, which reach heights of up to 700 m or 800 m limit potential views of the proposed turbines from lower elevations in the wider study area beyond approximately 10 km. Culter Fell, to the north, reaches 748 m AOD and Hart Fell, located south of the Proposed Development, peaks at 808 m AOD.

4.3.16 The LVIA will analyse the ZTV for the finalised turbine layout and assess effects on landscape character of LCTs.

Existing Developments

4.3.17 The baseline for cumulative wind developments changes relatively quickly, and the list of wind farms to be included in the baseline for the cumulative landscape and visual assessment (CLVIA) will be agreed with the statutory authorities (Scottish Borders Council, South Lanarkshire Council and Dumfries and Galloway Council as well as NatureScot). The Proposed Development would be separate, yet close to the group of wind development associated with the Clyde and Clyde Extension developments approximately 2.1 km to the west. Also of note is the existing Glenkerie Wind Farm, which is located approximately 2.2 km north of the Proposed Development.

4.3.18 In respect of the cumulative baseline (i.e. operational wind farms), the Proposed Development relates well to the existing pattern of development as the influence of wind development would not be notably extended beyond the present cumulative situation. The additional areas of influence would be largely localised to within the site and surrounding valley and constrained by the landform of the surrounding hills.

4.3.19 The LVIA will address the additional and combined cumulative effects from key receptors, as well as successive views of wind development from the A701 as it traverses the Tweedsmuir section of the valley.

4.4 Method of Assessment and Reporting

Guidance

4.4.1 The LVIA will be carried out in accordance with current guidance, i.e. The Guidelines for Landscape and Visual Impact Assessment (GLVIA3). Maps and visualisations will be produced in accordance with NatureScot guidance.

Proposed Study Area

4.4.2 The most widely visible elements of the Proposed Development will be the turbines. Much of the LVIA will therefore focus primarily on the visibility and potential effects of the turbines. However, the assessment of effects will consider other elements of the Proposed Development throughout (e.g. access tracks).

4.4.3 The initial study area for the CLVIA will be up to 45 km from the outermost proposed turbines, as advised by NatureScot guidance, but the detailed assessment will focus on potential and likely significant effects which may occur within a much more contained area. Whilst the extents of detailed studies will be determined during the assessment, it is judged likely that a study area of approximately 15 km radius will be sufficient for the detailed assessment of likely significant effects on landscape character. A study area of 20-25 km radius will be used for landscape designations, and a study area of approximately 25 km will allow assessment of all likely significant visual effects. These study areas are also likely to be appropriate for the cumulative assessment.

4.4.4 The assessment of ground level elements of the Proposed Development (infrastructure) will be focused on an area within approximately 5 km of the Proposed Development, with nearby viewpoints selected to have views across the site for this purpose.

Assessment Method

Landscape Effects

4.4.5 Effects on landscape character will be considered for LCTs up to approximately 15 km from the site, with ZTV mapping used as a means of identifying which LCTs require assessment. Predicted changes in both the physical landscape and landscape character will be identified. The assessment will identify the magnitude and type of change to the landscape, with reference to its key characteristics as set out in the NatureScot LCT descriptions. The sensitivity of the landscape will also be taken into account, acknowledging value placed on the landscape through designation as well as the presence of other consented and operational wind farms or solar farms. The magnitude of the effect will be assessed in terms of the size and scale, geographical extent, duration and reversibility of the effect. These aspects will all be considered, to form a judgement regarding the overall effect and whether this is judged to be significant.

4.4.6 Significance of landscape effects, considering receptor sensitivity and the magnitude of change as set out above, will identify the level of effect using four categories: **major, moderate, minor**, and **negligible**. **Major** and **moderate** effects will be considered to be significant in the context of the EIA Regulations.

Visual Effects

4.4.7 Visual effects are experienced by people at different locations around the study area, at static locations (for example from settlements or from formalised viewpoints) and sequentially when travelling along routes. It is usually considered that grouping people related to 'status' (e.g. residents, visitors/tourists/motorist) or the 'activity' they are engaged in (sport, informal recreation, commuting) will help the assessment and lead to findings which can be considered representative. Assessment of the visual effects of the Proposed Development on receptors up to approximately 25 km from the site will be based on analysis of the ZTVs, field studies and assessment of representative viewpoints. Some key views of over 25 km distance may be provided with wirelines to illustrate potential visibility, even if no significant effects may occur.

4.4.8 Potential viewpoints to be used in the assessment of visual effects will be discussed with Scottish Borders Council (SBC) and NatureScot. Neighbouring authorities of South Lanarkshire Council (SLC) and Dumfries and Galloway Council (DGC) are also invited to provide comment. An initial list of locations is shown on Figure 6. These include locations to represent:

- Views from the A701 (both specific and sequential), and from the minor roads to Talla and Fruid Reservoirs.
- Views from key locations within the surrounding landscape e.g. from Kingledoor's Burn valley (over the ridge from the site area); Talla Water valley, and Fruid Water valley.
- Views from key settlements that would have potential views of the Proposed Development and are relatively close to it, namely Tweedsmuir and Stanhope.
- Views from hilltops that are both popular with walkers and representative of designated/categorised landsdcapes e.g. wild land.
- Longer distant views from key hilltops within the study area, such as Tinto and Lowther Hill.

Table 4.1: Proposed Viewpoint Locations

Viewpoint Name		Grid Reference		Distance (approx.)/direction[2]	Reason for selection
1	A701 Source of the Tweed Layby	304885	615853	9.5 km W	Sequential views – Proposed turbines come into view (travelling eastwards). Also a static viewpoint marked on the OS plans.
2	A701 between Clyde Ext to the west and Craigmaid hill to east	305270	618353	6.0 km W	Sequential views – cumulative viewpoints with Clyde Extension to the west and Glenkerrie directly ahead looking north. (Travelling eastwards)
3	A701 Layby west of Glenbreck	305586	620817	1.8 km W	Sequential views – within 5 km (eastwards)
4	A701 Layby east of Glenbreck	307098	622255	0.3 km S	Sequential views – within 3km (eastwards)
5	A701 by Tweedsmuir Village Hall	310177	624966	2.1 km E	Sequential views – within 3 km (travelling westwards)
6	A701 by Stanhope	311912	630415	6.1 km E	Sequential views – where proposed turbines first come into views travelling westwards
7	Track by Kingledoors Burn	307855	625803	1.3 km N	View from the other side of the ridge representing local landscape character and walkers
8	Tweedsmuir at Bridge	309753	624352	0.8 km S	View from Tweedsmuir village just before joining the A701
9	Fruid Dam	308924	620548	3.5 km S	View from minor road and local right of way
10	Falla Dam car park	310732	622907	2.3km S	View from local place of interest at which visitors may park
11	Talla Linnfoots	314192	620057	6.1 km SW	View from car parking laybyby bridge overlooking Falla Reservoir
12	Broad Law	314628	623789	5.6 km SE	View from popular hill
13	Hart Fell	307500	624000	10.5 km S	View from popular hill located within the Wild Land Area
14	Chalk Rig Edge on Annadale Way	307001	613273	8.9 km S	Elevated view from Annandale Way within the Wild Land Area
15	Broughton Heights / Pyked Stane Hill	311672	640702	16.6 km N	View from popular hill within the NSA
16	Culter Fell	305379	628894	5.8 km N	View from popular hill across southern uplands
17	Lowther Hill	288974	610876	20.3 km SW	View from popular hill and the Southern Upland Way
18	Tinto	295307	634376	16.1 km NW	View from popular hill providing cumulative context
19	Byrehope Mount	311009	654823	31 km NE	View from the Pentland Hills

4.4.9 Photomontages would be prepared for viewpoints within approximately 20 km, and these would be agreed with the would be agreed with statutory consultees. More distant viewpoints would have wirelines to illustrate potential views.

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

4.4.11 Significance of visual effects, considering receptor sensitivity and the magnitude of change as set out above, will identify the level of effect using four categories: **major, moderate, minor**, and **negligible**. **Major** and **moderate** effects will be considered to be significant in the context of the EIA Regulations.

Night -Time Visual Assessment

4.4.12 As stated in section 12 of this report, in the interests of aviation safety, CAA guidance (2017) states that turbines over 150 m to tip height are required to incorporate visible lighting. Consequently, an assessment of the effects of aviation lighting on the proposed wind turbines will be carried out as part of the LVIA and included within the assessment.

[2] Direction relative to Proposed Development

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

4.4.14 Night-time photomontages, using photographs taken shortly after dusk (with due consideration of safety of photographers), will be produced for 2-3 viewpoints to illustrate the potential appearance of aviation lights on turbines relative to the existing night-time baseline. The selection of viewpoints to be represented will be agreed with consultees, but may include[3]:

- Viewpoint 1 on the A701 at a relatively elevated location where drivers are likley to experience night time views.
- Viewpoint 8 from Tweedsmuir Village representing residents views.
- Viewpoint 11 from Talla Linnfoots as this is an elevated viewpoint that may be experienced by road users at night.

Residential Visual Amenity Assessment

4.4.15 It is considered that a Residential Visual Amenity Assessment (RVAA) will be required as there are several residential properties within 2 to 3 km of the Proposed Development. The RVAA will be carried out within a 2 km study area (and also include properties within 3 km of the proposed turbines where appropriate) in accordance with the Landscape Institute guidance on RVAAs.

Visualisations

4.4.16 Visualisations used to support the assessment will include:

- ZTV maps analysing visibility of the proposed wind turbines to tip and hub heights as well as combined ZTV maps with other wind farms.
- Photographs of existing views.
- Wireline images to illustrate theoretical visibility of the Proposed Development from viewpoints.
- Photomontages to illustrate the predicted changes to views from viewpoints.
- Night-time photomontages for 2-3 viewpoints to illustrate the appearance of aviation lighting after dark.

4.4.17 Visualisations will include cumulative wind farm schemes (operational, under construction, approved and applications as appropriate), and will be produced in accordance with NatureScot and the Landscape Institute photography guidance.

Cumulative Effects

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

4.4.19 The cumulative assessment will note the various wind developments within the wider landscape (to approximately 45 km) and consider the current pattern of wind farm development. However, for the cumulative assessment to be useful, a more refined cumulative study area of approximately 15 km to 20 km will be agreed with the statutory authorities. The relationship of the Proposed Development to these will be carefully appraised and potential cumulative effects arising will be reported. For the purposes of scoping, operational and application stage developments within approximately 15 km radius of the Proposed Development have been identified. The list of wind farms, and their status will be updated at an agreed cut-off date following consultation with statutory consultees. The key existing and consented wind developments within approximately 15 km of the Proposed Development are shown on Figure 3.

4.4.20 The LVIA will assess the combined visual effects of the Proposed Development with other existing or reasonably foreseeable wind energy within the study area. The cumulative LVIA will consider operational and consented schemes, and those which are at application stage and have undetermined applications or appeals. The cumulative LVIA will seek to focus potential cumulative effects.

4.4.21 Cumulative research will be undertaken using the Council's planning portal, the Energy Consents Unit, and published wind turbine lists, and the scope of assessment and 'cumulative cut-off date' will be agreed with the Councils (SBC, SLC and DGC) and NatureScot prior to submission to ensure the most up to date information available is included in the CLVIA. Inclusion of schemes at scoping stage will be agreed statutory consultees, and turbines below 50 m to blade tip height will not be included in the assessment.

[3] It is proposed to avoid night-time viewpoints from hilltops and remote off-road locations for Health and Safety reasons, and because there are less likely to be viewers in these locations after dark.

Cumulative assessment methodology

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

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

4.4.23 The intervisibility of the Proposed Development with other developments in the surrounding area will be illustrated by overlaying the ZTVs of other developments with that of the Proposed Development. Paired ZTVs will be prepared to illustrate the key relationships between the Development and other wind developments close to the site. Cumulative visual effects will be assessed through analysis of combined ZTVs, views from individual viewpoints and sequential views from routes.

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

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

Designated Landscapes

4.4.26 The LVIA will review the baseline description and citations of relevant landscape designations within the ZTV and within approximately 20 km of the Proposed Development. Following the assessment of landscape and visual effects, there will be a review of the identified effects for landscape and visual receptors within the designated areas, and how these will affect the key qualities and reasons for designation. Potential Significant Effects during Construction

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

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

Potential Significant Effects during Operation

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

- Long-term effects on landscape character, as a result of ground level structures and turbine operation, either affecting the pattern of elements that define the character or affecting the visual/perceptual characteristics of landscape character areas.
- Long-term visual effects as a result of the Proposed Development on nearby views, with effects as a result of turbine operation on wider views, experienced by people at places with visibility of different elements of the Proposed Development. This includes effects on the visual aspects of residential amenity for residential properties close to the site.
- Cumulative effects of the Proposed Development in combination with existing, consented and in-planning wind farm schemes across the wider area, including combined, successive and sequential visibility.
- Implications of significant effects identified in or affecting designated landscapes, which may affect their special qualities and reasons for designation.

4.5 Consultation

4.5.1 The following elements of the LVIA may require additional consultation with consultees:

- Viewpoints and viewpoints to be photomontaged, to be agreed with the Councils (SBC, SLC and DGC) and NatureScot. An initial proposed list of locations is illustrated on Figures 6 and 6a (high resolution version) and presented in Table 4.1.
- Night-Time Visualisations may also require additional consultation to balance the Health and Safety of photographers with requirements of the assessment.
- The scope and extent of a Wild Land Assessment, if required, will be discussed and agreed with NatureScot.
- The scope and extent of the Residential Visual Amenity Assessment may require additional consultation with SBC.

4.6 Matters Scoped Out

4.6.1 To allow a focused assessment, where receptors are unlikely to be affected by the Proposed Development, either through having little or no theoretical visibility, or being distant from the Proposed Development, those receptors will be scoped out of the LVIA. To allow a focused assessment, where receptors are unlikely to be affected by the Proposed Development, either through having little or no theoretical visibility, or being distant from the Proposed Development, those receptors will be scoped out of the LVIA. If long-distance views are deemed to be important by consultees, wirelines would be used to demonstrate the level of significance.

4.6.2 At this stage, it is proposed that the following will not be included in the assessment, based on the initial desk-based work undertaken:

- LCTs beyond 15 km radius.
- Designated landscapes beyond 25 km radius.
- Settlements beyond 10 km.
- Local paths beyond 5 km.
- Scoping schemes as part of the CLVIA.
- Turbines below 50 m to blade tip height in the CLVIA.

4.7 Questions to Consultees

Q4.1: Are consultees content with the proposed methodology for the LVIA?

Q4.2: Are consultees content with the proposed approach to undertaking viewpoint photography and preparing visualisations?

Q4.3: Are consultees in agreement with the proposed study areas, focus, and source data for the assessment of landscape effects?

Q4.4: Are consultees in agreement with respect to the effects that are proposed to be scoped out?

Q4.5: Are consultees content that the LVIA scope has identified the most important receptors to be assessed?

Q4.6: Are consultees content with the proposed viewpoints identified in Table 4.1, and could they advise of any additional viewpoints they consider necessary to assess the effects of the Proposed Development?

Q4.7: Are consultees content with the proposed approach to the cumulative assessment and could they advise of any specific cumulative sites they consider should be included in the assessment?

5. Ecology

5.1 Introduction

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

5.1.2 Ecological features scoped into the assessment have been informed by key legislative and policy drivers, as they relate to nature conservation in Scotland, and include:

- The Conservation of Habitats and Species Regulations 2017, as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 (hereafter referred to as the 'Habitat Regulations');
- The Wildlife and Countryside Act 1981 (as amended);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Nature Conservation (Scotland) Act 2004;
- The National Planning Policy Framework 3 2014;
- The Revised Draft National Planning Framework 4 (NPF4) 2022;
- Scottish Planning Policy 2014;
- The United Kingdom Biodiversity Action Plan (UK BAP) Priority Species and Habitats 2007;
- Scottish Biodiversity List (SBL) 2020;
- The Scottish Borders Local Development Plan 2016 (LDP);
- The Scottish Borders Biodiversity Action Plan 2018 – 2028 (LBAP); and
- The Ancient Woodland Inventory (AWI).

5.1.3 The assessment will follow the Chartered Institute of Ecology and Environmental Management Guidelines (CIEEM) for Ecological Impact Assessment in the UK (CIEEM, 2018).

5.2 Environmental Baseline

5.2.1 Baseline information in relation to ecological features which may be affected by the Proposed Development has been collected through consultation, desk study and ecological field surveys. In addition, members of the field team were able to advise on potential ecological constraints on the basis of established local knowledge and professional judgement.

Defining the Study Area

5.2.2 Study areas have been defined individually for each environmental factor taking into account the geographic scope of the potential impacts relevant to that factor and the information required to assess those impacts.

5.2.3 Study areas for baseline ecological surveys will be in accordance with current NatureScot guidance.

- Habitats and Vegetation Surveys - Site + 250 m (where access allows) and also following SEPA guidance (2017).
- Protected Mammal Surveys - Site + 500 m (where access allows).
- Bat Activity Surveys - static detectors deployed as close as possible to proposed turbine locations and/or area of turbine interest and following NatureScot guidance (2019).
- Bat Roost Potential - Site + 200 m and blade length (c. 290 m; where access allows) for assessment of bat roost potential and following NatureScot guidance (2019).
- Fish Habitat Survey - watercourses within, and adjoining the site, also in accordance with Scottish Fisheries Co-ordination Centre (SFCC) guidance (2007).

5.2.4 Where required, study areas will be updated to account for any changes to Proposed Development design and ensure baseline ecological information is collected in accordance with current best practice industry guidance.

Initial Desk Study

5.2.5 An initial desk study was undertaken in 2022 to inform the proposed approach to baseline information gathering, including the scope and requirement for baseline ecological surveys.

5.2.6 The following key sources were consulted:

- NatureScot Sitelink;
- Multi-Agency Geographic Information for the Countryside (MAGIC);
- Aerial imagery;
- The Wildlife Information Centre (TWIC);and
- NatureScot general pre-application/scoping advice to developers of onshore wind farms applicable at the time (NatureScot, 2020).

5.2.7 Desk study records returned by TWIC included records of a number of protected species within the search area. Full results obtained from the desk study will be provided in the EIA Report.

Baseline Ecology Surveys

5.2.8 The following field surveys have been undertaken to confirm baseline ecological features within the site and surrounding area:

- Extended phase 1 habitat survey.
- National Vegetation Classification (NVC).
- Terrestrial mammal surveys.
- Bat activity surveys.
- Bat preliminary roost assessment (PRA) survey.
- Fish and freshwater pearl mussel habitat survey.

5.2.9 All surveys have been undertaken by suitably competent and qualified ecologists in accordance with industry standard guidance and best practice guidance. Full details of survey methodologies will be presented within the EIA Report. If required, field surveys will be updated prior to assessment in response to changes in the design of the Proposed Development, to ensure compliance with relevant current guidance (NatureScot, 2020).

5.2.10 Full details of key sources reviewed, consultations undertaken, and information gathered will be provided within the EIA Report.

Designated Sites

5.2.11 The site does not include any part of a statutory site with designated ecological interest. Table 5.1 and Figure 7 identify statutory designated sites with ecological interests located within 10 km of the site. The distances provided in Table 5.1 are between the designated site boundary and the site at their nearest points.

5.2.12 Within the site there is a non-statutory site: Glenmuck Bog Local Biological Site (LBS); comprising unmodified blanket bog, valley mire, flush and species-rich marshy grassland along a small burn.

5.2.13 Sites with ornithological qualifying interests are detailed and discussed separately in Section 6: 'Ornithology' of this EIA Scoping Report.

Table 5.1 – Statutory ecological designated sites within 10 km of the site

Name	Designation	Qualifying Features	Distance at closest point and orientation from site boundary
River Tweed	SAC	– Atlantic salmon (*Salmo salar*) – Brook lamprey *(Lampetra planeri)* – Otter *(Lutra lutra)* – River lamprey (*Lampetra fluviatilis*) – Sea lamprey (*Petromyzon marinus*) – Rivers with floating vegetation often dominated by water-crowfoot	Immediately adjacent to site to the south-east
River Tweed	SSSI	– Atlantic salmon – Beetle assemblage – Brook lamprey – Fly assemblage	Immediately adjacent to site to the south-east

Name	Designation	Qualifying Features	Distance at closest point and orientation from site boundary
		– Otter – River lamprey – Sea lamprey – Trophic range river/stream – Vascular plant assemblage	
Tweedsmuir Hills	SSSI	– Bryophyte assemblage – Upland assemblage – Vascular plant assemblage	2.2 km east
Craigdilly	SSSI	– Sub-montane scrub	8.8 km south-east
Moffat Hills	SAC[4]	– Acidic scree – Alpine and subalpine heaths – Blanket bog – Dry heaths	9.2 km south-east

Habitats and Vegetation

5.2.14 Surveys were undertaken in July to August 2022 following industry standard survey guidance for Phase 1 habitat survey (JNCC, 2010) and National Vegetation Classification (NVC) survey (Rodwell, 2006). Habitat surveys were undertaken within the site plus a 250 m buffer surrounding it. The purpose of these surveys was to establish baseline terrestrial habitat conditions at the site and identify vegetation communities of notable importance, including habitats listed on Annex 1 of the Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (i.e., Habitats Directive), groundwater dependent terrestrial ecosystems (GWDTE's) and as UKBAP Priority Habitats.

5.2.15 The site primarily comprises commercial coniferous plantation, with some areas of clear-fell. There are a number of watercourses which intersect the site and flow into the River Tweed. Some areas of blanket bog exist in the north and south of the site. Other open habitat types, found mainly around peripheral areas of the site or along watercourses, consist of acid grassland and marshy grassland. Areas of neutral grassland exist in the most southern parts of the site.

5.2.16 The following Phase 1 habitat types have been recorded:

- A1.1.1 – Broad-leaved woodland semi-natural;
- A1.2.2 – Coniferous plantation woodland;
- A1.3.2– Mixed plantation;
- A2 – Scrub;
- A3 – Scattered trees;
- A4 – Clear-fell;
- B1.1 – Acid grassland unimproved;
- B1.2 – Acid grassland semi-improved;
- B2.1 – Neutral grassland unimproved;
- B2.2 – Neutral grassland semi-improved;
- B5 – Marshy grassland;
- C1 – Bracken;
- D1 – Dry heath;
- E1.6.1 – Blanket bog;
- F1 – Swamp;
- G1 – Standing water; and

[4] Moffat Hills is also designated as a SSSI however it has not been included in this section as it is designated for non-ecological features only.

- G2.4 - Dystrophic running water.

5.2.17 Examples of Annex 1 habitats have been recorded within the site, including bog communities. However, analysis of habitat survey data are ongoing and full details will be presented within the EIA Report.

5.2.18 Full details of baseline habitats and vegetation conditions will be presented within the EIA Report.

5.2.19 If required, terrestrial habitat and vegetation surveys will be updated prior to assessment in response to evolution of the Proposed Development design. This will seek to ensure compliance with current NatureScot guidance (2020) and provision of sufficient information in accordance with Scottish Environmental Protection Agency (SEPA) guidance (2017) regarding the identification of GWDTEs within a Zone of Influence (ZoI) of development areas for subsequent hydrological assessment.

Protected Species

5.2.20 Terrestrial mammal walkover surveys were undertaken within the relevant study area in June and July 2022 by suitably competent ecologists, following industry standard guidance and species-specific survey methodologies applicable at the time of survey. The site is not close to a priority area for Scottish wildcat (*Felis silvestris*) and therefore the potential for this species to be present on-site has been discounted. As such, surveys sought to identify the presence and distribution of field signs confirming or indicating the potential presence of otter, water vole (*Arvicola amphibius*), badger (*Meles meles)*, pine marten (*Martes martes)* and red squirrel *(Sciurus Vulgaris)*.

5.2.21 Full details of survey methodologies will be provided within the EIA Report.

5.2.22 Surveys recorded evidence of the presence of otter within the site, with otter spraint found at the waterbody near Glenmuck Height. Although no evidence was recorded, Hallow Burn, Glenmuck Burn, Gala Burn, Bield Burn and Riggs Burn have potential to be used by the species, including for resting or holt creation.

5.2.23 Evidence of pine marten was also recorded in several locations within the site. There was no evidence of water vole or red squirrel, and the watercourses on-site are considered to be sub-optimal for water vole.

5.2.24 A badger sett was recorded in the west of the site and habitats present on-site (woodland) are suitable for the species.

5.2.25 Surveys to establish the bat species assemblage utilising the site and the spatial and temporal distribution of activity have been undertaken in 2021 in line with current NatureScot guidance (2019). Ten ground-level static detectors were deployed, to record bat activity within the site, for a period of at least 10 nights with suitable weather conditions, in spring, summer and autumn. As far as possible, detectors were placed in approximate proposed turbine locations as indicated at the time, as per 2019 guidance. The 10 detectors provide an adequate survey coverage for a wind farm of up to 10 turbines (one detector per turbine up to the first 10 turbines, as per guidance).

5.2.26 All bat activity data will be analysed through Kaleidoscope (Wildlife Acoustics) software and manually checked by an experienced ecologist. All sonogram data obtained from activity surveys will then be uploaded to the online Ecobat tool in order to quantify bat activity in accordance with NatureScot guidance (2019), with the Ecobat output used to assess the likelihood for significant effects to bat species arising as a result of the Proposed Development.

5.2.27 A Preliminary Roost Assessment (PRA) was undertaken in July 2022, comprising a daytime inspection of trees (and any other features, e.g., buildings) within the site, and extending to 200 m where access allowed, for potential to support bat roosts in accordance with the 2019 guidance. Several features were noted to offer roosting potential in the south of the site. The likelihood of impacts upon potential roost sites and the requirement for further survey work pre-construction in line with Collins (2016) guidance will be considered in the EIA Report.

5.2.28 A fish habitat survey was carried out in October 2022, to identify any areas of critical fish habitat within watercourses of and intersecting the site (i.e., spawning, nursery areas, juvenile and adult holding areas). A habitat assessment for freshwater pearl mussel was also undertaken with the fish habitat survey. The survey was undertaken by suitably competent ecologists, in normal flow conditions, following the SFCC industry standard guidance (SFCC, 2007). Survey results are in the process of being appraised and will be detailed in the EIA Report.

5.2.29 Desk study sources will also be consulted, where available, to identify the known status of watercourses within the relevant study area, any known barriers to fish migration and the known distribution of fish within the relevant catchment area.

5.2.30 Full details of fish habitat survey methodology and results, watercourses surveyed, and desk study findings will be provided within the EIA Report.

5.2.31 It is considered that further detailed fish surveys to inform an assessment of effects upon fisheries are not required, providing the implementation of good practice scheme design and mitigation measures in consultation with NatureScot and other primary interest groups, including local fisheries trusts and District Salmon Fisheries Boards to avoid and/or minimise the potential for pollutant impacts upon aquatic habitats and ensure the free passage of fish within the site is maintained. These measures will be included in the embedded mitigation for the Proposed Development.

5.2.32 In accordance with current guidance (NatureScot, 2020) there are some species groups which, providing the implementation of suitable mitigation measures, are unlikely to be subject to significant effects as a result of wind farm developments. As such, they do not require surveys to inform an EIA. This includes invertebrates, reptiles and amphibians (but excludes additional European Protected Species). Three ponds with the potential to support great crested newts (*Triturus cristatus)* are present within the site and it is proposed that eDNA surveys are undertaken at all or some of these ponds in Spring 2023 (where site infrastructure is proposed within 250m of their location), subject to confirmation of Proposed Development design and turbine micrositing.

5.3 Potential Significant Effects

5.3.1 The assessment will consider the potential significant effects associated with construction and operation of the Proposed Development.

5.3.2 CIEEM guidelines (2018) define a 'significant effect' as an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general (i.e., the feature could be positively or negatively significantly affected).

5.3.3 CIEEM guidelines on ecological impact assessment note that, "*A significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant adverse ecological effects can be lawfully permitted following EIA procedures as long as the mitigation hierarchy has been applied effectively as part of the decision-making process*."

5.3.4 Potentially significant effects identified will be expressed with reference to an appropriate geographic scale. For example, a significant effect on a nationally designated site is likely to be of national significance. However, the scale of significance does not necessarily always relate to the importance of an ecological feature. For example, an effect on a species which is considered of national importance may not have a significant effect upon its national population.

5.3.5 In line with the principles of proportionate EIA, embedded mitigation, including avoidance through the design process and application of industry standard good practice, will be considered at the outset of the assessment. Important ecological feature status will only be assigned where there is still considered to be the potential for significant effects on the identified feature arising from the Proposed Development after the application of embedded mitigation measures.

5.3.6 In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect will be assumed as a precautionary approach. Where uncertainty exists, this will be acknowledged.

5.3.7 Where the EIA proposes measures to mitigate potentially significant adverse effects on ecological features, a further assessment of residual ecological effects, taking into account any ecological mitigation recommended, will be undertaken.

5.4 Method of Assessment and Reporting

5.4.1 As the existing conditions at the site have been reported on the basis of the completed survey effort, survey methodologies and scope have already been discussed in section 5.2.

5.4.2 Impact assessment presented within the EIA Report for ecological features will be based on current CIEEM guidance (2018).

5.4.3 The assessment process will include the following stages:

- determination and evaluation of important ecological features;
- identification and characterisation of impacts;
- outline of mitigating measures to avoid and reduce significant impacts;
- assessment of the significance of any residual effects after such measures;
- identification of appropriate compensation measures to offset significant residual effects; and
- identification of opportunities for ecological enhancement.

5.4.4 The Ecology Chapter of the EIA Report will be supported by Technical Appendices detailing the desk study results, consultation, survey methods and results, and will be further supported by relevant figures, tables and photographs, where necessary. Where sensitive data is recorded, the Ecology Chapter will be supported by confidential appendices which will not be released to the public domain but will be made available to the ECU, NatureScot and SBC.

5.4.5 The assessment within the EIA Report will only assess, in detail, impacts upon important ecological features i.e., those that are considered important and potentially significantly affected by the Proposed Development. An assessment of features that are sufficiently widespread, unthreatened and resilient to Proposed Development impacts will not be undertaken in the EIA Report. Justification for scoping such assessment out of the EIA Report is provided in Section 5.7.

5.4.6 The River Tweed SAC and SSSI is located immediately adjacent to site to the south-east. No direct effects on these sites are predicted; however, indirect effects may occur and will be assessed in the EIA Report. The SAC and SSSI has otter (a highly mobile species) as a qualifying feature so an assessment of potential effects on otter (and therefore the SAC and SSSI) will be assessed within the EIA Report. Effects would be minimised through the implementation of CEMP.

5.4.7 It is recognised that the River Tweed SAC warrants consideration in a HRA context, as mitigation cannot be taken account of at the HRA screening stage. The application for consent will be supported by information required for the competent authority to undertake Habitats Regulations Appraisal, if required, so that the competent authority can assess whether a HRA is required for the Proposed Development.

5.4.8 Relevant European, national and local legislation, policy and guidance will be referred to in order to determine the importance (or 'sensitivity') of ecological features. In addition, importance will also be determined using professional judgement, specialist consultation advice and the results of baseline surveys and the importance of features within the context of the geographical area.

5.4.9 Importance will not necessarily relate solely to the level of legal protection that a feature receives: ecological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range.

5.4.10 The importance of ecological features will be defined in a geographical context from "Local" to "International".

5.4.11 The identification and characterisation of impacts on important ecological features will be undertaken in accordance with CIEEM guidelines (2018) with reference made to magnitude (e.g., area or number of individuals to be impacted), extent, duration and reversibility as appropriate.

5.4.12 Impacts will be considered during the construction and operational phases of the Proposed Development and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

Cumulative Assessment

5.4.13 The potential for cumulative impacts with other renewable energy development proposals will be assessed in accordance with NatureScot guidance (2012) and include consideration of those such developments located within the same hydrological catchment(s) or within the regular range of mobile species (e.g., for bats) out to a maximum of 10 km from the site boundary.

5.4.14 The assessment will encompass the effects of the Proposed Development in-combination with existing wind farm developments (>3 turbines), either built or under construction; approved developments, awaiting implementation; and applications awaiting determination with design information in the public domain.

5.5 Approach to Mitigation

Design Considerations

5.5.1 The following are measures which will be considered in embedded design of the Proposed Development to protect ecological features:

- A minimum bat buffer of 50 m (from blade tip) will be applied from turbines to suitable bat commuting/foraging features, such as watercourses and woodland.
- A minimum buffer of 50 m around watercourses/waterbodies will be applied which all elements of the Proposed Development (incl. turbines and infrastructure) will avoid.
- The most ecologically valuable habitats (e.g. Annex 1) will be avoided where possible and loss of native woodland on-site will be minimised.
- The Glenmuck Bog LBS and an appropriate buffer surrounding it will be avoided.

- Watercourse crossings will be minimised and sensitively designed to allow the continued movement of wildlife along the watercourse.

5.5.2 The adoption of embedded mitigation measures to avoid or minimise adverse impacts upon ecological features will be part of the iterative design process for the Proposed Development.

5.5.3 Other measures to avoid or otherwise minimise potentially adverse impacts upon ecological features during the Proposed Development will include:

- A Construction Environmental Management Plan (CEMP) (or similar) to be in place during the construction and operational phases of the Proposed Development. The CEMP will include all good practice construction measures, pollution prevention controls and monitoring to be implemented over the course of the Proposed Development in line with current guidance.
- Ecological Clerk of Works (ECoW) - An ECoW will be appointed to supervise works during the construction phase to ensure the agreed ecological mitigation and management measures are implemented. This is likely to include the production and implementation of a protected species protection plan, to minimise the risk to protected ecological species.

5.5.4 Where effects are assessed as being significant, within the context of the EIA regulations, further mitigation measures will be identified and agreed. All mitigation measures will be developed on the basis of robust science, drawing on current and emerging good practice, and its likely efficacy and success will be considered.

5.5.5 Suitable principles for biodiversity enhancement to be delivered as part of the Proposed Development will be outlined within the EIA Report. The appropriateness and feasibility of principles will be confirmed with NatureScot and relevant consultees over the course of the EIA process, with view to prescriptive enhancement measures being detailed post-consent within a Habitat Management Plan (HMP).

5.6 Consultation

5.6.1 NatureScot was consulted in March 2022 to ensure it was satisfied with the scope of ecology surveys. NatureScot emailed confirmation of its satisfaction with the proposed approach to ecology survey scope on 29 March 2022.

5.7 Matters Scoped Out

Designated Sites

5.7.1 By virtue of the static nature of the sites' qualifying habitats interests, spatial separation and/or absence of hydrological pathways of connectivity, it is proposed that the potential for indirect effects upon the ecological qualifying interests of any statutorily designated site for nature conservation located greater than 2 km from the site, is scoped out of the assessment. It is considered that embedded mitigation and good practice will be sufficient to prevent any impacts.

5.7.2 The assessment will therefore not consider construction or operation effects on the following:

- Tweedsmuir Hills SSSI;
- Craigdilly SSSI; and
- Moffat Hills SSSI and SAC.

5.7.3 In an EIA context, it is considered that embedded design mitigation and good practice will be sufficient to prevent any significant effects from occurring on these sites during either construction and/or operation. Therefore, these statutory designated sites are also scoped out of further assessment.

5.7.4 It is proposed that embedded mitigation and good practice, including an appropriate buffer applied to the LBS will be sufficient to prevent the potential for indirect effects upon the Glenmuck Bog LBS, which is located within the site. Therefore, it is proposed that Glenmuck Bog LBS is scoped out of the assessment.

Habitats and Species

5.7.5 Impacts to common and widespread habitats of low sensitivity and/or conservation interest, such as bracken, plantation forestry, and some grassland habitats, are scoped out of the construction and operation assessments.

5.7.6 The potential for impacts on fish, including those that are qualifying features of the River Tweed SAC and SSSI, during the construction and operational stages of the Proposed Development are scoped out of assessment on the basis of the implementation of measures contained within a CEMP. Additionally, these species' are considered relatively immobile as their habitat is limited to aquatic habitats which would be protected via the implementation of a CEMP. It is considered that embedded design mitigation and good practice will be sufficient to prevent any significant effects from occurring on these species during either construction and/or operation.

5.7.7 Baseline information gathering has not identified the site as being sufficiently important to lead to the potential for significant effects during construction on the following protected species in the context of the implementation of embedded mitigation and good practice (and thus are scoped out of the assessment):

- wildcat;
- water vole;
- red squirrel;
- badger;
- reptiles;
- common amphibians;
- fish; and,
- invertebrates.

5.7.8 Effects on habitats and species (excluding bats) during operation of the Proposed Development can also be scoped out. No further damage or disturbance is anticipated to habitats during operation, and maintenance visits will be rare and unlikely to result in disturbance to protected species.

5.7.9 Although these ecological features are scoped out of assessment, consideration will be afforded to the provision of precautionary embedded mitigation to be included in the CEMP and Operational Management Plans to ensure legislation compliance with regards the protection afforded to these species under the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended in Scotland), as relevant.

5.8 Questions to Consultees

Q5.1: Do consultees agree with the range of desk study sources and ecology surveys considered to inform the design and assessment of the Proposed Development?

Q5.2: Do consultees agree that the full range of likely effects to be assessed within the EIA Report has been adequately identified and is proportionate to the nature of the Proposed Development?

Q5.3: Are there any other relevant consultees who should be contacted with respect to the ecology assessment and scope of baseline information gathering?

Q5.4: Do consultees agree with those features that have been scoped out of assessment in respect to ecology (and the rationale for the decision)?

Q5.5: Do consultees agree with the proposed assessment approach?

Q5.6: Do consultees agree with the proposed scope of the cumulative assessment? Can consultees provide a list of those specific developments that should be considered in the cumulative assessment?

Q5.7: Do consultees agree with the proposed study area(s)?

6. Ornithology

6.1 Introduction

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

6.1.2 Ornithological features scoped into the assessment have been informed by key legislative and policy drivers, as they relate to nature conservation in Scotland, and include:

- Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds (codified version of Directive 79/409/EEC as amended) (Birds Directive);
- The Conservation of Habitats and Species Regulations 2017, as amended in Scotland by the Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 (hereafter referred to as the 'Habitat Regulations');
- The Wildlife and Countryside Act 1981 (as amended);
- The Wildlife and Natural Environment (Scotland) Act 2011;
- The Nature Conservation (Scotland) Act 2004;
- The National Planning Policy Framework 3 2014;
- The Revised Draft National Planning Framework 4 (NPF4) 2022;
- Scottish Planning Policy 2014;
- The United Kingdom Biodiversity Action Plan (UK BAP) Priority Species and Habitats 2007;
- Scottish Biodiversity List (SBL) 2020;
- The Scottish Borders Local Development Plan 2016 (LDP); and
- The Scottish Borders Biodiversity Action Plan 2018 – 2028 (LBAP).

6.1.3 The assessment will follow the Chartered Institute of Ecology and Environmental Management Guidelines (CIEEM) for Ecological Impact Assessment in the UK (2018).

6.2 Environmental Baseline

6.2.1 Baseline information in relation to ornithological features which may be affected by the Proposed Development has been collected through consultation, desk study and ornithological field surveys.

6.2.2 Full details of key sources reviewed, consultations undertaken, and information obtained will be provided within the EIA Report.

Target Species

6.2.3 Important ornithological features (defined as 'Target Species') will comprise:

- species listed on Annex 1 of the Birds Directive;
- species listed on Schedule 1 of the WCA; and
- 'Priority bird species for assessment when considering the development of onshore wind farms in Scotland' as listed on Annex 1 of current guidance (NatureScot, 2018).

Defining the study area

6.2.4 Study areas have been defined individually for each environmental receptor, taking into account the geographic scope of the potential impacts relevant to that receptor and the information required to assess those impacts.

6.2.5 Study areas for baseline ornithology surveys will be in accordance with relevant current guidance (NatureScot, 2017):

- Vantage point (VP) flight activity surveys - the site plus 500 m;
- Moorland Breeding Bird Surveys (MBBS) - within the site and out to 500 m where accessible;
- Annex 1/Schedule 1 breeding raptor and owl searches – site plus 2 km; and
- Breeding black grouse (*Tetrao Tetrix)* searches – within the site and out to 1.5 km (where accessible).

6.2.6 Where required, study areas will be updated to account for any changes to scheme design and ensure baseline ornithological information is collected in accordance with current best practice industry guidance.

Initial Desk Study

6.2.7 An initial desk study is being undertaken in 2022 to inform the proposed approach to baseline information gathering, including the scope and requirement for baseline ornithological surveys.

6.2.8 The following key sources are being consulted:

- NatureScot Sitelink;
- South of Scotland Golden Eagle (*Aquila chrysaetos)* Project (SSGEP);
- Lothian and Borders branch of the Scottish Raptor Study Group (SRSG);
- Multi-Agency Geographic Information for the Countryside (MAGIC);
- Royal Society for the Protection of Birds (RSPB);
- Aerial imagery;
- The Wildlife Information Centre (TWIC); and
- NatureScot general pre-application/scoping advice to developers of onshore wind farms applicable at the time (NatureScot, 2020).

Statutory Designated Sites for Nature Conservation

6.2.9 The site does not include any part of a statutory site with designated ornithological interest. Table 6.1 and Figure 8 identify statutory designated sites with ornithological interests located within 10 km of the site (extended to 20 km for any sites with qualifying migratory waterfowl). Only one designated site with ornithological interest has been identified as part of the initial desk study: Tweedsmuir Hills Site of SSSI. The distance between this designated site boundary and the site at their nearest points is provided in Table 6.1. The site does not include any part of a non-statutory site with designated ornithological interest, nor is it within 2 km of any such non-statutory site.

6.2.10 Sites with non-avian ecological qualifying interests are detailed and discussed separately in section 5 'Ecology' of this EIA Scoping Report.

6.2.11 The Tweedsmuir Hills SSSI which lies 2.2 km east of the site. This site is designated for its breeding bird assemblage which involves red grouse (*Lagopus lagopus scotica*), black grouse, golden plover (*Pluvialis apricaria)*, curlew (*Numenius arquata)*, dunlin (*Calidris alpina*), common snipe (*Actitis hypoleucos*), ring ouzel (*Turdus torquatus)*, whinchat (*Saxicola rubetra)*, stonechat (*Saxicola rubicola*) and wheatear (*Oenanthe oenanthe*). Several Schedule 1 species also use the site for foraging while breeding off-site, in winter or on passage. No sites with qualifying migratory waterfowl interest were identified within 20 km.

Baseline Surveys

6.2.12 The following field surveys are currently being undertaken in 2022-23 to confirm baseline ornithological features within the site and surrounding area:

- VP flight activity surveys;
- MBBS;
- Annex 1/Schedule 1 breeding raptor and owl searches; and
- Breeding black grouse searches.

6.2.13 VP flight activity surveys have been carried out from three VP locations to provide appropriate coverage of the relevant study area, as shown on Figure 9.

6.2.14 VP flight activity survey being undertaken at each VP monthly is shown in Table 6.1. VP hours will meet the criteria in accordance with NatureScot guidance (2017).

Table 6.1 – VP survey effort

VP number	Mar -22	Apr -22	May -22	Jun -22	Jul -22	Aug -22	Sept -22	Oct -22	Nov -22	Dec -22	Jan -23	Feb -23	Total
	Breeding season						Non-breeding season						
1	6	6	6	6	6	6	6	6	6	6	6	6	72
2	6	6	6	6	6	6	6	6	6	6	6	6	72
3	6	6	6	6	6	6	6	6	6	6	6	6	72

6.2.15 MBBS surveys were carried out between April and July 2022, following an adapted Brown and Shepherd (1993) methodology, in accordance with NatureScot guidance (2017), to record breeding moorland species. Further details of the methodology will be provided in the EIA Report.

6.2.16 Dedicated Annex 1/Schedule 1 breeding raptor and owl surveys, comprising a combination of short VPs and walkovers to detect displaying or nesting behaviour, were carried out between April and July 2022 in accordance with methods described in Hardey *et al.* (2013). Further details of the methodology will be provided in the EIA Report.

6.2.17 Dedicated black grouse surveys were carried out following methods summarised in Gilbert *et al*. (1998) and in accordance with NatureScot guidance (2017). Further details of the methodology will be provided in the EIA Report.

6.2.18 All surveys have been undertaken by suitably competent and qualified ornithologists in accordance with industry standard guidance. Full details of survey methodologies (including the study areas used for each survey) will be presented within the EIA Report

6.2.19 Ornithological surveys are currently on-going. However, baseline information gathered to date identifies that the site and immediate surrounds supports a modest moorland breeding bird assemblage, including small numbers of black grouse (one suspected lek with three males approximately 700 m from the site), common sandpiper, curlew, golden plover, lapwing (*Vanellus vanellus*), oystercatcher (*Haematopus ostralegus)*, and snipe. Breeding territories were typically associated with the River Tweed and adjoining fields to the river, and within open habitat to the north of the site, with no territories located within the site itself (which is largely unsuitable for these species).

6.2.20 No evidence of breeding Annex 1/Schedule 1 raptors and owl species have been recorded within the site or within 2 km of the site. Desk study records for Annex 1/Schedule 1 raptors and owl species are pending as the desk study has not yet been completed. However, the Ornithology Chapter of the EIA Report will detail any desk study results relating to these species.

6.2.21 VP flight activity surveys have, to date, recorded low levels of flight activity, with target species recorded being curlew, goosander (*Mergus merganser)*, greylag goose (*Anser anser*), grey heron (*Ardea cinerea)*, hen harrier (*Circus cyaneus)*, red kite (*Milvus milvus)*, merlin (*Falco columbarius)*, oystercatcher and pink-footed goose (*Anser brachyrhynchus)*.

6.3 Potential Significant Effects

6.3.1 Impacts will be considered during the construction and operational phases of the Proposed Development and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

6.3.2 Potential significant effects could arise during the construction phase of the Proposed Development, through habitat loss, fragmentation or habitat change, or disturbance or loss of nest sites, eggs or dependent young.

6.3.3 Potential significant effects could arise during the operational phase of the Proposed Development through avian mortality from collision with turbine blades (or other infrastructure associated with the Proposed Development), or displacement caused by avoidance of the operational Proposed Development.

6.3.4 Where flight activity data justifies it (considered to be ≥3 'at-risk' flights) Collision Risk Models following the Band Model in accordance with NatureScot guidance (Band *et al*., 2007; NatureScot, 2000) will be undertaken to quantify the likelihood of mortality for Target Species.

6.3.5 These sources of impact will be considered throughout the design process for the Proposed Development, and where possible will either be avoided completely through scheme design or will be prevented/ minimised via good practice embedded mitigation measures to be included in the Proposed Development from the outset and detailed within the EIA Report.

6.4 Method of Assessment and Reporting

6.4.1 The survey scope has been described above in relation to the existing conditions at and around the site.

6.4.2 Impact assessment presented within the EIA Report for ornithological features will be based on CIEEM guidance (2018) and NatureScot guidance 'Assessing Significance of Impacts from Onshore Wind Farms Outwith Designated Areas' (2018).

6.4.3 The assessment process will include the following stages:

- determination and evaluation of important ornithological features;
- identification and characterisation of impacts;

- outline of mitigating measures to avoid and reduce significant impacts;
- assessment of the significance of any residual effects after such measures;
- identification of appropriate compensation measures to offset significant residual effects; and
- identification of opportunities for enhancement.

6.4.4 The Ornithology Chapter of the EIA Report will be supported by Technical Appendices detailing the desk study results, consultation, survey methods and results, and will be further supported by relevant figures, tables and photographs, where necessary.

Determining Importance

6.4.5 The assessment within the EIA Report will only assess in detail impacts upon ornithological features that are considered important and to have the potential to be significantly affected by the Proposed Development. A detailed assessment of features that are sufficiently widespread, unthreatened and resilient to project impacts will not be undertaken and justification for scoping out of these features from detailed assessment will be provided.

6.4.6 Relevant European, national and local legislation, policy and guidance will be referred to in order to determine the importance (or 'sensitivity') of ornithological features. In addition, importance will also be determined using professional judgement, specialist consultation advice and the results of baseline surveys and the importance of features within the context of the geographical area.

6.4.7 Importance will not necessarily, however, relate solely to the level of legal protection that a feature receives, and ornithological features may be important for a variety of reasons, such as their connectivity to a designated site and the rarity of species or the geographical location of species relative to their known range. This will be taken into account when defining the Target Species for the purposes of impact assessment.

6.4.8 The importance of ornithological features will be defined in a geographical context from "Local" to "International".

Identification and Characterisation of Impacts

6.4.9 The identification and characterisation of impacts on important ornithological features will be undertaken in accordance with CIEEM guidelines (2018) with reference made to magnitude (e.g. area or number of individuals to be impacted), extent, duration and reversibility as appropriate.

6.4.10 Impacts will be considered during the construction and operational phases of the Proposed Development and will be assessed on the basis that a clearly defined range of avoidance and standard good practice measures are implemented.

Significant Effects

6.4.11 CIEEM guidelines (2018) define a 'significant effect' as an effect that either supports or undermines biodiversity conservation objectives for 'important ornithological features' or for biodiversity in general and notes that "*a significant effect does not necessarily equate to an effect so severe that consent for the project should be refused planning permission. For example, many projects with significant negative ecological effects can be lawfully permitted following EIA procedures*."

6.4.12 Potentially significant effects identified will be expressed within the EIA Report with reference to an appropriate geographic scale. For example, a significant effect on a nationally designated site is likely to be of national significance. However, the scale of significance does not necessarily always relate to the importance of an ornithological feature. For example, an effect on a species which is considered of national importance, may not have a significant effect upon its national population.

6.4.13 For the purposes of assessment, the significance of effects will primarily be expressed within the EIA Report with reference to the regional, national or international scale (as relevant) in line with guidance. The significance of effects at a local scale may also be assessed where sufficient information allows a meaningful assessment.

6.4.14 In line with the principles of proportionate EIA, embedded mitigation, including avoidance through the design process and application of industry standard good practice, will be considered at the outset of the assessment. Important ornithological feature status will only be assigned where there is still considered to be the potential for significant effects on the identified feature arising from the Proposed Development after the application of embedded mitigation measures.

6.4.15 In order to assess significance, population information will be provided at regional and national scales, as relevant, where available. For regional estimates, it is proposed that Natural Heritage Zone (NHZ) population estimates are used (Wilson *et a*l., 2015). In cases of reasonable doubt, where it is not possible to robustly justify a conclusion of no significant effect, a significant effect will be assumed as a precautionary approach. Where uncertainty exists, this will be acknowledged.

6.4.16 Where the EIA proposes measures to mitigate potentially significant adverse effects on ornithological features, a further assessment of residual effects, taking into account any ornithological mitigation recommended, will be undertaken.

Cumulative Impacts

6.4.17 The potential for cumulative impacts with other wind farm developments will be assessed in accordance with NatureScot guidance (2012), for any feature with greater than **negligible** magnitude residual effects following the application of mitigation and compensation proposals. With regard to the spatial extent of the cumulative assessment, NatureScot guidance (NatureScot, 2012 and NatureScot, 2018) recommends that cumulative effects should typically be assessed at the relevant Regional NHZ scale, unless there is a reasonable alternative. The site sits within NHZ20 'Border Hills'. In this case, the undertaking of a cumulative assessment of potential impacts at the NHZ scale would entail the consideration of a vast number of other wind farm developments and the work required to obtain sufficient data for robust cumulative assessment would be disproportionate to any potential increase in effects associated with the Proposed Development. It may be that NatureScot holds relevant datasets to this, and a request is made pertaining to this in Section 6.8.

6.4.18 NatureScot guidance (2012) recognises that access to relevant data for other developments may be limited and therefore a meaningful assessment of cumulative effects is not always possible. It is not known whether NatureScot have up to date relevant ornithological records (collision risk) for Target Species at wind farms within NHZ20, which could be used. In the event NatureScot does not have such information and given that relevant data for many of the wind farm developments located within NHZ20 is unlikely to be readily available, the results of any cumulative assessment at the NHZ scale based on incomplete data would not allow any meaningful conclusions to be drawn.

6.4.19 As such (and in the event of relevant information not being available from NatureScot), it is proposed that an alternative species-specific approach will be adopted for the purposes of this assessment, with core foraging ranges of important ornithological features, as per NatureScot guidance (2016) or best available evidence, used to determine the spatial extent over which the cumulative assessment is undertaken. Therefore, it is proposed that the cumulative assessment for this Proposed Development will encompass the effects of the proposal in-combination with existing wind farm developments (>3 turbines), located, as a precaution, within 20 km of the site, either built or under construction; approved developments, awaiting implementation; and proposals awaiting determination within the planning process with design information in the public domain.

Presentation of Sensitive Information

6.4.20 Ornithological data considered sensitive (e.g. data pertaining to breeding locations of Schedule 1 species) will be included in a confidential appendix to the EIA Report in line with guidance. This will not be made publicly available but will comprise part of the application for the Proposed Development. It will be made available to the ECU, NatureScot and SBC.

6.4.21 It will be ensured that sufficient information is presented within the EIA Report to allow an objective and robust assessment of potentially significant adverse impacts upon ornithological features to be carried out.

6.5 Approach to Mitigation

6.5.1 The adoption of embedded mitigation measures to avoid or minimise adverse impacts upon ornithological features will be part of the iterative design process for the Proposed Development.

6.5.2 Full details of the design evolution and embedded mitigation measures in relation to ornithology will be detailed within the EIA Report. This will include the specification of any species-specific working buffers as necessary, and a requirement for the production of a breeding bird protection plan to ensure legislative compliance in accordance with current good practice guidance. Measures including the appointment of an Ecological Clerk of Works (ECoW) to oversee the implementation of ornithological protection measures and production of a Construction Environmental Management Plan (CEMP) to be followed will minimise the risk to ornithological features.

6.5.3 Flight activity and breeding data will also be reviewed to identify any potentially problematic turbines which may result in significant collision risk, and measures to limit increased suitability of the site to sensitive species (such as hen harrier, merlin and short-eared owl (*Asio flammeus*)) will be outlined where required, with reference to NatureScot guidance (2017).

6.5.4 Suitable principles for biodiversity enhancement to be delivered as part of the Proposed Development will be outlined within the EIA Report. The appropriateness and feasibility of principles will be confirmed with NatureScot and relevant consultees over the course of the EIA process, with a view to prescriptive enhancement measures being detailed post-consent within a Habitat Management Plan (HMP).

6.6 Consultation

6.6.1 NatureScot was consulted in March 2022 to ensure it was satisfied with the scope of ornithology surveys. NatureScot emailed confirmation of its satisfaction with the proposed approach to ornithology survey scope on 29 March 2022 and agreed that the Applicant should approach NatureScot again after the completion of one year of surveys to reassess the survey requirement for the Proposed Development. In March 2023, a report will be compiled to present the first year of ornithology data collected at the site and NatureScot will be invited to provide comment on the acceptability of a single year of data collection to inform the EIA.

6.7 Matters Scoped Out

6.7.1 Due to the findings of surveys on site (up until the time of writing) and a limited amount or lack of suitable habitat within the site, it is considered unlikely that the construction and operation of the Proposed Development would result in potentially significant disturbance/displacement effects to:

- Black grouse;
- Osprey (Pandion haliaetus);
- Hen harrier;
- Merlin;
- Golden plover;
- Common sandpiper;
- Lapwing;
- Dunlin;
- Snipe;
- Curlew;
- Nightjar (Caprimulgus europaeus);
- Eagle species;
- Pink-footed goose; and
- Other wetland species including greylag goose, whooper swan (*Cygnus cygnus)*, oystercatcher and goosander.

6.7.2 It is proposed that disturbance to/displacement of these species will therefore be scoped out of the impact assessment, provided there is no change to the baseline conditions between EIA scoping and authoring of the EIA Report.

6.7.3 The qualifying species of the Tweedsmuir Hills SSSI are red grouse, black grouse, golden plover, curlew, dunlin, common snipe, ring ouzel, whinchat, stonechat (*Saxicola rubicola)* and wheatear. Several Schedule 1 species also use the site for foraging while breeding off-site, in winter or on passage. NatureScot (2016) gives the core ranges of many of the qualifying species listed above as 2 km or under, including black grouse, curlew and dunlin. In addition to this, as discussed above, low amounts of suitable habitat for these species exists within the site (which is mainly forested) and records of these species during surveys to date have been low in number or absent. In this context and as the SSSI lies over 2 km from the site, it is proposed that the potential for indirect effects upon the ornithological qualifying interests of Tweedsmuir Hills SSSI (the only designated site with qualifying ornithological interest within 10 km of the site) can be scoped out of the assessment by virtue of spatial separation, and results of baseline surveys and habitats on-site.

6.7.4 Construction and operation impacts to common and widespread ornithological species, including woodland and moorland passerines are scoped out of the assessment (in accordance with current guidance; NatureScot, 2017).

6.7.5 These ornithological features are therefore to be scoped out of the assessment. Consideration will, however, be afforded to the provision of precautionary embedded mitigation, to be included in the CEMP, to ensure compliance with the provisions protecting these species in the Conservation (Natural Habitats, &c.) Regulations 1994 (the Habitats Regulations) (as amended in Scotland) and the Wildlife and Countryside Act 1981 (as amended in Scotland), as relevant. This will include pre-construction surveys for nesting species so that active nests are protected during construction.

6.8 Questions to Consultees

Q6.1: Do consultees agree with the range of desk study sources and ornithology surveys considered to inform the design and assessment of the Proposed Development? Including the "Target Species" considered?

Q6.2: Do consultees agree that the full range of likely effects to be assessed within the EIA Report has been adequately identified and is proportionate to the nature of the Proposed Development?

Q6.3: Are there any other relevant consultees who should be contacted with respect to the ornithology assessment and scope of baseline information gathering?

Q6.4: Do consultees agree with those features that have been scoped out of assessment in respect to ornithology (and the rationale for the decision)?

Q6.5: Do consultees agree with the proposed scope of the cumulative assessment?

Q5.6: Do consultees agree that potentially significant impacts upon statutory designated sites for nature conservation (with ornithological features of interest) can be scoped out of the assessment?

Q6.7: Can NatureScot provide a list of those wind farm developments within the NHZ20 which should be considered within the assessment? Can NatureScot provide a list of those collision risk rates for red kite for those wind farm developments within the said NHZ?

7. Cultural Heritage

7.1 Introduction

7.1.1 This section outlines the baseline archaeological and cultural heritage conditions within the site and study area and outlines the methodology that will be utilised for the identification and assessment of direct and settings effects on heritage assets within the EIA Report. This section also considers the potential for significant effects on heritage assets arising from the Proposed Development and highlights instances where mitigation measures may be required.

7.1.2 This section of the EIA Scoping Report has been produced by AOC Archaeology Group, a Registered Organisation of the Chartered Institute for Archaeologists (CIfA).

7.2 Environmental Baseline

7.2.1 This baseline has been informed by data obtained from Historic Environment Scotland (HES) Designated Datasets; the National Record for the Historic Environment (NRHE) as held by HES; and a review of historic Ordnance Survey mapping held by the National Library of Scotland (NLS).

7.2.2 Each asset within the site has been assigned an 'Asset No.' unique to this report, and the gazetteer (Appendix 2) includes information regarding the type, period, grid reference, NRHE number, protective designation, and other descriptive information, as derived from the consulted sources. These assets are also depicted on Figure 10.

7.2.3 Three Scheduled Monuments (Asset 1: SM2702, Asset 2: SM2748 and Asset 3: SM3529) have been identified within the site. Menzion Farmhouse (Asset 2) and Menzion Farm (Asset 1) are examples of earlier prehistoric enclosed cremation cemeteries. The Scheduled Monument known as Weird Law, platform settlement 550 m S of summit (Asset 3) is an example of a later prehistoric settlement.

7.2.4 Twenty-two non-designated heritage assets have been identified within the site. Many of these assets were recorded during an upland survey of Upper Tweeddale by the Biggar Museum Trust and Peebleshire Archaeology Society. The assets include prehistoric settlements, burial sites, field systems, burnt mounds and cairns as well as enclosures and building remains associated with post medieval pastoral farming. The majority of the assets within the site are concentrated on the lower slopes close to the banks of the River Tweed and the A701. Known assets on the upper slopes (Assets 10, 11, 21 and 22) are discrete small mounds, interpreted as burnt mounds and were also recorded during the Upper Tweeddale Survey. The mound at Asset 11 is noted to likely be of natural origin, however the description for Asset 11 notes the location of a quarry "*10 m upstream*" indicating that further, as yet, unrecorded post-medieval or modern assets survive within the site.

7.2.5 There are an additional 79 non-designated heritage assets recorded within 1 km of the site. These can be characterised as prehistoric and post-medieval settlement, burial, and agricultural remains.

7.2.6 The Ordnance Survey maps published in 1859 and 1860 depict the site on the north-western slopes of the River Tweed annotated "*Weird Law*" and "*Ewelaw Rig*", the latter name likely references historical land uses associated with both pasture and arable activities. The Ordnance Survey maps also annotate Nether Rigs (Asset 25) and Upper Rigs in the south-western corner of the site. A sheep shelter and enclosure are depicted on Weird Law. On the lower slopes of Eyelaw Rig an old whinstone quarry (Asset 13) and "*Giants Grace*" a *"supposed tumulus*" (Asset 4) are shown. A house annotated as "*Oliver"* is depicted south-east of the site consistent with the current location of the house and appears to have been surrounded by planned gardens and woodland in the mid-19th Century.

7.2.7 The lower slopes of the site and the land adjacent to the Tweed were a focus for prehistoric and later settlement and funerary activity and thus there is judged to be a high potential for hitherto unknown archaeological remains to survive on the site. There is likely to be lower potential for archaeological remains to survive on the exposed south-east facing upper slopes of Oliver Dod and Glenmuck Height both due to the nature of the terrain and previous ground disturbance caused by commercial forestry planting. However, the possibility of archaeological remains surviving in these areas cannot be discounted.

7.3 Potential Sources of Impact

Direct Impacts

7.3.1 There are three Scheduled Monuments (Assets 1-3) identified within the site. Scheduled Monuments are afforded statutory protection under the provisions of the Ancient Monuments and Archaeological Areas Act 1979 (AMAA Act 1979), modified by the Historic Environment (Amendment) (Scotland) Act 2011. The boundaries of the Scheduled Monuments are shown on Figure 10. Any works within the boundary of the Scheduled Monument would require Scheduled Monument Consent (SMC) from Historic Environment Scotland (HES). The works which require SMC are comprehensively defined in the AMAA Act 1979 and summarised as any works that result in demolition, destruction or damage, removal, repair, alteration or addition, flooding or tipping (AMAA 1979 Section 2(2)). SMC would be unlikely to be granted for the purposes of the Proposed Development unless there are exceptional circumstances and therefore the design of the Proposed Development will ensure that all infrastructure would be located to avoid these designated assets.

7.3.2 Furthermore, it is noted that whilst the area encompassed by each Scheduled Monument designation has been delineated to protect the core remains associated with each asset, archaeological remains associated with the Scheduled Monument may extend beyond the designated area. Consequently, buffer zones will be placed around each Scheduled Monument to protect any surrounding associated archaeological deposits.

7.3.3 The Proposed Development has the potential to directly impact on the known heritage assets within the site. Wherever possible, heritage assets would be preserved in situ and thus direct impacts would be avoided by design. If heritage assets cannot be avoided by design, a robust programme of mitigation would be required.

7.3.4 There is the potential for hitherto unknown archaeological deposits and remains to survive on the site. As such the Proposed Development may have the potential to directly impact hitherto unknown archaeological remains.

Settings Impacts

7.3.5 The Proposed Development has the potential to impact upon the settings of heritage assets with which it is intervisible or where it can be seen in key views towards assets across the landscape. There is also a potential for cumulative impacts on the settings of heritage assets.

7.3.6 Assets 1 and 3 located within the site are funerary and burial monuments which date to the earlier prehistoric period. These assets are located on the lower slopes of the valley where further contemporary remains may be located. As ritual and funerary monuments, these assets are likely to be highly sensitive to changes in their settings. While their settings relate primarily to the valley of the River Tweed, preliminary site visits indicate that they would have open visibility of the Proposed Development and its proximity is anticipated to have an impact on their setting. A full assessment of the impact of the Proposed Development on their setting will be informed by detailed site visits and the final design.

7.3.7 Asset 3 is a later prehistoric settlement located on the higher valley south facing slopes of Weird Law overlooking the Tweed Valley. The proximity of the Proposed Development is anticipated to have an impact on the setting of this asset. A full assessment of the impact of the Proposed Development on its setting will be informed by detailed site visits and the final design.

7.3.8 A number of assets within close proximity to the site are of a defensive nature and were sited to command wide reaching views across the landscape. The prehistoric fort at Whiteside Rig (SM3467) is the second largest fort in the Scottish Borders and is afforded extensive views north along the Tweed Valley although views west towards the site are blocked by woodland. Also close to the site are forts at Nether Oliver (SM2947) and Oliver Castle (SM3144) and defended and undefended settlements along the River Tweed. Rivers and their valleys were the primary routes through the landscape for travel and the elevated location of the forts would have allowed those within the fort to observe and control such routes. It is unlikely that the Proposed Development would interrupt the visual relationship between any of the identified defensive monuments along the Tweed Valley. However, detailed consideration will be given as to how the Proposed Development may appear backdropped behind key views between these monuments.

7.3.9 There are six Category B Listed Buildings and two Category C Listed Buildings within 5 km of the site (Figure 10) with the potential for their settings to be impacted by the Proposed Development. An assessment of the impact of the Proposed Development on their setting will be informed by review of their sensitivity to changes in their settings, Zone of Theoretical Visibility (ZTV) mapping and site visits. An initial review of Listed Buildings located outwith the ZTV has not identified any with the potential for the Proposed Development to be seen backdropped in key views towards them and thus Listed Buildings located outwith the ZTV will be scoped out of further assessment.

7.3.10 There are 90 Scheduled Monuments within 10 km of the Proposed Development. An initial review of the settings of these monuments has been undertaken based on preliminary site visits to selected assets and the wider study areas and review of recorded information about their key characteristics including likely alignments, key views and landscape relationships. This review has indicated that Scheduled Monuments within the Tweed valley have strong visual relationships within the valley but that long distant views across the landscape are limited. The landscape in which the Proposed Development is located is tightly defined by the hills either side of the Tweed valley and this is reflected in the preliminary ZTV shown on Figure 10 which indicates that Scheduled Monuments located beyond the Tweed valley would have little or no visibility with the Proposed Development. A review of the Scheduled Monuments located within the 10 km study area but beyond the ZTV has not identified any Scheduled Monuments with the potential for the Proposed Development to be seen backdropped in key views towards them and therefore it is considered unlikely that there would be any significant effects on the settings of Scheduled Monuments located outwith the ZTV. It is therefore proposed to scope Scheduled Monuments located outwith the ZTV out of further assessment.

7.3.11 The south-west edge of the Inventory Garden and Designed Landscape (GDL) of Dawyck (GDL00134) extends into the 10 km study area. As shown on Figure 10 the whole of the GDL designation lies outwith the ZTV. Preliminary site visits indicate that the setting of the GDL relates to the wooded grounds of the Estate and upland valley of the River Tweed with identified key views relating to the core of the estate and immediate surrounding valley of the Tweed. The Proposed Development would be located beyond the setting of the GDL and would not be visible on any approaches towards it. Significant effects on the setting of the Dawyck GDL are considered unlikely and therefore the GDL will be scoped out of further assessment.

7.4 Method of Assessment and Reporting

7.4.1 The EIA Report will be prepared in accordance with relevant national and local legislation, policy, and guidance on the historic environment:

Legislation and Policy

- Ancient Monuments and Archaeological Areas Act 1979 (as amended) (UK Government 1979);
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 (as amended) (UK Government 1997);
- Planning etc. (Scotland) Act 2006 (UK Government 2006);
- Historic Environment (Amendment) (Scotland) Act 2011 (Scottish Government 2011a);
- Historic Environment (Scotland) Act 2014 (Scottish Government 2014b);
- Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) (UK Government 2017);
- Scottish Planning Policy (Scottish Government 2014a);
- Historic Environment Policy for Scotland (Historic Environment Scotland (HES) 2019), including Designation Policy and Selection Guidance (HES 2019; Updated 2020); and
- Scottish Borders Council Local Development Plan
  - Policy EP7 Listed Buildings and EP8 Archaeology.

Technical Guidance

7.4.2 The following guidance documents will be consulted during the assessment to assist in the determination of potential effects on heritage assets:

- Planning Advice Note 2/2011: Planning and archaeology (Scottish Government 2011b);
- Managing Change in the Historic Environment: Setting (HES 2020);
- NatureScot and HES's published guidance contained within 'Environmental Impact Assessment Handbook v5' (SNH & HES 2018);
- The Chartered Institute for Archaeologists (CIfA) Code of Conduct: professional ethics in archaeology (2014; Revised 2019; 2020 & 2021);
- CIfA Standard and guidance for historic environment desk-based assessment (2014a – updated 2020); and
- CIfA Standard and guidance for commissioning work or providing advice on archaeology and the historic environment (2014b – updated 2020).

Study Areas

7.4.3 In order to assess the potential for effects on cultural heritage assets resulting from the Proposed Development, the following study areas have been identified:

- A core study area (the site), which includes all land within the site, which will be subject to assessment for potential direct effects. This study area will be subject to detailed walkover survey and cultural heritage assets which may be directly impacted by the Proposed Development will be identified.
- A 1 km study area for the identification of all known heritage assets and known previous archaeological interventions in order to help predict whether any similar hitherto unknown archaeological remains are likely to survive within the site and thus be impacted by the Proposed Development.
- A 5 km study area for the assessment of potential effects on the settings of all designated heritage assets including Scheduled Monuments, all Listed Buildings, Inventoried Gardens and Designed Landscapes and Battlefields, Conservation Areas, and assets deemed to be of National Significance in the Historic Environment Record (HER).
- A 10 km study area for the assessment of potential effects on the setting of all nationally important heritage assets including Scheduled Monuments, Category A Listed Buildings, Inventoried Gardens and Designed Landscapes and Battlefields and assets deemed to be of National Significance in the HER.

Assessment Methodology

7.4.4 The assessment will establish the historic baseline for the site. Baseline data will be collated from the following sources:

- The National Record for the Historic Environment (NRHE) as held by HES;
- The Historic Environment Record (HER) as supplied by the Archaeology Service at the Scottish Borders Council Council;
- The Historic Environment Record (HER) as supplied by West of Scotland Archaeology Service (WoSAS) (for data pertaining to elements of the study areas within South Lanarkshire);
- National Library of Scotland for published historic and Ordnance Survey maps;
- National Collection of Aerial Photography (NCAP) as held by HES for vertical and oblique aerial photographs;
- Biggar Museum Trust Upper Tweed Archaeological Survey;
- published archival sources;
- Scottish Palaeoecological Archive Database (SPAD) for information regarding the palaeoecological and paleoenvironmental potential of the Site and surrounding landscape;
- Historic Land-Use Assessment Data for Scotland (HLAMap);
- available client supplied data about the site;
- LiDAR data and imagery as held by the Scottish Remote Sensing Portal;
- a walkover survey of the site; and
- setting assessment visits to designated assets within the ZTV with the potential to be impacted by the Proposed Development.

Impact Assessment

7.4.5 The EIA Report chapter will fully describe the baseline historic environment conditions and will assess the potential for direct impacts upon known heritage assets within the site as well as outlining the potential for hitherto unknown buried remains to survive on site, and thus potentially be impacted upon.

7.4.6 The assessment will also consider the identified heritage assets in the outlined study areas which could be subject to potential impacts upon setting, including the potential for cumulative impacts. The EIA Report chapter will be supported by a detailed ZTV which will be used to identify assets intervisible with the Proposed Development. It is envisaged that visualisations (either wireframes or photomontages) will be produced for some assets to aid in assessment of settings impacts. The viewpoints required will be agreed in consultation with HES, the Archaeology Service, SBC and the Landscape and Visual consultants at MVGLA but at present it is anticipated that wireframes or photomontages will be provided for the following assets:

- Whiteside Rig, fort & enclosure (SM3467);
- Nether Oliver Crags, fort (SM2947);
- Weird Law, platform settlement 550m S of summit (SM3529);
- Menzion Farmhouse, two enclosed cremation cemeteries 400m NNW of (SM2748);
- Menzion Farm, settlement 735m SSW of (SM2750);
- Hawkshaw Castle (SM48524);
- Glenkerie Burn, fort (SM3084); and
- Glenbreck, platform settlements 1100m SW of (SM2981).

7.4.7 The assessment will distinguish between the term 'impact' and 'effect'. An impact is defined as a physical change to a heritage asset or its setting, whereas an effect refers to the significance of this impact. The first stage of the assessment will involve establishing the importance of the heritage asset and assessing the sensitivity of the asset to change (impact). An assessment of the impact magnitude will be made and a judgement regarding the level and significance of effect will be arrived at.

7.4.8 The setting assessment will be undertaken with reference to HES' Managing Change Guidance on setting and will aim to establish the current setting of the identified heritage assets, how that setting contributes to the understanding, appreciation and experience of those assets and how the Proposed Development could impact upon this.

7.4.9 Cumulative effects will also be considered. The assessment of cumulative effects on heritage assets will be based upon consideration of the effects of the Proposed Development on the settings of heritages assets, in addition to the likely effects of other operational/under construction, consented and proposed (at the application stage) wind farm schemes. Cumulative effects will be considered for designated assets as identified in the 5 km and 10 km study areas.

7.4.10 The assessment will take into account the relative scale (i.e. size and number of turbines) of the identified developments, their distance from the affected assets, and the potential degree of visibility of the various developments from the assets. Cumulative wirelines from those assets most likely to experience significant cumulative impacts on their settings will be provided, if appropriate.

7.4.11 The schemes to be included in the cumulative impact assessment will be those identified through the proposed consultations with SBC, SLC, DGC and NatureScot (NS) and will be undertaken according to the guidance in NatureScot's Assessing the Cumulative Impact of Onshore Wind Energy Developments (SNH, 2012) and Historic Environment Scotland's Environmental Impact Assessment Handbook (SNH and HES April 2018).

7.4.12 SPP notes that "*where there is potential for a proposed development to have an adverse effect on a Scheduled Monument or on the integrity of its setting, permission should only be granted where there are 'exceptional circumstances*" (Scottish Government 2014a, para 145). Adverse effects on integrity of setting are judged here to relate to whether a change would seriously adversely affect the asset's key attributes or elements of setting which contribute to an asset's significance to the extent that that the setting of the asset can no longer be understood or appreciated. It is considered that an effect upon the integrity of the setting of an asset will only occur where the degree of change that will be represented by the Proposed Development would adversely alter those factors of the monument's setting that contribute to cultural significance such that the understanding, appreciation, and experience of an asset are not adequately retained

7.4.13 In terms of effects upon the setting of heritage assets, it is considered that only those effects identified as 'significant' in the assessment will have the potential to adversely affect integrity of setting. Where no significant effect is found it is considered that the integrity of an asset's setting will remain intact.

7.4.14 Where significant effects are found, a detailed assessment of adverse effects upon integrity of setting will be undertaken. The assessment of adverse effect upon the integrity of an asset's setting, where required, will be a qualitative one.

7.5 Consultation

7.5.1 Consultation will be undertaken with the archaeology officer at SBC. A request will be made for the HER extract which will further inform the baseline. Further consultation will take place to ensure that the proposed scope of assessment meets the archaeology officer's requirements. The archaeology officer will also be consulted with regards to any mitigation measures that may be required to be implemented as part of the Proposed Development.

7.5.2 Consultation will be undertaken with HES to confirm the number and type of visualisations required to support the assessment. Further consultation will be undertaken with regards to the layout of the Proposed Development and any steps that could be taken to minimise impacts on the setting of nearby designated heritage assets.

7.6 Matters Scoped Out

7.6.1 Direct impacts on cultural heritage assets outwith the site will be scoped out of the assessment.

7.6.2 Impacts on the settings of non-designated cultural heritage assets and features will be scoped out of the assessment as these assets are generally considered less sensitive to changes in their settings and are judged to be unlikely to be subject to significant settings effects. This will be confirmed with consultees.

7.6.3 An initial review of assets outwith the ZTV has been undertaken to identify designated assets with key views towards them which may feature the Proposed Development. No such assets have been identified within this review. Therefore, designated assets falling outwith the ZTV will be scoped out of further assessment.

7.6.4 Impacts on the settings of heritage assets beyond 10 km of the site boundary will be scoped out, as most assets beyond that distance are located outwith the ZTV and will also be too distant to have their settings significantly adversely affected by the Proposed Development. This will be confirmed with consultees.

7.7 Questions to Consultees

Q7.1 Is the proposed assessment methodology, including proposed study areas, accepted?

Q7.2 Are the receptors and impacts scoped out of the assessment accepted?

Q7.3 Are there any assets beyond the proposed study areas that consultees would like to see scoped into the assessment?

Q7.4 Are there any assets located outwith the ZTV that consultees would like to see scoped into the assessment?

Q7.5 Are there any visualisations that the consultees would like to see as part of the assessment?

8. Noise

8.1 Introduction

8.1.1 This section considers the scope of work required to assess potential significant effects associated with noise and vibration during the construction and operational phases of the Proposed Development.

8.2 Environmental Baseline

8.2.1 The site is located west of the village of Tweedsmuir in the Scottish Borders on moorland and plantation forestry. The surrounding area is rural in nature with a few isolated dwellings located outside of Tweedsmuir. The Proposed Development is approximately 2.2 km south of the operational Glenkerie Wind Farm and consented extension, comprising 17 turbines in total. Approximately 2.3 km south of the Proposed Development is the consented Whitelaw Brae Wind Farm comprising 14 turbines. To the east of the Proposed Development is the operational Clyde Wind Farm and extension with the nearest turbine approximately 2.1 km away and comprises a total of 206 turbines. The proposed Grayside Wind Farm, the closest proposed turbines of which are approximately 2 km north-west of the site would comprise 21 turbines. No other wind farms have been identified within 10 km of the site boundary that are consented, built or within the planning system and under consideration.

8.2.2 The baseline noise levels were measured to the north of the site for Glenkerie Wind Farm and Extension and to the south of the site for Whitelaw Brae Wind Farm. The noise assessments for these developments described the existing baseline to be typical of that of a rural location: natural sounds such as bird calls and wind disturbed vegetation. The existing baseline noise levels will be used to inform the baseline for the Proposed Development together with a further background noise survey, refer to paragraph 8.4.11.

8.3 Potential Sources of Impact

8.3.1 During wind farm construction, noise can arise from both on-site activities such as the construction of access tracks, turbine foundations, substation buildings etc. and from the movement of construction related traffic both on-site and travelling on public roads to and from the site.

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

8.3.3 In addition to the above no significant noise effects are anticipated from the on-site substation and battery energy storage system (BESS), given the minimum separation distance between this infrastructure and nearest noise sensitive receptor (NSR) and that substations and BESS do not generate high levels of noise. Operational substation and BESS noise has therefore been scoped out of further assessment.

8.4 Method of Assessment and Reporting

8.4.1 The assessment will consider wind farms within an approximate radius of 5 km and NSRs within a radius of approximately 2 km from the Proposed Development. A list of ~~possible~~ potential NSRs within this study area are given in Table 8.1 and shown on Figure 11. It should be noted that the list of potential NSRs does not include every nearby receptor and in line with current best practice, one receptor can represent others in the vicinity. During the assessment the list of NSRs and coordinates may alter when turbine noise immission levels at these locations have been calculated. It is considered likely that the final list of NSRs in the EIA Report will contain fewer locations. The exact study area will be determined by the final layout and defined as the area where the wind turbine noise from the Proposed Development is predicted to be within 10 dB of other relevant wind energy developments, and the predicted cumulative wind farm noise level is greater than 35 dB $L_{A90, 10min}$.

Table 8.1 – Potential Noise Sensitive Receptors to be Considered

ID	Description	Easting	Northing	Distance to nearest turbine (metres)
NSR01	Menzion Farmhouse	309114	623612	1020
NSR02	Oliver Farm	309472	624414	1040
NSR03	Oliver Bank	309587	624444	1130
NSR04	The Toll House	309631	624436	1170
NSR05	Lilybank	309788	624318	1360
NSR06	Tweedview Farmhouse	309782	624890	1200
NSR07	Oliver House	309816	624863	1240

ID	Description	Easting	Northing	Distance to nearest turbine (metres)
NSR08	The Bield	309976	624782	1410
NSR09	Riverview	310040	624814	1470
NSR10	Tweedholm Cottage	310035	624843	1460
NSR11	Carngorm	310069	624906	1490
NSR12	Glenrusco	310593	624963	2010
NSR13	Greenbraes	310591	625600	2110
NSR14	Hopehead	307926	625759	960
NSR15	Glenbreck	306097	621533	2450
NSR16	Hawkshaw	307537	622436	1060
NSR17	Craiglaw	308793	620978	2790

8.4.2 The assessment will consider the potential effects of the Proposed Development due to noise associated with both the construction and operational phases, including consideration of the impact of construction traffic, as set out below.

Construction Noise

8.4.3 The assessment of temporary construction noise effects will include the calculation of noise levels from the anticipated plant and activities at the identified NSRs. Predictions of construction noise levels will be undertaken in accordance with BS 5228-1:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise' (BS5228) using published source noise data. The calculations will be undertaken in accordance with Annex F2.2, Method for Activity and Annex F2.4, Method for Mobile Plant in a Defined Area, and will assume a worst-case scenario of all plant operations continuously and simultaneously for 10 hours.

8.4.4 The predictions of construction noise levels will be assessed against the guidance limits provided in BS5228 to identify the significance of temporary construction noise effects.

8.4.5 The impact of traffic associated with the construction phase will be based on the result of the Transport Assessment where consideration will be given to the increase in traffic flows generated on the proposed transport route(s). This will be based on the baseline and predicted flows and assessed following the guidance detailed within the Design Manual for Roads and Bridges (DMRB). It may be possible that the total vehicle flows on some quieter roads are below the calculation threshold set out in the Calculation of Road Traffic Noise (CRTN). In such cases, changes in noise from vehicles using these roads will be calculated using the Haul Route method set out in BS5228.

8.4.6 The residual effects of construction noise and construction traffic will be undertaken in accordance with relevant good practice, policy and guidance.

Operational Noise

8.4.7 The overall approach for the operational noise assessment will be discussed in detail and agreed with the Scottish Borders Council (SBC). Ultimately, the assessment will be undertaken in accordance with ETSU-R-97, whilst also following the recommendations detailed within the Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (IOA GPG), as endorsed by national planning guidance.

8.4.8 ETSU-R-97 states that the assessment should take account of the effect of noise from all existing consented or, in some cases, proposed wind turbines that may affect a particular noise sensitive receptor. In this respect, cumulative noise will be the primary focus of the assessment and other turbines in the area will be included. Potential cumulative noise effects are typically restricted to turbines within 5 km, and turbines that have been identified to be within this distance from the Proposed Development are:

- Clyde Wind Farm;
- Clyde Wind Farm Extension;
- Glenkerie Wind Farm;
- Glenkerie Wind Farm Extension; and
- Whitelaw Brae Wind Farm.

8.4.9 During consultation with SBC, any other potential wind farms which are in the planning system and need to be considered in the assessment will be discussed. Currently, there are no other known wind farms within 5 km of the Proposed Development in the planning system.

8.4.10 The assessment will be undertaken with reference to current best practice, baseline information and noise predictions contained within the noise assessments of the individual applications and consented limits presented in the planning permissions. As per the guidance of ETSU-R-97 and the IOA GPG, daytime and night-time noise limits will be applicable to all wind turbines operating cumulatively. Therefore, the assessment of cumulative noise will be a key consideration with respect to the Proposed Development in the context of the consented noise limits associated with the operation of the existing wind farms.

8.4.11 Noise limits will be determined at each NSR following ETSU-R-97 and the IOA GPG. Existing limits for any properties listed in noise related planning conditions for the above neighbouring wind farms will be used and no further monitoring will be proposed at these locations. For other locations where existing noise limits are not available and wind turbine noise from the Proposed Development is expected to be greater than 35 dB L_{A90}, background noise measurements will be considered. As set out in ETSU-R-97 and the IOA GPG, it is not necessary to carry out background noise measurements at every dwelling, and data from one location may be used as a proxy for others which would be exposed to a similar noise climate. The exact survey locations will be discussed with SBC prior to undertaking any measurements and the survey would be in accordance with the IOA GPG, in particular simultaneous wind speed measurements at appropriate heights to determine hub height wind speeds.

8.4.12 Noise limits for any properties that have financial involvement with the Proposed Development would be set at 45 dB L_{A90}, in accordance with ETSU-R-97 and the IOA GPG. In the case of a property that is financially involved with a neighbouring wind farm, but not the Proposed Development, the increased limit of 45 dB L_{A90} would only apply in the cumulative assessment.

8.4.13 The operational noise assessment will also consider the impact of the Proposed Development in isolation of other wind energy developments in the area. Noise limits for the Proposed Development will be derived based on the ETSU-R-97 noise limits less the portion of which already utilised by these other developments.

Operational Vibration

8.4.14 The Proposed Development is within the safeguarding area around Eskdalemuir seismic array which contains equipment that is highly sensitive to ground-borne vibration. This means that any ground-borne vibration produced by the Proposed Development and other wind turbines in the safeguarding area must be within a total noise budget. Separate discussions are taking place with the Defence Infrastructure Organisation and Eskdalemuir Working Group regarding any allowable budget and the determination of which falls outside the scope of this assessment.

8.5 Consultation

8.5.1 No consultation has been carried out to date. SBC will be consulted in the early stages of the project to discuss and agree the methodology of assessment and potential noise survey locations and sensitive receptors.

8.6 Matters Scoped Out

8.6.1 It is anticipated that the following can be scoped out of the assessment:

- Low frequency noise and infrasound, the Scottish Government online planning advice note, Onshore Wind Turbines (2014), refers to a report for the UK Government which concluded that *"there is no evidence of health effects arising from infrasound or low frequency noise generated by the wind turbines that were tested*".
- Amplitude modulation, including 'excess amplitude modulation' and 'other amplitude modulation', in line with the IOA GPG, is not something that can be adequately assessed at the planning stage.
- Noise associated with traffic during the operation of the Proposed Development, as this is likely to be low and not significant in the context of the existing road network.
- Vibration effects upon health as a result of construction and operational activities and associated traffic, considering the distances to the closest receptors.
- Vibration effects on the Eskdalemuir sceismic array as discussed above. Separate consideration of this is taking place outside of the noise and vibration assessment.

8.7 Questions to Consultees

Q8.1 Are there any other wind farms within the planning system that you would like included in the assessment beyond those listed above?

Q8.2 Is it acceptable to use noise limits specified in existing planning consents where available?

9. Geology, Hydrology, Hydrogeology and Peat

9.1 Introduction

9.1.1 This section outlines the proposed scope of works to assess the significant effects from the Proposed Development on geology, hydrogeology and hydrology. It also includes the proposed assessment approach regarding soils and peat

9.2 Environmental Baseline

9.2.1 The Proposed Development is shown by British Geological Survey (BGS) mapping to be largely absent from any superficial deposits. Areas of glacial till and glaciofluvial deposits are noted on watercourse corridors within the site and glaciofluvial deposits and alluvium are noted along the southern boundary associated with the River Tweed. Localised areas of blanket head are present in the north-eastern area of the site adjacent to the site boundary and in the western area of the site. No peat is recorded on the BGS superficial mapping within the site boundary with a localised area of peat reported beyond the site boundary to the south-west. With much of the site comprising commercial forestry, it is likely that the local soils will have been altered by the planting and associated drainage installed to establish the forest. The bedrock beneath the site predominantly comprises Ordovician to Silurian age metasandstones and metamudstones of the Mindork Formation with the Shinnel Formation present in the north-western area of the site.

9.2.2 Review of the Carbon and Peatland 2016 mapping published by Scottish Natural Heritage (now NatureScot) records Class 3 peatland within the site boundary. Class 3 peatland is not considered a priority peatland habitat and is described as an area with dominant vegetation cover associated with wet and acidic type vegetation with carbon-rich soils and some areas of deep peat. No Class 1 or 2 peatland is recorded on-site with the closest area of Class 1 peatland located adjacent to the western site boundary.

9.2.3 Given the nature of the superficial deposits little shallow groundwater is expected. Some shallow groundwater may be present in the alluvium and glaciofluvial deposits near to watercourses, but otherwise is likely to be absent. The bedrock deposits which underlie the site are classified by the BGS as a low productivity aquifer which is described as highly indurated rocks with limited groundwater in near surface weathered zones and secondary fractures.

9.2.4 The majority of the site is located within the River Tweed (source to Talla Water confluence) surface water catchment, which flows in a generally north-easterly direction along the southern boundary of the site. The northern boundary of the site is located within the surface water catchment of the Kingledores Burn which is located approximately 600 m north of the site at its closest extent. The Kingledores Burn also flows in a general north-easterly direction before its confluence with the River Tweed approximately 3 km north-east of the site.

9.2.5 SEPA flood mapping confirms flood extends are associated with the River Tweed and Kingledores Burn, however neither of these extend to within the site.

9.2.6 A review of the NatureScot SiteLink website indicates that no designated sites are located within the site however review of the Scottish Borders Council List of Local Biodiversity Sites (LBS) indicates the Glenmuck Bog LBS is present on-site. The Glenmuck Bog is indicated as an area of unmodified blanket bog, valley mire, flush and species rich marshy grassland along a small burn.

9.2.7 The River Tweed is designated as a SAC and SSSI adjacent to the site as is a reach of the Kingledores Burn, downstream of the Proposed Development. The designating features of the SAC and SSSI include Atlantic salmon, beetle assemblage, brook lamprey, fly assemblage, otter, river lamprey, sea lamprey, two freshwater habitats (rivers with floating vegetation often dominated by water-crowfoot and trophic range river/stream) and vascular plant assemblage. The River Tweed, and its tributaries, are also a highly regarded fishery.

9.2.8 An initial whole site low resolution peat survey on a 100 m x 100 m grid has been undertaken and the peat depth plan is provided on Figure 12. The results of the survey indicate the presence of peaty soils over the majority of the site and localised areas of peat and deep peat. The areas of peat and deep peat are located within the north-western area of the site with the deepest areas of peat located within the Glenmuck Bog with a maximum depth of 5.4 m recorded.

9.3 Potential Sources of Impact

9.3.1 The construction and operation of the Proposed Development has the potential to result in the following high-level types of effects:

- disturbance and loss of deposits of peat;

- ground instability (including peat slide risk) and contamination;
- impairment of surface water and groundwater quality from pollution, fuel, oil, concrete or other hazardous substances;
- increased flood risk to areas downstream of the site during construction through increased surface water runoff;
- potential change of groundwater levels and flow paths and contribution to areas of peat and Groundwater Dependent Terrestrial Ecosystems (GWDTEs);
- disturbance of watercourse bed and banks from the construction of culverts; and
- potential pollution impacts to public and private water supplies.

9.4 Method of Assessment and Reporting

9.4.1 The potential effects from the Proposed Development on geology and the water environment (hydrology and hydrogeology) will be assessed by completing a desk study and consultation, further field investigation followed by an impact assessment, the process of which is detailed within this section.

Approach to Baseline

Study Area

9.4.2 The impact assessment will consider potential cumulative, or in-combination effects associated with other developments in the same hydrological or hydrogeological catchments and within 5 km of the Proposed Development.

Desk Study

9.4.3 A desk study will be undertaken to confirm the baseline characteristic by reviewing available information relating to soils, peat, geology, hydrology and hydrogeology.

9.4.4 The desk study will review previous assessments undertaken at nearby sites as much valuable and relevant information is likely to be contained in these reports and can be used to initially characterise the following:

- the depth and distribution of peat and carbon rich soils;
- the nature of the underlying geology;
- groundwater resources;
- licensed and unlicensed groundwater and surface water abstractions;
- public and private water supplies;
- surface water flows;
- flood extents;
- rainfall data; and
- water quality data.

9.4.5 The baseline assessment will include review of published geological maps, OS maps, aerial photographs digital terrain models (slope plans) and geological literature.

9.4.6 It is recognised that some of the information presented in previous reports may be out of date and as part of the baseline assessment data requests would be made to SBC, SEPA and BGS, in order that a contemporary assessment of baseline conditions can be made.

9.4.7 If appropriate, Ironside Farrar Limited, who are advisors to the Scottish Government on matters regarding peat would also be consulted.

9.4.8 The desk study will be used to develop a conceptual site model which would then be used to identify sensitive features or receptors which may potentially be affected by the Proposed Development and which might warrant further investigation as part of the proposed field surveys.

Field Survey

9.4.9 The geological and water assessment specialists will liaise closely with each other as well as with the project ecologists and wider project team to ensure that appropriate information is gathered to allow potentially sensitive features or receptors to be adequately assessed and a comprehensive impact assessment to be completed.

9.4.10 A programme of site visits and surveys will be undertaken to:

- verify the information collected during the desk study;
- undertake a visual assessment of the main surface waters and identify private water supplies;
- identify drainage patterns, areas vulnerable to erosion or sediment deposition, and any pollution risks;
- visit any identified Groundwater Dependent Terrestrial Ecosystems (GWDTEs) (in consultation with project ecologists);
- 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;
- prepare a schedule of potential watercourse crossings;
- inspect rock exposures and establish by probing an estimate of overburden thickness;
- based on the results of the low resolution peat survey, further targeted peat depth probing data will be collected to confirm areas of deep peat that may influence the Proposed Development in accordance with current best practice; and
- confirm substrate beneath areas of peat based on the type of refusal of peat depth probe.

9.4.11 The desk study and field surveys will be used to identify potential development opportunities and constraints and be used to inform the site design.

9.4.12 Once the desk study and initial field surveys are completed and sensitive soil, geological and water features have been identified, an impact assessment will be undertaken.

Assessment of Effects

Determining Significance

9.4.13 The purpose of the assessment will be to assess potential effects on soils, peat, geology and the water environment (hydrology and hydrogeology) and specifically:

- identify any areas susceptible to peat slide, using site specific peat thickness and Digital Terrain Mapping (DTM) data to analyse slopes;
- assist micro-siting turbines, tracks and other proposed infrastructure in areas of no peat or shallow peat, and areas where there is little peat landslide hazard risk;
- if required show how any disturbed peat will be managed and safeguarded, by preparing a peat management plan;
- 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 licenced and private water supplies; and
- assess potential effects on water (including groundwater) dependent habitats.

9.4.14 Where warranted, it is anticipated that the impact assessment may include the following technical appendices:

- peat landside and hazard risk assessment;
- peat management plan;
- schedule of watercourse crossings;
- private water supply risk assessment; and
- groundwater dependent terrestrial ecosystems risk assessment.

9.4.15 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.

9.4.16 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.

9.4.17 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.

9.4.18 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.

Mitigation

9.4.19 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. This will include geological, hydrological and hydrogeological constraints which include slope stability, deep peat, watercourse locations, areas of potential flooding, private water supplies and groundwater dependent terrestrial ecosystems.

9.4.20 For example, it is expected that the following potential mitigation measures will be included in the design of the Proposed Development:

- a buffer of up to 50 m will be applied to watercourses;
- site specific targeted peat probing will be used to identify areas of potential deep peat and these will be avoided where possible;
- a site-specific peat landslide and hazard risk assessment will be prepared and areas of potential increased peat slide risk will be avoided or mitigated;
- if required, a peat management plan will be prepared to show how the integrity of peat will be safeguarded; and
- impacts on private water supply sources and areas of GWDTE will be avoided.

9.4.21 There is much best practice guidance (see Appendix 3) which has been developed 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.

Peat Landslide Hazard Risk Assessment

9.4.22 Phase I peat depth data has been obtained to inform the emerging site design and impact assessment as required by current best practice. As part of the programme of field work the following has been undertaken:

- a geomorphological mapping exercise to link the topographic features with the underlying geology and to visit those areas of the site that may be identified as potentially ‘at risk from peat slide’;
- the thickness of the peat has been established by targeted probing and the underlying sub-strata confirmed by inspections of watercourses; and
- signs of existing or potential peat instability has been recorded.

9.4.23 Further Phase II peat depth probing will be undertaken as part of the site design in accordance with best practice and will include peat probing along the infrastructure at 50 m centres and at 10 m interval crosshair at turbine locations.

9.4.24 Output from the field surveys will comprise a record of investigation locations and summary of peat depths recorded.

9.4.25 If significant peat depths are proven a preliminary Peat Landslide Hazard and Risk Assessment (PLHRA) 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 can be identified and included in the site design.

Cumulative Effects

9.4.26 An assessment of cumulative effects on identified geological, hydrogeological and hydrological receptors will be undertaken by considering each phase of the Proposed Development in combination with identified cumulative developments within 5 km of the site. Cumulative effects will be assessed using the same methodology as for likely effects from the Proposed Development in isolation.

9.5 Consultation

9.5.1 As part of the consultation phase of the project, environmental data and views of the Proposed Development will be sought from:

- Ironside Farrar Ltd (Advisors to the Scottish Government with regard to peat);
- SEPA;
- NatureScot;

- The River Tweed Commission;
- Fisheries Management Scotland;
- Fisheries – Local District Salmon Fisheries; and
- SBC.

9.6 Matters Scoped Out

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

- Detailed Flood Risk Assessment. Published mapping confirms that most of the site is not located in an area identified as being at flood risk. It is proposed, therefore, that a simple screening of potential flooding sources (fluvial, coastal, groundwater, infrastructure etc.) is presented in the EIA Report and measures that would be used to control the rate and quality of run-off will be specified in the EIA Report.

9.7 Questions to Consultees

Q9.1 Published mapping confirms that most of site area is not identified as being at flood risk. It is proposed, therefore, that a simple screening of potential flooding sources (fluvial, coastal, pluvial, groundwater etc.) is presented in the EIA Report. Is this approach acceptable?

Q9.2 It is not proposed to prepare a detailed drainage design. Rather measures that would be used to control the rate and quality of runoff will be specified in the EIA Report. Again, is this acceptable?

Q9.3 Site investigations, including detailed peat probing and private water survey as outlined in Section 8.4.1, will be undertaken as part of the proposed assessment. Should any additional investigation or data sources be considered when assessing baseline conditions?

Q9.4 It is not proposed to undertake any water quality sampling, establish groundwater monitoring points, surface water monitoring points or undertake leachability trials of any rock in the proposed borrow pit as there is published data that can be used to characterise baseline conditions and complete the impact. Is this acceptable?

Q9.5 Please advise if there is any specific information or methodology that should be used / followed as part of the Private Water Supply risk assessment?

Q9.6 Do you agree that the scope of the proposed assessment is appropriate?

10. Traffic and Transport

10.1 Introduction

10.1.1 This section covers the predicted transport and access issues that may arise from the construction and operation of the Proposed Development, the significance of these effects and what suitable mitigation can be put in place to avoid, minimise or offset any adverse impacts.

10.1.2 The Transport & Access EIA Report Chapter will be supported by a Transport Assessment report, Abnormal Load Route Survey and technical figures.

10.1.3 The key issues for consideration as part of the assessment will be:

- the temporary change in traffic flows and the resultant temporary effects on the study network during the construction phase;
- the physical mitigation associated with the delivery of loads to site;
- the design of new access infrastructure; and
- the consideration of appropriate and practical mitigation measures to avoid, minimise or offset any temporary effects.

10.1.4 The potential effects of these will be examined in detail in the EIA Report.

10.2 Environmental Baseline

10.2.1 The study area will form the road network that will be used for import of raw materials, construction staff commuting and the proposed Abnormal Indivisible Load (AIL) route to the site. The study area is therefore proposed to include:

- A74(M) to the north and south of Junction 15; and
- A701 between the A74(M) and Broughton.

10.2.2 Access to the Proposed Development would be taken from the A701 via a new or upgraded forest access junction. Construction traffic associated with the Proposed Development would generally approach from the south and all abnormal load traffic would travel to the site from King George V Docks in Glasgow via the M8, M74 and A701.

10.2.3 A site visit will be undertaken as part of the AIL route survey. This will also review general road infrastructure and other relevant access constraints.

10.2.4 Locally sourced material or materials won on-site would be used wherever feasible and traffic would avoid impacting on local communities as far is possible.

10.2.5 Baseline traffic count data will be obtained from a new Automatic Traffic Count (ATC) survey located on the A701 near the proposed site access junction. Further traffic data for the A701 and A74(M) will be obtained from UK Government Department for Transport (DfT) traffic count data or the Traffic Scotland database. 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.

10.2.6 Traffic accident data will be obtained from Crashmap.co.uk for the study network to inform the accident review for the immediate road study area. Three years' worth of data for the A701 will be collated.

10.3 Potential Sources of Impact

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

- severance;
- driver delay;
- pedestrian delay;
- pedestrian amenity;
- fear and intimidation; and
- accidents and safety.

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

10.4 Method of Assessment and Reporting

10.4.1 The main transport impacts would 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.

10.4.2 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.

10.4.3 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.

10.4.4 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.

10.4.5 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.

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

10.4.7 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.

10.4.8 Additional mitigation will be included should the assessment reveal criteria that are significant following the application of standard mitigation measures.

10.4.9 Site specific physical improvements, 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;
- design of the site access junction to ensure that approved access routes are adhered to; and
- enhanced temporary construction warning and direction signage.

10.4.10 Committed development traffic, i.e. those from developments with planning consent, will be included in baseline traffic flows, where traffic data for these schemes is considered significant and is publicly available. Developments that are proposed or at Scoping would not be included.

10.4.11 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.

10.4.12 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.

10.4.13 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.

10.5 Consultation

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

- SBC Transport Officers;
- Dumfries & Galloway Council Transport Officers;
- Transport Scotland; and
- Electronic Service Delivery for Abnormal Loads (ESDAL) Database Weight consultees for Abnormal Load movements.

10.6 Matters Scoped Out

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

10.6.2 Due to the negligible environmental effects which would occur during the operational phase of the Proposed Development, it is proposed that operational effects are scoped out of the traffic and transport assessment for the EIA. This is due to operational movements being circa two inbound Light Goods Vehicles (LGV) movements per week.

10.7 Questions to Consultees

Q10.1 Is the proposed methodology considered acceptable?

Q10.2 Are the methods proposed for obtaining traffic flow data acceptable?

Q10.3 Is the use of Low National Road Traffic Forecasts (NRTF) acceptable for the whole of the study?

Q10.4 What cumulative traffic flows from committed development should be included in the assessment?

11. Socio-Economics, Tourism, Recreation and Land Use

11.1 Introduction

11.1.1 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.

11.2 Environmental Baseline

Socio-Economics

11.2.1 According to ONS population estimates (2021a), the population of the Scottish Borders in 2020 was approximately 115,200; 59,200 females (51.4%) and 56,100 males (48.6%). Of this population, the number of those who are considered to be of 'working age' (16-64) is 67,300, which is approximately 58.4%; 48.7% males and 51.3% females, a very similar split to the overall population. This compares with Scotland (63.9%) and Great Britain (62.4%). It is evident that the Scottish Borders has an older population than average, with 25.2% over the age of 64, compared with 19.3% in Scotland and 18.7% in Great Britain.

11.2.2 Despite an ageing population, the Scottish Borders has a higher than average economic activity rate of 78.3% (55,000 economically active residents), compared to Scotland (76.5%) and only slightly lower than Great Britain (78.5%), in 2021 (ONS, 2022a), with 61.5% of the total employee jobs being full time (approximately 24,000). This high economic activity rate is not reflected in the higher than average monthly earnings in the Scottish Borders, estimated to be a Gross Weekly Pay of £552.10, compared with £622.00 in Scotland and £613.10 in the wider Great Britain, in 2021 (ONS, 2022b).

11.2.3 In terms of what people do in the Scottish Borders, there is a higher than average number of people involved in 'Human Health and Social Work Activities' (ONS, 2021b), 23.1% of the population, compared to Scotland (16.6%) and Great Britain (13.6%), and significantly more people work in 'Wholesale And Retail Trade; Repair Of Motor Vehicles And Motorcycles', 17.9% of the population compared to 13.9% in Scotland and 14.9% in Great Britain.

11.2.4 Where the Scottish Borders is less represented than its comparators are in the 'Administrative and Support Service Activities' industry, with 3.1% of the population compared with 8.0% and 8.8% in Scotland and Great Britain, respectively. This is also the case for Transportation and Storage, where 2.6% of the Scottish Borders work, compared with 4.5% of Scotland and 5.1% of Great Britain.

11.2.5 Of relevance to the construction stage of the Proposed Development is the number of residents working in the construction industry; in the Scottish Borders there are 2,000 people involved with this industry, equating to 5.1% of the population. This is equal to the average for Scotland (5.1%) and higher than Great Britain (4.8%), alluding to a potentially adequate supply of available workers to construct the Proposed Development.

Tourism

11.2.6 The tourism industry in the Scottish Borders is estimated to be adding £144 million to the economy on average each year and, according to the last Scottish Borders Factsheet (VisitScotland, 2019), with this being a 16% growth based on previous years.

11.2.7 The same study found that in 2019, approximately 3,074,000 visitors came to the Scottish Borders, with approximately 1,264,000 visitors staying overnight. Regarding sustainable tourism, it is estimated that there are approximately 461 business units, supporting 4,100 local jobs and contributing £79,800,000 to the economy in 2019.

11.2.8 In terms of attractions, the survey found that the most popular attraction in the Scottish Borders was the Tweed Valley Forest Park, with 347,763 visitors in 2019, followed by St Abb's Head with 63,721 visitors and Melrose Abbey with 61,325, the latter of which is a paid-entry site. These sites are located a considerable distance from the site and, as such, would not be considered in the assessment, with the closest of the popular tourism assets, Tweed Valley Forest Park, located approximately 25km north east of the site.

11.2.9 Local tourism receptors which would be considered in the assessment are Hearthstanes Estate, Tweedmuir Kirk and the Crook Inn, as well as several walking routes on the Culter Hills.

Recreation

11.2.10 Recreationally, the site and surrounding area lies.amongst several different ranges of hills which have recreational usages. The site itself sits on the south-eastern edges of the Culter Hills, upon the Wierd Law and Upper Oliver Dodd hills, with the further Culter Hills range to the north and west of the site.

11.2.11 There are further ranges located throughout Tweedsmuir and within the vicinity of the site; the Moffat Hills lie to the south of the site and the Manor Hills (also known as the Tweedsmuir Hills) lying to the south and east of the site.

11.2.12 Each of these ranges offer a wide array of recreational activities and are used for hillwalking, recreational walking, cycling and mountain bike riding. The natural qualities of the area, from mountain ranges and the Galaburn Wood also offer opportunities for activities such as bird watching.

11.2.13 There are extensive waterbodies throughout the area which can be used for fishing; including the River Tweed and the several tributary burns feeding into it. Talla Resorvoir, approximately 1.7 km southeast of the site, is also used for fishing and bird watching.

Land Use

11.2.14 Predominant land use within the site is commercial forestry, rough grazing and moorland, interspersed with an expansive network of small burns leading to the River Tweed. Although the site boundary includes no Core Paths, it does include several access tracks which could be utilised by the public for recreation under the right to roam. The River Tweed is located to the south of the Site and it is noted that greater access is being sought from the local authority and community to improve access to and around the River Tweed as part of the wider 'Destination Tweed' project, with the aim of creating a new long-distance route.

11.3 Potential Sources of Impact

Study Area

Wider Study Area

11.3.1 The Wider Study Area (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 will primarily be set at the area of the Scottish Borders Council administrative area, but effects are also considered within the rest of Scotland and the UK where relevant.

Local Study Area

11.3.2 The Local Study Area (LSA) provides an intermediate level of assessment in regard to the potential impacts on accommodation in the local area. It is proposed that the LSA would incorporate the Tweedsmuir region of the Scottish Borders, offering a more reflective account of the accommodation businesses that could be impacted by the Proposed Development. This is due to the WSA being too large of an area to give an accurate representation of the impact of the Proposed Development, conversely, the Local Area of Impact (LAI) is likely to be too remote and has a lack accommodation businesses around the site, therefore is not reflective of the accommodation that may be used by construction workers.

Local Area of Impact

11.3.3 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. The LAI for the Proposed Development is defined by the site itself, together with an area extending to 5 km from the site boundary.

Potential Sources of Impact

11.3.4 The impacts on socio-economics may come as a result of direct or indirect interaction between the Proposed Development and the socio-economics and land use of the area/region and may be beneficial or adverse.

11.3.5 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.

11.3.6 Construction activities may also have a temporary adverse impact on certain local receptors including walkers, bird watchers and other users of recreational sites such as the Culter Hills, within or adjacent to the site. Effects on local accommodation businesses could be adverse (for example if there is any disruption caused by construction traffic) or beneficial (if used by construction workers).

11.3.7 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 access roads created for wind farm developments, which can often be utilised by recreational walkers.

11.3.8 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 Wind Farms & Tourism Trends in Scotland report (BiGGAR Economics, 2021) assesses evidence on the impact of 44 wind farms in Scotland on tourism employment. The report found that as the development of wind farms in Scotland grew over 2015 – 2019, this coincided with the growth of tourism-related employment. The report also analysed trends within local authorities as to whether the relative growth in the number of turbines had led to an impact in tourism-related employment and found that there was no evidence of a relationship.

11.3.9 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 Proposed Development 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.

11.4 Method of Assessment and Reporting

11.4.1 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 Proposed Development with other proposed schemes.

11.4.2 The assessment will follow current best practice guidance as set out in the following documents:

- SPP (2014), in particular paragraph 29;
- NPF3 (2014);
- Revised Draft NPF4 (once published);
- 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.

Baseline Data Collection

11.4.3 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 a reference list is included in Appendix 3.

Assessment Methodology

11.4.4 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).

11.4.5 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.

11.4.6 These impacts can be beneficial, adverse or neutral.

11.4.7 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.

11.4.8 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.

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

Mitigation

11.4.10 The assessment will take account of any 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.

Reporting

11.4.11 To identify and assess the impact of the Proposed Development, the assessment 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 Proposed Development with other proposed schemes.

Cumulative Assessment

11.4.12 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.

11.4.13 Other cumulative effects may arise if the construction and/or operation of a number of wind farms were to affect receptors in the LAI.

11.5 Consultation

11.5.1 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:

- Scottish Borders Council;
- Local Community Councils;
- British Horse Society Scotland;

- Cycling Scotland;
- Scottish Association for Country Sports;
- Scottish Rights of Way and Access Society;
- Sustrans Scotland;
- Visit the Scottish Borders; and
- VisitScotland.

11.5.2 Any consultation would have three key objectives:

- to verify published information;
- to identify potential effects; and
- to help assess significance of potential impacts.

11.6 Matters Scoped Out

11.6.1 Based on 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 approximately 18 months; consequently, it is not expected that there would be a significant effect on the demand for permanent housing, health or educational services.

11.6.2 Regarding permanent employees for the operation of the Proposed Development, these numbers are expected to be low and, as such, the demand for permanent housing, health or educational services is expected to be low.

11.6.3 Recreational activities outwith the site are scoped out unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.

11.7 Questions to Consultees

Q11.1 Do consultees agree with the extent of the baseline description?

Q11.2 Do consultees agree that the number and extent of the Study Areas are appropriate?

Q11.3 Do consultees agree with the proposed methodology?

Q11.4 Do consultees agree with the potential impacts that have been highlighted and those which have been scoped out of the assessment?

12. Aviation and Radar

12.1 Introduction

12.1.1 Wind turbines have the potential to affect civil and military aviation and meteorological forecasting. This section of the report covers the methodology used to undertake the aviation and radar scoping assessment, lists the references used and describes the baseline condition, consultation requirements and mitigations to be applied if required.

12.1.2 This section of the EIA Scoping Report has been written by Cdr John Taylor RN (Ret) of Wind Power Aviation Consultants Ltd (WPAC).

12.2 Environmental Baseline

12.2.1 The Proposed Development is located 48 km to the south of Edinburgh International Airport (EDI) and 71 km to the east of Glasgow Prestwick Airport (GPA). Figure 13 (Visual Flight Rules (VFR) 250k Chart Extract) shows the location in an aviation context, underneath the Scottish Terminal Area (TMA), Class D regulated airspace with a base of 5000 ft. Below the TMA is Class G unregulated airspace. In a military context, the Proposed Development is to the north of the RAF Spadeadam Danger Areas. Aviation charts show a number of existing and operational wind farms in the area.

12.3 Guidance and Legislation

12.3.1 There are a number of aviation publications relevant to the interaction of turbines and aviation containing guidance and legislation, which cover the complete spectrum of aviation activity in the UK including:

- Civil Aviation Authority (2016) Policy and Guidance on Wind Turbines Version 6 CAP764 CAA;
- Civil Aviation Authority (2019) Licensing of Aerodromes, Version 11 CAP 168 CAA;
- Civil Aviation Authority (2019) ATS Safety Requirements Version 3 CAP 670 CAA;
- Civil Aviation Authority (2017) UK Flight Information Services, Ed 3 CAP 774 CAA;
- Civil Aviation Authority (2006) Safeguarding of Aerodromes Version 2 CAP774 CAA;
- Civil Aviation Authority (2010) Safe Operating Practices at Unlicensed Aerodromes Ed 1 CAP 783 CAA;
- Civil Aviation Authority (2017) Manual of Air Traffic Services Part 1 Ed 7.0 CAP 493 CAA;
- Civil Aviation Authority (2020) Parachuting Ed 5 CAP660 CAA;
- Ministry of Defence (2022) Military Aviation Authority Regulatory Article 2330 (Low Flying) MOD; and
- Civil Aviation Authority (2017) CAA Policy Statement: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level CAA.

12.4 Study Area

12.4.1 The assessment of effects of the proposed turbines will be based upon the guidance laid down in CAA Publication CAP 764 Policy and Guidelines on Wind Turbines Version 6 (February 2016). Consultation criteria for aviation stakeholders is defined in Chapter 4 of CAP 764. These distances inform the size of the study area and include:

- Airfield with a surveillance radar – 30 km;
- Non radar licensed aerodrome with a runway of more than 1.1 km – 17 km;
- Non radar licensed aerodrome with a runway of less than 1.1 km – 5 km;
- Licensed aerodromes where the turbines would lie within airspace coincidental with any published Instrument Flight Procedure (IFP);
- Unlicensed aerodromes with runways of more than 800 metres – 4 km;
- Unlicensed aerodromes with runways of less than 800 metres – 3 km;
- Gliding sites – 10 km; and

- Other aviation activity such as parachute sites and microlight sites within 3 km – in such instances developers are referred to appropriate organisations

12.4.2 CAP 764 further states that these distances are for guidance purposes only and do not represent ranges beyond which all wind turbine developments will be approved or within which they will always be objected to. These ranges are intended as a prompt for further discussion between developers and aviation stakeholders and will be reported upon in the EIA Report. For example, Edinburgh Airport has stated a requirement to be consulted in relation to wind farms out to 40 km or even further if it is likely to affect their operations.

12.4.3 It is necessary to take into account the aviation and air defence activities of the Ministry of Defence (MOD) as safeguarded by the Defence Infrastructure Organisation (DIO). The types of issues that will be addressed in the EIA Report include:

- Ministry of Defence Airfields, both radar and non-radar equipped;
- Ministry of Defence Air Defence Radars;
- Meteorological Radars; and
- Military Low Flying.

12.4.4 It is necessary to take into account the possible effects of turbines upon the National Air Traffic Services En Route Ltd (NERL) communications, navigation and surveillance (CNS) systems – a network of primary and secondary radars and navigation facilities around the country.

12.4.5 As well as examining the technical impact of turbines on Air Traffic Control (ATC) facilities, it is also necessary to consider the physical safeguarding of ATC operations using the criteria laid down in CAP 168 Licensing of Aerodromes to determine whether a Proposed Development will breach obstacle clearance criteria. This will also be reported on in the EIA Report but initial review shows there are no physical safeguarding issues associated with the Proposed Development.

12.5 Method of Assessment and Reporting

Radar Modelling Methodology

12.5.1 The radar calculation results referred to in this section were produced using specialist propagation prediction software (RView Version 5). Developed over a number of years, it has been designed and refined specifically for the task. RView will be used to identify potential aviation effects of the Proposed Development as the design evolves. The results will then be used as a basis for consultation and liaison with relevant aviation bodies, as detailed below.

12.6 Consultation

Licensed Aerodromes

12.6.1 There are no radar equipped licensed aerodromes within the consultation distances as set out in paragraph 12.4.1. Edinburgh International Airport is located 48 km to the north of the Proposed Development. Initial radar modelling shows that turbines of tip height up to 250 m will not be visible to the radar as radar line of sight is in excess of 1000 m Above Ground Level (AGL). These results will be updated and reported in the aviation section of the EIA Report. Glasgow Prestwick Airport (GPA) is approximately 71 km to the west. Radar modelling confirms that the turbines will not be visible to the radar and consultation with GPA is not considered to be required.

Unlicensed Aerodromes

12.6.2 There are no unlicensed aerodromes marked on aviation charts or known to exist within the consultation distance of the Proposed Development as referred to in paragraph 12.4.1; therefore, these are scoped out of the assessment.

Ministry of Defence

MOD ATC Radars

12.6.3 The only MOD ATC radar with coverage of the site is the Deadwater Fell radar located at RAF Spadeadam, 61 km to the south of the site. Initial radar modelling indicates that all of the turbines will be screened by terrain as radar line of sight is in excess of 250 m AGL. These results will be updated and reported in the aviation section of the EIA Report.

MOD Air Defence (AD) Radars

12.6.4 The closest AD radar is located at Brizlee Wood, near Alnwick. Initial radar modelling shows that the turbines will be screened by terrain. These results will be updated and reported in the aviation section of the EIA Report.

MOD Threat Radars

12.6.5 The MOD utilise a number of 'threat radars' associated with training at RAF Spadeadam. These radars are located across the Borders area. Initial radar modelling indicates that none of the threat radars will be affected by the Proposed Development so are scoped out of the assessment.

MOD Low Flying

12.6.6 The site is located within an MOD low flying area, however, due to the existing concentrations of turbines, the MOD has designated this location as a 'Blue' area, so that a low flying objection is unlikely. There may be an initial concern expressed by the MOD but that will almost certainly be to ensure that Infra-Red lighting is applied. The Applicant will provide an aviation lighting scheme proposal and obtain MOD approval as part of the consultation process and application for consent.

Met Office Weather Radars

12.6.7 The Met Office safeguards its network of radars using a European methodology known as Operational Programme for the Exchange of Weather Radar Information (OPERA). In general, they will object to any proposed turbine within 5 km in line of sight and will examine the impact of any turbines within 20 km. Where a site is within 20 km, the Met Office will undertake an operational assessment based on three main criteria, having determined if there is a technical effect on the radar. The factors they will consider include:

- proximity to airports;
- river catchment response times; and
- population density.

12.6.8 In this case the closest Met Office radar is at Holehead, over 70 km to the north-west of the site. There will be no effect on Met Office radars and this issue is therefore scoped out of the EIA Report.

NATS En Route Ltd (NERL)

12.6.9 An initial assessment has been conducted to determine any effect of the Proposed Development on NERL communications, navigation and surveillance (CNS) infrastructure. The closest radars in the system are at Lowther Hill and Great Dun Fell. Initial radar modelling shows that all of the proposed turbines would be visible to the Lowther Hill radar and all screened by terrain from Great Dun Fell. In addition to these two long range radars, there are two additional 'infill' radars in the network, Kincardine and Orchardton, designed to mitigate specific wind farms. Initial radar modelling shows that neither radar would be affected by the Proposed Development. NERL will be consulted in order to identify mitigation options in relation to the effect on the Lowther Hill radar and this will be reported in the EIA Report. There are a number of possible mitigation options available within the existing NERL infrastructure.

Aviation Obstruction Lighting

12.6.10 A wind farm with tip heights in excess of 150 m will need to be illuminated at the hub of selected turbines with medium intensity red aviation obstruction lighting. WPAC will design a lighting layout which minimises the number of lit turbines whilst fulfilling flight safety requirements and gain approval for the lighting layout from the CAA. This will be reported in the EIA Report within a technical appendix to describe the effect of aviation lighting on the environment and to inform the LVIA. It will also articulate the mitigation techniques available taking into account the extant legislation and guidance outlined in Section 12.3.

12.6.11 An infra-red lighting layout to fulfil MOD requirements will also be designed and approval obtained from the MOD and reported in the EIA Report.

12.7 Matters Scoped Out

12.7.1 As reported above, Met Office radar effects, MOD threat radars and effects on unlicensed aerodromes can be scoped out of the EIA Report.

12.8 Questions to Consultees

Q 12.1 Edinburgh International Airport – will an Instrument Flight Procedure check be required in this location?

13. Shadow Flicker

13.1 Introduction

13.1.1 This section identifies the proposed scope of the EIA to assess likely significant effects from the Proposed Development in relation to shadow flicker.

13.2 Environmental Baseline

13.2.1 Shadow flicker occurs when a certain combination of climatic 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 in relation to the turbine and the receptor in question. The sun then shines onto a window of a residential dwelling from behind the rotating wind turbine blades.

13.2.2 There are a number of residential receptors located in and around the village of Tweedsmuir within the potential shadow flicker study area, defined as 10 rotor diameters[5] of the proposed turbine locations.

13.2.3 The location of all residential dwellings, including confirmation that no new dwellings have been built, or gained planning permission, in proximity to the site will be verified during the EIA process.

13.3 Potential Sources of Impact

13.3.1 As the turbine blades rotate, it causes the shadow of the turbine to flick on and off at the receptor property. This may have a negative effect on residents in affected properties. If shadow flicker cannot be avoided through design, technical mitigation solutions are available and a shadow Flicker Mitigation Protocol would be proposed and agreed if required.

13.4 Method of Assessment and Reporting

13.4.1 Scottish Government Planning Advice and Guidance: Onshore wind turbines: planning advice note (2014) states that shadow flicker *occurs only within buildings where the flicker appears through a narrow window opening. The seasonal duration of this effect can be calculated from the geometry of the machine and the latitude of the potential site. Where this could be a problem, developers should provide calculations to quantify the effect. In most cases however, where separation is provided between wind turbines and nearby dwellings (as a general rule, 10 rotor diameters), 'shadow flicker' should not be a problem'.*

13.4.2 In addition, published research by the Department of Energy and Climate Change (DECC), Update of UK Shadow Flicker Evidence Base (2011), evaluates the current international understanding of shadow flicker and confirms an acceptable Study Area for assessment is 10 rotor diameters from each turbine and within 130 degrees either side of north of the turbines can be affected at UK latitudes.

13.4.3 SBC Supplementary Guidance: Renewable Energy (2018) state that 'Where requested by the Council, the developer will be required to produce shadow flicker assessments modelled to take into account all residential property within 2 km of a wind turbine. This distance threshold should take into account any screening of turbines offered by topography'.

13.4.4 There are no formal guidelines in Scotland or the UK currently available on what exposure would be acceptable in relation to shadow flicker. Similarly, there is no standard for the assessment of shadow flicker.

13.4.5 With consideration given to the nature of the Proposed Development and its key baseline characteristics, at this early stage it is considered that shadow flicker effects during the operational phase of the Proposed Development have at least some potential to be significant and therefore require further consideration through the EIA process.

13.4.6 The shadow flicker assessment will be undertaken using numerical modelling of proposed turbines and receptors within the defined Study Area[6]. The numerical modelling software performs calculations to determine the position of the sun throughout the year, and thus during what times of day it would theoretically cast a shadow across the windows of nearby houses within 10 rotor diameters.

13.4.7 The results would be written up in a Shadow Flicker Chapter to be presented as part of the EIA Report, along with any proposed mitigation, if required.

[5] The Study Area is proposed to be 10 rotor diameters from the final turbine locations, unless otherwise requested.

13.5 Consultation

13.5.1 Consultation would be undertaken through this EIA Scoping Report. No additional consultation is anticipated.

13.6 Matters Scoped Out

13.6.1 There is no potential for shadow flicker effects to occur during the construction of the Proposed Development and therefore this is scoped out of the assessment.

13.7 Questions to Consultees

Q13.1 Can consultees confirm they are happy with the proposed scope of the shadow flicker assessment?

14. Other Considerations

14.1 Introduction

14.1.1 A number of other environmental issues will be considered in relation to the Proposed Development, including:

- infrastructure;
- telecommunications;
- television reception;
- ice throw;
- climate and carbon balance;
- air quality;
- population and human health;
- risks of major accidents and/or disasters; and
- environmental management.

14.1.2 These topics, including reference to how they will be assessed or if they are proposed to be scoped out, are discussed in turn in the following text.

Infrastructure

14.1.3 Details and locations of infrastructure including overhead power lines, gas pipelines and underground cables will be checked and taken into account during the design of the Proposed Development.

Telecommunications

14.1.4 Tall structures such as buildings and turbines can adversely affect the performance of fixed telecommunications links, if positioned close enough to those links.

14.1.5 Ofcom data will be used in order to identify all fixed microwave telecommunications links within 3 km of the site boundary; mapping the proximity of any such links to the Proposed Development; and, if required, calculating, using the Ofcom-recommended 'Bacon Formula', whether the Proposed Development has the potential to adversely affect the performance of the link(s).

14.1.6 Consultation will also be undertaken with key stakeholders to identify relevant microwave links and Ultra High Frequency (UHF) telemetry links.

14.1.7 Potential means of mitigation of effects on fixed telecommunications links include micro-siting of turbines, installation of higher performance antennae, or re-routing of links.

Television Reception

14.1.8 The site is located in an area which is served by a digital transmitter and television reception is unlikely to be affected by the Proposed Development as digital signals are rarely affected. In the unlikely event that television signals are affected by the Proposed Development, mitigation measures will be considered by the Applicant.

14.1.9 Television reception is scoped out of the EIA.

Ice Throw

14.1.10 Ice build-up on blade surfaces can occur in cold weather conditions. Turbines can continue to operate with a very thin accumulation of snow or ice, but will shut down automatically as soon as there is a sufficient build up to cause aerodynamic or physical imbalance of the rotor assembly. Potential icing conditions affecting turbines can be expected two to seven days per year (light icing) in Scotland (WECO, 1999).

14.1.11 The potential for ice throw to occur after start-up following a turbine shut down during conditions suitable for ice formation is high. There are monitoring systems and protocols in place to ensure that turbines that have been stationary during icing conditions are restarted in a controlled manner to ensure public safety. The risk to public safety is considered to be very low due to the few likely occurrences of these conditions along with the particular circumstances that can cause ice throw. Due to the very low risk, it is proposed that ice throw is scoped out of the EIA Report.

Climate and Carbon Balance

14.1.12 The EIA Regulations 2017 include for consideration of potentially significant effects on climate which includes greenhouse gas emissions. As a renewable energy project, the Proposed Development is likely to result in a significant saving in carbon and therefore benefit to the UK climate.

14.1.13 The main aims of the calculation are: to quantify sources of carbon emissions associated with the Proposed Development (i.e. from construction, operation and transportation of materials, as well as loss of peat as relevant); to quantify the carbon emissions which will be saved by constructing the Proposed Development; and to calculate the length of time for the project to become a 'net avoider', rather than a 'net emitter' of carbon dioxide emissions. The length of time is termed the 'payback time'.

14.1.14 A carbon balance assessment will be undertaken for the Proposed Development using guidance Calculating Potential Carbon Losses and Savings from Wind Farms on Scottish Peatlands.

Air Quality

14.1.15 Given the remote location of the site, the generation of dust during construction activity is unlikely to have a direct impact on any human receptors and would be controlled by means of best practice to be described in the EIA Report.

14.1.16 Consideration will be given within the Ecology and Geology, Peat, Hydrology & Hydrogeology Chapters to the potential impacts that dust generation could have on any identified sensitive ecological or hydrological receptors. If required, detailed mitigation measures will be proposed within these EIA Report Chapters. Otherwise, it is proposed that air quality is scoped out of the EIA Report.

Population and Human Health

14.1.17 The EIA Regulations 2017 include a requirement to assess as part of the EIA process, the potential significant effects on population and human health resulting from the Proposed Development. These requirements will be addressed in the EIA and EIA Report, as appropriate, under each of the other topic headings e.g. noise, landscape and visual, or socio-economic effects. Where no significant effects are likely these will be scoped out of the EIA.

Risk of Major Accidents and/or Disasters

14.1.18 The Proposed Development would be constructed in accordance with relevant health and safety legislation and would be subject to routine inspections during operation. Braking mechanisms installed on turbines allow them to be operated only under specific wind speeds and should severe windstorms be experienced, then the turbines would be shut down. In addition, given the elevated location of the site, flooding will not pose a significant risk to the operation of the Proposed Development nor will the construction of the Proposed Development contribute to flooding elsewhere. Therefore, it is considered unlikely that significant effects will arise as a result of the Proposed Development, and this topic is proposed to be scoped out of the EIA.

Environmental Management

14.1.19 The Applicant is committed to pollution prevention and environmental protection. As such an environmental management strategy to minimise environmental effects of the Proposed Development during construction will be developed. The principles of this strategy will be presented in an Outline Construction Environmental Management Plan (OCEMP) appended to the EIA Report. Should consent be granted, the OCEMP would be revised and updated to a CEMP, the content of which would be agreed with SBC through consultation and enforced via a planning condition. The CEMP would be used by the Contractor to ensure appropriate environmental management is implemented throughout the construction phase of the Proposed Development.

15. Invitation to Comment

15.1.1 You are invited to provide comment on this EIA Scoping Report. Please send all Scoping responses to ECU at:

Energy Consents Unit

5 Atlantic Quay

150 Broomielaw

Glasgow

G2 8LU

Email: Econsents_Admin@gov.scot

15.1.2 If you wish to discuss matters contained in this report in greater detail prior to responding to the scoping exercise, please contact:

Fiona Scott

SLR Consulting Ltd

Floor 2, 4/5 Lochside View

Edinburgh Park

Edinburgh

EH12 9DH

Email: fscott@slrconsulting.com

Appendix 1: Scoping Consultees

Statutory Consultees
Scottish Borders Council
Dumfries & Galloway Council
South Lanarkshire Council
Historic Environment Scotland
NatureScot
SEPA

Non Statutory Consultees	
British Horse Society	NATS Safeguarding
British Telecoms Plc	Nuclear Safety Directorate
Civil Aviation Authority	RSPB Scotland
Crown Estate Scotland	Scottish Forestry
Defence Infrastructure Organisation	Scottish Rights of Way and Access Society (Scotways)
Edinburgh International Airport	Scottish Water
Fisheries Management Scotland	Scottish Wildlife Trust
Fisheries – Local District Salmon Fisheries	Scottish Wild Land Group
Glasgow Prestwick Airport	The River Tweed Commission
John Muir Trust	Transport Scotland
Joint Radio Company	Visit Scotland
Met Office	Tweed Foundation
Mountaineering Scotland	West of Scotland Archaeology Service

Community Councils	
Tweedsmuir Community Council	Scottish Borders Community Councils
Upper Tweed Community Council	
Manor, Stobo & Lyne Community Council	
Ettrick & Yarrow Community Council	

Appendix 2: Cultural Heritage Assets Gazetteer

Appendix 2: Cultural Heritage Asset Gazetteer

Asset Number	1
Asset Name	Menzion Farm,enclosed cremation cemetery 600m WSW of
Type of Asset	Scheduled Monument
Listing No./NRHE Number	SM2702
HER Number	NT02SE 8; Canmore ID 48576
Status	Scheduled Monument
Easting	308511
Northing	623459
Parish	Tweedsmuir
Council	The Scottish Borders
Description	No description held on Historic Environment Scotland portal for SM2702. Canmore ID: 48576 description Enclosed Cremation Cemetery: This cremation cemetery stands at a height of 900' OD on a low ridge which rises a few feet above the broken marshy ground at the foot of the SE slopes of Weird Law. It was excavated in 1961. Before excavation, the monument appeared as a turf-covered stony bank, 8' in thickness and 1' in height, which enclosed a circular area measuring 32' in diameter. A low stony mound, roughly circular on plan and 14' in diameter, occupied the centre of the enclosure. Excavation showed that the bank was formed by a band of stones: it was 6' to 8' in width and up to 1'8" in height, and there was no formal kerb. No entrance was discovered in the stretches of the bank that were examined and surface indications gave no hint of a gap of any kind in the unexcavated portions. Within the interior the stony mound proved to be pear-shaped, measuring 25' by 19' and 1'6" in average height. It was not centrally placed; whereas its SW end almost merged with the inner edge of the enclosing ring, there was a clear intervening space of up to 10' on the NW, NE, and SE. The space was featureless. When the stones forming the mound were removed, they were found to be covering a layer of burnt material about 2" in depth. Dug through this burnt layer, and into the underlying natural sand and gravel, there were five pits, oval or circular on plan and all about 1' in depth, some containing burnt material, including considerable quantities of cremated human bone and charcoal. Analysis of bone fragments revealed identifiable remains of two persons, one a young adult, possibly female, the other a child, sex unknown. In addition to these five pits, there was a shallow oblong pit measuring 5'3" by 2'8" and just over 1' in depth, occupying an almost central position in relation to the enclosed stone ring. It was tightly packed with stones, the upper layer of which was blackened and scorched, indicating that the pit and its filling existed before the accumulation of the burnt layer. Apart from two small unworked chert flakes, no relics were recovered, but a radiocarbon measurement made at the National Physical Laboratory on a sample of coal gave the age before the present (1950) as 3440 +- 90, equivalent to a date about 1490 BC. The sequence of events as revealed by the excavations may be summarised as follows. A circular ritual enclosure, measuring 32' in diameter, was formed by a low band of stones. The oblong pit was dug in the centre of the enclosure, probably as part of the ceremonies that took place before the actual cremation. The pit was then packed with stones. The two bodies, possibly those of a mother and child, were then cremated inside the enclosure, and afterwards the remains were buried in pits and the whole area sealed beneath a protective mound of stones. RCAHMS 1967, visited 1961 Generally as described.

Appendix 2: Cultural Heritage Asset Gazetteer

Surveyed at 1:2500.
Visited by OS (RD) 3 August 1972

Asset Number	2
Asset Name	Menzion Farmhouse, two enclosed cremation cemeteries 400m NNW of
Type of Asset	Scheduled Monument
Listing No./NRHE Number	SM2748
HER Number	NT02SE 19; Canmore ID 48534
Status	Scheduled Monument
Easting	308937
Northing	623922
Parish	Tweedsmuir
Council	The Scottish Borders
Description	The monument comprises two enclosed cremation cemeteries; funerary monuments constructed in the mid Bronze Age (c.1600-1300BC). These are already scheduled, but the original scheduling maps are inadequate, both in area and accuracy of location, and the current proposal rectifies this. The cemeteries lie on the SE-facing slope of Ewelaw Rig at approximately 270m OD. The easternmost cemetery is circular and measures approximately 10m in diameter. The remains of the enclosing stony bank are slight but can still be clearly traced. The western cemetery is also circular, but larger, measuring approximately 16.5m in diameter, with a more substantial enclosing bank surviving. Excavations at a similar enclosed cemetery (at Weird Law) showed that the enclosing wall was constructed to define an area which was used as a cremation site. Funeral pyres were constructed and lit within the enclosure, and once these had burnt out, the cremated human remains were extracted and buried in pits within the enclosure. The area to be scheduled is in two parts - a circle 30m in diameter centred on the eastern enclosure, and a circle 35m in diameter centred on the western enclosure. Canmore ID: 48534 description NT02SE 19 0894 2392 and 0900 2394. Two probable enclosed cremation cemeteries are situated at the E end of Ewelaw Rig. (i) NT 089 239: Measures 50 ft in diameter within a low stony bank which has been severely robbed and is now only about 3 ft in thickness and 9 ins in height. Within the interior there is a low stony mound, measuring 13 ft by 11 ft. (ii) NT 090 239: Situated 40 yds NE of the last and very denuded. Diameter about 35 ft. A modern pit has been dug within the interior. RCAHMS 1967, visited 1962 NT 0894 2392. An enclosed cremation cemetery measuring 14.7m in internal diameter within a bank 1.5m wide by 0.1m high. In the centre is an irregular mound c 3.0m in diameter by 0.1m high. NT 0900 2394. An enclosed cremation cemetery measuring 9.5m in diameter over the centres

Appendix 2: Cultural Heritage Asset Gazetteer

of a bank with a maximum height of 0.3m.

Surveyed at 1/2500.
Visited by OS (RD) 2 August 1972

Asset Number	3
Asset Name	Weird Law, platform settlement 550m S of summit
Type of Asset	Scheduled Monument
Listing No./NRHE Number	SM3529
HER Number	NT02SE 39; Canmore ID 48556
Status	Scheduled Monument
Easting	307746
Northing	623383
Parish	Tweedsmuir
Council	The Scottish Borders
Description	The monument comprises an unenclosed platform settlement dating from the later prehistoric period. The monument was originally scheduled in 1974, but the scheduling documents contained a mapping error. The current rescheduling proposal rectifies this. The settlement lies at around 320m OD on a south-facing slope overlooking the valley of the River Tweed. It comprises at least three roughly circular house stances levelled into the hillside, which vary from 6.5-10m in diameter. These platforms would each have held a substantial timber roundhouse. The faint traces of at least two other possible platform sites can be seen in the vicinity, and a level area immediately to the S of the settlement may represent a zone of contemporary cultivation or stock management. The area to be scheduled is rectilinear, measuring a maximum of 70m E-W by 50m N-S. Canmore ID: 48556 Description NT02SE 39 0775 2338. NT 077 235: There are four hut platforms in line on the S flank of Weird Law, two are 35' wide and two 45'. A fifth platform has been destroyed by quarrying. RCAHMS 1967, visited 1960 NT 0775 2338: Only three house platforms varying between 6.5m and 10.0m in diameter, can be located in this area of rough grazing. Just below them are three vague but level areas which may represent contemporary fields. Surveyed at 1/10 560. Visited by OS (JP) 7 December 1974

Asset Number	4
Asset Name	Tweedsmuir, Giant's Grave
Type of Asset	Cairn (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 2; Canmore ID 48535
Status	Non-designated heritage asset

Appendix 2: Cultural Heritage Asset Gazetteer

Easting	309250
Northing	624100
Parish	Tweedsmuir
Council	The Scottish Borders
Description	Giant's Grave (NAT) Cairn (NR) (Site of) OS 6" map (1962) 'Giant's Grave': Cairn (site of). No remains of this cairn can be seen. In 1818, when it was removed, a 6' long cist, containing an urn was found. New Statistical Account (NSA) 1845 (G Burns); RCAHMS 1967, visited 1956. There is nothing to be seen at this site. Visited by OS (RD), 4 August 1972.

Asset Number	5
Asset Name	Weird Law
Type of Asset	Enclosed Cremation Cemetery (Bronze Age)(Possible)
Listing No./NRHE Number	
HER Number	NT02SE 20; Canmore ID 48536
Status	Non-designated heritage asset
Easting	308470
Northing	623640
Parish	Tweedsmuir
Council	The Scottish Borders
Description	There is a probable enclosed cremation cemetery 200 yds N of NT02SE 8. RCAHMS 1967, visited 1962 NT 0847 2364. An enclosed cremation cemetery measuring 13.7m in internal diameter within a stony bank 1.5m wide by 0.3m high. A few small stones are visible in the interior. Surveyed at 1/2500. Visited by OS (RD) 4 August 1972

Asset Number	6
Asset Name	Weird Law
Type of Asset	Ring Enclosure(S) (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 44; Canmore ID 48562
Status	Non-designated heritage asset
Easting	308300
Northing	623300
Parish	Tweedsmuir
Council	The Scottish Borders
Description	Two ring enclosures are within 200yds of the enclosed cremation cemetery NT02SE 8. Each measures 18' in diameter within a bank 4' thick and not more than 1' high. RCAHMS 1967,

Appendix 2: Cultural Heritage Asset Gazetteer

visited 1962

An extensive perambulation of this area failed to locate those ring enclosures. The surface of the ground to the South has been levelled possibly destroying the enclosures. Visited by OS (RD) 20 July 1972

Asset Number	7
Asset Name	Tweedsmuir, Roc Observation Post
Type of Asset	Observation Post (20th Century)
Listing No./NRHE Number	
HER Number	NT02SE 56; Canmore ID 132319
Status	Non-designated heritage asset
Easting	309272
Northing	624279
Parish	Tweedsmuir
Council	The Scottish Borders
Description	Royal Observer Corps underground monitoring post (EDI 36) on a terrace in Gala Burn Wood, overlooking the A701 road. Information from RCAHMS (KM), 23 July 1998.

Asset Number	8
Asset Name	Bield Burn
Type of Asset	Cairn (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02NE 27; Canmore ID 194307
Status	Non-designated heritage asset
Easting	309500
Northing	625140
Parish	Tweedsmuir
Council	The Scottish Borders
Description	As part of the continuing re-survey of Tweeddale the following principal sites have been recorded: NT 0950 2514 Cairn. A full report has been lodged with the NMRS. Sponsors: Biggar Museum Trust, Peeblesshire Archaeological Society. T Ward 2000

Asset Number	9
Asset Name	Bield Burn

Appendix 2: Cultural Heritage Asset Gazetteer

Type of Asset	Clearance Cairn (Period Unassigned), Quarry (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 73; Canmore ID 244910
Status	Non-designated heritage asset
Easting	309460
Northing	624630
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower SE flank of Upper Oliver Dodd and on the SE side of the head-dyke there are three turf buchts [sheepfolds]. They measure up to 10m by 2m internally. Two are parallel with each other, with their open ends facing SE, away from the dyke which post-dates them. The third bucht lies just below the 310m contour with its open end facing NE. 100m NE of the buchts there is a small quarry which has been used as a dumping place for field clearance stones of cobble size. 150m N of the clearance stone there is a small quarry lying on the W side of the head-dyke. It has upcast material dumped around it except where it faces the dyke. There are several other small rock quarries within the grounds of Oliver House. Sponsor: Scottish Woodlands Ltd T Ward 2000 (MS/959/7).

Asset Number	10
Asset Name	Gala Burn
Type of Asset	Burnt Mound(S) (Prehistoric)
Listing No./NRHE Number	
HER Number	NT02SE 74; Canmore ID 244911
Status	Non-designated heritage asset
Easting	308600
Northing	624500
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the S flank of Upper Oliver Dodd and on the N side of Gala burn there are two burnt mounds, separated by a distance of around 2m. They measure 2m and 3m in diameter and both are dome-shaped and 0.5m high.Sponsor: Scottish Woodlands Ltd.T Ward 2000 (MS/959/7) As part of the continuing re-survey of Tweeddale (DES 2000, 74-5) the following site has been recorded. NT 086 245 Burnt mounds (2). In total, 401 sites are listed in this survey, with illustrations and discussion. Full report at www.biggararchaeology.org.uk. T Ward 2005

Appendix 2: Cultural Heritage Asset Gazetteer

Asset Number	11
Asset Name	Gala Burn
Type of Asset	Ewelaw Rig
Listing No./NRHE Number	
HER Number	NT02SE 75; Canmore ID 244913
Status	Non-designated heritage asset
Easting	308850
Northing	624420
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the S flank of Upper Oliver Dodd and on the N side of Gala Burn, there is a prominent mound which, when tested, was shown to consist of small unburnt stones and peat. This is most likely to be a natural mound. It measures 6m by 3m by 1m high and is covered in moss. About 10m upstream from the mound there is a small quarry cut into the side of the burn gully. T Ward 2000 (MS/959/7)

Asset Number	12
Asset Name	Ewelaw Rig
Type of Asset	Cairn(S) (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 76; Canmore ID 244914
Status	Non-designated heritage asset
Easting	309050
Northing	624170
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the W flank of Ewelaw Rig and SW of the Gala Burn Wood, there are a series of features lying along a natural terrace on the hill. A 6m diameter by 0.5m high cairn with evidence of robbing, forming a 0.3m deep depression in the centre of the mound. 15m to the Ne, there is a 5m diameter by 0.4m high grassy mound with a 0.2m deep depression in the centre. A further 5m to the NE, there is an 8m diameter scoop with a 1m high rear scarp on the NW (upslope) side. On the SW and NE sides, slight banks decrease in height, tailing off into a 3m wide gap. 5m upslope from the scooped site there is a small ring enclosure. It measures 7m in overall diameter with grass-covered stony banks which are 1.5m wide by 0.4m high. There is no obvious gap in the circuit of the feature, which appears to have been partly quarried from the hill face. Sponsor: Scottish Woodlands Ltd T Ward 2000 (MS/959/7)

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Asset Number	13
Asset Name	Ewelaw Rig
Type of Asset	Cairn (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 77; Canmore ID 244943
Status	Non-designated heritage asset
Easting	309100
Northing	624100
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the W flank of Ewelaw Rig and SW of Gala Burn, there are three scooped enclosures and a cairn. Sponsor: Scottish Woodlands T Ward 2000 (MS/959/7)

Asset Number	14
Asset Name	Hallow Burn
Type of Asset	House Platform (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 78; Canmore ID 244948
Status	Non-designated heritage asset
Easting	308730
Northing	623900
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower S flank of Ewelaw Rig there is a single unenclosed platform settlement. The platform which measures 12m by 8m slopes very slightly down to the SE. It has a well defined crescent-shaped rear scarp, but the usual frontal apron is absent. The access side has probably been on the SW side. T Ward 2000 (MS/959/7) As part of the continuing re-survey of Tweeddale (DES 2000, 74-5) the following site has been recorded. NT 0873 2390 Unenclosed platform settlement. In total, 401 sites are listed in this survey, with illustrations and discussion. Full report at www.biggararchaeology.org.uk. T Ward 2005

Asset Number	15

Appendix 2: Cultural Heritage Asset Gazetteer

Asset Name	Weird Law
Type of Asset	Cairn(S) (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 79; Canmore ID 245039
Status	Non-designated heritage asset
Easting	308330
Northing	623640
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the SE flank of Weird Law lying in a narrow gully which opens to the NE there are three small domed cairns. Two cairns measuring 2.5m by 0.25m high are located at the mouth and half way along the gully respectively. The third cairn is 2m by 0.4, high and is located at the top of the gully. Sponsor: Scotish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	16
Asset Name	Weird Law
Type of Asset	Cairn (Period Unassigned), Unenclosed Platform Settlement (Prehistoric)(Possible)
Listing No./NRHE Number	
HER Number	NT02SE 80; Canmore ID 245040
Status	Non-designated heritage asset
Easting	307950
Northing	623470
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower SE flank of Weird Law there are two unenclosed platform settlements lying about 50m apart. The example to the NE may be an undeveloped site since, although it has a well defined rear scarp which has been quarried into the base of the slope, there is no obvious frontal apron to the slightly sloping platform which measures 10m by 8m. The other [at NGR] is slightly higher on the hill face and is more typical of the site type, although the quarried material has been dumped to one side, to the NE of the 12m diameter platform. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	17
Asset Name	Weird Law
Type of Asset	Cairn(S) (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 81; Canmore ID 245041

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Status	Non-designated heritage asset
Easting	307970
Northing	623450
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower SE flank of Weird Law and lying about 50m downhill from Site 19 [NT02SE 80 - possible unenclosed platform settlement], there is a dome-shaped cairn which measures 5m by 4m by 0.6m high. It is situated at the N end of a natural, relatively level, terrace. Another cairn measuring 4m by 2.5m by 0.5m high is located some 50m to the SW. Two further cairns lie another 30m to the SW, measuring 5m by 3m by 0.4m high and 2m in diameter. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	18
Asset Name	Rigs Burn
Type of Asset	Cairn(S) (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 82; Canmore ID 245043
Status	Non-designated heritage asset
Easting	307900
Northing	623200
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower SE flank of Weird Law and dispersed over an area of 250m by 150m, there is a group of at least 20 small cairns. They measure up to 6m in diameter by 0.5m high. Some of the larger cairns on the upper slopes have been severely robbed. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	19
Asset Name	Rigs Burn
Type of Asset	Burnt Mound (Prehistoric)
Listing No./NRHE Number	
HER Number	NT02SE 83; Canmore ID 245044
Status	Non-designated heritage asset
Easting	307830
Northing	623180
Parish	Tweedsmuir
Council	The Scottish Borders

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Description	On the lower S flank of Weird Law and on the N side of Rigs Burn there is a burnt mound deposit. The deposit is 0.2m deep and can be seen for a distance of 4m in the exposure beside the burn. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	20
Asset Name	Rigs Burn
Type of Asset	Building (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 84; Canmore ID 245046
Status	Non-designated heritage asset
Easting	307770
Northing	623200
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the lower S flank of Weird Law and on the N side of Rigs burn, there are the stone foundations of a rectilinear building, measuring 6m by 4m internally. The entrance is apparent on the long NE wall and at the NW end there is 2m wide addition which appears open on the NE side. The building sits on a knoll about 10m NW from the boudary dyke. Below the building there is area of six lazy-beds, which measure from 4m to 15m long. They are partly enclosed by a stony bank which runs from the building down to the later (?) boundary dyke. T Ward 2000 (MS/959/7)

Asset Number	21
Asset Name	Weird Law
Type of Asset	Burnt Mound (Prehistoric)
Listing No./NRHE Number	
HER Number	NT02SE 85; Canmore ID 245048
Status	Non-designated heritage asset
Easting	307540
Northing	623670
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the SW flank of Weird Law there is a dome-shaped burnt mound which measures 3m in diameter by 0.5m high. It lies near the source of a spring and is visible as a grassy mound surrounded by rushes. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

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Asset Number	22
Asset Name	Weird Law
Type of Asset	Burnt Mound(S) (Prehistoric)
Listing No./NRHE Number	
HER Number	NT02SE 86; Canmore ID 245049
Status	Non-designated heritage asset
Easting	307690
Northing	623800
Parish	Tweedsmuir
Council	The Scottish Borders
Description	On the higher SW side of Weird Law, there are two burnt mounds lying 10m apart. The E mound is 2m in diameter by 0.5m high and the W mound is 6m long by 3m wide and stands about 0.5m high. Sponsor: Scottish Woodlands Ltd. T Ward 2000 (MS/959/7)

Asset Number	23
Asset Name	Newbigging
Type of Asset	Settlement (Period Unassigned)
Listing No./NRHE Number	
HER Number	NT02SE 88; Canmore ID 278213
Status	Non-designated heritage asset
Easting	309470
Northing	624500
Parish	Tweedsmuir
Council	The Scottish Borders
Description	Photographs but no decription held in Canmore entry: https://canmore.org.uk/site/278213

Asset Number	24
Asset Name	Nether Rigs
Type of Asset	Natural Feature (Period Unknown)
Listing No./NRHE Number	
HER Number	NT02SE 99; Canmore ID 331797
Status	Non-designated heritage asset
Easting	308121
Northing	623052
Parish	Tweedsmuir

Appendix 2: Cultural Heritage Asset Gazetteer

Council	The Scottish Borders
Description	An old channel in the surface of an outwash fan formed where the Rigs Burn debouches into the River Tweed now has the appearance of the ditch of a small semicircular enclosure. The channel, however, is shown as a meander in the course of the burn on the 1st edition of the OS 6-inch map (Peeblesshire 1860, sheet xxiii) and there can be no doubt that it is entirely natural in origin. Visited by RCAHMS (ARG) 18 July 2013

Asset Number	25
Asset Name	Nether Riggs
Type of Asset	Farmstead (Post Medieval)
Listing No./NRHE Number	
HER Number	NT02SE 108; Canmore ID 354515
Status	Non-designated heritage asset
Easting	308034
Northing	623029
Parish	Tweedsmuir
Council	The Scottish Borders
Description	The ruined farmstead of Nether Rigs can be seen immediately off the A701. Supposedly upstanding as ruins until recently, the buildings were partly destroyed by a lorry, and then pulled down completely. On visiting in 2012, a bed frame was visible in the rubble. The farms gardens were said to be across the road where rhubarb still grows. Information from Scottish Borders Council

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