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EIA Scoping Report

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Bowshiel Solar Farm and Battery Energy Storage System (BESS)

EIA Scoping Report

0733784

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1. INTRODUCTION

1.1 OVERVIEW

This Scoping Report has been prepared by Environmental Resources Management Ltd ('ERM') on behalf of Voltalia UK Ltd ('the Applicant'). The Applicant is proposing to submit an application to the Energy Consents Unit ('ECU') under Section 36 of the Electricity Act 1989[1] to construct and operate a ground-mounted solar photovoltaic ('PV') development with a generating capacity of up to 170MW, Battery Energy Storage System ('BESS') with a generating capacity of up to 150MW, associated infrastructure, access, and landscaping, henceforth referred to as 'the Proposed Development'.

The Proposed Development is located on land approximately 2.4 kilometres (km) south of the village of Cockburnspath at the closest point to the Proposed Development boundary ('the Site'). A plan showing the proposed extent of the Site (outlined in red) is provided as Figure 1.1. The proposed layout of the Proposed Development infrastructure is shown in Figure 1.2.

1.2 THE APPLICANT

Founded in 2005, Voltalia is a leading Independent Power Producer ('IPP') in the renewable energy market, developing, constructing, and operating solar, wind, hydro, biomass and storage projects. Operating across three continents and in over 20 countries, Voltalia has 2.37GW of installed generating capacity (including over 1GW of solar generation).

With a mission to improve the global environment by fostering local development, all of Voltalia's sites will contribute towards addressing national and local electricity needs by generating an affordable and renewable source of clean energy.

1.3 OBJECTIVES OF THIS REPORT

In line with Environmental Impact Assessment ('EIA') Regulations[2], an Environmental Impact Assessment Report ('EIAR') should be included with the application for consent for the purposes of informing Scottish Ministers in making their determination on the Proposed Development.

The aim of this Scoping Report is to provide an overview of the Applicant's proposed approach to EIA and subsequent EIAR. This report also identifies topics and issues which, based on ERM's professional expertise, require formal assessment as part of the EIA and will be included in the EIAR, referred to as 'scoped in'. This report will also outline topics and issues which will not result in significant potential effects and will not require formal assessment, resulting in them being 'scoped out' of the EIA. The information provided in this report is intended to allow consultees to form an opinion on the proposed scope of the EIAR and to highlight any topics or matters they feel require additional consideration.

[1] UK Government, (1989), Electricity Act 1989. [Online] Available at: https://www.legislation.gov.uk/ukpga/1989/29/contents (Accessed 20 June 2024)
[2] Scottish Government, (2017), The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017. [Online] Available at: https://www.legislation.gov.uk/ssi/2017/101/contents (Accessed 20 June 2024)

1.4 REPORT CONTENT AND STRUCTURE

To allow consultees to form a Scoping Opinion, this Scoping Report has been prepared to include the following:

- A description of the Proposed Development, including figures identifying the Site and all infrastructure comprising the Proposed Development;
- Figures identifying the designated and sensitive environmental receptors surrounding the Site; and
- A brief description of the nature and purpose of the Proposed Development and its potential residual effects.

This report identifies the different aspects of the environment that are likely to be significantly affected by the Proposed Development, and which require further consideration and assessment as part of the EIA process and will be reported in the EIAR.

Given the iterative nature of the EIA process, the final layout of the Proposed Development is still being refined. The Proposed Development is being scoped on a preliminary infrastructure layout shown in Figure 1.2.

The results of the scoping process and subsequent EIA baseline surveys will all feed into the iterative design of the Proposed Development. For the purposes of the EIA, a precautionary approach will be taken, with a worst-case scenario identified and assessed for each receptor as appropriate.

2. THE PROPOSED DEVELOPMENT

2.1 THE SITE

The Proposed Development would be constructed and operated on land approximately 2.4km south of Cockburnspath, and 13km southeast of Dunbar. The Proposed Development is centered on National Grid Reference ('NGR') NT 78702 67899. The Site will occupy an area of approximately 190 hectares (Ha) and lies within the Scottish Borders Council administrative area. The Site is shown in Figure 1.1 and is the area being considered for the Proposed Development, with the final design being informed by the results of environmental assessments and required surveys.

The topography of the Site slopes to the northwest from approximately 125m above ordnance datum (AOD) to approximately 230m at its highest point.

Settlements in the vicinity of the Site include:

- Cockburnspath, 2.4km north of the Site;
- Grantshouse, 2.2km southeast of the Site;
- Oldhamstocks, 4km northwest of the Site;
- Innerwick, 7.5km northwest of the Site; and
- Dunbar, 13km northwest of the Site.

Other sites of interest in the surrounding area include:

- Penmanshiel Wind Farm, 1.5km east of the Site;
- Quixwood Moor Wind Farm, 2.5km south of the Site; and
- Torness nuclear power station, 7km northwest of the Site.

2.2 SITE INFRASTRUCTURE

2.2.1 SOLAR PV MODULES & MOUNTING STRUCTURES

Solar panels are composed of photovoltaic cells and are designed to maximise the absorbance of incident solar radiation whilst minimizing reflection. Each string (row) of solar panels is intended to be mounted on a rack, comprised of piles, with gaps left between each string to avoid inter-panel shading. These gaps will depend on local topography but in general will be between 2 - 8m.

Each solar panel will be orientated to be south facing, and tilted to an angle, typically between 10 to 25 degrees from horizontal to maximise exposure to the sun. Solar panels will be mounted at a typical height of 0.8m, rising to approximately 3.2m, depending on the exact angle from horizontal required.

2.2.2 ON SITE SUBSTATION AND CABLING

The western portion of field 13 (as shown in Figure 1.2) will contain the substation for the Proposed Development. The Proposed Development substation will have an approximate footprint of 25 x 25m.

2.2.3 BATTERY ENERGY STORAGE SYSTEM (BESS)

A BESS facility, with anticipated generating capacity of up to 150MW will also be included as part of the Proposed Development. This will be situated in the vicinity of the substation compound in the western portions of fields 12 and 13. The BESS facility will have a footprint of approximately 105 x 170m. The BESS facility will be composed of containerised battery storage units.

2.2.4 ACCESS

Access to the Proposed Development will be via the A1, at the junction already used for Bowshiel Farm.

2.2.5 TEMPORARY CONSTRUCTION COMPOUND

A temporary construction compound will be located in the southern portion of field 8 (Figure 1.2). Following the construction of the remainder of the Proposed Development the area comprising the temporary construction compound will be back-filled with solar panels.

2.2.6 ANCILLARY INFRASTRUCTURE

Various ancillary infrastructure is proposed as part of the Proposed Development to aid in the operation of the solar farm. This infrastructure includes:

- Security/Deer fencing, approximately 2m tall; and
- Closed Circuit Television (CCTV) cameras, mounted on 4m poles.

2.3 DEVELOPMENT PHASES

2.3.1 CONSTRUCTION

Following the successful receipt of planning consent, construction of the Proposed Development will begin. It is anticipated that the construction of the Proposed Development will take approximately 18 months. All construction activities will be carried out by suitably trained and experienced personnel, in line with good practice guidance and all relevant development consent conditions.

2.3.2 OPERATION

The Proposed Development is anticipated to have an operational lifetime of 40 years. During the operational phase, the Proposed Development will be closely monitored and maintained in accordance with relevant good practice guidance. All maintenance will be carried out by trained specialists.

2.3.3 DECOMMISSIONING

At the end of the Proposed Development's operational lifetime decommissioning will occur. Decommissioning will involve the dismantling and removal of all PV panels and associated components.

All decommissioning works will be carried out in accordance with good practice guidance and follow all relevant legislation at that time.

3. EIA PROCESS

3.1 REQUIREMENT FOR EIA

Environmental Impact Assessment is an iterative process, which aims to identify and subsequently avoid or mitigate any potentially significant environmental effects resulting from the Proposed Development. This is achieved through continual refinement of its design. Effects can occur throughout all phases of the Proposed Development, construction, operation, and decommissioning. Potential significant environmental effects will be mitigated using the mitigation hierarchy of avoid, reduce, offset, and compensate.

The EIA Regulations define EIA developments as either:

(a) Schedule 1 development (project types where EIA is mandatory); or

(b) Schedule 2 development, likely to have significant effects on the environment by virtue of factors such as its nature, size, or location.

Solar developments are not listed in Schedule 1 of the EIA Regulations.

As the Proposed Development can be considered to fall under the “generating station” development type listed in Schedule 2 of the EIA Regulations, screening criteria require to be applied in order to determine whether the Proposed Development is considered to constitute EIA development. These criteria are set out in Schedule 3 of the EIA Regulations, which comprise:

- Characteristics of the development;
- Location of the development; and
- Characteristics of the potential impact.

No formal EIA Screening has been carried out for this project and the applicant has chosen to voluntarily carry out an EIA.

3.2 APPROACH TO SCOPING

The aim of the Scoping process is to identify any environmental issues considered relevant at an early stage, to determine which elements of the Proposed Development have the likely potential to result in significant effects on the environment, and to establish the extent of surveys and assessment required for the EIA.

The results of the EIA will be presented within an EIAR which, as prescribed in the EIA Regulations, is required to include ‘*a description of the likely significant effects*’ of the Proposed Development. It is therefore necessary for the scope of the EIA to be appropriately defined to ensure all significant effects are covered.

This Scoping Report provides details of the technical topics which will be included within the EIAR to meet the information requirements as set out in Schedule 4 of the EIA Regulations. Technical topics are detailed in Sections 5 to 12 of this report and comprise the following:

- Section 5 – Landscape and Visual;
- Section 6 – Archaeology and Cultural Heritage;
- Section 7 – Ecology and Ornithology;

- Section 8 – Water Resources and Flood Risk;
- Section 9 – Geology and Soils;
- Section 10 – Traffic and Transport;
- Section 11 – Noise and Vibration; and
- Section 12 – Other Issues.

Throughout the EIA process, effects arising during the construction, operation, and decommissioning phases will be assessed. Where appropriate, mitigation requirements will be identified, and appropriate mitigation measures developed.

3.3 APPROACH TO EIA

The preparation and production of the EIAR will be conducted in accordance with legislative requirements set out within the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (EIA Regulations)[2].

Where additional guidance exists relevant to a specific technical discipline, this will be detailed in the relevant section.

The principal steps of the EIA process are as follows:

- Scoping: The Scoping Opinion from the ECU will be used to define the scope of the EIA and subsequent EIAR;
- Baseline Studies: Desk-Based Assessment (DBA), baseline surveys and site visits will be undertaken, where appropriate, in order to determine the baseline conditions of the environment and area that may be affected by the Proposed Development;
- Assessing effects: Potential interactions between the Proposed Development and the baseline conditions will be considered, the nature of the effects (e.g., direct or indirect; positive or negative; long, medium or short term; temporary or permanent) will be predicted and assessed. Potential cumulative effects arising from the Proposed Development in conjunction with other proposed or consented developments will also be considered;
- Mitigation and assessment of residual effects: Where adverse effects are identified that cannot be avoided through layout design and embedded mitigation, suitable measures to reduce or offset effects will be proposed. Any residual effects will then be assessed to determine any effects predicted to remain following implementation of the recommended measures; and
- Production of the EIAR: The findings of the EIA will be set out in the EIAR.

3.4 ASSESSMENT METHODOLOGY

In order to assess the potential effects arising from the Proposed Development, the significance of such effects will be determined, in accordance with the EIA Regulations. The determination of significance relates to the sensitivity of the resource or receptor being

affected, and the magnitude of change as a result of the effect. The assessment of effects will combine professional judgment together with consideration of the following:

- The sensitivity of the resource or receptor under consideration;
- The magnitude of the potential effect in relation to the degree of change which occurs as a result of the Proposed Development;
- The type of effect (i.e. adverse, beneficial, or neutral);
- The probability of the effect occurring (i.e. certain, likely, or unlikely); and
- Whether the effect is temporary, permanent, and/or reversible.

A generalised methodology for assessing significant effects is detailed below, however, individual technical areas may have a specific assessment methodology as detailed in relevant chapters of this scoping report.

3.4.1 SENSITIVITY OF RECEPTORS

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

Table 3.1 details a general framework for determining the sensitivity of receptors. Each technical assessment will specify their own appropriate sensitivity criteria that will be applied during the EIA and details will be provided in the relevant EIAR chapter.

TABLE 3.1 FRAMEWORK FOR DETERMINING SENSITIVITY OF RECEPTORS

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low environmental value, or local importance.
Negligible	The receptor is resistant to change and is of little environmental value.

3.4.2 MAGNITUDE OF CHANGE

The magnitude of potential change will be identified through consideration the following:

- the degree of change to baseline conditions predicted as a result of the Proposed Development;
- the duration and reversibility of an effect;
- professional judgement; and
- best practice guidance and legislation.

General criteria for assessing the magnitude of change are presented in Table 3.2. Each technical assessment will apply its own appropriate magnitude of change effects criteria during the EIA, with full details provided in the relevant EIAR chapter.

TABLE 3.2 FRAMEWORK FOR DETERMINING MAGNITUDE OF CHANGE

Magnitude of Effects	Definition
High	A fundamental change to the baseline condition of the asset, leading to total loss or major alteration of character.
Medium	A material, partial loss or alteration of character.
Low	A slight, detectable, alteration of the baseline condition of the asset.
Negligible	A barely distinguishable change from baseline conditions.

If changes of zero magnitude (i.e. non/no change) are identified, this will be made clear in the assessment.

3.4.3 SIGNIFICANCE OF EFFECT

The sensitivity of the asset and the magnitude of the predicted change will be used as a guide, in addition to professional judgment, to predict the significance of the likely effects. Table 3.3 summarises guideline criteria for assessing the significance of effects.

TABLE 3.3 FRAMEWORK FOR ASSESSMENT OF THE SIGNIFICANCE OF EFFECTS

Magnitude of change	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

Effects predicted to be of major or moderate significance are generally considered to be ‘significant’ in the context of the EIA Regulations and are shaded in light grey in the table above.

Zero-magnitude effects upon a receptor will result in no effect, regardless of sensitivity.

3.5 MITIGATION

Where the EIA identifies likely significant adverse environmental effects, mitigation measures will be proposed in order to avoid, reduce, offset or compensate those effects. These mitigation measures may be embedded in the design or compensatory. The most effective mitigation measures are those which avoid or prevent the creation of adverse effects at the source. Such measures include design evolutions, best practice management and operational measures to avoid the impact.

The strategy of avoid, reduce, offset, and compensate is a hierarchical one which seeks:

- First to avoid or prevent significant adverse effects;
- Then to reduce/minimise those which remain; and
- Lastly, where no other remediation measures are possible, to propose appropriate compensation.

In addition, enhancement measures may be incorporated into the design of the Proposed Development to maximise environmental benefits.

3.6 RESIDUAL EFFECTS

Residual effects of the Proposed Development, which remain after successful implementation of the identified mitigation measures, will also be assessed in the EIAR.

3.7 CUMULATIVE EFFECTS

In accordance with the EIA Regulations, the EIA will also give consideration to 'cumulative effects'. These are effects that result from incremental changes caused by past, present, or reasonably foreseeable future actions together with the Proposed Development. For cumulative assessment, two types of effects will be considered:

- The combined impact of individual effects from the same development (e.g. noise, airborne dust, or traffic) on a single receptor; and
- The combined impact from the effects of several developments that may, on an individual basis be insignificant, but cumulatively may be significant.

The extent of any cumulative assessment relative to each technical assessment will be agreed upon during the Scoping process and can include both existing and proposed solar developments as well as other forms of development.

3.8 STRUCTURE AND CONTENT OF THE EIA REPORT

The content of the EIAR will broadly follow the specifications detailed within Schedule 4 of the EIA Regulations. The EIAR will consist of three volumes and a Non-Technical Summary (NTS):

- Volume 1 – EIAR Text;
- Volume 2 – Figures (divided into figures and visualisations); and
- Volume 3 – Technical Appendices.

The front end of the EIAR text will include:

- An introduction, including a summary of the EIA process and methodology;
- Description of the Site and its surroundings;
- Details of alternatives considered within the context of how the design of the Proposed Development has considered the environmental and economic balance; and
- A summary of the relevant planning policy and environmental context.

The technical chapters of the EIAR will present details of the assessments undertaken, including any cumulative effects, required mitigation, and residual effects.

4. POLICY AND LEGISLATIVE CONTEXT

4.1 LEGISLATIVE CONTEXT

Applications for consent for the construction and operation of an electricity generating station with a capacity exceeding 50 MW must be made to the Scottish Ministers under Section 36 of the Electricity Act 1989 ('the 1989 Act'). If granted consent under Section 36 of the 1989 Act, deemed planning permission may be granted by Scottish Ministers under Section 57(2) of the Town and Country Planning (Scotland) Act 1997 ('the 1997 Act').

4.2 INTERNATIONAL AND EUROPEAN CLIMATE CHANGE POLICY CONTEXT

The Paris Agreement is a legally binding international treaty on climate change, which was adopted by 196 Parties at the UN Climate Change Conference ('COP21') in Paris in December 2015 before coming into force in November 2016. The goal of the Paris Agreement is to prevent the increase in the global average temperature from reaching 2°C above pre-industrial levels, and to pursue efforts to limit the increase to 1.5°C.

The Paris Agreement represents a global action plan which requires countries to commit to highly ambitious reductions in greenhouse gas ('GHG') emissions. Each country that signed up to the Paris Agreement set out a target known as a Nationally Determined Contribution ('NDC') for reducing GHG emissions by 2030. The target for the UK was a 68% reduction on 1990 levels by 2030.

The 26th UN Climate Change Conference ('COP26') was held in Glasgow in October – November 2021. The Glasgow Climate Pact was established, to incorporate the aims of limiting temperature rise to 1.5°C. All countries agreed to revisit and strengthen their NDCs to 2030. The Paris Rulebook, the guidelines for how the Paris Agreement is delivered, was also finalized at COP26. This will allow for the full delivery of the Paris Agreement, after agreement on a transparency process which will hold countries accountable for delivering on their targets.

The Paris Agreement and recent Climate Change Conferences represents a commitment which renewable energy and GHG reduction targets in the UK seek to meet, which are established in UK and Scottish legislation and are described in the following sections.

4.3 UK LEGISLATIVE AND POLICY CONTEXT

The following Acts of Parliament, which are part of UK-wide legislation, and Government policy papers, are relevant to the Proposed Development:

4.3.1 CLIMATE CHANGE ACT 2008

The Climate Change Act 2008[3] ('the 2008 Act') set out a commitment to reduce GHG emissions by 80% against 1990 levels by 2050, and provides a system of carbon budgeting with a series of five-year carbon budgets. The 2008 Act also established the Committee on Climate Change ('CCC'), which reports to Parliament on progress made in reducing GHG emissions.

[3] HM Government (2008) *The Climate Change Act 2008* [Online] Available at: https://www.legislation.gov.uk/ukpga/2008/27/contents (Accessed 25/07/2024).

In June 2019, secondary legislation was passed which revised the GHG reduction target to a 100% (or 'net zero') reduction against 1990 levels by 2050. This was further reduced to 2045 in Scotland under the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 which is discussed further under Section 4.4.2 below.

There are six carbon budgets covering 2008 to 2037. The UK is currently in the Fourth Carbon Budget period (2023 to 2027). The Sixth Carbon Budget requires a reduction in UK GHG emissions of 78% by 2035 against 1990 levels, effectively accelerating the original 80% reduction target by 15 years.

4.3.2 THE UK ENERGY WHITE PAPER (DECEMBER 2020)

The Energy White Paper 'Powering our Net Zero'[4], published on 14th December 2020, builds on the Government's 'Ten Point Plan' to set out a strategy for moving towards cleaner energy systems. Chapter 2 of the White Paper considers power generation specifically, and highlights the importance of accelerating the deployment of clean electricity generation in decarbonisation.

A key objective of the White Paper is to accelerate the deployment of clean electricity generation through the 2020s. With regards to solar, the White Paper states that:

> *"Onshore wind and solar will be key building blocks of the future generation mix, along with offshore wind. We will need sustained growth in the capacity of these sectors in the next decade to ensure that we are on a pathway that allows us to meet net zero emissions in all demand scenarios."*

4.3.3 THE UK NET ZERO STRATEGY (OCTOBER 2021)

The Net Zero Strategy[5] ('NZS') was published by the UK Government in October 2021 and includes policies to help the UK meet its carbon budgets. The NZS includes plans for emissions reductions across sectors, including the power sector. The NZS states that the net zero economy will be underpinned by clean electricity, and commits to fully decarbonising the power system by 2035.

4.3.4 THE BRITISH ENERGY SECURITY STRATEGY (APRIL 2022)

The British Energy Security Strategy[6] ('the Security Strategy') was published by the UK Government on 7th April 2022. The Security Strategy sets out the Government's plan to achieve greater energy independence, amidst increasing prices in oil and gas. The Security Strategy emphasises the importance of transitioning from fossil fuels to clean renewable sources for greater energy security. Government measures and targets to increase deployment of renewable energy sources, including solar energy, are set out in the Security Strategy. A five-fold increase in deployment of solar energy is expected by 2035 and the Government intends to make amendments to planning policies to support this deployment.

[4] Department for Energy Security and Net Zero (2020) *Energy White Paper Powering our Net Zero* [Online] Available at: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future (Accessed 25/07/2024).
[5] Department for Energy Security and Net Zero (2021) *Net Zero Strategy: Build Back Greener* [Online] Available at: https://www.gov.uk/government/publications/net-zero-strategy (Accessed 25/07/2024).
[6] Department for Business, Energy & Industrial Strategy (2022) *British Energy Security Strategy* [Online] Available at: British Energy Security Strategy (publishing.service.gov.uk) (Accessed 25/07/2024).

The Government will consult on amending planning rules to strengthen policy in favour of ground-mounted solar development on non-protected land. In addition, the Government will support solar that is co-located with other functions, such as battery storage, onshore wind generation, and agriculture.

4.3.5 POWERING UP BRITAIN: ENERGY SECURITY PLAN (2023)

The Powering Up Britain Energy Security Plan[7] ('ESP') was published in March 2023, and builds on the NZS and the Security Strategy. The ESP emphasises the importance of energy independence and security, and adds that this cannot be achieved without decarbonisation of the energy sector.

The ESP outlines an aim for 70 gigawatts (GW) of ground and rooftop solar capacity by 2035, a five-fold increase on current capacity. The ESP reiterates the importance of solar power in meeting energy security and climate change goals.

4.3.6 CCC PROGRESS REPORTING ON REDUCING EMISSIONS (2019-2023)

The 'Net Zero – The UK's Contribution to Stopping Global Warming'[8] was published in May 2019, which responded to a request from the Governments of the UK, Wales and Scotland, asking the Committee to reassess the UK's long-term emissions targets.

In June 2023, the CCC published their latest Report to the UK Parliament entitled 'Progress in Reducing Emissions'[9]. In the Foreword Lord Deben, Chair of the CCC states:

> *"Our confidence in the achievement of the UK's 2030 target and the Fifth and Sixth Carbon Budgets has markedly declined from last year. Leadership is required to broaden the national effort to every corner of our economy. That means investing now in low-carbon industries to deliver lasting economic benefits to the UK."*

The Report also outlines that:

> *"In a range of areas, there is now a danger that the rapid deployment of infrastructure required by the Net Zero transition is stymied or delayed by restrictive planning rules. The planning system must have an overarching requirement that all planning decisions must be taken giving full regard to the imperative of Net Zero."*

4.4 SCOTTISH LEGISLATIVE AND POLICY CONTEXT

The following Act passed by the Scottish Parliament is relevant to this application:

[7] Department for Energy Security and Net Zero (2023) *Powering Up Britain: Energy Security Plan* [Online] Available at: https://www.gov.uk/government/publications/powering-up-britain/powering-up-britain-energy-security-plan (Accessed 25/07/2024).
[8] Climate Change Committee (2019) *Net Zero – The UK's contribution to stopping global warming* [Online] Available at: https://www.theccc.org.uk/publication/net-zero-the-uks-contribution-to-stopping-global-warming/ (Accessed 25/07/2024).
[9] Climate Change Committee (2023) *Progress in Reducing Emissions* [Online] Available at: https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/ (Accessed 25/07/2024).

4.4.1 CLIMATE CHANGE (SCOTLAND) ACT 2009

The Climate Change (Scotland) Act 2009[10] sets the statutory framework for greenhouse gas emissions reductions in Scotland. An interim 42% reduction target for 2020, as well as an 80% reduction target for 2050. These targets have since been updated in the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019.

4.4.2 THE CLIMATE CHANGE (EMISSIONS REDUCTION TARGETS) (SCOTLAND) ACT 2019

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[11] sets out Scotland's emissions reduction targets, which updates the targets set out in the Climate Change (Scotland) Act 2009. This was enacted in response to the climate emergency declaration in April 2019.

The Scottish Government now has a target for net zero emissions by 2045, with interim targets of a 75% reduction by 2030 and 90% by 2040. The CCC have advised that its modelling for CB6 indicates that Scotland is not on track to meet this target.

The following policies are relevant to the Proposed Development:

4.4.3 NATIONAL PLANNING FRAMEWORK 4

The National Planning Framework 4[12] ('NPF4') was adopted on 13th February 2023, replacing and consolidating the previous National Planning Framework 3 and Scottish Planning Policy ('SPP'). The purpose of NPF4 is to guide spatial development in Scotland by setting out national planning policies, designating national developments and highlighting regional spatial priorities.

Section 25 of the 1997 Act, which states that development should accord with the development plan, does not have primacy with respect to applications under Section 36 of the 1989 Act. However, it is considered that NPF4 remains a key material consideration in the determination of the Proposed Development.

4.4.3.1 NATIONAL DEVELOPMENTS

NPF4 identifies 18 National Developments ('NADs'), described as "significant developments of national importance that will help to deliver the spatial strategy". The NPF4 adds that:

> *"Their designation means that the principle for development does not need to be agreed in later consenting processes, providing more certainty for communities, businesses and investors.*
>
> *In addition to the statement of need at Annex B, decision makers for applications for consent for national developments should take into account all relevant policies."*

[10] HM Government (2009) *Climate Change (Scotland) Act 2009* [Online] Available at: https://www.legislation.gov.uk/asp/2009/12/contents (Accessed 29/08/2024).
[11] HM Government (2019) *Climate Change (Emissions Reduction Targets) (Scotland) Act 2019* [Online] Available at: https://www.legislation.gov.uk/asp/2019/15 (Accessed 25/07/2024).
[12] Scottish Government (2023) *National Planning Framework 4* [Online] Available at: https://www.gov.scot/publications/national-planning-framework-4/documents/ (25/07/2024).

Annex B of NPF4 provides details of the various NADs and a statement of need for each. Of particular relevance to the Development is National Development 3 "Strategic Renewable Electricity Generation and Transmission Infrastructure". NPF4 states for this national development:

> *"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."*

With regards to classes of development which qualifies as NAD3, the NPF4 states:

> *"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 energy 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."*

The Development will exceed 50 MW in capacity and is therefore be classed as a national development under NAD3.

4.4.3.2 NATIONAL PLANNING POLICY

Part 2 of NPF4 includes the national planning policies for Scotland. The most relevant of these are included below:

Policy 1 – Tackling the Climate and Nature Crises: This policy promotes development proposals that address the global climate emergency by reducing emissions. The Chief Planner's letter from February 2023, 'Transitional Arrangements for National Planning Framework 4', includes advice on individual policies, and states:

> *"This policy prioritises the climate and nature crises in all decisions. It should be applied together with the other policies in NPF4. It will be for the decision maker to determine whether the significant weight to be applied tips the balance in favour for, or against a proposal on the basis of its positive or negative contribution to the climate and nature crises."*

Policy 2 – Climate Mitigation and Adaptation: This policy promotes development proposals that minimises or avoids greenhouse gas emissions. Policy 2 requires development proposals to be designed and sited to minimise lifecycle GHG emissions, and adapt to current and future risks from climate change.

Policy 11 – Energy: This policy promotes renewable energy development proposals, including solar and energy storage. The policy includes a list of impacts which proposals will need to demonstrate have been addressed. Policy 11 states that in considering these impacts, significant weight will be placed on the contribution of the proposal to renewable energy generation and GHG emissions reduction targets.

In addition to these policies, the following within NPF4 will be considered during the EIA process:

- Policy 3 – Biodiversity;
- Policy 4 – Natural Places;
- Policy 5 – Soils;
- Policy 6 – Forestry, Woodland and Trees;
- Policy 7 – Historic Assets and Places;
- Policy 13 – Sustainable Transport;
- Policy 20 – Blue and Green Infrastructure;
- Policy 22 – Flood Risk and Water Management; and
- Policy 29 – Rural Development.

4.4.4 THE DRAFT ENERGY STRATEGY AND JUST TRANSITION PLAN (2023)

The Draft Energy Strategy and Just Transition Plan[13] ('ESJTP') was published on 10th January 2023, which replaces the Scottish Energy Strategy published in December 2017. The consultation period was extended from 4th April 2023 to 9th May 2023, following the publication of independent analyses of Scotland's energy requirements.

The ESJTP highlights that solar plays an important role as part of a diverse energy mix in decarbonising Scotland's energy system. The ESJTP aims to maximise the contribution solar can make, and includes a draft vision for solar energy, setting out actions to further deployment of solar.

4.4.5 NATIONAL PLANNING GUIDANCE

In addition to NPF4, the following planning advice notes (PANs) will be considered during the preparation of the EIAR:

- PAN 60 Planning for Natural Heritage (2000);
- PAN 61 Planning and Sustainable Urban Drainage Systems (2001);
- Flood Risk: Planning Advice (2015);

[13] Scottish Government (2023) *Draft Energy Strategy and Just Transition Plan* [Online] Available at: https://www.gov.scot/publications/draft-energy-strategy-transition-plan/documents/ (Accessed 25/07/2024).

- PAN 75 Planning for Transport (2005);
- PAN 3/2010 Community Engagement (2010);
- PAN 1/2011 Planning and Noise (2011);
- PAN 2/2011 Planning and Archaeology (2011);
- PAN 1/2013 Environmental Impact Assessment (2013); and
- Large Photovoltaic Arrays: Planning Advice.

4.4.6 REGIONAL POLICY CONTEXT

The Strategic Development Plan[14] was approved by Scottish Ministers on 27th June 2013 and covers the Scottish Borders Council, along with the City of Edinburgh, East Lothian, Midlothian, South Fife and West Lothian. Policy 10 – Sustainable Energy Technologies is a high-level policy which states that the Strategic Development Plan seeks to promote sustainable energy sources. The Strategic Development Plan requires that LDPs will:

> *'Set a framework for the encouragement of renewable energy proposals that aims to contribute towards achieving national targets for electricity and heat, taking into account relevant economic, social, environmental and transport considerations, to facilitate more decentralised patterns of energy generation and supply and to take account of the potential for developing heat networks.'*

4.4.7 LOCAL POLICY CONTEXT

The Local Development Plan (LDP) applicable to the Site comprises the following, and alongside NPF4 represents the Development Plan:

- Scottish Borders Local Development Plan 2 (LDP2) (2024);
- Relevant Supplementary Planning Guidance:
  - Landscape and Development (2008);
  - Local Biodiversity Action Plan (2018);
  - Local Landscape Designations (2012);
  - Renewable Energy Supplementary Guidance (2018);
  - Sustainable Urban Drainage Systems (2020); and
  - Trees and Development (2020).

4.4.7.1 SCOTTISH BORDERS LOCAL DEVELOPMENT PLAN 2 (LDP2)

The Scottish Borders Local Development Plan (LDP2) was adopted on 22nd August 2024. LDP2 replaces the previous Local Development Plan that was adopted on 12th May 2016. LDP2 comprises the policies that will guide future development under Volume One, and the settlement profiles under Volume Two. LDP2 states that the plan promotes net zero greenhouse gas emissions by 2045.

The following policies are considered most relevant and will be considered as part of the EIA process:

[14] SESplan (2013) *Strategic Development Plan* [Online] Available at: https://esescityregiondeal.org.uk/sesregionalplanning (Accessed 13/08/2024).

- **Policy PMD1 – Sustainability**: This policy includes a list of sustainability principles which the Council will expect to be incorporated into new developments;
- **Policy ED9 – Renewable Energy Development**: This policy states that Scottish Borders Council will support development proposals for all forms of renewable energy developments, including solar arrays. Proposals will be assessed in accordance with NPF4 Policy 11 paragraphs b) to f) and other relevant policies of NPF4;
- **Policy EP1 – International Nature Conservation Sites and Protected Species**: This policy states that development proposals which will have a likely significant effect on a designated or proposed European site, are only permissible where an appropriate assessment has demonstrated that it will not adversely affect the integrity of the site;
- **Policy EP2 – National Nature Conservation Sites and Protected Species**: Development proposals which are likely to have a significant adverse effect on a Site of Special Scientific Interest (SSSI), a National Nature Reserve (NNR), or nationally protected habitats or species will normally not be permitted. Mitigation of any impacts that may be caused by proposals permissible under the exception criteria included within the policy will need to be detailed within the planning application;
- **Policy EP3 – Local Biodiversity and Geodiversity**: This policy indicates that proposals which negatively impact on biodiversity through impacts on habitats and species will not be permitted, unless the benefits outweigh the adverse impacts on habitats and species;
- **Policy EP4 – National Scenic Areas**: This policy aims to protect the scenic qualities of the two National Scenic Areas (NSA) at Eildon and Leaderfoot and Upper Tweeddale. Proposals will only be permitted where adverse effects on the qualities of the NSA are outweighed by social or economic benefits of national importance;
- **Policy EP5 – Special Landscape Areas**: This policy seeks to protect Special Landscape Areas (SLA) and safeguard their landscape quality;
- **Policy EP7 – Listed Buildings**: Development proposals with a potentially significant impact on historic assets should be accompanied by an assessment which is based on an understanding of the cultural significance of the historic asset. The assessment should identify the likely visual or physical impacts, including cumulative effects;
- **Policy EP8 – Historic Environment Assets and Scheduled Monuments**: This policy aims to protect heritage assets including Scheduled Monuments, Battlefields and archaeological assets of regional or local significance. Proposals that affect heritage assets may require detailed investigations, and those that adversely affect an asset will need to include a mitigation strategy;
- **Policy EP9 – Conservation Areas**: This policy seeks to preserve the character and appearance of Conservation Areas;
- **Policy EP13 – Trees, Woodlands and Hedgerows**: This policy aims to protect woodland resources from adverse impacts. Replacement planting within the Scottish Borders area will be required where there is an unavoidable loss of trees;
- **Policy IS8 – Flooding**: Development proposals will be assessed against NPF4 Policy 22: Flood Risk and Water Management. A Flood Risk Assessment and a report of the measures proposed to mitigate flood risk will be required; and

- **Policy IS9 – Waste Water Treatment Standards and Sustainable Urban Drainage**: Development proposals should incorporate Sustainable Urban Drainage Systems (SUDS) measures. A drainage strategy should be submitted to include treatment and flood attenuation measures, and details for the long-term maintenance of any necessary features.

4.5 QUESTIONS FOR CONSULTEES

Q4.1 Is there any additional legislation, policy or supplementary guidance which should be considered in the EIA process?

5. LANDSCAPE AND VISUAL

5.1 INTRODUCTION

This chapter of the Scoping Report relates to the potential effects of the Proposed Development on landscape and visual receptors. This assessment will be undertaken by Abseline LLP.

This chapter includes the following elements:

- Preliminary baseline conditions;
- Potential environmental effects;
- Proposed assessment methodology;
- Approach to mitigation;
- Matters and aspects scoped out; and
- Commentary on consultation.

5.2 BASELINE CONDITIONS

The Site is located on the eastern slopes of Ewieside Hill, on the eastern fringe of the Lammermuir Hills; it lies within the Scottish Borders. The area is generally sparsely settled, with some scattered properties, farmsteads and small settlements near to the Site, these include Cockburnspath (2.4km, north) and Grantshouse (2.2km, southeast). The A1 and East Coast Main Line railway route along the valley directly east of the Site. In the wider area, the A1107 and A6112 connect into the A1 approximately 1.0km to the north and 2.4km southeast of the Site respectively. There are a limited number of minor roads near to the Site, particularly to the north and south, which connect the minor dwellings and settlements. Penmanshiel Wind Farm is located on the opposite side of the A1, 1.5km east, with Drone Hill Wind Farm beyond. Quixwood Moor Wind Farm is located 2.5km to the south. The Berwickshire Coast Path runs along the coast 2.5km to the north of the Site and the Southern Upland Way runs within 0.2km along local roads to the south and within Penmanshiel Wood to the east of the Site. There are a number of Core Paths within 3km of the Site.

5.2.1 LANDSCAPE CHARACTER

In the absence of solar specific landscape capacity or landscape sensitivity studies, NatureScot's 2019 landscape character assessment forms the most recent study of the area. It will be used to identify the landscape character types (LCTs) within the Study Area. The eastern part of the Site is within LCT 117: Pastoral Upland Fringe, with the western area of the Site located within LCT 100: Plateau Farmland - Borders.

5.2.2 LANDSCAPE DESIGNATIONS

There are no National Parks or National Scenic Areas within 5km of the Site.

Special Landscape Area (SLA) 36: Berwickshire Coast (1.3km, north) is the only locally designated landscape within 3km of the Site (see Figures 5.1, 5.2 and 5.3). The area has

limited visibility of the Proposed Development and it is considered that significant effects are unlikely to occur on this SLA; it is proposed to be scoped out of the assessment.

Dunglass Garden and Designed Landscape (GDL) is located 2.7km northwest of the Site. Figure 5.1 shows no visibility of the Proposed Development within the GDL. Any effects on the heritage value and setting of GDLs will be considered in the cultural heritage chapter; visual effects on people visiting the Dunglass GDL are proposed to be scoped out of the Landscape and Visual Impact Assessment (LVIA).

5.2.3 VISUAL RECEPTORS AND VISUAL AMENITY

As illustrated by Figures 5.1-5.3, visual receptors within 2km of the Site include local residents; people using local roads and main routes, including the A1 and railway line; tourists visiting the area; and those using long distance walking routes, Core Paths, public rights of way or those exercising their right to roam.

5.3 POTENTIAL ENVIRONMENTAL EFFECTS

Effects arising from the Proposed Development will be considered at the following key stages. The nature of the potential effects relevant to the assessment for each stage will be:

5.3.1 CONSTRUCTION

The construction of the project would involve the gradual modification of the Site from an area of agriculture to that of a solar farm.

Effects during construction on landscape fabric would be expected to arise from:

- Groundworks for the access tracks, substation, BESS and associated hard standing areas;
- The installation of solar panels;
- The removal of small sections of vegetation for access tracks; and,
- The creation of new habitat areas.

Effects during construction on landscape/seascape character would arise from:

- Short-term construction activity within the Site;
- Changes to landscape fabric as described above; and
- Changes to views towards the Site which would include partially complete areas of solar panels.

Effects during construction on visual receptors would arise from:

- Short-term movement of vehicles and plant, within and travelling to and from the Site to deliver and install the solar panels and other site infrastructure; and
- Changes to views towards the Site which would include completed and partially completed areas of solar panels, with increasing similarity to the operational scheme as construction is completed.

Effects during construction on designated landscapes would arise from:

- Short-term changes to the special qualities as a result of views of the construction activity taking place within the Site.

5.3.2 OPERATION

Effects during operation on landscape fabric would arise from:

- Changes as a result of the continued establishment of managed habitats and planting; and
- The presence of the solar farm infrastructure.

Effects during operation on landscape character would arise from:

- The presence of the solar panels and associated infrastructure within the Site, and changes to views towards the Site from nearby areas.

Effects during operation on visual receptors would arise from:

- Changes to views towards the Site to include the presence of the solar panels and some other on-site infrastructure, both from static locations and when moving along routes.

Effects during operation on designated landscapes would arise from:

- Changes to the special qualities as a result of visibility, and inclusion of, the solar farm when viewed from and within designated landscapes.

5.3.3 DECOMMISSIONING

Effects during decommissioning would be short-term and similar to those arising during construction except in reverse. After decommissioning, changes to the landscape fabric arising from planting as part of the Proposed Development are anticipated to remain permanently.

5.3.4 EFFECTS SCOPED INTO THE LVIA

TABLE 5.1 EFFECTS SCOPED INTO THE LVIA

Environmental Receptor or Effect	Scoped in	Rationale
Effects on landscape and visual receptors within 2km	Scoped in	Extent of potentially significant effects

5.4 PROPOSED ASSESSMENT METHODOLOGY

5.4.1 GUIDANCE

The primary reference is Guidelines for Landscape and Visual Impact Assessment, 2013 (GLVIA3) as clarified by Landscape Institute Technical Guidance Note (TGN) 05/23 (draft).

In addition to GLVIA3, the approach to the assessment will be informed by the following key documents (in addition to other relevant guidance):

- Landscape Sensitivity Assessment Guidance, NatureScot, 2022;
- Technical Guidance Note 06/19: Visual Representation of Development Proposals, Landscape Institute, 2019; and
- TGN 02/19 Residential Visual Amenity Assessment (RVAA), Landscape Institute, 2019.

5.4.2 STUDY AREA

A Study Area of 3km has been used to prepare three Zone of Theoretical Visibility (ZTV) studies, showing the extent of panel visibility (Figure 5.1) and the extent of the BESS and substation visibility (Figure 5.2) with screening from woodlands and settlements to provide a more realistic pattern of visibility; a combined bare ground ZTV is provided (Figure 5.3) to illustrate the maximum theoretical extent of visibility of all elements within the Proposed Development.

The following parameters have been utilised for the ZTVs:

- Panel areas: 3.5m;
- BESS area: 3.5m; and
- Substation area: 7m.

The Site is located on the south and eastern slopes of Ewieside Hilll, on the open flatter parts of the hillside above the steeper wooded slopes that descend into the adjacent valleys. Visibility would be constrained by the local hills and areas of woodland within 2km of the Site. The main areas of visibility extend 1.8km east to Greenside Hill; beyond 3km southeast along slopes on either side of the A1 and south of the A6112; 2km south and 1.1km southwest to the woodland belts in these directions; and 1-2km west to the tops of Ewieside Hill and Ecclaw Hill. Visibility is limited to the north due to the Site's position on the east and southern face of Ewieside Hill and the presence of woodlands. Beyond these areas, the extent of theoretical visibility would generally be limited to occasional elevated hilltops and distant open areas on the coast to the north.

The extent of theoretical visibility is limited beyond approximately 2km. Beyond this distance, the Proposed Development would form a more minor feature within the wider view. Whilst there is visibility from open fields in some directions beyond 2km, particularly to the southeast, significant effects are unlikely to arise beyond this point and it is proposed that receptors beyond this distance are scoped out, setting a Study Area of 2km.

5.4.3 ASSESSING LANDSCAPE EFFECTS

The assessment of effects on landscape fabric will consider the physical changes to the landscape arising from the Proposed Development.

The assessment of effects on landscape character receptors will be assessed based on the guidance set out in Section 5.4.1 above and informed by the baseline studies described in Section 5.2 above.

SLA36: Berwickshire Coast (1.3km, north) is the only landscape designations within the proposed 2km Study Area and it is proposed to be scoped out.

5.4.4 ASSESSING VISUAL EFFECTS

The assessment of visual effects will focus on public amenity and will consider the effects on the views people see when in settlements; using roads and recreational routes; at tourist and recreational destinations and from near, but not within, their private homes and gardens. All visual receptors with theoretical visibility of the Proposed Development within 2km will be considered within the LVIA.

5.4.5 VIEWPOINTS

Viewpoint analysis will be used to inform the LVIA from selected viewpoints within the Study Area. The purpose of this is to assess both the scale of visual impact for receptors and to inform the assessment of the effects on visual amenity and landscape character. The viewpoints have been selected to represent views from a range of distances, directions and receptor types (landscape character, visual receptors, specific viewpoints known for their valued views, visitor destination and designated landscapes) in the proposed 2km Study Area. Proposed viewpoint locations are set out in the table below.

TABLE 5.2 PROPOSED VIEWPOINTS

VP	Location	Distance, direction	Receptors
1	A1/A1107 junction	0.9km, N	Main roads users, local residents
2	SUW at Penmanshiel Wood	1.4km, N	Walkers
3	Greenside Hill	1.2km, E	Walkers
4	Penmanshiel Memorial	0.3km, SE	Visitors to memorial, local road users
5	A1 layby North of Grantshouse	1.2km, SE	A1 road users
6	Southern Upland Way	0.7km, S	Walkers
7	Ecclaw Hill - Core Path	1.6km, W	Walkers (and nearby local road users)

5.4.6 VISUALISATIONS

Visualisations will be provided in line with the Landscape Institute's Technical Guidance Note 06/19: Visual Representation of Development Proposals (2019).

Visualisations will be provided as photo panels (Landscape Institute Type 1 Visualisations) and wirelines, alongside a number of photomontages (Landscape Institute Type 3 Visualisations) showing the Proposed Development within the existing view, at year 1 and at year 15 to demonstrate the effect of mitigation planting.

5.4.7 CUMULATIVE ASSESSMENT METHODOLOGY

Cumulative assessment will be undertaken to identify impacts arising from the Proposed Development when considered together with other relevant developments in the area. The proposed Study Area for cumulative effects is 2km.

Existing developments will be considered as part of the baseline, and consented development (including Blackburn Wind Farm) as part of the future baseline. Thus, cumulative effects with these will be considered in the main body of the assessment.

Effects with relevant proposed developments (or other changes) will be considered in a scenario-based cumulative assessment so that the effects of different combinations are described and considered

No relevant cumulative sites have been identified following an initial search.

5.4.8 RESIDENTIAL VISUAL AMENITY

Bowshiel Farm and cottages lie within the centre of the Site and the Proposed Development has been designed with sufficient offsets around the properties, taking into account existing screening. Beyond the Site boundary, the nearest properties to the Site lie beyond 250m from the proposed development areas. It is atypical for properties at this distance to reach the Residential Visual Amenity Assessment (RVAA) threshold[15] for solar developments, and it is proposed that a RVAA is not required.

5.5 APPROACH TO MITIGATION

Landscape and visual mitigation will be incorporated into the final design of the Proposed Development. This will include the consideration of the extent and location of elements of the Proposed Development, as well as the inclusion of hedgerows and trees around the perimeter of panel areas and along public access routes within the Site to screen the Proposed Development from view and/or retain important outward views.

5.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

It is proposed that effects on the following receptors are scoped out of the assessment:

TABLE 5.3 ENVIRONMENTAL EFFECTS TO BE SCOPED OUT OF THE ASSESSMENT

Environmental Receptor or Effect	Scoped out	Rationale
Effects on landscape and visual receptors beyond 2km	Scoped out	Significant effects are unlikely at this distance
Effects on landscape and visual receptors within 2km with no visibility of the Proposed Development	Scoped out	Effects will not arise where there is no visibility

[15] Defined within Landscape Institute Technical Guidance Note 02/19 'Residential Visual Amenity Assessment (RVAA)' (2019) as *"The threshold at which the visual amenity of a residential property is changed and adversely affected to the extent that it may become a matter of Residential Amenity and which, if such is the case, competent, appropriately experienced planners will weigh this effect in their planning balance."*

Environmental Receptor or Effect	Scoped out	Rationale
Effects on the special qualities of SLA36 Berwickshire Coast (1.3km, north)	Scoped out	Significant effects are not likely due to a combination of limited visibility and distance
Effects on Residential Visual Amenity	Scoped out	The nearest uninvolved properties lie more than 250m from the Proposed Development and it is not likely that the RVA threshold would be exceeded.

5.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

Q5.1 Do you agree that the relevant guidance has been identified to inform the assessment approach?

Q5.2 Is the proposed 2km study area adequate to identify all potentially significant effects?

Q5.3 Do you agree that the relevant baseline studies have been identified to inform the assessment of effects on landscape character and designations?

Q5.4 Do you agree with the list of receptors to be scoped out?

Q5.5 Do you agree with the proposed viewpoint locations?

Q5.6 Are there any cumulative developments in planning or pre-application which you consider should be included?

Q5.7 Do you agree that a residential visual amenity assessment is not required for this development?

6. CULTURAL HERITAGE AND ARCHAEOLOGY

6.1 INTRODUCTION

The Cultural Heritage and Archaeology chapter of the EIAR will be supported by appropriate figures and visualisations and will be prepared by a qualified archaeologist with experience in the assessment of BESS and solar sites in Scotland and the UK.

The Cultural Heritage and Archaeology scoping chapter is supported by the following figures:

- Figure 6.1 Cultural Heritage and Archaeology Study Areas;
- Figure 6.2 Non-Designated Assets within the Site;
- Figure 6.3 Heritage Assets within the 1km Study Area; and
- Figure 6.4 Designated Assets within the 3km Study Area.

The Cultural Heritage and Archaeology assessment will consider direct, indirect, and cumulative effects on archaeology and cultural heritage.

6.2 BASELINE CONDITIONS

6.2.1 STUDY AREAS: DIMENSIONS AND RATIONALE

To assess potential Direct/Indirect Physical Impacts and Setting Impacts on the historic environment, two Study Areas have been established:

- 1km Study Area; and
- 3km Study Area.

6.2.1.1 1KM STUDY AREA

The 1km Study Area (Figure 6.1) will be used to identify potential Direct and Indirect Physical Impacts. This Study Area takes in the Site itself and the land within a 1km radius of the Site. The wider historic environment will be considered as and when pertinent to the Proposed Development.

6.2.1.2 3KM STUDY AREA

The 3km Study Area (Figure 6.1) will take in land within a 1 – 3km radius of the Site and will be used to identify potential Setting Impacts to Designated assets, as well as any sensitive Non-Designated assets identified through consultation with the Scottish Borders Council (SBC). For heritage assets located within the 3km Study Area, a sieving exercise will be undertaken to determine those to be included within the setting assessment. A table listing assets for inclusion within, or exclusion from, the setting assessment will be provided to stakeholders along with a rationale for any decisions made. The 3km Study Area will not be used as an arbitrary cut-off point for assessing these impacts. Due consideration will be given to heritage receptors beyond 3km that fall within a shared bare earth ZTV, as well as heritage receptors specifically identified for inclusion within any cumulative assessment by Historic Environment Scotland (HES) and the SBC.

The 3km Study Area will also serve as the initial extent of any assessment of Cumulative Impacts.

6.2.2 ASSETS WITHIN THE SITE

There are no Designated heritage assets within the Site.

There are 15 Non-Designated heritage assets located within the Site, ranging in date from the Prehistoric through to the Modern periods. These comprise of:

- A Prehistoric settlement site (58720), ring ditch (241407) and pit setting (360603);
- A Medieval tower house (58751) and a late Medieval farmhouse (278499);
- Five Post-Medieval assets associated with infrastructural and industrial activity (342730, 342727, 342725, 342729, 342726);
- One modern asset relating to aviation activity (353679); and
- Three undated enclosures (58721, 58719, 58718) and a linear earthwork (58717).

These are shown in Figure 6.2.

6.2.3 ASSETS WITHIN THE 1KM STUDY AREA (OUTWITH THE SITE)

There is one Designated asset within the 1km Study Area, comprising of:

- One Scheduled Monument.

6.2.3.1 SCHEDULED MONUMENTS

The Scheduled Monument is Ewieside Hillfort (SM369), the remains of a later prehistoric hill fort, located 200m northwest of the Site.

6.2.3.2 NON-DESIGNATED HERITAGE ASSETS

There are 31 Non-Designated heritage assets located within the 1km Study Area, dating from the Early Prehistoric to Modern periods.

At least 17 of these assets date to the early / late Prehistoric period, consisting of settlement and subsistence sites, as well as ritual and funerary monuments and findspots. These include multiple cairns (58725, 58726, 59816, 59810, 59809); a cist (58749); three forts (58724, 58750, 59808); three potential settlement sites (58733, 59807, 59805); two earthworks (58736, 58723); and three findspots of various Prehistoric finds (58722, 58732, 59851). These assets are mainly clustered to the northwest, north, east and south of the Site. By comparison, there is noticeably little evidence for such activity to the southwest and west of the Site.

There are no non-designated assets dating to the Medieval period within the wider 1km Study Area. There are a further seven Post-Medieval assets, the majority of the latter are associated with farmsteads and agricultural activity, with a one exception relating to industrial expansion. Such sites are widely distributed around the Site, though notably none are recorded to the west.

Of the five assets dated to the Modern period within the 1km Study Area, three are related to industrial activity, one World War Two defensive activity, and the remainder to infrastructural expansion. These modern assets are located to the north and southeast of the Site.

There are also two undated assets within the 1km Study Area, comprising two earthworks located to the north of the Site.

All of the above assets are shown in Figure 6.3.

6.2.4 DESIGNATED ASSETS WITHIN THE 3KM STUDY AREA

There are 17 Designated assets within the 3km Study Area, comprising:

- Three Scheduled Monuments;
- 12 Listed Buildings;
- One Conservation Area; and
- One Garden and Designed Landscape.

6.2.4.1 SCHEDULED MONUMENTS

The Scheduled Monuments within the 3km Study Area comprise, Cockburnspath Tower (SM13317), a 15th-century tower and ancillary buildings, located 1.2km north of the Site, Winding Cairn (SM12469) a prehistoric cairn located 2.1km east of the Site, and St Helen's Church (SM382) a medieval church located 2.4km northeast of the Site.

6.2.4.2 LISTED BUILDINGS

There are four Category A Listed buildings (LB4046, LB4047, LB4054, and LB4129) and a further four Category B (LB4048, LB4049, LB4050, and LB4052), and four C Listed Buildings (LB46594, LB46624, LB46625, and LB46627) within the 3km Study Area, most of which date to the Post-Medieval period. The two exceptions to this are the Market Cross Cockburnspath (LB4047) and Cockburnspath Church and Graveyard (LB4129), both of which date to the Medieval period. These buildings are all located c. 2.4km to 3km to the northwest and southeast of the Site and are mostly associated with the expansion of the village of Cockburnspath and Grantshouse.

6.2.4.3 CONSERVATION AREA

The only Conservation Area within the 3km Study Area is the Cockburnspath Conservation Area. It covers the historic core of the settlement of Cockburnspath and retains a number of historical and architectural features related to the settlement's historic development.

6.2.4.4 GARDEN AND DESIGNED LANDSCAPES

The Garden and Designed Landscape comprises Dunglass (GDL00154), located 2.7km to the northwest of the Site. The GDL encompasses Dunglass House and its associated designed landscape, the origins of which have been dated back to the Medieval period. The current landscape was laid out between 1776 and 1832 and incorporated an earlier landscape along with the existing house and church.

In the 14th century, Dunglass Castle stood on the site where the current Dunglass House is now located. It was built by Sir Alexander Home, who built the nearby Colliegate Church in 1403. Over time, the estate has passed through many hands, and undergone various changes resulting in the present-day configuration today.

All of the Designated heritage assets within the 3km Study Area are shown on Figure 6.4.

Further information on the assets located within the 3km Study Area is contained within Appendix A Cultural Heritage Baseline.

6.3 POTENTIAL ENVIRONMENTAL EFFECTS

The following potential impacts and their effects on cultural heritage and archaeology receptors may result from the Proposed Development without appropriate mitigation, and will be considered within the Cultural Heritage and Archaeology section of the EIA:

- Direct Physical Impacts;
- Indirect Physical Impacts;
- Setting Impacts; and
- Cumulative Impacts.

6.3.1 DIRECT/INDIRECT PHYSICAL IMPACTS

Assets located within the Site are likely to be subject to Direct/Indirect Impacts as a result of the Proposed Development. As such, there is the potential for Direct/Indirect physical impact upon the following:

- One Prehistoric settlement site, (58720), ring ditch (241407), and pit setting (360603);
- One Medieval tower house (58751) and a late Medieval farmhouse (278499);
- One Post-Medieval farmhouse and two roads (342725, 342726), a well (342730) a quarry (342727), and a mill dam (342729);
- One aircraft crash site (353679); and
- Three undated enclosures (58721, 58719, 58718) and a linear earthwork (58717).

Assets located within the 1km Study Area are more susceptible to Indirect Impacts as a result of the Proposed Development (for example, through vibration, dust, etc.). Assets within this Study Area comprise one Prehistoric Scheduled Monument (SM369), along with 31 Non-Designated heritage assets dating from the Prehistoric through to the Modern periods.

A comprehensive list of the assets located within the Study Areas is provided in Appendix A Cultural Heritage Baseline.

6.3.2 POTENTIAL SOURCES & EXTENT OF DIRECT/INDIRECT PHYSICAL IMPACT

Direct/Indirect (Physical) Impacts to the heritage resource are typically limited to the footprint of infrastructure within the Proposed Development. Direct/Indirect (Physical) Impacts would not be anticipated to occur wholesale across the full extent of the Site but limited to areas of ground disturbance associated with construction and/or landscaping. As such, these types of impact are typically limited to the Construction Phase of any project.

Direct (Physical) Impacts are physical alterations, e.g., truncation, removal, structural damage etc., which may affect either known or potential/unrecorded assets, both buried and above ground. These impacts are usually permanent and irreversible.

Indirect (Physical) Impacts are physical alterations occurring as a result of construction and associated activity, but not from direct physical contact between plant machinery and other forms of construction personnel / equipment. Instead, they result from e.g., vibration caused by the movement of plant machinery, delivery vehicles etc., harmful desiccation/saturation of assets due to changes in groundwater level as a result of groundworks elsewhere, and other remote construction activities.

Both Direct and Indirect (Physical) Impacts may also occur to heritage assets along the course of any transport routes used for delivery of materials to the Proposed Development.

6.3.3 SETTING IMPACTS

Setting Impacts may occur during the Construction Phase but are typically considered to peak during the Operational Phase of a project, with the Setting Impacts having maximum visual and experiential impact following the completion of all above-ground infrastructure.

There is a potential for Setting Impacts to occur in relation to both Designated and Non-Designated heritage assets located within the 3km Setting Study Area.

At this stage, there is considered to be the potential for Setting Impacts to be significant.

6.3.4 CUMULATIVE IMPACTS

Cumulative Impacts typically occur during the construction and operational phases of a project. There is the potential for cumulative impacts as a result of Direct/Indirect (Physical) impact interactions or Setting Impact interactions with other developments.

Table 6.1 below presents a summary of environmental effects to be scoped out of the assessment.

TABLE 6.1 ENVIRONMENTAL EFFECTS TO BE SCOPED IN TO THE ASSESSMENT

Environmental Receptor or Effect	Scoped In	Rationale
Direct Physical Impacts to Heritage Assets within the Site.	Scoped In	Direct physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant impact if identified.
Indirect Physical Impacts to Heritage Assets within 1km	Scoped In	Indirect physical impacts to heritage assets as a result of the Proposed Development are considered possible and would have a significant impact if identified.
Setting Impacts to Designated assets within the 3km Study Area.	Scoped In	Additional assets beyond 3km may be scoped in where: They fall within the bare earth ZTV; They have been requested for assessment by stakeholders; and/or, They have the potential to be impacted by the Proposed Development.
Setting Impacts to regionally and nationally important Non-Designated heritage assets within the 3km Study Area, with inclusion for assessment decided following consultation and sieving exercise.	Scoped In	Additional assets beyond 3km may be scoped in where: They fall within the bare earth ZTV; They have been requested for assessment by stakeholders; and/or, They have the potential to be impacted by the Proposed Development.

Environmental Receptor or Effect	Scoped In	Rationale
The Cumulative Effect of the Proposed Development in conjunction with other developments within 3km.	Scoped In	Additional developments beyond 3km may be included for assessment where: Bare earth ZTVs overlap; They have been requested for assessment by stakeholders; and/or, They have the potential to impact the setting of assets in conjunction with the Proposed Development.

6.4 PROPOSED ASSESSMENT METHODOLOGY

The results of the assessment will be presented in the cultural heritage chapter of the EIAR.

6.4.1 LEGISLATIVE CONTEXT

The assessment will be conducted with reference to the relevant statutory and planning frameworks for cultural heritage. Key Heritage legislation of relevance includes:

- The Ancient Monuments and Archaeological Areas Act 1979[16];
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997[17]; and
- The Historic Environment Scotland Act 2014[18];

6.4.2 POLICY AND GUIDANCE CONTEXT

In addition to this legislation, the following is a summary of the key heritage policy and guidance:

- Scotland's Fourth National Planning Framework (NPF4)[19];
- Historic Environment Policy for Scotland (HEPS, 2019)[20];
- Our Place in Time: The Historic Environment Strategy for Scotland (2014)[21];

[16] UK Government (1979) The Ancient Monuments and Archaeological Areas Act [Online] Available at: https://www.legislation.gov.uk/ukpga/1979/46 (Accessed 08/07/2024)
[17] Scottish Government (1997) *The Planning (Listed Buildings and Conservation Areas) (Scotland) Act* [Online] Available at: https://www.legislation.gov.uk/ukpga/1997/9/contents (Accessed 08/07/2024)
[18] Scottish Government (2014) The Historic Environment Scotland Act [Online] Available at http://www.legislation.gov.uk/asp/2014/19/pdfs/asp_20140019_en.pdf (Accessed 08/07/2024)
[19] The Scottish Government (2023) *National Planning Framework 4: Part 2 – National Planning Policy* [Online] Available at: https://www.gov.scot/publications/national-planning-framework-4/pages/3/ (Accessed 08/07/2024)
[20] HES (2019) Historic Environment Policy for Scotland. [Online] Available at: https://www.historicenvironment.scot/advice-and-support/planning-and-guidance/historic-environment-policy-for-scotland-heps (Accessed 08/07/2024)
[21] Scottish Government (2014) *Our Place in Time: The Historic Environment Strategy for Scotland* [Online] Available at: https://www.gov.scot/publications/place-time-historic-environment-strategy-scotland/ (Accessed 08/07/2024)

- HES. Managing Change in the Historic Environment Series, specifically 'Managing Change in the Historic Environment: Setting (2016)[22];
- Scottish Natural Heritage (now known as NatureScot) and Historic Environment Scotland (HES) EIA Handbook (2018)[23];
- ALGAO Scotland: Delivery of Public Benefit and Social Value for Archaeology in the Planning Process (2023)[24];
- Planning Advice Note (PAN) PAN 2/2011: Planning and Archaeology[25];
- The Scottish Borders Adopted Local Development Plan 2 (2024)[26]; and
- CIfA Standards and Guidance for Desk-Based Assessments (2020)[27]

6.4.3 BASELINE DATA COLLECTION

A historic and archaeological baseline will be compiled to inform the assessment of Direct and Indirect Physical Impacts to known heritage assets. The 1km Study Area will be used to collect data to inform known assets as well as to inform the potential for previously unknown heritage assets to be present within the Site. Data will be gathered from the following sources:

- Historic Environment Scotland (HES) Datasets including:
  - Canmore Archaeological Records;
  - Database of World Heritage Sites;
  - Database of Scheduled Monuments;
  - Database of Listed Buildings;
  - Database of Inventoried Garden and Designed Landscapes;
  - Database of Inventoried Battlefields;
  - SBCs Historic Environment Record (HER);
  - SBCs catalogue of Special Landscape Areas (SLA);
  - Scottish Landscape Character Types;
  - Aerial photographs;
  - Other cartographic information detailing previous land uses;

[22] HES (2016, updated February 2020) *Managing Change in the Historic Environment: Setting* [Online] Available at: https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=80b7c0a0-584b-4625-b1fd-a60b009c2549 (Accessed 08/07/2024)
[23] SNH and HES (May 2018). *EIA Handbook*. [Online]. Available at https://www.historicenvironment.scot/archives-and-research/publications/publication/?publicationId=6ed33b65-9df1-4a2f-acbb-a8e800a592c0 (Accessed 08/07/2024)
[24] ALGAO Scotland (2023). *Delivery of Public Benefit and Social Value for Archaeology in the Planning Process*. [Online] Available at https://www.algao.org.uk/news/tue-14022023-0904-delivery-public-benefit-and-social-value-archaeology-planning-process (Accessed 08/07/2024)
[25] The Scottish Government (2011) *Planning Advice Note 2/2011* [Online] Available at https://www.gov.scot/publications/pan-2-2011-planning-archaeology/ (Accessed 08/07/2024)
[26] Scottish Borders Council (2016) *Adopted Local Development Plan 2* [Online] Available at: https://www.scotborders.gov.uk/plans-guidance/local-development-plan (Accessed 02/08/2024)
[27] Chartered Institute for Archaeologists (2017) *Standard and Guidance for Historic Environment Desk-Based Assessment, Published December 2014, Updated October 2020* [Online] Available at: https://www.archaeologists.net/sites/default/files/CIfAS%26GDBA_4.pdf (Accessed 08/07/2024)

- The Statistical Accounts of Scotland;
- The National Records of Scotland;
- Conservation Area Appraisals and maps as held by the SBC;
- Archaeological Data Service (ADS) for heritage data including grey literature reports, archaeological journals, and the Excavation Index for Scotland;
- Regional and national research framework assessments and strategies;
- Published and grey literature archaeological journals and monographs; and
- Local studies libraries and other local resources such as nearby heritage groups, as appropriate.

6.4.4 WALKOVER SURVEY

The historic baseline will be augmented by a walkover survey, within the Site, in order to:

- Assess and validate documentary data collected;
- Identify the extent and condition of any visible archaeological remains; and
- Determine whether previously unrecorded historic features are visible.

6.4.5 SETTINGS ASSESSMENT

Setting Impacts will be assessed in accordance with 'Managing Change in the Historic Environment: Setting' (HES 2016) and Appendix 1 of HES guidance (Scottish Natural Heritage (now known as NatureScot) and Historic Environment Scotland (HES) EIA Handbook). In accordance with the latter, setting impacts are generally viewed as direct effects resulting from the proposal causing change within the setting of a heritage asset that affects its cultural significance or the way in which it is understood, appreciated and experienced. Setting Impacts may also occur indirectly from the proposal, for example as a result of changes in traffic. Setting impacts may be permanent, reversible or temporary.

To aid the assessment of Setting Impacts, reference will be made to the extent of the potential visual changes in the setting as determined through the use of bare earth ZTV and LVIA viewpoints.

A sieving exercise will be used to determine which Designated/Non-Designated assets are to be included within the final setting assessment. For inclusion, assets will need to meet the following criteria:

- The asset must lie within the bare earth ZTV;
- The asset must have the potential for views of the Proposed Development;
- An asset must derive part of its setting and therefore cultural significance, from either a historic relationship to the Proposed Development site or through views from the asset, towards the Proposed Development site or views across the Site; and
- An asset's setting, and cultural significance, are partly derived from views towards that asset from the wider landscape or directly on the approach to the asset. The Proposed Development must have the potential to erode these views.

6.5 APPROACH TO MITIGATION

6.5.1 DIRECT/INDIRECT PHYSICAL IMPACTS

Known archaeology, as identified within the Historic and Archaeological Baseline, will be avoided during site design, where possible, within the limits of other on-site constraints. The assessment of Direct/Indirect physical impacts will consider the proximity of known heritage assets to areas of proposed ground disturbance and the potential for groundworks to disturb previously unknown heritage assets. A geophysical survey of the Site will be carried out to further ground truth the baseline data collection as well as identify further unknown and undiscovered archaeological receptors, and further mitigate direct impacts to these receptors.

Where it is not possible to avoid these impacts, consultation will be undertaken with appropriate stakeholders to formulate a suitable mitigation strategy. Any mitigation strategy would aim to reduce the magnitude of effect through archaeological recording in advance of or during construction. Mitigation may include archaeological excavation, watching brief, historic building recording, historic landscape recording, and the dissemination of the results of these works.

6.5.2 SETTING IMPACTS

The production of the EIAR will be an iterative process, whereby in the first instance mitigation of any Setting Impacts will be made by changes in Site Layout and Design, where this is possible within the limits of other Site constraints. Consultation with HES and the Council regarding setting impacts and possible mitigation measures will be conducted periodically throughout the production of the EIAR.

6.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

Table 6.2, below presents a summary of environmental effects to be scoped out of the assessment.

TABLE 6.2 ENVIRONMENTAL EFFECTS TO BE SCOPED OUT OF THE ASSESSMENT

Environmental Receptor or Effect	Scoped Out	Rationale
Assessment of the direct physical impacts to heritage assets outwith the Site, with the exception of Designated assets such as bridges along transport routes.	Scoped Out	Significant, direct physical impacts to heritage assets outwith the Site are considered unlikely.
Indirect physical impacts to heritage assets outwith the 1km Study Area, with the exception of Designated assets such as bridges along transport routes.	Scoped Out	Significant, indirect physical impacts to heritage assets outwith the Site are considered unlikely.
Setting Impacts to Non-Designated heritage assets of Local Importance (as defined by the HER).	Scoped Out	Significant setting impacts to Non-Designated heritage assets of Local Importance are considered unlikely.

Environmental Receptor or Effect	Scoped Out	Rationale
Setting Impacts to Category B and C Listed Buildings within 3km where they do not meet the selection criteria outlined in **Section 6.3**.	Scoped Out	These receptors do not meet the criteria which would require them to be scoped in to further assessment, and there is therefore likely to be little to no impact on the receptors described.

6.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

6.7.1 CONSULTEES

Consultation will be undertaken and may include, but is not limited to:

- SBC Historic Environment Team; and
- HES.

6.7.2 QUESTIONS FOR CONSULTEES

The following questions have been designed to ensure that any forthcoming EIAR satisfies both the SBC and HES:

Q6.1 Do Consultees agree with the proposed methodology and scope of assessment?

Q6.2 Do Consultees have any information regarding current or recent archaeological work or projects being undertaken within or in the vicinity of the Proposed Development, particularly those whose results may not yet be recorded in the local HER or HES datasets?

Q6.3 Are Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Proposed Development?

Q6.4 Do Consultees have details of any cultural heritage sites in the vicinity of the Proposed Development which it considers may raise significant issues within the EIA process for this development?

Q6.5 Are Consultees aware of any additional stakeholders who will require consultation or where consultation would be desirable?

7. ECOLOGY AND ORNITHOLOGY

7.1 INTRODUCTION

This section describes the ecological interests (including ornithology) present within the Site and surrounding area. This includes any nationally, or internationally designated sites. A high-level description of potential impacts on ecological and ornithological receptors arising from construction, operational and decommissioning phases of the Proposed Development is provided to determine the requirements for the assessment that will be included within the Environmental Impact Assessment Report (EIAR).

7.2 BASELINE CONDITIONS

An initial search of protected areas using NatureScot's (NS) SiteLink[28], identified 40 nature conservation designations with ecological interests within 20km of the Site. The 20km search buffer was selected using professional judgement, as certain species of goose, such as pink-footed goose (*Anser brachyrhynchus*) can range up to 20km from winter roosting sites[29]. A total of four Special Areas of Conservation (SACs), four Special Protection Areas (SPAs), two Ramsar sites and 20 Sites of Special Scientific Interest (SSSIs) with ecological interests within 20km of the Site were returned within the desk study. These sites are detailed in Table 7.1, overleaf, and on Figure 7.1.

[28] NatureScot. *SiteLink*. [Online]. Available at: SiteLink - Home (nature.scot) (Accessed August 2024)
[29] Scottish Natural Heritage (now NatureScot). *Assessing Connectivity with Special Protection Areas (SPAs)*. [Online]. Available at: Assessing connectivity with special protection areas.pdf (nature.scot) (Assessed August 2024).

TABLE 7.1 ECOLOGICAL INTERESTS WITHIN 20KM OF THE SITE

Name	Designation	Distance and Direction from Site	Qualifying Features
Pease Bridge Glen	SSSI	0.89km north	The site is notified for its diverse intact ancient woodlands and its nationally important bryophyte flora.
River Tweed	SSSI	0.89km northeast	Designated for: • Trophic range river/stream habitats • Vascular plant assemblage • Atlantic salmon (*Salmo salar*) • Brook lamprey (*Lampetra planeri*) • River lamprey (*Lampetra fluviatilis*) • Sea lamprey (*Petromyzon marinus*) • Otter (*Lutra lutra*) • Beetle assemblage • Fly assemblage.
Pease Bay Coast	SSSI	2.43km north	Designated for: • para-maritime cliff-slope grassland communities. • Saltmarsh
Outer Firth of Forth and St. Andrews Bay Complex	SPA	2.47km north	Non-breeding populations of: • red-throated diver (*Gavia stellata*) • Slavonian grebe (*Podiceps auritus*) • Little Gull (*Larus minutus*) • Common eider (*Somateria mollissima*) • Long-tailed duck (*Clangula hyemalis*) • Common scoter (*Melanitta nigra*)

Name	Designation	Distance and Direction from Site	Qualifying Features
			• Velvet scoter (*Melanitta fusca*) • Common goldeneye (*Bucephala clangula*) • Red-breasted merganser (*Mergus serrator*) • European shag (*Phalacrocorax aristotellis*) • Black-headed gull (*Chroicocephalus ridibundus*) • Common gull (Larus canus) • Razorbill (*Alca torda*). • Black-legged kittiwake (*Rissa tridactyla*) • Herring gull (*Larus argentatus*) • Common guillemot (*Uria aalge*) Breeding populations of: • Common tern (*Sterna hirundo)* • Arctic tern (*Sterna paradisaea*) • European shag • Northern gannet (*Morus bassanus*) • Atlantic puffin (*Fratercula arctica*) • Black-legged kittiwake • Manx shearwater (*Puffinus puffinus*) • Common guillemot • Herring gull
St. Abb's Head to Fast Castle	SPA	3.92km northeast	Designated for breeding populations of: • Razorbill • Common guillemot • Black-legged kittiwake • Herring gull • European shag

Name	Designation	Distance and Direction from Site	Qualifying Features
St. Abb's Head to Fast Castle	SSSI	4.42km northeast	Designated for: • Maritime cliff habitat • Breeding seabird colony • Common guillemot, breeding • Black-legged kittiwake
St. Abb's Head to Fast Castle	SAC	4.42km northeast	Designated for vegetated sea cliffs of the Atlantic and Baltic Coasts.
Berwickshire Coast (Intertidal)	SSSI	4.50km northeast	Designated for: • Reefs • Sea caves
Drone Moss	SSSI	4.54km southeast	Designated for raised bog habitat.
Abbey St. Bathans Woodland	SSSI	5.42km southwest	Designated for: • Upland oak woodland habitat • Lichen assemblage.
River Tweed	SAC	5.48km south	Designated for: • Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitrichio-Batrachion* vegetation (Rivers with floating vegetation dominated by water crowfoot)

Name	Designation	Distance and Direction from Site	Qualifying Features
			• Otter • Atlantic salmon • Sea lamprey • Brook lamprey • River lamprey
Coldingham Common, Long Moss	SSSI	5.50km east of the Site	Designated for basin Fen
Lammermuir Deans	SSSI	6.99km northwest of the Site	Designated for: • Upland mixed ash (*Fraxinus excelsior*) woodland • Subalpine calcareous grassland • Valley fen
Berwickshire and North Northumberland Coast	SAC	7.18km east of the Site	Designated for: • Mudflats and sandflats not covered by seawater at low tide • Large shallow inlets and bays • Reefs • Submerged or partially submerged sea caves • Grey seal (*Halichoerus grypus*)
Barns Ness Coast	SSSI	7.59km northwest of the Site	Designated for: • coastal habitats, including shingle and sandy shores, sand dunes and rocky stacks. • mineral enriched dune grassland

Name	Designation	Distance and Direction from Site	Qualifying Features
			• Saltmarshes and shingle • Wildflowers • Birds • Invertebrates including, butterflies and day flying moths
Coldingham Loch	SSSI	9.58km east of the Site	The site is designated for eutrophic loch habitat
Woodhall Dean	SSSI	10.34km northwest of the Site	Woodhall Dean SSSI is designated for the following features: • Broadleaved, mixed and yew (*Taxus baccata*) woodland. • Upland oak (*Quercus robur*) woodland.
Crook Burn, Dyeshaugh	SSSI	11.53km southwest	The site is designated for fen meadow
Rammer Cleugh	SSSI	12.57km northwest	Rammer Cleugh SSSI is designated for: • Woodlands • Upland oak woodland
Firth of Forth	SPA/Ramsar	14.72km northwest of the Site	Designated for non-breeding: • Red-throated diver • Golden plover (*Pluvialis apricaria)* • Scaup (*Aythya marila*) • Great crested glebe (*Podiceps cristatus*) • Cormorant (*Phalacrocorax carbo*)

Name	Designation	Distance and Direction from Site	Qualifying Features
			• Curlew (*Numenius arquata*) • Eider • Long-tailed duck • Common scoter • Velvet scoter • Red-breasted merganser • Oystercatcher (*Haematopus ostralegus*) • Ringed plover (*Charadrius hiaticula*) • Grey plover (*Pluvialis squatarola*) • Dunlin (*Calidris alpina alpina*) • Mallard (*Anas platyrhynchos*) • Lapwing (*Vanellus vanellus*) • Wigeon (*Anas Penelope*) • Slavonian grebe • Pink-footed goose • Shelduck (*Tadorna tadorna*) • Knot (*Calidris calidris*) • Redshank (*Tringa tetanus*) • Turnstone (*Arenaria interpres*) • Goldeneye • Bar-tailed godwit (*Limosa lapponica)* Also designated for passage sandwich tern (*Sterna sandvicensis*)
Firth of Forth	SSSI	14.72km northwest	The Firth of Forth SSSI is designated for: • Coastlands: Maritime cliff

Name	Designation	Distance and Direction from Site	Qualifying Features
			• Coastlands: Saltmarsh • Coastlands: Sand dunes • Intertidal marine habitats and saline lagoon: Mudflats • Lowland grassland: Lowland neutral grassland • Fens: Transition grassland • Vascular plant assemblage • Invertebrates: Beetle assemblage • North brown argus butterfly (*Aricia artaxerxes*) Non-breeding populations of: ◦ Red throated diver ◦ Great crested grebe ◦ Slavonian grebe ◦ Cormorant ◦ Pink-footed goose ◦ Shelduck ◦ Mallard ◦ Wigeon ◦ Scaup ◦ Eider ◦ Long-tailed duck ◦ Common scoter ◦ Velvet scoter ◦ Goldeneye ◦ Red-breasted merganser ◦ Oystercatcher ◦ Ringed plover ◦ Golden plover

Name	Designation	Distance and Direction from Site	Qualifying Features
			◦ Grey plover ◦ Lapwing ◦ Knot ◦ Dunlin ◦ Bar-tailed godwit ◦ Curle ◦ Redshank ◦ Turnstone ◦ Sandwich tern • Designated for breeding: ◦ Eider ◦ Shelduck ◦ Ringed plover
Langtonlees Cleugh	SSSI	15.06km southwest	Designated for upland mixed ash woodland
Burnmouth Coast	SSSI	15.48km southeast of the Site	Designated for: • Maritime cliff habitat • Fly assemblage
Greenlaw Moor	SSSI	16.90km southwest of the Site	Designated for: • Raised bog habitat • breeding bird assemblage • non-breeding pink-footed goose

Name	Designation	Distance and Direction from Site	Qualifying Features
Foulden Burn	SSSI	17.35km southeast of the Site	Designated for: • Lowland calcareous grassland • Lowland neutral grassland.
Greenlaw Moor	Ramsar	18.72km southwest of the Site	Designated for: • Pink-footed goose
Greenlaw Moor	SPA	18.72km southwest of the Site	Designated for: • Non breeding populations of pink-footed goose. • Wintering waterfowl assemblage; • Breeding waterfowl. • Breeding bmerlin (*Falco columbarius*) • Breeding short-eared owl (*Asio flammeus*) • Breeding peregrine (*Falco peregrinus*)
Papana Water	SSSI	18.94km west of the Site	Designated for upland mixed ash woodland.
Dogden Moss	SAC	19.43km southwest of the Site.	Designated for active raised bogs.

7.2.1 PROTECTED AND PRIORITY SPECIES RECORDS

An initial search of available records using the National Biodiversity Network (NBN) Atlas[30] was undertaken on 07 August 2024 and showed several protected species have been recorded within 2km of the Proposed Development within the last 10 years. Therefore, there is potential for these species to be affected by the Proposed Development. A summary of each species is provided below:

7.2.1.1 BATS

There were no records of bats returned on NBN Atlas within 2km of the Site within the last ten years. Bats are found throughout Scotland, except for Shetland[31]. All bats in Scotland are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and the Conservation (Natural Habitats, &c.) Regulations 1994, and are thus a European Protected Species (EPS).

Daytime Bat Walkover (DBW)

A DBW was completed on 23 May 2024 to determine the suitability of the sites for bats, and to assess whether further surveys are required.

The Site was situated within an agricultural setting, with habitats dominated by a mixture of grazing pasture and arable fields. The grazing pasture was grazed by both cattle and sheep. The sward height of the grazing pasture less than 20cm, with few, if any flowering plants. Arable fields were either recently ploughed or had a monoculture of crop growing within the field. These open habitats were unlikely to contain large amount of invertebrate prey for bats, and lacked any form of features for roosting, in isolation these habitats would be of negligible suitability to foraging, commuting, and roosting bats.

However, the fields in the southern half of the Site, particularly between the farmhouse and Bowshiel Wood were delineated with hedgerows. These hedgerows provided high-quality habitat that had the potential to be used as flight paths for bats. In addition, towards the centre of the Site was a pond, which provided foraging habitat for bats, this was connected to Bowshiel Wood to the south, by the presence of hedgerows within the southern half of the Site. This meant that the southern half of the Site was well connected to areas of habitat, in the form of woodland, and a watercourse (Pease Burn) which are likely to be used regularly by foraging and commuting habitats.

A further area of woodland, Gledstane Forest, was present adjacent to the northeastern edge of the Site, however, fields in the northern part of the Site were found to be demarked mostly by a mixture of post and wire fences and stone walls, both of which have lower suitability for foraging and commuting bats, meaning connection between the Site and Gledstane Forest was limited, with bats unlikely to cross the Site north to south between Gledstane Forest in the north, and Bowshiel Wood in the south.

[30] NBN. *NBN Atlas* [Online]. Available at: NBN Atlas - UK's largest collection of biodiversity information (Accessed August 2024)
[31] NatureScot. *Standing Advice for Planning Consultations – Bats.* [Online]. Available at: Standing advice for planning consultations - Bats | NatureScot (Accessed 09 August 2024)

With the above in mind, the Site was of low suitability for foraging and commuting bats. Therefore, further surveys for bats are required.

7.2.1.2 BADGER

There was one record of badger (*Meles meles*) returned within 2km of the Site within the last 10 years. Both badger and their setts are protected under the Protection of Badgers Act 1992. Badgers are found throughout most of mainland Scotland, and badger setts are often located in woodland, hedgerows or in dense patches of scrub on steep banks close to fields. However, setts can also be found in open fields, as well as railway embankments, old quarries, rock cavities and landfill sites[32].

The habitat within the Site is suitable for badgers; with hedgerows, and patches of scrub within an arable landscape providing resource for sett building and foraging. Furthermore, there are several areas of woodland immediately adjacent to the Site, which provide further sett building and foraging resource for badger. As such, there is potential for badger to be using the Site, and as such badger surveys will be required.

7.2.1.3 OTTER

No records of otter (*Lutra lutra*) were returned within 2km of the Site within the last 10 years. Otter is found throughout Scotland, anywhere close to watercourses, wetland, coastline or estuary[33]. Otter is an EPS, and as such is protected under the Conservation (Natural Habitats, &c.) Regulations 1994. Otter is also listed under Annex II of the Habitats Directive and is afforded protection throughout the UK under Schedule 5 of the Wildlife and Countryside Act (as amended).

The Site contains several ditches, and a small pond, with Pease Burn being found immediately adjacent to the Site to the south, at its nearest point. These habitats provide commuting and foraging habitat for otter. In addition, patches of scrub exist within the Site, with woodland immediately adjacent to the Site, particularly in the south, close to Pease Burn, which provides resting habitat for otter. Therefore, as suitable habitat exists for otter within the Site, and close by, otter surveys will be required.

7.2.1.4 WATER VOLE

The data search returned no records of water vole (*Arvicola amphibious*) within 2km of the Site within the last 10 years. In Scotland places of shelter or protection used by water vole are afforded protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Lowland habitat that may support water voles includes small-flowing or static burns, backwaters, canals, ditches, and overgrown field drains; these can sometimes be in intensive

[32] NatureScot. *Standing Advice for Planning Consultations – Badgers*. [Online] Available at: Standing advice for planning consultations - Badgers | NatureScot (Accessed 07 August 2024)
[33] NatureScot. *Standing Advice for Planning Consultations – Otters* [Online] Available at: Standing advice for planning consultations - Otters | NatureScot (Accessed 07 August 2024)

farmland[34]. Within the Site, there are several field drains / ditches and a pond, as such there is potential for water vole to be present and surveys for water vole will be required.

7.2.1.5 RED SQUIRREL

There were no records of red squirrel (*Sciurus vulgaris*) within 2km of the Site, within the last 10 years. Red squirrels and their dreys (resting places) receive full protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Red squirrels can occur in any type of woodland; however, dreys are found only in trees that are 15 years or older[35]. The Site contains some mature trees close to farm buildings, and there are several areas of woodland immediately adjacent to the Site; therefore, there is potential for red squirrels to be present within the Site, and immediately adjacent to the Site. Red squirrel surveys will be required.

7.2.1.6 WILDCAT

The data search returned no records of wildcat (*Felis sylvestris sylvestris*) within 2km of the Site, within the last 10 years. Wildcat is an EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). According to the Scottish Wildlife Trust, wildcats are restricted in their distribution to small parts of the Scottish Highlands[36]. The Site is not within these areas, and as such wildcat will not be present and surveys are not required.

7.2.1.7 GREST CRESTED NEWT

There were no records of great crested newt (GCN) (*Triturus cristatus*) returned from the data search within 2km of the Site within the last 10 years. GCN is an EPS under the Conservation (Natural Habitats, &c.) Regulations 1994, and is afforded protection throughout the UK under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

GCN are mainly found in central and southern Scotland, and they breed in medium-sized ponds, but also live on land in lowland grassland, scrub, hedgerows, or woodland, normally within 500m of breeding ponds[37].

The Site contained a pond, which could be used by GCN for breeding. The pond was surrounded by rough grassland, with pockets of scrub, and some piles of stone, and an old stone wall. This provided potential resting, foraging and commuting habitat, as well as hibernacula for GCN. This pond was subject to an eDNA Survey, and torching for GCN on 02 May 2024. No GCN were found during the torching survey, and the eDNA Survey returned a negative result for GCN; therefore, GCN are considered absent from the Site and no further surveys for GCN are required.

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[34] NatureScot. *Standing Advice for Planning Consultations – Water Vole* [Online] Available at: Standing advice for planning consultations - Water Voles | NatureScot (accessed 07 August 2024).
[35] NatureScot. *Standing Advice for Planning Consultations – Red Squirrels* [Online] Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-red-squirrels/ (Accessed 07 August 2024)
[36] Scottish Wildlife Trust (2024). *Wildcat* [Online] Available at: Wildcat | Mammal | Species profile | Scottish Wildlife Trust (Accessed 07 August 2024).
[37] NatureScot. *Standing Advice for Planning Consultations – Great Crested Newts.* [Online] Available at: Standing advice for planning consultations - Great Crested Newts | NatureScot (Accessed 08 August 2024)

7.2.1.8 REPTILES

No records of any reptile species were returned from the data search within 2km of the Site, within the last 10 years. Adder (*Vipera berus*), slow-worm (*Anguis fragilis*) and common lizard (*Zootoca vivipara*) are commonly found in Scotland and all three species can be found in most parts of Scotland. All three species occur in a range of habitats, including woodland / scrub, grassland, heath and dunes. All three species are protected by the Wildlife and Countryside Act 1981 (as amended), and by the Nature Conservation Act 2004[38].

The Site is dominated by a mixture of grazing pasture and arable fields, though there are some limited areas of rough grassland and limited areas of scrub within the Site, with some woodland found immediately adjacent to the Site. Therefore, habitat exists for reptiles, but it is limited and largely disconnected, and as such reptiles are unlikely to be present and so reptile surveys are not required.

7.2.1.9 BIRDS

Desk study

The data search returned 186 records of 41 species of conservation importance within 2km of the Site within the last 10 years. Species of conservation importance are defined as any species matching one or more of the following criteria:

- Listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[39];
- Listed on Annex I of the Birds Directive[40];
- Red- or amber-listed Bird of UK Conservation Concern (BoCC)[41]; and
- Scottish Biodiversity List[42].

Species returned within the desk study included one Schedule 11 birds species, barn owl (*Tyto alba*), as well as cuckoo (*Cuculus canorus*), curlew (*Numenius arquata*), reed bunting (*Emberiza schoeniclus*), skylark (*Alauda arvensis*) and woodcock (*Scolopax rusticola*).

Habitats within the Site are largely dominated by a mixture of arable and pasture fields, some of which were demarked by hedgerows. There are also small areas of rough grassland, with woodland being found immediately adjacent to the Site. In addition, the Site contains several

[38] NatureScot. *Standing Advice for Planning Consultations – Reptiles (Adder, Slow worm & Common lizard*). [Online]. Available at: Standing advice for planning consultations - Reptiles (Adder, Slow Worm & Common lizard) | NatureScot (Accessed 08 August 2024).
[39] UK Government (1981). *Wildlife and Countryside Act 1981, Chapter 69, Part 1*. [Online] Available at: Wildlife and Countryside Act 1981 (legislation.gov.uk) (Accessed 08 August 2024)
[40] European Commission (2009). *Council Directive 2009/147/EC the Conservation of Wild Birds.* [Online]. Available at: Directive - 2009/147 - EN - Birds Directive - EUR-Lex (europa.eu) (Accessed 08 August 2024)
[41] Stanbury, A.J., Eaton, M.A., Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Lindley, P., McCulloch, N., Noble, D.G. & Win. I. (2021). *The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands, and the Isle of Man and second IUCN Red List assessment of the extinction risk of Great Britain.* British Birds 114, 723 – 747
[42] Scottish Government (2020). *Scottish Biodiversity List*. [Online]. Available at: Scottish Biodiversity List | NatureScot (Accessed 08 August 2024).

old farm buildings. These are all habitats, which could be used by birds for nesting, roosting and foraging.

The Site lies within the foraging range of pink-footed goose, which is a qualifying species of the Firth of Forth SPA, SSSI and Ramsar site, based on the species maximum foraging range[43]. Pink-footed geese can forage on farmland, such as the arable and grazing pasture fields, within the Site; however, although the Firth of Forth SPA, SSSI, Ramsar lies approximately 15km from the Site, the closest known roost within the Firth of Forth SPA, SSSI, Ramsar is at Aberlady Bay, which is over 30km from the Site. Therefore, the Site is out with the species maximum foraging range. In addition, Mitchell (2012) shows that the Site does not fall within the typical foraging distribution of pink-footed goose[43].

Non-breeding herring gull and common gull populations are features of the Outer Firth of Forth and St. Andrews Bay Complex SPA and could utilise fields within the Site to forage. However, gulls are opportunistic species and as the Site lies in a rural location, farmland habitat is extensive in the wider area beyond the Site; therefore, it is unlikely the loss of foraging habitat because of the Proposed Development would have any significant impact on these species.

Considering the lack of impact pathway between the Proposed Development and pink-footed goose populations of the Firth of Forth SPA, SSSI, Ramsar, and herring gull and common gull populations of the Outer Firth of Forth and St. Andrews Bay Complex SPA, wintering bird surveys are not required.

Bird Survey Results

Ornithology surveys were conducted between May and July 2023 in accordance with NatureScot's guidance document for solar farm development[44]. These surveys included a breeding bird survey undertaken within the Site and a survey buffer of 500m, and a scarce breeding bird survey, which incorporated the Site and a 2km buffer, where accessible. Four visits were undertaken, with focus of the surveys being those species of conservation importance as detailed within Section 7.2.1.9.

Survey results showed that the bird assemblage was typical of the lowland farm habitats present. A total of 11 target species were recorded holding territory, with skylark the most frequently recorded, with 31 territories recorded, with all but one centred within the Site. A lower variety of breeding species was recorded within the Site, compared to out with the Site. This was attributed to the dominance of grazing pasture and arable fields, with species such as yellowhammer (*Emberiza citronella*), willow warbler (*Pylloscopus trochilus*), wren (*Troglodytes troglodytes)* and song thrush (*Turdus philomenos*) holding more territories within the scrub and woodland immediately out with the Site. There was no evidence of breeding Schedule 1 - listed raptors recorded within the Site or a 2km buffer.

[43] Mitchell, C. (2012). *Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland*. [Online] Available at: mitchel_2012_mapping_distirbution_feeding_pinkfooted_and_greylag_geese_scotland_wwtsnh_report.pdf (bto.org) (Accessed 08 August 2024).
[44] NatureScot (2022). *General pre-application and scoping advice for solar farms.* [Online]. Available at: General pre-application and scoping advice for solar farms | NatureScot (Accessed 21 June 2024).

7.2.2 HABITATS

The Site is within an agricultural setting and is dominated by a mixture of arable fields and grazing pasture, with fields delineated by a mixture of hedgerows and post and wire fencing. There are some old farm buildings within the Site. The Site contains several ditches, and a medium-sized pond. There is a watercourse, immediately adjacent to the Site to the south, (Pease Burn). There is no woodland within the Site, but several areas of woodland lie immediately adjacent to the Site, in the north, south and east of the Site, however none of these areas are ancient woodland. The nearest area of ancient woodland is a section of Glen Fin, an area of ancient (of semi natural origin) woodland, which lies 338m north of the Site. The Site is bounded in the east by the A1.

The Carbon and Peatland Map (Scotland 2016)[45] shows there is no Class 1 or Class 2 Peatland within 500m of the Site, with the Site lying on mineral soil.

There is no connection between the Site and any local statutory sites designated for habitat features.

7.3 POTENTIAL ENVIRONMENTAL EFFECTS

The construction (and decommissioning) of the Proposed Development will involve the short-term use of heavy plant, increased vehicular traffic, and an increase in human presence, all of which have the potential to lead to temporary increases in noise and vibration, which has the potential to displace, disturb and / or harm protected / priority animal species. Furthermore, construction works have the potential to lead to long-term, and short-term habitat loss, with the potential to impact protected and / or priority habitats, plants, and animals, both directly and indirectly. During operation of the Proposed Development any increases in light have the potential to disturb, or displace, nocturnal fauna including birds, bats, badger, otter and invertebrates. Table 7.2, provides a summary of the effects scoped into the Environmental Impact Assessment (EIA).

TABLE 7.2 SUMMARY OF EFFECTS SCOPED INTO THE ASSESSMENT

Environmental Receptor or Effect	Scoped In	Rationale
Construction and Decommissioning Phase		
Displacement, disturbance, injury, and / or mortality of priority and / or protected ecological features	Scoped in	See Section 7.3

[45] Carbon and Peatland (Scotland) 2016 [Online] Available at: Map | Scotland's environment web. (Accessed 09 August 2024)

Environmental Receptor or Effect	Scoped In	Rationale
Loss / degradation of habitat used by protected and / or priority species	Scoped in	See Section 7.3
Loss / degradation of protected and / or priority habitats.	Scoped in	See Section 7.3
Operational Phase		
Disturbance and displacement of nocturnal fauna (e.g., bats, birds, otter, badger and inverts) due to operational lighting	Scoped in	See Section 7.3
Disturbance and displacement of Important Ecological Features (IEFs) through operational activity.	Scoped in	See Section 7.3

7.4 PROPOSED ASSESSMENT METHODOLOGY

7.4.1 ASSESSMENT APPROACH

The approach taken to the impact assessment follows the guidance for Ecological Impact Assessment (EcIA) published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[46], which sets out the process for assessment broadly through the following stages:

- Determining importance of baseline ecological features, including identification of IEFs;
- Identification, assessment and characterisation of ecological effects;
- Incorporation of measures to mitigate identified effects;
- Assessment of significance of residual effects following mitigation;
- Identification of appropriate compensation to offset significant residual effects; and
- Identification of opportunities for ecological enhancement.

7.4.1.1 DETERMINING IMPORTANCE

One of the key challenges of EcIA is to decide which ecological features are important and should be subject to detailed assessment. Such ecological features will be those that are most important and potentially affected by the project. In EcIA 'importance' of an ecological feature is synonymous with 'sensitivity' and is defined within a geographical context.

[46] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2.* Chartered Institute of Ecology and Environmental Management, Winchester.

Upon the identification of the potential direct and indirect effects from the Proposed Development, it is necessary to undertake a systematic assessment of importance to determine the IEFs. IEFs are ecological features that could be 'significantly' affected by the Proposed Development, both negatively and positively. In the EcIA, only ecological features that are of regional importance and above will be considered sufficiently important to be determined IEFs, and in accordance with guidance published by CIEEM, only these features are required to be assessed for potential significant effects.

When determining IEFs, expert judgement and contextual information will be applied to determine the level of importance to be assigned to each ecological feature. Additionally, in accordance with CIEEM guidance[46], where a legally protected species is present within the ZoI, and there is potential for a breach in protected species legislation, such species are considered also IEFs.

7.4.1.2 CHARACTERISATION OF POTENTIAL EFFECTS

In line with CIEEM guidance[45] where possible, consideration is given to the following characteristics when identifying potential effects of a development on IEFs:

- Nature of effect: whether it is positive (beneficial) to IEFs, e.g., by increasing species diversity or extending habitat, or negative (detrimental) e.g., by loss of, or displacement from, suitable habitat.
- Extent: the spatial or geographical area over which the effect may occur.
- Duration: the duration of an effect.
- Frequency: the number of times an activity occurs may influence the resulting effect.
- Timing: this may result in an impact on an ecological feature if it coincides with critical life stages or season.

7.4.1.3 MAGNITUDE OF EFFECTS

The magnitude of potential effects will be identified through the consideration of previously described effect characteristics, to determine the degree of change to baseline condition predicted because of the Proposed Development.

7.4.1.4 SIGNIFICANCE OF EFFECT

Significance is a concept related to the weight that should be attached when decisions are made. A significant effect is simply an effect that is sufficiently important to require that the decision maker is adequately informed of the environmental consequences of permitting the project.

To determine significance in other chapters within the EIAR a matrix approach is used; however, as CIEEM Guidance[46] discourages the use of the matrix approach, it will not be used within the EcIA.

For the purposes of EcIA the significance of effect will be defined as an effect that either supports or undermines biodiversity conservation objectives for IEFs, or for biodiversity in

general. Conservation objectives may be specific, broad, or wide-ranging; therefore, effects can be considered significant at a wide range of geographic scales.

Significance of the potential effects on each identified IEF is determined through professional judgement, by considering both the nature conservation importance of each feature and the degree to which it may be affected (the effect magnitude) by the Proposed Development. Where identified, the significant effects will be qualified with reference to an appropriate geographic scale.

7.4.1.5 CUMULATIVE EFFECTS

As some effects can be individually insignificant, but collectively, taking place over time or concentrated in a location, can be significant, a cumulative assessment will be carried out within the EcIA. Cumulative effects are particularly important as many ecological features are exposed to background levels of threat or pressure and may be close to reaching critical thresholds where further impact could cause irreversible decline.

7.4.1.6 RESIDUAL EFFECTS

Following the assessment of effects, including incorporation of embedded mitigation, all attempts will be made to avoid and mitigate significant effects. Where significant or detrimental effects are predicted, further specific, applied mitigation will be detailed as necessary. Following the application of this mitigation, an assessment of residual effects will be undertaken to determine the final significance of effects.

7.4.1.7 NATIONAL PLANNING FRAMEWORK 4 (NPF4)

The Proposed Development will look to deliver positive effects for biodiversity in accordance with NPF Policy 3. The Site will be in better condition for biodiversity as a result of the Proposed Development, when compared to before it. This will be delivered through implementation of a Landscape and Biodiversity Masterplan (LBMP).

7.4.2 DATA COLLECTION APPROACH

7.4.2.1 DESK STUDY

A detailed desk study will be undertaken as part of the EcIA for the Proposed Development to identify nature conservation features in both the local and wider environment by searching for records of statutory and non-statutory sites of nature conservation, protected species and priority habitats and species.

Information will be obtained from publicly available data sources, such as NBN database, NS SiteLink; as well as via data requests to local biological recording groups, such as The Wildlife Information Centre (TWIC).

A radius of 20km from the Site will be used to search for internationally and nationally designated sites for nature conservation. This is because certain species of geese, for example

pink-footed goose, can range up to this distance from their winter roost site[47]. A radius of 2km will be used for biological records. Local sites of nature conservation interest will be searched for, within a 2km radius of the Site, with woodland listed on the Ancient Woodland Inventory (AWI) (Scotland), and nationally important peatlands within 500m of the Site.

Any features beyond the above distances are considered outside the ZoI of the Proposed Development.

7.4.2.2 CONSULTATION

The Desk Study will also involve consultation with relevant statutory and specialist bodies through the data collection and assessment period. Additionally, the Desk Study will be complemented by engagement with the local community to ensure appropriate local knowledge is integrated into the baseline, where available. Consultation will be carried out to ensure the approach to assessment is appropriate, and to agree mitigation measures, and any requirement for EPS licensing, as necessary.

7.4.2.3 BASELINE SURVEY

Phase 1 Habitat Survey

In accordance with current professional standards[48], a Phase 1 Habitat Survey of accessible areas within, and up to 250m from the Site boundary will be completed where access is available. The aim of the survey will be to classify and map broad habitats, which will help determine the presence and extent of important habitats (e.g., Priority Habitats listed on the SBL). The Phase 1 Habitat Survey results will be converted to UK Habitat Classification (UKHab), if required.

National Vegetation Classification (NVC)

An NVC, in accordance with latest guidelines[49], will be undertaken to determine the extent and quality of Priority Habitats, (such as those listed on SBL), and plant communities. This will be completed within, and up to 250m from the Site, where access is available. NVC communities will be classified in accordance with current SEPA guidance[50] to identify the extent of any potential Groundwater Dependent Terrestrial Ecosystems (GWTDE).

[47] Scottish Natural Heritage (now NatureScot). *Assessing Connectivity with Special Protection Areas (SPAs)*. [Online]. Available at: Assessing connectivity with special protection areas.pdf (nature.scot) (Assessed 08 August 2024.
[48] Joint Nature Conservation Committee (JNCC) (2010). *Handbook for Phase 1 habitat survey. A technique for environmental audit.* JNCC, Peterborough, UK
[49] Rodwell. J.S. (2006). *National Vegetation Classification: Users' handbook*. Joint Nature Conservation Committee, Peterborough, UK
[50] SEPA (2017). *Land Use Planning System SEPA Guidance Note 31, Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems. Version 3.* [Online]. Available at: lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf (sepa.org.uk) (Accessed 05 August 2024

Bat Surveys

Nighttime Bat Walkover (NBW)

NBW surveys will be undertaken, to listen for, and record bat flights and behaviour to gain an understanding on how bats are physically using the Site. NBW surveys will be completed in accordance with Bat Conservation Trust (BCT) Guidelines[51], with three walked transects being undertaken, one per season (Spring, Summer, Autumn), throughout the period bats are active[52].

Automated Bat Detector Surveys

Automated full spectrum remote static bat detectors will be deployed for a minimum of five nights, and as the DBW found the Site to be of low suitability for foraging and commuting bats, detectors will be deployed once per season (Spring, Summer, Autumn), throughout the period bats are active[52]. This is in accordance with BCT Guidelines[51].

Otter Survey

An otter survey, in accordance with NatureScot Guidelines[33], will be carried out on all accessible watercourses within, and up to 200m from the Site. The survey will include a systematic search of watercourses and riparian areas to identify evidence of otter activity including feeding remains, spraint (dung), footprints and holts (resting areas); as well as individual animals.

Water Vole

In accordance with NatureScot Guidelines[34] a water vole survey will be completed of all accessible watercourses within the Site, and a buffer of 50m. The survey will include an assessment of habitat suitability, based on professional judgement and established criteria[53]. Furthermore, a systematic search of watercourses and bankside areas will be undertaken to identify evidence of water vole activity including feeding remains, latrines, prints and burrows; as well as sightings of individual animals.

Badger Survey

Badger surveys, in line with current best practice guidelines[32], will be conducted in accessible areas within, and up to 100m from the Site. The survey will include a systematic search of woodland, scrub, and boundary features to identify evidence of badger activity including feeding remains, latrines, footprints, and badger setts; as well as sightings of animals.

[51] Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. Bat Conservation Trust, London.
[52] For Scotland (and northern England) the BCT broadly define this period as between May and September.
[53] Dean, M. (2021). *Water Vole Field Signs and Habitat Assessment*: A practical guide to Water Vole Surveys. Pelagic Publishing.

Red Squirrel Surveys

In line with NatureScot guidelines[35], surveys for red squirrels will be undertaken in accessible areas within, and up to 50m from the Site. The survey will include a systematic search of woodland, scrub, and boundary features to identify evidence of red squirrel activity including feeding remains and dreys; as well as sightings of individual animals.

7.5 APPROACH TO MITIGATION

As per CIEEM guidelines[46] the mitigation hierarchy will be the approach used to avoid, mitigate, and compensate for negative ecological impact and effects. The mitigation hierarchy involves the following sequential stages:

- Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative site).
- Mitigation – Negative effects should be avoided or minimised through mitigation measures either through the design of the project or subsequent measures that can be guaranteed (for example, through a condition or planning obligation).
- Compensation – Where there are significant residual negative ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation, or compensation.

As detailed in CIEEM guidance[46] avoidance and / or mitigation of negative impacts will be achieved through consideration of potential impacts of the Proposed Development from the earliest stages of scheme design. Embedded mitigation will be considered where necessary. Embedded mitigation refers to measures incorporated into scheme design.

Any mitigation measures proposed will address specific effects.

The design of mitigation, compensation and enhancement measures will consider what is realistically achievable and the likely extent to which success can be guaranteed. Mitigation, compensation and enhancement measures will be included within a LBMP, with the measures within the LBMP agreed with the developer, prior to any application for consent being submitted.

As per CIEEM Guidelines[46], the EcIA will identify where monitoring is required for mitigation, compensation and enhancement measures.

7.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

7.6.1 DESIGNATED SITES

Significant effects on the following designated sites have been scoped out due to the lack of ecological connectivity between the designated sites and the Site:

- Pease Bridge Glen SSSI;
- Pease Bay Coast SSSI;
- St. Abb's Head and Fast Castle SAC / SSSI;

- Berwickshire Coast (Intertidal) SSSI;
- Drone Moss SSSI;
- Abbey St. Bathans Woodland SSSI;
- Coldingham Common, Long Moss SSSI;
- Lammermuir Deans SSSI;
- Berwickshire and North Northumberland Coast SAC;
- Barns Ness Coast SSSI;
- Coldingham Loch SSSI;
- Woodhall Dean SSSI;
- Crook Burn, Dyeshaugh SSSI;
- Rammer Cleugh SSSI;
- Langtonless Cleugh SSSI;
- Burnmouth Coast SSSI;
- Foulden Burn SSSI;
- Papana Water SSSI; and
- Dogden Moss SSSI.

7.6.1.1 OUTER FIRTH OF FORTH AND ST. ANDREW'S BAY SPA

Significant effects have been scoped out of the Outer Firth of Forth and St. Andrews Bay Complex SPA because, although non-breeding herring gull and common gull populations linked with the Outer Firth of Forth and St. Andrews Bay Complex SPA could utilize fields within the Site for foraging, gulls are opportunistic species and there is extensive comparable farmland available in the wider area beyond the Site. As such, any loss of foraging habitat because of the Proposed Development would not be significant in the context of the wider landscape and there would be no displacement of these species from the designated site. In addition, the Outer Firth of Forth and St. Andrews Bays Complex SPA is also designated for non-breeding aggregations of seabirds dependent on the marine environment. These species would not interact with the farmland habitats within the Site, and so these species would not be affected by the Proposed Development.

7.6.1.2 THE FIRTH OF FORTH SPA / RAMSAR / SSSI

Significant effects upon The Firth of Forth SPA, Ramsar and SSSI have been scoped out of the assessment due to its distance from the Site, and the fact that the foraging distribution of pink-footed geese from the designated site as shown in Mitchell (2012) does not include the Site or immediate surrounds. Therefore, the designated features will not be affected by the Proposed Development.

7.6.1.3 ST ABBS'S HEAD TO FAST CASTLE SPA

Significant effects to St. Abb's Head to Fast Castle SPA have been scoped out of the due to its distance from the Site, (it lies 7.4km southeast of the Site) and the fact that the site is

designated for its seabird population, particularly nationally important populations of kittiwake, guillemot, razorbill, shag, and herring gull. Most of these species are ecologically dependent upon the marine environment and would not interact with farmland habitats within and surrounding the Site. Although herring gull could forage within the Site, any loss of habitat is unlikely to affect the species due to the amount of similar habitat within the local landscape.

7.6.1.4 GREENLAW MOOR SPA / RAMSAR / SSSI

Significant effects upon Greenlaw Moor SPA / Ramsar / SSSI have been scoped out of the assessment due to the sites distance from the Site, and the fact that the foraging distribution of pink-footed geese from the designated site, as shown in Mitchell (2012) does not include the Site or immediate surrounds. In addition, though the site is designated for merlin, short-eared owl and peregrine, all of which are afforded protection under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), no Schedule 1 raptors or owls were recorded within the Site, or 2km from the Site during the bird surveys. Therefore, no designated features will be affected by the Proposed Development.

7.6.2 ANCIENT WOODLAND

The nearest known area of woodland listed on the AWI (Scotland) is a section of Glen Fin, an area of ancient (of semi natural origin) woodland, which lies approximately 338m north of the Site. Due to its distance from the Site, this woodland will not be affected by the Proposed Development, and as such effects to ancient woodland have been scoped out of the assessment.

7.6.3 PEATLAND HABITATS

Significant effects to peatland habitats have been scoped out, as The Carbon and Peatland Map (Scotland 2016)[45], shows that the Site lies on mineral soil, and there is no Class 1 or Class 2 Peatland within 500m of the Site.

7.6.4 PROTECTED AND PRIORITY SPECIES

7.6.4.1 WILDCAT

The Site is out with the known range of Scottish wildcat, and as such effects to wildcat have been scoped out of the assessment.

7.6.4.2 GREAT CRESTED NEWT

Although the Site contains suitable habitat for great crested newt, an eDNA survey of the pond within the Site returned a negative result. Therefore, GCN are considered absent from the Site, and as such effects to GCN have been scoped out of the assessment.

7.6.4.3 REPTILES

The Site is largely agricultural, with suitable reptile habitat small and isolated, and so reptiles will not be present and have been scoped out of the assessment.

7.6.4.4 WINTERING BIRDS

The Site lies within the maximum foraging range of pink-footed goose from both the Firth of Forth SPA and Greenlaw Moor SPA. However, as per Mitchell (2012)[43] in respect of the Firth of Forth SPA, the main goose roost is at Aberlady Bay, lying approximately 28km from the Site. In addition, at Greenlaw Moor SPA, Mitchell (2012)[43] shows that the foraging distribution of pink-footed geese does not include the Site or immediate surrounds; therefore, the Site is out with the predicted foraging range of pink-footed goose. Furthermore, non–breeding herring gull and common gull populations linked to the Outer Firth of Forth and St. Andrews Bay Complex SPA could utilise fields within the Site for foraging. However, wintering bird surveys are not considered necessary to establish the status of these species, as gulls are opportunistic species and suitable farmland habitat for foraging is very extensive in the wider area. Therefore, the loss of foraging habitat because of the Proposed Development would not have any significant impacts on these two gull species. Therefore, surveys for wintering birds are not required and effects upon wintering birds have been scoped out of the assessment.

7.6.4.5 SUMMARY OF EFFECTS SCOPED OUT OF THE ASSESSMENT

Table 7.3 summarises the receptors and effects scoped out of the assessment.

TABLE 7.3 SUMMARY OF EFFECTS SCOPED OUT OF THE ASSESSMENT

Receptor	Potential Effects	Proposal For Assessment	Rationale
Construction and Decommissioning Phase			
Pease Bridge Glen SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Pease Bay Coast SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
St. Ann's Head and Fast Castle SPA / SAC / SSSI	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA/Appropriate Assessment (AA)	See Section 7.6
Berwickshire Coast (Intertidal) SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
Drone Moss SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Abbey St. Bathans SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Coldington Common. Long Moss SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Lammermuir Deans SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Berwickshire and North Northumberland Coast SAC	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA/AA	See Section 7.6
Barns Ness Coast SSSI	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA	See Section 7.6
Coldingham Loch SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Woodhall Dean SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Crook Burn, Dyeshaugh SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
Rammer Cleugh SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Langtonlees Cleugh SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Burnmouth Coast SSSI	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA	See Section 7.6
Foulden Burn SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Papana Water SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Dogden Moss SSSI	• Loss / degradation of habitat for which the site is designated	Scoped Out of EIA	See Section 7.6
Outer Firth of Forth SPA	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA/AA	See Section 7.6
Firth of Forth SPA / Ramsar/ SSSI	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury	Scoped Out of EIA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
	and / or mortality qualifying features		
Greenlaw Moor SPA	• Loss / degradation of habitat for which the site is designated and for which qualifying features rely • Displacement, disturbance, injury and / or mortality qualifying features	Scoped Out of EIA	See Section 7.6
Ancient Woodland	• Loss / degradation of ancient woodland	Scoped Out of EIA	See Section 7.6
Peatland Habitats	• Loss / degradation of peatland habitats	Scoped Out of EIA	See Section 7.6
Wildcat	• Loss / degradation of habitat used by wildcat • Displacement, disturbance, injury and / or mortality of wildcat	Scoped Out of EIA	See Section 7.6
Great Crested Newt	• Loss / degradation of habitat used by GCN • Displacement, disturbance, injury and / or mortality of GCN	Scoped Out of EIA	See Section 7.6
Reptiles	• Loss / degradation of habitat used by reptiles • Displacement, disturbance, injury and / or mortality of reptiles	Scoped Out of EIA	See Section 7.6
Wintering Birds	• Loss / degradation of habitat used by wintering birds • Displacement, disturbance, injury	Scoped Out of EIA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
	and / or mortality of wintering birds		
Operational Phase			
Barns Ness Coast SSSI	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA	See Section 7.6
Burnmouth Coast SSSI	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA	See Section 7.6
St. Ann's Head and Fast Castle SPA / SAC / SSSI	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA/AA	See Section 7.6
Outer Firth of Forth SPA	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA/AA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
Firth of Forth SPA / Ramsar / SSSI	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA/AA	See Section 7.6
Greenlaw Moor SPA	• Disturbance and displacement of qualifying features through operational lighting. • Disturbance and displacement of qualifying features through operational activities.	Scoped Out of EIA/AA	See Section 7.6
Wildcat	• Disturbance and displacement of wildcat through operational lighting • Displacement and displacement of wildcat through operational activity	Scoped Out of EIA	See Section 7.6
Great Crested Newt	• Disturbance and displacement of GCN through operational activity	Scoped Out of EIA	See Section 7.6
Reptiles	• Disturbance and displacement of reptiles through operational activity	Scoped Out of EIA	See Section 7.6
Wintering Birds	• Disturbance and displacement of roosting pink – footed geese through operational lighting • Displacement and displacement of pink-footed geese, and gull species	Scoped Out of EIA	See Section 7.6

Receptor	Potential Effects	Proposal For Assessment	Rationale
	through operational activity		

7.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

The following questions have been designed to ensure that the proposed methodologies and assessment are carried out in a robust manner and to the satisfaction of the determining authorities:

Q7.1 Do you agree with the baseline survey scope and assessment approach?

Q7.2 Do you agree with our approach to Phase 1 Habitat Survey data and its conversion to UKHab?

Q7.3 Are there any relevant consultees who should be contacted, or other sources of information, which should be referenced with respect to the ecology and ornithology assessment?

Q7.4 Are there any known projects that should be considered within the cumulative assessment, beyond planning applications?

Q7.5 Do you agree that there is no significant connectivity between the Proposed Development and the designated sites mentioned above, and that consequently effects related to those designated sites can be scoped out of the assessment (both EIA and AA, where applicable)?

8. WATER RESOURCES AND FLOOD RISK

8.1 INTRODUCTION

This section describes the water resources and flood risk baseline within the Site and surrounding area and the sensitivity of the different receptors.

A high-level description of potential effects on water resources and flood risk receptors arising from construction, operational and decommissioning phases of the Proposed Development is provided to determine the requirements for the assessment that will be included within the Environmental Impact Assessment Report (EIAR).

The methodology of the assessment that will be included within the Water Resources and Flood Risk chapter of the EIA is provided along with the mitigation that will be included within the Proposed Development and potential effects which are proposed to be scoped out of the assessment along with justification as to why.

8.1.1 STUDY AREAS

The water resources and flood risk Study Area is defined by the zone of influence of the Proposed Development up to a distance of 1km from the Site boundary as shown in Figure 8.1.

At distances greater than 1km within catchments, based on professional judgement and experience on other infrastructure projects of a similar nature, it is considered the Proposed Development is unlikely to contribute to a hydrological effect.

8.2 BASELINE CONDITIONS

8.2.1 SURFACE HYDROLOGY

The Site is located within the Berwick Coastal main river and coastal catchment, with the eastern extent of the Study Area located within the Eye Water catchment. The Site and Study Area are located entirely within the Scotland Water Framework Directive (WFD) River Basin District.

The hydrological catchments associated with the Site are shown in Figure 8.2.

The Site is located entirely within the Tower Burn (Pease Burn) river and loch nested catchment, with the Study Area also located within the Eye Water (Ale Water Confluence to Eyemouth), Hazeldean Burn/ Old Cambus Burn and Cockburnspath Burn nested catchments.

There are no WFD designated watercourses within the Site, with surface water courses comprising small scale surface water drains and the Pease Burn which is located immediately south of the Site boundary.

The Tower Burn (Pease Burn) is the only WFD designated watercourse within the Study Area which has an overall WFD classification of poor. The watercourse is located east of the Site on the eastern side of the A1 and East Coast Main Line and flows north towards Pease Bay approximately 2.2km north of the Site.

There is a surface water pond located in the centre of the Site which has connectivity to an open field drain, which are assessed to drain into the Pease Burn to the south of the Site.

The Study Area is located within the Edinburgh, East Lothian and Borders Nitrate Vulnerable Zone as part of the Scottish Government Nitrate Vulnerable Zones map[54], with the qualifying reason being due to polluted waters.

8.2.2 COASTAL WATERS

Barns Ness to Wheat Stack is a coastal waterbody (ID: 200038) located approximately 2km northeast of the Site boundary. The waterbody has an overall classification of 'Good'. The Proposed Development is hydrologically connected to this waterbody via Pease Burn. The Barns Ness to Wheat Stack waterbody also forms part of the Outer Firth of Forth and St. Andrews Bay Complex SPA.

8.2.3 FLOOD RISK

The SEPA Flood Map identifies modelled river (for watercourses with a catchment of 3km² or more), coastal and surface water flood extents for 'High' (10% annual probability of flooding), 'Medium' (0.5% annual probability of flooding) and 'Low' (0.1% annual probability of flooding) flood scenarios.

There are no modelled coastal flooding extents within the Site. The local topography between the Proposed Development and the sea, in addition to existing infrastructure such as the A1 and railway line, limits any risk of coastal flooding to negligible.

The SEPA Flood Map indicates there is modelled river flooding of a medium to high likelihood within the channel and immediate riparian land of the Pease Burn along the southern boundary of the Site. Further upstream of the Pease Burn the modelled river flooding is replaced by surface water flooding within the channel of the Pease Burn on the southwestern boundary of the Site.

There is an isolated pocked of modelled surface water flooding of a medium to high likelihood located within the Site. Topographic mapping and aerial imagery show that this localized flooding is in the location of an existing pond.

In all modelled scenarios, including those accounting for increases in in-channel water levels associated with climate change, modelled extents are limited to the channels of watercourses and riparian land immediately next to the watercourses.

8.2.4 HYDROLOGY

The groundwater underlying the Study Area comprises the Torness (ID: 150568) and Torness Coastal (ID: 150730) groundwater bodies which both have an overall Water Framework Directive (WFD) classification of 'Good'.

[54] Scottish Government (2015). Nitrate Vulnreable Zones. Available online at: https://www.gov.scot/publications/nitrate-vulnerable-zones-maps/

The British Geological Survey (BGS) 1:50,000 scale superficial deposits mapping indicates the Study Area is underlain by alluvium deposits (clay, silt, sand, and gravel), Devensian till (diamicton) deposits and, Glaciofluvial deposits (gravel, sand, and silt).

The BGS 1:625,000 scale digital hydrogeology mapping indicates the underlying deposits are classified as a low productivity aquifer where flow is virtually all through fractures and other discontinuities.

8.2.5 PUBLIC AND PRIVATE WATER SUPPLIES

Scottish Borders Council have provided details of Private Water Supplies (PWS) within the Study Area which shows the Blackburn Rig PWS is located within the Study Area, approximately 950m south of the Site. The Blackburn Rig PWS is an unregulated (type B) groundwater well.

The Scottish Government Drinking Water Protected Areas dataset[55] indicates the Site and Study Area are located within the St Abbs Drinking Water Protection Zone (ID: 150597). The Torness Coastal Drinking Water Protection Zone (ID: 150730) is located in the north of the Study Area and runs along the eastern boundary of the Site.

Consultation with Scottish Water confirmed that the Site is not located in a public drinking water catchment which may impact Scottish Water drinking water catchments or abstraction points.

Further consultation will be undertaken with Scottish Borders Council, Scottish Water, SEPA and landowners to obtain details of any water supplies that would be impacted by the Proposed Development.

8.2.6 DESIGNATED RECEPTORS

NatureScot GIS datasets[56] available through the Scotland's Environment mapping service show Pease Bridge Glen is located in the north of the Study Area approximately 900m north of the Site along the Pease Burn, which is a designated Sites of Special Scientific Interest (SSSI) for biological reasons.

The SEPA Bathing Water Catchments dataset[57] shows the Study Area is located within the Pease Bay and Eyemouth Bathing Water Catchments.

[55] Scottish Government (2014), *Drinking water protected areas - Scotland river basin district: map 11*. Available online at: https://www.gov.scot/binaries/content/documents/govscot/publications/map/2014/03/drinking-water-protected-areas-scotland-river-basin-district-maps/documents/surface-water-maps/6f8c7773-411b-454d-a354-00acb1c4e444/6f8c7773-411b-454d-a354-00acb1c4e444/govscot%3Adocument/DWPA%2B-%2BScotland%2BRBD%2B-%2Bsurface%2Bwater%2B-%2Bmap%2B11%2Bof%2B22.pdf (Accessed 9 July 2024)

[56] NatureScot (2021), SiteLink Map. Available online at: https://sitelink.nature.scot/map (Accessed 10 July 2024)

[57] SEPA (2024). Bathing Water Catchments. Available online at: https://www.sepa.org.uk/environment/environmental-data/

8.2.7 SENSITIVE RECEPTORS

The sensitivities of the identified receptors are detailed in Table 8.1.

TABLE 8.1 SENSITIVE RECEPTORS

Receptor	Sensitivity	Sensitivity Description
Surface Hydrology (watercourses)	High	The Tower Burn (Pease Burn) is the only WFD designated watercourse within the Study Area which has an overall WFD classification of poor. However, the Study Area is located within a Bathing Water Catchment and therefore the Site has the potential to be hydrologically linked to bathing water sites. Therefore, a sensitivity of High is presumed.
Coastal Waters	High	The Proposed Development is hydrologically connected to the Barns Ness to Wheat Stack coastal waterbody via Pease Burn. Due to this waterbody's overall WFD classification of 'Good' a High sensitivity is presumed.
Hydrogeology (groundwater)	High	The Study Area is underlain by a low productivity aquifer within a designated Drinking Water Protected Area for groundwater.
Public and Private Water Supplies	High	The Study Area is located within the St Abbs Drinking Water Protection Zone and am unregulated PWS is located within the Study Area. As these receptors are involved in the provision of potable water supplies a High sensitivity is presumed.
GWDTEs	High	Further field based survey work is required to confirm the presence of GWDTEs. Should any GWDTEs be present a High sensitivity is assumed.
Designated Receptors	High	The Pease Bridge Glen SSSI is located in the north of the Study Area approximately 900m north of the Site along the Pease Burn. The SSSI has the potential to be hydrologically to the Proposed Development via the Pease Burn and as such a High sensitivity is assumed.

8.3 POTENTIAL ENVIRONMENTAL EFFECTS

Given the nature of the Proposed Development it is considered appropriate to conclude that there will be no long-term change in the baseline that would constitute a significant adverse operational effect on the water resources and flood risk.

As such, the only potential impacts that could result in potentially significant effects are those that could arise during the construction phase of the project. The construction phase would involve a number of processes that have the potential to impact water resources and flood risk and are likely to be:

- Reduction in surface water quality or quantity at surface watercourses as a result of chemical pollution, increase in erosion or sedimentation or impediments to flow due to, for example, onsite spills, excavation works or insufficient sediment mitigation;
- Changes to groundwater interflow patterns from temporary works such as physical cut-offs, excavations or dewatering for foundations and hardstandings, affecting the groundwater body and leading to reduced function of or severance of flow to GWDTEs;
- Reduced quality or quantity of supply for private water supplies due to changes in groundwater, near-surface or surface water flow;
- Risk of chemical pollution and battery fire from battery energy storage facility onsite;
- Increase in runoff and localized surface flood risk due to increased impermeable hardstanding from the BESS and ancillary infrastructure, and channelisation of surface water forming beneath the edge of PV arrays as part of the Proposed Development; and
- Cumulative effects if the potential effects arising from the Proposed Development are in combination with other relevant projects or activities.

TABLE 8.2 ENVIRONMENTAL EFFECTS SCOPED INTO ASSESSMENT

Environmental Receptor or Effect	Scoped In	Rationale
Effects on Surface Water Quality	Scoped In	Potential pollution incidents and sedimentation from construction activity.
Effects on Ground Water Quality	Scoped In	Potential pollution incidents and disruption to ground water regime from construction activity.
Effects on Private Water Supplies	Scoped In	Potential pollution incidents and disruption to supply from construction activity.

Environmental Receptor or Effect	Scoped In	Rationale
Localised surface water flood risk	Scoped In	Potential increase in runoff and localized surface flood risk due to presence of onsite infrastructure.
Cumulative Effects arising from the Proposed Development	Scoped In	Potential for effects arising from relevant projects or activities.

8.4 PROPOSED ASSESSMENT METHODOLOGY

8.4.1 LEGISLATION, POLICY, AND GUIDANCE

The assessment methodology for water resources and flood risk will be carried out in accordance with the requirements and principles within the following legislation, policy and guidance detailed below (listed in chronological order from oldest to newest).

8.4.1.1 LEGISLATION

- The Water Framework Directive (2000/60/EC)[58] (as implemented in Scotland via the Water Environment and Water Services (Scotland) Act 2003[59]);
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011[60] Pollution Prevention and Control (Scotland) Regulations 2012;
- Industrial Emissions Directive (IED) [61] The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013;
- The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013[62]; and

[58] European Parliament (2000) Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy ("The Water Framework Directive"). Available online at: http://ec.europa.eu/environment/water/water-framework/index_en.html
[59] Scottish Government (2003). Water Environment and Water Services (Scotland) Act 2003. Available online at: https://www.legislation.gov.uk/asp/2003/3/contents
[60] Scottish Government (2011). The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available online at: https://www.legislation.gov.uk/ssi/2011/209/contents/made
[61] Scottish Government (2012). The Pollution Prevention and Control (Scotland) Regulations 2012. Available online at: https://www.legislation.gov.uk/ssi/2012/360/contents/made
[62] Scottish Government (2013). The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013. Available online at: https://www.legislation.gov.uk/ssi/2013/29/made

- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[63] Policy.

8.4.1.2 POLICY

- Scottish Borders Council Adopted Local Development Plan 2 (Policy EP15 Development Affecting the Water Environment, Policy IS8 Flooding, Policy IS9 Wastewater Treatment and Sustainable Urban Drainage)[64]; and
- The National Planning Framework 4[65].

8.4.1.3 GUIDANCE

- Planning Advice Note 61: Planning and Sustainable Urban Drainage Systems[66];
- Construction Industry Research and Information Association (CIRIA) Control of Water Pollution from Construction Sites (C532)[67];
- CIRIA Development and flood risk: guidance to the construction industry, C624D[68];
- Planning Advice Note 79: Water and Drainage[69];
- British Standard Code of Practice for Earthworks BS 6031 200928[70];
- Scottish Environment Protection Agency (SEPA) Engineering in the Water Environment Good Practice Guide: River Crossings[71];
- SEPA Controlled Activities Regulations (CAR) – A Practice Guide, Version 7.2[72];
- CIRIA The SuDS Manual (C753)[73];
- CIRIA Environmental Good Practice on Site (C741)[74];

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[63] Scottish Government (2017) the Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017
Available online at: https://www.legislation.gov.uk/ssi/2017/282/note/made
[64] Scottish Borders Council (2024). Local Development Plan 2. Available online at: https://www.scotborders.gov.uk/plans-guidance/local-development-plan
[65] Scottish Government (2023). National Planning Framework 4. Available online at: https://www.gov.scot/publications/national-planning-framework-4/
[66] Scottish Government (2001). Planning Advice Note 61: Sustainable urban drainage systems. Available online at: https://www.gov.scot/publications/pan-61-sustainable-urban-drainage-systems/
[67] CIRIA (2001). Control of water pollution from construction sites. Guidance for consultants and contractors (C532). Available online at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C532&Category=BOOK
[68] CIRIA (2004). Development and flood risk – guidance for the construction industry (C624D). Available online at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductCode=C624&Category=BOOK
[69] Scottish Government (2006). Planning Advice Note 79: Water and Drainage. Available online at: https://www.gov.scot/publications/planning-advice-note-pan-79-water-drainage/
[70] The British Standards Institute (BSI) (2009). BS 6031:2009 Code of Practice for Earthworks. Available online at: https://knowledge.bsigroup.com/products/code-of-practice-for-earthworks/standard
[71] SEPA and Natural Scotland (2010). Engineering in the Water Environment Good Practice Guide: River Crossings, Second edition. Available online at: https://www.sepa.org.uk/media/151036/wat-sg-25.pdf
[72] SEPA (2015). Controlled Activities Regulations - A Practical Guide, Version 7.2. Available online at: http://www.sepa.org.uk/media/34761/car_a_practical_guide.pdf
[73] CIRIA (2015). The SuDS Manual (C753). Available at: https://www.susdrain.org/resources/SuDS_Manual.html
[74] CIRIA (2015). C741 Environmental good practice on site guide. 4th edition. Available online at: https://www.ciria.org/CIRIA/CIRIA/Item_Detail.aspx?iProductcode=C741&Category=BOOK

- Highways Agency's Design Manual for Roads and Bridges (DMRB) LA 113 – Road drainage and the water environment, formerly HD45/09, Revision 1, 2020[75];
- SEPA Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Water Runoff from Construction Sites[76];
- SEPA Guidance for Pollution Prevention[77]; and
- SEPA Recommended Riparian Corridor Layer for use in Land Use Planning [78].

8.4.2 BASELINE DESK STUDY

A desk-based study has been conducted to inform this chapter and will be expanded in future assessments. This will include groundwater-supported resources and habitats, public and private water supplies, surface water flows, flooding, rainfall data, and water quality data. A review of published geological maps, Ordnance Survey (OS) maps, aerial photographs and site-specific data such as site investigation data, habitat mapping, hydrogeological reports, digital terrain models and geological literature will also be completed.

8.4.3 FIELD BASED STUDY

A site-based reconnaissance will be conducted in liaison with the project ecology and geology teams to ensure a comprehensive range of data is collected. The survey will:

- Verify the findings of desk-based studies;
- Identify and assess the key surface water characteristics and networks;
- Visit GWDTEs where identified by the project ecology team;
- Visually assess primary surface water catchments and verify private water supplies (where appropriate), and any other abstractions that could be affected by the Proposed Development; and
- Visit locations of any proposed watercourse crossings to prepare a schedule of potential watercourse crossings.

The results of the site-based survey will be used to identify possible constraints and to inform the design of the Proposed Development.

8.4.4 ASSESSMENT METHODOLOGY

The assessment methodology for the Water Resources and Flood Risk chapter of the EIAR will follow the methodology and approach detailed in Section 3.4.

[75] Highways Agency (2020). Design Manual for Roads and Bridges (DMRB) LA 113 – Road drainage and the water environment, formerly HD45/09, Revision 1. Available online at: https://www.standardsforhighways.co.uk/dmrb/search/d6388f5f-2694-4986-ac46-b17b62c21727
[76] SEPA (2021). Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Water Runoff from Construction Sites. Available online at: https://www.sepa.org.uk/media/340359/wat-sg-75.pdf
[77] SEPA (various). Available online at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/
[78] SEPA (2024). Recommended Riparian Corridor Layer for use in Land Use Planning. Available online at: recommended-riparian-corridor-note.docx (live.com)

The receptor sensitivity and magnitude of change definition criteria which will be applied in the Water Resources and Flood Risk chapter of the EIAR is set out in Table 8.2 and Table 8.4 respectively.

The framework for identifying the significance of effects based on the receptor sensitivity and magnitude of change is set out in Table 8.3.

TABLE 8.3 RECEPTOR SENSITIVITY DEFINITION CRITERIA

Receptor Sensitivity	Definition
Very High	• A large, medium or small waterbody with a SEPA water quality classification of 'High'. • The hydrological receptor is used for recreational use (e.g. bathing waters). • The hydrological receptor and downstream environment have no capacity to attenuate natural fluctuations in hydrochemistry and cannot absorb further changes without fundamentally altering its baseline characteristics / natural processes. • Local groundwater constitutes a valuable resource because of its high quality and yield. Aquifer classified by the British Geological Survey (BGS) as 'highly productive aquifer' and is of regional importance. • Statutorily designated nature conservation sites dependent on groundwater. • The receptor will support abstractions for public water supply or private water abstractions for the production of massproduced food and drinks. • Groundwater dependent terrestrial ecosystems (GWDTEs) which are classified by SEPA as "highly groundwater dependent" and have no functional impairment by man-made influence (such as drainage or forestry). • The hydrological receptor is of high environmental importance or is designated as European or international importance, such as a Special Area of Conservation (SAC), Special Protections Areas (SPA), a Site of Special Scientific Interest (SSSI) or Wetland of International Importance (Ramsar). • The receptor acts as an active floodplain or other flood defence, in accordance with NPF4.
High	• A large, medium or small waterbody with a SEPA water quality classification of 'High' or 'Good'; • The hydrological receptor and downstream environment has no or limited capacity to attenuate natural fluctuations in hydrochemistry and cannot

Receptor Sensitivity	Definition
	absorb further changes without fundamentally altering its baseline characteristics / natural processes; • Aquifer classified by the British Geological Survey (BGS) as 'moderately or highly productive aquifer' and is of local or regional importance. May affect statutorily designated nature conservation sites or local areas of nature conservation dependent on groundwater; • The hydrological receptor will support abstractions for public water supply, or private water abstractions which supply more than 25 people and / or 100 livestock (at any given point in the year) and/ or is used for the mass-production of food and drinks; • GWDTEs which are classified by SEPA as "highly groundwater dependent" and have no (<1%) or minor (1 -25%) functional impairment by man-made influence (such as drainage or forestry); • The hydrological receptor is of high environmental importance and is designated as European or International Importance such as a Special Area of Conservation (SAC), Special Protection Areas (SPA) or Wetland of International Importance (Ramsar), or is of national importance such as a Site of Special Scientific Interest (SSSI) and National Nature Reserves (NNR); • The receptor act as an active floodplain or other flood defence, or is located within an active flood plain; • Soil type and associated land use are highly sensitive (e.g., peat/blanket bog); • Class 1 or 2 priority peatland, carbon-rich and peaty soils cover >20% of the development area; • Areas containing geological or geomorphological features considered to be of national importance (e.g., geological SSSIs); and/or • Receptor contains areas of regionally important economic mineral deposits.
Medium	• A large, medium or small waterbody with a SEPA water quality classification of 'Moderate'; • The hydrological receptor and downstream environment will have moderate capacity to attenuate natural fluctuations in hydrochemistry but cannot absorb certain changes without fundamentally altering its baseline characteristics / natural processes;

Receptor Sensitivity	Definition
	• Aquifer of limited value (less than local) and is classified by the BGS as a 'low productivity aquifer' as water quality does not allow potable or other quality sensitive uses. Exploitation of local groundwater is not far-reaching. Local areas of nature conservation known to be sensitive to groundwater effects; • GWDTEs/ wetlands which are classified by SEPA as "highly groundwater dependent" but have moderate (25% - 50%) functional impairment by man-made influence (such as drainage or forestry); • GWDTEs which are classified by SEPA as "moderately groundwater dependent" have no functional impairment by man-made influence (such as drainage or forestry); • The hydrological receptor does not act as an active floodplain or other flood defence but is considered to provide some degree of natural flood management (e.g., peat soils); • The hydrological receptor is of local environmental importance (such as Local Nature Reserves (LNR)); • Soil type and associated land use are moderately sensitive (e.g. commercial forestry); • Class 1 or 2 priority peatland, carbon-rich and peaty soils cover <20% of the Proposed Development; • Class 3 and 5 peatland areas, carbon rich and peaty soils; • Receptor contains areas of locally important economic mineral deposits; and/or • Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS), considered worthy of protection for their historic or aesthetic importance.
Low	• A large, medium or small waterbody with a SEPA water quality classification of 'Poor' or 'Bad'; • The hydrological receptor and downstream environment will have capacity to attenuate natural fluctuations in hydrochemistry but can absorb any changes without fundamentally altering its baseline characteristics / natural processes;

Receptor Sensitivity	Definition
	• Poor groundwater quality and / or very low permeability make exploitation of groundwater unfeasible. Changes to groundwater not expected to affect local ecology; • The hydrological receptor does not support abstractions for public water supply or private water abstractions; • GWDTEs which are classified by SEPA as “highly groundwater dependent” but have major (>50%) functional impairment by man-made influence (such as drainage or forestry); • GWDTEs which are classified by SEPA as “moderately groundwater dependent” but have functional impairment by man-made influence (such as drainage or forestry); • GWDTEs which are classified by SEPA as “highly or moderately groundwater dependent” but are ombrotrophic; • The hydrological receptor does not act as an active floodplain or other flood defence; • The hydrological receptor is not of regional, national or international environmental importance; • The hydrological receptor is not designated for supporting freshwater ecological interest; • Geological features or geology not protected and not considered worthy of specific protection; • Soil type and associated land use not sensitive to change in hydrological regime (e.g. intensive grazing); and/or • Receptor contains non-peatland areas, with no carbon-rich and/or peaty soils.
Negligible	The receptor is resistant to change and is of little environmental value.

TABLE 8.4 MAGNITUDE OF CHANGE CRITERIA

Magnitude of Change	Definition
High	• A short or long-term major shift in hydrochemistry or hydrological conditions sufficient to negatively change the ecology of the receptor.

Magnitude of Change	Definition
	This change will equate to a downgrading of a SEPA water quality classification by two classes e.g. from 'High' to 'Moderate'; • A sufficient material increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water; • A major loss of (greater than 50% of Hydrology Study Area) or total loss of highly dependent and high value GWDTE, or where there will be complete hydrological severance which will fundamentally affect the integrity of the feature; • A major permanent or long-term negative change to groundwater quality or available yield; • The yield of existing supplies may be lost or major long-term or short-term reduction in quantity and/ or deterioration in quality; • Changes to groundwater quality or water table level that will negatively alter local ecology or will lead to a groundwater flooding issue; • Major or total loss of or alteration to peatland resource such that post development characteristics or quality will be fundamentally or irreversibly changed; • Long term/permanent change to human or environmental health; • Catastrophic failure of site infrastructure due to ground instability; • Long term/permanent change to baseline resource; and/or • Major or total loss of a geological site or mineral deposit, where the value of the site would be severely affected.
Medium	• A short or long term non-fundamental change to the hydrochemistry or hydrological environment, resulting in a change in ecological status. This change will equate to a downgrading of a SEPA water quality classification by one class e.g. from 'High' to 'Good'; • A moderate increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water; • A loss of part (approximately 10% to 50% of Hydrology Study Area) of a moderately dependent and moderate value GWDTE – significant hydrological severance affects the integrity of the feature, but it could still function; • Changes to the local groundwater regime that may slightly affect the use of the receptor; • The yield of existing supplies may be reduced or quality slightly deteriorated; • Fundamental negative changes to local habitats may occur, resulting in impaired functionality; • Loss of, or alteration to the baseline resource such that post development characteristics or quality will be partially changed; • Mid-term/permanent change to human or environmental health; • Ground failure that requires remediation but does not cause catastrophic failure of site infrastructure; • Mid-term/permanent change to baseline resource; and/or

Magnitude of Change	Definition
	• Partial loss of a geological site or mineral deposit, with major effects to the settings, or where the value of the site would be affected.
Low	• A detectable non-detrimental change to the baseline hydrochemistry or hydrological environment. This change will not result in a downgrading of the SEPA water quality classification; • A marginal increase in the probability of flooding onsite and offsite, adding to the area of land which requires protection by flood prevention measures or affecting the ability of the functional flood plain to attenuate the effects of flooding by storing flood water; • A detectable but non-material effect on the receptor (up to 5%) or a moderate effect on its integrity as a feature or where there will be a minor severance or disturbance such that the functionality of the receptor will not be affected; • A detectable effect on a GWDTE (loss of between 5% - 10% of Hydrology Study Area) or a minor effect on a GWDTE's integrity as a feature or where there will be a minor severance or disturbance such that the functionality of the receptor will not be affected; • Changes to groundwater quality, levels or yields do not represent a risk to existing baseline conditions or ecology; • Small loss of soils or peatland, or where soils will be disturbed but the value not impacted; • Short-term change to human or environmental health; • Ground settlement/subsidence that does not adversely affect site infrastructure or require remedial action; • Short-term change to baseline resource; and/or • Small effect on a geological site or mineral deposit, such that the value of the site would not be affected.
Negligible	• No perceptible changes to the baseline hydrochemistry or hydrological environment; • No change to the SEPA water quality classification; • No increase in the probability of flooding onsite and offsite; • A slight or negligible change from baseline condition of geological resources; • Change hardly discernible, approximating to a 'no change' in geological condition; • Minimal detectable effect on a GWDTE (between to 0.1% - 5% of Hydrology Study Area) or no discernible effect on its integrity as a feature or its functionality; • Minimal or no change to soils or peatland deposits; • Minimal or no change to human or environmental health; • Minimal or no change to ground stability; • A very slight change from the baseline conditions. The change is barely distinguishable, and approximates to the 'no-change' situation; and/or • Minimal or no change to a geological site or mineral deposit.

TABLE 8.5 FRAMEWORK FOR ASSESSMENT OF THE SIGNIFICANCE OF EFFECTS

Magnitude of change	Sensitivity of Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

8.5 APPROACH TO MITIGATION

Embedded mitigation measures will be incorporated into the design layout and principles of the Proposed Development as part of the sequential design process. Mitigation measures relating to water resources and flood risk which will be embedded into the design and construction of the Proposed Development include those outlined below.

8.5.1 WATERCOURSE BUFFERS

The watercourse buffers detailed in Table 8.6 will be incorporated around watercourses within the Proposed Development wherever practicable based on the scale of the watercourse in accordance with SEPA Recommended Riparian Corridor Layer for use in Land Use Planning.

The surface watercourses within the Site are predominantly open field drains and small burns. Given the extent of these minor watercourses it might not be practicable to always incorporate the minimum 10m buffer. Wherever this buffer cannot be achieved a standalone assessment will be completed in the EIAR which will provide the locations where this cannot be achieved, reasoning, potential impacts, what buffer will be implemented, and any additional mitigation.

TABLE 8.6 WATERCOURSE BUFFERS

Channel Width	Buffer Distance
< 2m	10m
2 to 15m	15m
>15m	30m

8.5.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN (CEMP)

Prior to the construction phase, a CEMP will be produced which will incorporate specific measures based on the recommendations of the EIAR and best practice guidance to account for and minimize potential effects on water resources and flood risk during construction.

The measures to be implemented through the CEMP are likely to include:

- Drainage where construction vehicles are located and fuels are stored will be directed to an oil interceptor to prevent pollution in the event of any spillage;
- A construction phase surface water drainage system which will incorporate elements of Sustainable Drainage Systems (SuDS) to replicate natural drainage patterns, prevent increases in surface water runoff and store surface water along the drainage network through lagoons or attenuation ponds prior to discharge outlets;
- Access track swales and drainage ditches with outlets at specified intervals, to reduce the volume of water within a single channel and therefore reduce the potential of erosion;
- Best practice measures for chemical storage including oils, fuel and concrete will be put in place, including bunding of construction compounds, the use of spill kits and absorbent pads and the use of geotextile membranes in chemical storage areas;
- Best practice drainage and sediment management measures including the use of check dams, settlement lagoons and silt fencing and mats;
- Stockpiled material will be stored at least 50m from watercourses in order to reduce the potential of sediment transport into the wider water environment, with regular inspection to ensure erosions is not taking place; and
- The establishment of a surface and groundwater monitoring program at locations on principal watercourses downstream of the Proposed Development and control points, which will be based on methodology and frequency agreed with SEPA (if required).

8.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

TABLE 8.7 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

Potential Effect	Scoped Out	Rationale
Migration of pollutants from contaminated land	Scoped Out	The Site comprises undeveloped farmland bounded by various undeveloped land parcels, which are unlikely to have had previous uses which lead to the presence of contaminated land. Therefore, although a preliminary contaminated land assessment is proposed for the Site, the migration of pollutants from contaminated land into the water environment is to be scoped out of the EIAR. Tree felling associated with construction is unlikely and therefore effects from resultant

Potential Effect	Scoped Out	Rationale
		acidification of watercourses are scoped out.
Standalone flood risk assessment	Scoped Out	The SEPA Flood Map shows that the Proposed Development is not at risk of coastal flooding or river flooding now or in the future, with a less than 0.1% AEP chance of flooding from the sea in any given year. Therefore, a standalone Flood Risk Assessment (FRA) is to be scoped out of the EIAR.

8.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

Consultations will be conducted with the following statutory and non-statutory consultees:

- Scottish Borders Council (SBC);
- SEPA;
- Scottish Water; and
- NatureScot.

If during consultation PWS are identified near to the Proposed Development, then residents will be contacted and consulted as necessary.

The consultee questions relating to water resources and flood risk include:

Q8.1 Do you agree that the topics proposed to be scoped out of the EIAR do not require further assessment?

Q8.2 Do you agree that a standalone FRA can be scoped out?

Q8.3 Do you agree that upgrades to watercourse crossings can be achieved without causing significant effects on the water environment through the implementation of industry standard best practice guidance?

Q8.4 Does the Council, NatureScot, SEPA or other consultees have any information that would be useful in the preparation of the water resources and flood risk chapter assessment?

9. GEOLOGY AND SOILS

9.1 INTRODUCTION

This chapter of the Scoping Report relates to the potential effects of the Proposed Development on geology and soils.

9.2BASELINE CONDITIONS

9.2.1 SUPERFICIAL SOILS

The BGS Onshore Geoindex Superficial Soils Viewer[79] shows the Site to be underlain by the following superficial soils:

- Devensian – Diamicton Till throughout the eastern and central portions of the Site.
- Gravel, Sand, and Silt Glaciofluvial Deposits along the northeastern Site boundary.
- Silt, Sand, and Gravel Alluvium around the river located on the southwestern Site boundary.

The northwest of the Site does not have any mapped superficial deposits.

The 2016 Carbon and Peatland Map[80] shows the Site to be underlain by Mineral Soils with no peat recorded at the Site.

The National Soils Map of Scotland[81] shows the Site to be completely underlain by Brown Soils.

9.2.2 BEDROCK GEOLOGY

The BGS Onshore Geoindex Bedrock Geology Viewer[82] shows the Site to be underlain by Wacke from the Gala Group. This rock type is defined as: "*Graded beds that may include wacke sandstone, siltstone and mudstone in variable proportions, interpreted as turbidites. Rare interbedded graptolite-bearing beds.*"

9.2.3 COAL MINING

The Coal Authority Interactive Map Viewer[83] shows that the Site is not situated in a Development High Risk Area. There is a Development High Risk Area located approximately 5km to the north of the Site.

[79] British Geological Survey (2024) Onshore Geoindex Superficial Soils Viewer [online] Available at: GeoIndex - British Geological Survey (bgs.ac.uk) (Accessed 31/07/2024)
[80] Scotland's Environment (2016) 2016 Carbon and Peatland Map [online] Available at: Scotland's Soils - soil maps (environment.gov.scot) (Accessed 31/07/2024)
[81] Scotland's Environment (2024) National Soils Map of Scotland [online] Available at: Scotland's Soils - soil maps (environment.gov.scot) (Accessed 31/07/2024)
[82] British Geological Survey (2024) Onshore Geoindex Bedrock Geology Viewer [online] Available at: GeoIndex - British Geological Survey (bgs.ac.uk) (Accessed 31/07/2024)
[83]

9.2.4 UNEXPLODED ORDNANCE

A Preliminary Desk Study Assessment for the Site was completed by Zetica to assess the risk of Unexploded Ordnance (UXO) at the Site. This assessment identified the following potential risk sources to be on or affecting the Site:

- One British fighter-bomber aircraft crashed on the Site;
- One Auxiliary Unit Operational Base (AUOB) was established near Penmanshiel, in the immediate vicinity of the Site; and
- Ad-hoc military training is known to have been undertaken in rural areas of Berwickshire during WWII.

Since no groundbreaking will take place at this point of the project, further action is not considered necessary as part of this assessment.

9.2.5 LANDFILL SITES

The UK Government[84] has no record of historic landfill sites located within the Site boundary.

9.3 POTENTIAL ENVIRONMENTAL EFFECTS

At this stage, the main key sensitivities are considered to be:

- Soils that may have been subject to contamination due to past land use on the Site.

The following effects on geological receptors have the potential to result from the Proposed Development and shall be considered in the undertaking of further geology and soils assessment:

- Loss of soils (Construction and Decommissioning);
- Soils as a waste material (Construction and Decommissioning);
- Contaminated land (Construction, Decommissioning, Operation, and Maintenance);
- Impacts on Geology (Construction and Decommissioning);
- Transboundary Effects (Construction and Decommissioning); and
- Cumulative Effects (Construction and Decommissioning).

9.3.1 LOSS OF SOILS

The loss of soils is an environmental effect that could arise during the construction and decommissioning phases of the Proposed Development. Soils can be an important carbon sink and therefore the loss of soils should be avoided. The compaction of soils also has the potential to increase runoff as the soil becomes less permeable.

9.3.2 SOILS AS A WASTE MATERIAL

As outlined in the above section, the loss of soils has negative effects on the environment and therefore, waste soils should be avoided wherever possible. Furthermore, if soils that are

[84] UK Government (2024) Historic Landfill Sites [online] Available at: Historic Landfill Sites - data.gov.uk (Accessed 31/07/2024)

excavated as a result of the Proposed Development have to be transported off Site further assessment will be required.

9.3.3 CONTAMINATED LAND

The presence of contaminated land on the Site could pose a threat to workers during the construction phase of the development as well as potential end-users.

9.3.4 IMPACTS ON GEOLOGY

The impacts on geology have to be reviewed to ensure that the underlying bedrock geology does not represent any local, regional or nationally important minerals that could be impacted by the Proposed Development.

9.3.5 TRANSBOUNDARY EFFECTS

Transboundary effects are effects on the soil and geology resources outwith the Site boundary as a result of the Proposed Development.

9.3.6 CUMULATIVE EFFECTS

A cumulative effect is considered to be an additional effect on soil and geology resources arising from the Proposed Development in addition to the combination of other developments likely to impact the soils and geological environment.

9.3.7 ENVIRONMENTAL EFFECTS SCOPED IN

Table 9.1 shows the results of the scoping assessment as well as the rationale for scoping potential effects in or out of the assessment.

TABLE 9.1 ENVIRONMENTAL EFFECTS SCOPED IN TO ASSESSMENT

Potential Effect	Scoped In	Rationale
Contaminated Land	Scoped In	The Site is largely vacant and there is no history of mining, or water/waste treatment facilities that could have led to contamination within the Site boundary. However, there is a recorded agricultural landfill in the northwestern sector of the Site. The contents of this landfill are unknown and could therefore be a potential risk of contamination. Furthermore, an environmental report undertaken by Argyll Environmental has identified a sheep wash/dip on the farm which may have been used for the chemical dipping of livestock, with disposal of spent dip to land being a common practice. There is a risk of contamination of the area associated with organophosphates or similar chemicals.
Geology	Scoped In	There is potential for bedrock geology to be impacted in relation to excavations and foundations associated with the Proposed Development.

9.4 PROPOSED ASSESSMENT METHODOLOGY

The Study Area for the Geology and Soils assessment will be the area within the Site boundary, as there are unlikely to be impacts on geology and soils outside this area.

The proposed methodology will be prepared in line with the guidance and standards listed below:

- NatureScot Guidance – Good Practice During Wind Farm Construction[85]; and
- Environmental Good Practice on Site[86].

The purpose of the Geology and Soils assessment will be to:

- Assess potential effects on geology and soils; and
- Develop an acceptable code for construction that will adopt best practice procedures, effective management, and control of on-site activities to reduce or offset any detrimental effects on the geology and soils.

9.4.1 SENSITIVITY OF RECEPTORS

The sensitivity of a receiving environment is defined as its ability to absorb an effect without noticeable change and can be classified as either very high, high, medium, low, or negligible. The receptor classification is determined by a series of factors, including: associated habitats, soil characteristics, geology, and land use. Table 9.2 details the different classifications of receptor sensitivity that are used to inform the assessment of the geology and soils present within the Site boundary, assessing whether the effects will be significant under the EIA regulations.

TABLE 9.2 FRAMEWORK FOR DETERMINING SENSTIVITY OF RECEPTORS

Sensitivity of Receptor	Definition
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	Soil type and associated land use are highly sensitive (e.g. peat/blanket bog); Nationally important carbon rich soils are present. Areas containing geological or geomorphological features considered to be of national importance (e.g. geological Sites of Special Scientific Interests (SSSIs)); Receptor contains areas of regionally important economic mineral deposits.
Medium	Soil type and associated land use are moderately sensitive (e.g. commercial forestry);

[85] NatureScot (2019) Guidance – Good Practice During Wind Farm Construction. 4th Edition. [Online] Available at: Good practice during wind farm construction | NatureScot (Accessed 31/07/2024)
[86] The Construction Industry Research and Information Association (2015) Environmental Good Practice on Site (C741). CIRIA, UK.

Sensitivity of Receptor	Definition
	Receptor contains areas of locally important economic mineral deposits; Areas containing geological features of designated regional importance including Regionally Important Geological/geomorphological Sites (RIGS), considered worthy of protection for their historic or aesthetic importance.
Low	Geological features or geology not protected and not considered worthy of specific protection. Soil type and associated land use not sensitive to change in hydrological regime (e.g. intensive grazing).
Negligible	The receptor is resistant to change and is of little environmental value.

9.4.2 MAGNITUDE OF EFFECT

The magnitude of potential effects on geology and soils will be identified through consideration of the degree of change to baseline conditions predicted as a result of the Proposed Development, the duration and reversibility of an effect and professional judgement, best practice guidance and legislation.

The criteria for assessing the magnitude of an effect are presented in Table 9.3**.**

TABLE 9.3 FRAMEWORK FOR DETERMINING MAGNITUDE OF EFFECTS

Sensitivity of Receptor	Definition
High	Long term/permanent change to human or environmental health. Catastrophic failure of site infrastructure due to ground instability. Long term/permanent change to baseline resource; and Major or total loss of a geological site or mineral deposit, where the value of the site will be severely affected.
Medium	Loss of, or alteration to the baseline resource such that post development characteristics or quality will be partially changed. Mid-term/permanent change to human or environmental health. Ground failure that requires remediation but does not cause catastrophic failure of site infrastructure. Mid-term/permanent change to baseline resource; and Partial loss of a geological site or mineral deposit, with major effects to the settings, or where the value of the site will be affected.
Low	Short-term change to human or environmental health. Ground settlement/subsidence that does not adversely affect site infrastructure or require remedial action.

Sensitivity of Receptor	Definition
	Short-term change to baseline resource; and Small effect on a geological site or mineral deposit, such that the value of the site will not be affected.
Negligible	Minimal or no change to soil deposits. Minimal or no change to human or environmental health. Minimal or no change to ground stability. A very slight change from the baseline conditions. The change is barely distinguishable, and approximates to the 'no-change' situation; and Minimal or no change to a geological site or mineral deposit.

9.4.3 SIGNIFICANCE OF EFFECT

The sensitivity of the receptor and the magnitude of the predicted effects will be evaluated, through professional judgement, to predict the significance of the likely effects on the geology and soils as a result of the Proposed Development. Table 9.4 summarises guideline criteria for determining the significance of effects.

TABLE 9.4 FRAMEWORK FOR DETERMINING THE SIGNIFICANCE OF EFFECTS

Magnitude of Effect	Sensitivity of Resource or Receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

9.5 APPROACH TO MITIGATION

Mitigation measures for geology and soils as a receptor will be included within the EIA Chapter for geology and soils and within a Contaminated Land Desktop Study.

9.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

Table 9.5 shows the environmental effects proposed to be scoped out of the assessment and the associated rationale.

TABLE 9.5 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

Potential Effect	Scoped Out	Rationale
Soils as a Waste Material	Scoped Out	Soils will be reused on site, therefore no soil waste is expected to be generated.
Loss of Soils	Scoped Out	There is no evidence of peat on the Site and soils will be reused on Site where possible. The compaction of soils is avoided through employing good practice construction

Potential Effect	Scoped Out	Rationale
		procedures on Site. Therefore, the loss and compaction of peat and soils is scoped out of the assessment.
Transboundary Effects	Scoped Out	Transboundary effects will not affect the soils and peat at the Site. There is low to no risk of soils moving across the boundaries unless transported there. This will be avoided as all soils excavated from the ground will be reused on Site.
Cumulative Effects	Scoped Out	Cumulative Developments will not affect the soils at the Site as the occurrence of additional developments will not have an effect within the Study Area.

9.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

Consultation will be conducted with the following consultees:

- NatureScot; and
- SEPA.

Key questions for consultees are:

Q9.1 Do you agree that the data sources identified are sufficient to inform the Geology and Soils baseline for the EIA?

Q9.2 Have all Geology and Soils receptors and potential effects that could result from the Proposed Development been identified?

Q9.3 Do you agree with the proposed methodology and scope of the Geology and Soils assessment?

Q9.4 Do you have any information that will be useful in the preparation of the Geology and Soils assessment, such as information on local quarrying, or infilled land?

10. TRAFFIC AND TRANSPORT

10.1 INTRODUCTION

This section of the Scoping Request describes the baseline traffic and transport conditions and the potential effects on the existing transport network and on sensitive receptors due to the construction, operation, and decommissioning phases of the proposed Bowshiel Solar Farm and BESS. Vehicle movements to the Site will consist of heavy goods vehicles (HGVs), light goods vehicles (LGVs) and cars. No abnormal load vehicles are anticipated.

10.2 BASELINE CONDITIONS

The Study Area for access, traffic and transport has been defined as the local public road network which will most commonly be used for access by traffic generated by the Proposed Development. The road network anticipated to be included in the Study Area, are the A1(T) and an unclassified minor road off the A1(T) at 379303E, 668212N, which doubles as a Public Right of Way (PRoW) and provides access to a single farm complex (Bowshiel Farm) located within the Site boundary. There are no local amenities directly fronting the A1(T) or the unclassified road.

Construction traffic associated with the Proposed Development would generally approach from the east from the A1(T) via the unclassified road, following the road in a south-southwesterly direction for approximately 800m until it connects with the Site. Immediate access to the Site will be via existing field access points which will be formalised.

10.2.1 A1(T)

The A1 is part of the trunk road network in Scotland and provides a connection from Edinburgh to the border with England at Berwick on Tweed passing through both East Lothian and the Scottish Borders Council areas. The A1 runs southeast to northwest in the vicinity of the Study Area and provides a key link to other major roads within Scottish Borders where the Site is located. The A1(T) is a good standard single carriageway (in the vicinity of the Study Area) with stretches of dual carriageway along the route and is subject to the national speed limit, which is enforced by the presence of speed cameras.

Transport Scotland manages the A1(T) and the road is operated by Amey (as maintenance contractor for Scotland Southeast Area). A route of this type and size has a capacity of circa 57,600 vehicles movements per day [87].

10.2.2 UNCLASSIFIED MINOR ROAD

The unclassified minor road is a no through road providing access to a single farm complex from the A1(T). The unclassified road is a single carriageway road with a rural aspect, with restricted widths although it appears there are passing places to facilitate two-way vehicle

[87] Standards for Highways (2013) Volume 15, Economic Assessment of Road Schemes in Scotland, DMRB.

movements on the road. The road is unlit, has no footway provision or cycling facilities and is bound by mainly grass verges.

10.2.3 NON-MOTORISED USER NETWORKS

As noted above, the unclassified road which provides access to the Site doubles as a PRoW (CLOC/BB84/1) and provides a link to a Core Path 189 located southwest of the Site, but outside of the Site boundary. It is acknowledged that PRoW CLOC/BB84/1 will be impacted by construction traffic, however, it is considered that appropriate construction environmental measures can be put in place to manage the effects. A review of Sustrans' National Cycle Network (NCN) map and the Scottish Borders Cycle Route map indicates that there are no cycle routes in the vicinity of the Proposed Development.

10.2.4 BASELINE TRAFFIC FLOWS

Traffic flow data for the road sections that may be affected by the Proposed Development has been obtained from count point data available from the Department for Transport (DfT)[88] traffic count data site. The Annual Average Daily Flow (AADF) data collected from manual Count Point for 2023 within the vicinity of the Proposed Development in the A1(T) is summarised in Table 10.1 below.

TABLE 10.1 EXISTING ANNUAL AVERAGE DAILY FLOW (2023)

Road / Location	Total AADF	HGV AADF	HGV % of Total AADF
A1 near Cockburnspath, DfT Point ID 80523	10,195	1,1634	16.0 %

10.3 POTENTIAL ENVIRONMENTAL EFFECTS

In accordance with the Institute of Environmental Management and Assessment[89] ("IEMA", 2023), 'Guidelines for the Environmental Assessment of Traffic and Movement', potential effects including Community Effects (severance, non–motorised user delay and amenity, fear, and intimidation on and by road users), Road Vehicle Driver and Passenger Delay, Road User and Pedestrian Safety should be considered. The IEMA 2023 Guidelines also necessitate the consideration of noise, visual impact, air pollution, and dust and dirt which are addressed in other chapters of this EIAR, where relevant.

Details of the construction programme are unknown at this stage, however, based on the technical specifications available and the use of typical vehicle numbers from recent projects in terms of construction phase delivery vehicle movements, it is anticipated peak traffic

[88] UK Government, Department for Transport, Road Traffic Statistics. Available at: https://roadtraffic.dft.gov.uk/manualcountpoints/80523. Accessed on 23/07/2024.
[89] Institute of Environmental Management and Assessment (2023) *Guidelines for the Environmental Assessment of Road Traffic and Movement*. Available at: https://www.thenbs.com/PublicationIndex/documents/details?Pub=IEA&DocID=257892

generation may be around 70 two-way movements per day, of which 30 are HGVs, so 35 vehicles in and 35 out (15 in and 15 out for HGVs). These figures are estimates only at this stage and would be considered in detail in a Transport Statement (TS).

This number of vehicles, when compared against the baseline traffic flows on the A1(T) will lead to a temporary increase of 1% (and 1.8% for HGVs) on the A1(T) during the construction period. The lowest threshold of impact for traffic generation at non-sensitive receptors is typically 30% as set in the IEMA 2023 Guidelines. Therefore, when compared to the thresholds set in relevant IEMA guidance this is not considered to represent a significant increase on the A1(T).

Movements associated with the construction phase are expected to contribute a minimal amount to the AADTF of the A1(T). Given the relatively short construction period, the nature of the Site, and the Proposed Development, the potential for significant environmental effects is unlikely due to an absence of receptors or source of effects to necessitate an EIA for traffic and transport.

However, to assist in assessing the traffic impacts of the Proposed Development, it is proposed that a standalone Transport Statement (TS) be included within the Section 36 application for consent. This will detail the likely traffic movements generated during the construction phase, review the suitability of access routes to the Site, and address any potential road safety and delay issues on road links within the Study Area including the A1(T) amongst others. The TS will include identification of possible measures to mitigate any temporary disruption to the public road network, where appropriate. Further consultation will be undertaken as the project develops with the Scottish Borders Council and Transport Scotland to agree the scope of the TS.

Vehicle movements generated during the operational phase of the Proposed Development will comprise activities associated with inspection, monitoring, and general Site upkeep. It is anticipated that such visits will occur once per week on average and be via van or other similarly sized vehicles.

Due to the low number of vehicle movements anticipated, it is unlikely that the operation of the Proposed Development will have any significant effects on the road network. The Proposed Development is not intended to attract visitors, and therefore it is not anticipated to generate other types of trips other than for regular maintenance.

The effect of operational traffic is therefore expected to be negligible and the TS will focus primarily on construction impacts.

Traffic and transport effects associated with the decommissioning of the Proposed Development are expected to comprise of the removal of all solar PV array infrastructure including modules; mounting structures; cabling; and, switching stations. These would be removed from the Site and recycled or disposed of in accordance with good practice and market conditions at that time.

Traffic associated with the decommissioning of the Proposed Development will be the same or less than that experienced during construction. It is not possible to accurately forecast the

baseline environment including traffic flow levels 40 years into the future. For the above reasons, further work would be undertaken, and appropriate traffic management procedures agreed with the Scottish Borders Council and Transport Scotland at the time of decommissioning.

10.4 PROPOSED ASSESSMENT METHODOLOGY

The TS would be completed with reference to National Planning Framework 4 (NPF4), relevant technical/planning guidance (listed below), and in consultation with the Scottish Borders Council and Transport Scotland.

Technical/planning guidance includes:

- The Transport Assessment Guidance[90];
- Planning Advice Note (PAN7)5: Planning for Transport[91];
- Scottish Borders Council Local Access and Transport Strategy (LATS)[92]; and
- Design Manual for Roads and Bridges (DMRB)[93].

Any new suitable access arrangement will be designed in accordance with the National Road Development Guide[94] or Design Manual for Road and Bridges, where applicable. With full consideration given to the road safety of all road users.

The travel characteristics of the Proposed Development will be assessed using a first principles approach, to calculate the vehicle trips generated by staff and the transportation of construction materials. The trip generation assessment will outline the level of staff vehicles and HGV vehicle trips expected during the peak month of construction, to demonstrate a worst-case scenario. The assessment of potential cumulative impacts of known committed developments will also be undertaken.

10.5 APPROACH TO MITIGATION

As indicated in Section 10.3, the TS will also outline measures to mitigate the impact of HGV traffic on the surrounding road network during the construction of the Proposed Development. It is anticipated that the measures will form part of a Construction Traffic Management Plan which would be agreed upon with Scottish Borders Council and Transport Scotland, and finalised post consent before the commencement of construction of the Proposed Development.

[90] Scottish Government (2012). 'Transport Assessment Guidance'. [Online]. Available: TRANSPORT ASSESSMENT GUIDANCE (Accessed on 23 July 2024).
[91] Scottish Government (2005). 'Planning Advice Note (PAN7)5: Planning for Transport'. [Online] Available: PLANNING ADVICE NOTE: PAN 75 - PLANNING FOR TRANSPORT - gov.scot (www.gov.scot). (Accessed on 23 July 2024).
[92] Scottish Borders Council (2018). 'Local Access and Transport Strategy 2015'. [Online]. Available: https://www.scotborders.gov.uk/plans-guidance/transport-plans | Scottish Borders Council (Accessed on 23 July 2024).
[93] Standards for Highways (2024) [Online] Available: Standards for Highways (Accessed on 23 July 2024).
[94] SCOTS (2017). 'National Roads Development Guide'. [Online]. Available: SCOTS (scotsnet.org.uk)

10.6 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

As described in Section 10.3 (Potential Environmental Effect), above, it is proposed that assessment of traffic and transport effects is scoped out of the EIA.

A stand-alone Transport Statement (TS), to assess traffic impacts, will be submitted alongside the Section 36 application for consent.

10.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

Consultation will be conducted with the following consultees:

- Scottish Borders Council; and
- Transport Scotland.

Key questions for consultees are:

Q10.1 Are consultees content that it is more appropriate to address potential issues in a Transport Statement rather than an EIA assessment?

Q10.2 Are Consultees content with the proposed methodology and scope of the traffic and transport assessment?

Q10.3 Are you aware of any relevant policies or guidance documents not specifically mentioned in this chapter of the report?

Q10.4 Are there any developments or infrastructure schemes which should be taken into account when considering potential cumulative traffic and transport impacts?

11. NOISE AND VIBRATION

11.1 INTRODUCTION

The focus of this chapter will be on existing and proposed receptors, policy, methodology, the effects to be considered in the EIAR, and the proposed approach to assessing the effects of the Proposed Development on sensitive receptors. This chapter will cover both the (short-term) effects during the construction phase and the (long-term) effects during the operational phase. The impact during the decommissioning phase is expected to be comparable to, and not exceed, that of the construction phase.

11.2 LEGISLATION, POLICY, AND GUIDANCE

11.2.1 LEGISLATION

The following legislation is relevant to the Proposed Development:

- The Control of Pollution Act 1974 (CoPA 1974)[95] ; and
- The Environmental Protection Act 1990 (EPA 1990)[96] .

11.2.1.1 COPA 1974

This Act provides Local Authorities with powers to control noise and vibration from construction sites.

Section 60 of CoPA 1974 enables a Local Authority to serve a notice to persons carrying out construction work of its requirements for the control of site noise. This may specify plant or machinery that is or is not to be used; the hours during which construction work may be carried out; the level of noise or vibration that may be emitted; and provide for changes in circumstances.

Section 61 of CoPA 1974 allows for those carrying out construction work to apply to the Local Authority in advance for consent to carry out the works. This is not mandatory, but once consent is issued it provides a defence against action by the Local Authority under Section 60 of CoPA 1974 or Section 80 of the EPA 1990. It does not, however, prevent nuisance action under Section 82 of the EPA 1990. The application includes detail of the works to be carried out, the methods to be used and the measures that will be taken to minimise noise and vibration.

11.2.1.2 EPA 1990

The EPA 1990 specifies mandatory powers available to Local Authorities in respect of any noise that either constitutes or is likely to cause a statutory nuisance.

Section 79 sets out matters that constitute a statutory nuisance, which include: "*noise emitted from premises so as to be prejudicial to health or a nuisance*"; and "*noise that is prejudicial to*

[95] UK Government (1974). '*Control of Pollution Act*, 1974' [Online] Available: *Control of Pollution Act 1974 (legislation.gov.uk)* (Accessed 11 July 2024)
[96] UK Government (1990). '*The Environmental Protection Act*, 1990'. [Online]. Available: Environmental Protection Act 1990 (legislation.gov.uk) (Accessed 11 July 2024)

health or a nuisance and is emitted from or caused by a vehicle, machinery or equipment in a street".

A duty is imposed on Local Authorities to carry out inspections to identify statutory nuisances, and to serve abatement notices against these. Section 80 deals with summary proceedings for statutory nuisance.

11.2.2 NATIONAL PLANNING POLICY AND GUIDANCE

The noise and vibration assessment will be carried out within the context of relevant government policy and guidance in Scotland. This includes the National Planning Framework 4 (NPF4)[97], Planning Advice Note 1/2011: Planning and Noise (PAN)[98], and Technical Advice Note: Assessment of Noise (TAN)[99].

11.2.2.1 NATIONAL PLANNING FRAMEWORK 4 (NPF4)

The NPF4 is Scotland's national spatial strategy that sets out spatial principles, regional priorities, national developments, and national planning policy. NPF4 has several policies which address noise and are relevant to the Proposed Development, as follows:

Policy 11 states the policy principles for energy. The intent of the policy is to encourage, promote and facilitate all forms of renewable energy development onshore and offshore. In relation to noise, the policy states:

> *"e) In addition, project design and mitigation will demonstrate how the following impacts are addressed: i. impacts on communities and individual dwellings, including, residential amenity, visual impact, noise and shadow flicker."*

Policy 23e states:

> "*Development proposals that are likely to raise unacceptable noise issues will not be supported*" and "*A Noise Impact Assessment may be required where the nature of the proposal or its location suggests that significant effects are likely*".

11.2.2.2 PLANNING ADVICE NOTE (PAN) 1/2011: PLANNING AND NOISE

PAN 1/2011 provides advice on the role of the planning system in helping to prevent and limit the adverse effects of noise, with information and advice on assessment methods provided in the associated TAN. The PAN promotes the principles of good acoustic design and the appropriate location of new noise-generating development. The selection of a site, the design of a development and conditions which may be attached to a planning permission can all play a part in preventing, controlling and mitigating the effects of noise.

[97] Scottish Government, 2023. National Planning Framework 4. [online] Available at: https://www.gov.scot/publications/national-planning-framework-4/ (Accessed 11 July 2024).
[98] Scottish Government, 2011. Planning Advice Note 1/2011: Planning and Noise. [online] Available at: https://www.gov.scot/publications/planning-advice-note-1-2011-planning-noise/ (Accessed 11 July 2024).
[99] Scottish Government, 2011. Planning Advice Note (PAN) 1/2011: Planning and Noise. [online] Available at: https://www.gov.scot/publications/technical-advice-note-assessment-noise/ (Accessed 11 July 2024).

11.2.2.3 TECHNICAL ADVICE NOTE (TAN): ASSESSMENT OF NOISE

The TAN provides guidance which may assist in the technical assessment of noise, although it is neither prescriptive nor exhaustive. It provides a summary of relevant and current (at the time of publication) technical standards, guidance and codes of practice. For a noise generating development (such as industrial, commercial or recreational developments) affecting a noise sensitive building, the TAN sets out assessment steps which broadly follow the principles described in BS 4142:2014.

11.2.3 LOCAL PLANNING POLICIES

The Scottish Borders Council Local Development Plan 2024[100], current guidance adopted on 22nd of August 2024, sets forth local policies regarding environmental quality and public health. The policies regarding noise highlight that some developments can generate considerable noise, especially during construction. The local plan contains the following policies specifically relating to noise:

Housing Development (HD) Policy HD3 Protection Of Residential Amenity

> "Development that is judged to have an adverse impact on the amenity of existing or proposed residential areas will not be permitted. To protect the amenity and character of these areas, any developments will be assessed against:
>
> (iii) the generation of traffic or noise…"

11.2.4 CONSTRUCTION AND DECOMMISSIONING PHASES

British Standard (BS) 5228 (Code of Practice for noise and vibration control on construction and open sites)[101] is of particular relevance to noise generated by the construction and decommissioning of the Proposed Development.

The standard refers to the need for the protection against noise and vibration of persons living and working in the vicinity of and those working on construction and open sites. It recommends procedures for noise and vibration control in respect of construction activities.

11.2.5 OPERATIONAL PHASE

The following standards are of particular relevance to noise generated by the operational phase of the Proposed Development:

- BS 4142:2014+A1:2019 Methods for rating and assessing industrial and commercial sound[102];

[100] Scottish Borders Council (2024). 'Adopted Local Development Plan 2: Volume 1 – Policies'. Available at: https://www.scotborders.gov.uk/downloads/file/12939/adopted-ldp2-volume-1-policies (Accessed: 28 August 2024).
[101] BSI Group (2009). 'BS 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites'.
[102] BSI Group (2019). 'BS 4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound'.

- BS 8233 (Guidance on Sound Insulation and Noise Reduction for Buildings)[103]; and
- ISO 9613-2:1996: Attenuation of Sound during Propagation Outdoors[104].

11.3 BASELINE CONDITIONS

11.3.1 DATA SOURCES USED IN SCOPING

Satellite imagery and mapping data from ArcGIS and address data from Ordinance Survey have been used to identify baseline receptors and noise sources likely to significantly contribute to the baseline sound environment.

11.3.2 STUDY AREA

The Study Area will be determined based on the proposed site layout and the location of operational equipment, as well as the location of construction/decommissioning activities. For the Scoping exercise, a Study Area which includes the Site itself and an area extending 1km from the Site boundary has been assumed. This distance is typically adequate to address significant noise and vibration effects from a development of this nature.

11.3.3 KEY SENSITIVITIES

The key receptors for noise and vibration are the nearby residential properties.

11.3.4 BASELINE ENVIRONMENT

The surrounding land use is mostly arable farming, woodland, and residential. There are individual residential properties located within the Site boundary (namely in Bowshiel Farm). Beyond the Site boundary, several isolated residential properties surround the Site on all sides. The nearest villages include Penmanshiel (approximately 748m to the southeast), Tower Farm (approximately 819m to the North) and Blackburn (approximately 954m to the southwest).

The use of a representative selection of the closest receptors as noise monitoring locations and assessment locations would be expected to result in a worst-case assessment of noise and vibration effects.

The baseline noise environment is likely to include road traffic noise from the existing road network, as well as other anthropogenic sources such as farm machinery. Specifically, the Site is surrounded to the east by the A1, which will dominate the baseline environment for receptors in proximity to it. Natural sources of noise such as birds, wind in the trees and other animals are also likely to contribute to the baseline noise levels.

Figure 11.1 shows the Site boundary, the scoping Study Area and the location of residential noise sensitive receptors (NSRs).

[103] BSI Group (2014). 'BS 8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings'.
[104] ISO (1996). 'ISO 9613-2:1996 - Attenuation of Sound during Propagation Outdoors'. BSI Standards Publication

11.4 POTENTIAL ENVIRONMENTAL EFFECTS

11.4.1 CONSTRUCTION AND DECOMMISSIONING

During the construction and decommissioning phases, noise is expected primarily as a result of vehicles transporting materials, generators, and mobile equipment such as tracked excavators working on-site.

Solar farm construction takes place relatively quickly, as minimal excavations are required. The potential adverse effects of noise and vibration during construction are therefore only for short periods, e.g., when deliveries are made and when piles for mounting structures are being installed.

Given the temporary nature and limited extent of such works, although construction noise may be audible at times, it is expected that noise impacts from such activities can be adequately controlled through the use of a Construction Environmental Management Plan (CEMP), which will require the use of Best Practicable Means (BPM) as defined by the CoPA 1974 and EPA 1990, to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. An assessment of construction noise and vibration effects will however be included in the EIA.

Noise and vibration effects during decommissioning are expected to be similar to those generated during the construction phase. As such, a separate assessment of decommissioning noise and vibration will not be included.

With regards to traffic, whilst some construction traffic will be required, it is expected to be minimal and over a short construction period. Construction traffic will consist of heavy goods vehicles (HGVs), light good vehicles (LGV's) and cars. No abnormal loads movements are expected to be required.

The magnitude of the predicted increase in traffic due to construction is anticipated to be low in absolute terms (around 76 vehicles per day, 40 cars/vans & 30 HGVs), and expected to contribute a negligible effect to the Annual Average Daily Traffic Flow (AADTF) of these roads, therefore effects from the construction traffic noise are unlikely to be significant and scoped out of the EIA. It is anticipated that traffic volumes during the decommissioning phase will be similar to that during the construction phase and an assessment of this has therefore also been scoped out.

11.4.2 OPERATIONAL

During the operational phase of the Proposed Development, noise is generated by the electrical systems such as the transformers, inverters, and batteries which may be audible at the nearest NSRs. However, it should be noted that solar panels only generate electricity during daylight hours, and therefore there is minimal noise generated during the hours of darkness when ambient noise levels are typically at their lowest.

Vehicle access will likely be limited to occasional visits for maintenance etc. Increases in road traffic due to operation are therefore not expected to occur and therefore have been scoped out of further assessment.

11.4.3 CUMULATIVE EFFECTS

No other potentially noisy developments have been identified near the Proposed Development within a radius of 1km. However, an assessment of cumulative effects has been scoped in and any developments in the locality will be assessed closer to the application.

11.4.4 ENVIRONMENTAL EFFECTS SCOPED IN TO THE ASSESSMENT

TABLE 11.1 EFFECTS SCOPED IN TO THE ASSESSMENT

Potential Receptor or Effect	Scoped In	Rationale
Construction Phase		
Noise effects at the nearest residential properties and other sensitive receptors from construction activities (not including traffic noise).	Scoped In	Noise impacts from construction activities e.g., digging trenches for on-site cable routing, ground excavation or driving steel frames into the ground.
Operational Phase		
Noise effects at the nearest residential properties and other sensitive receptors from operation of the installation.	Scoped In	Noise impacts generated by fixed electrical plant associated with the Solar Farm and Battery Energy Storage System.
Cumulative Effects (Operational Phase)		
An assessment of cumulative effects in the locality will be assessed closer to the application.	Scoped In	Cumulative impact of the Proposed Development in combination with other noise generating developments in the locality.

11.5 PROPOSED ASSESSMENT METHODOLOGY

11.5.1 BASELINE MONITORING

A knowledge of the baseline noise environment is required at a representative selection of the closest receptors which will be used to assess the effects of the Proposed Development.

Baseline noise levels will be logged at a selection of monitoring locations chosen to be representative of the noise environment at the assessment locations. Monitoring will be carried out in accordance with BS 4142.

Baseline noise measurement locations will be chosen in consultation with the Local Authority, to be representative of the typical noise environment at the nearest NSRs under assessment.

The construction assessment requires a knowledge of the day / evening / night baseline noise environment. Baseline noise levels to inform a construction assessment will make use of the same survey data collected for the operational assessment.

11.5.2 SPECIFIC METHODOLOGIES

Noise level predictions for the operational phase will be carried out using a computer software package, e.g. the widely recognised software package SoundPLAN, implementing the prediction method set out in ISO 9613-2[105]. ISO 9613-2 describes a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. The method predicts the equivalent continuous A-weighted sound pressure level (as described in ISO 1996) under meteorological conditions.

A revised version of this standard was published on 31 January 2024. However, it has not yet been widely implemented into computer software modelling packages and the previous 1996 version remains current according to the British Standards Institute (BSI), the national standards body of the United Kingdom. If the modelling software (likely SoundPLAN), updated with the revised standard is available, it will be used for the assessment.

Construction noise level predictions would be carried out according to BS 5228-1.

11.5.3 CONSTRUCTION AND DECOMMISSIONING PHASES

Construction noise will be assessed using BS 5228-1, with reference to the 'ABC method'. The ABC method defines thresholds at building facades on the basis of existing noise levels as set out in Table 11.2.

Where forecast construction noise exceeds the relevant threshold, this would be an indicator of a potentially significant effect.

TABLE 11.2 AIRBORNE SOUND FROM CONSTRUCTION – IMPACT CRITERIA AT RESIDENTIAL RECEPTORS

Period of Interest	Assessment Category dB $L_{Aeq, T}$		
	A	B	C
Daytime			
Weekdays, 07:00-19:00 (12 Hour Period) Saturday, 07:00-13:00 (6 Hour Period)	>65	>70	>75
Evenings & Weekends			
Weekdays 19:00–23:00 (4 Hour Period) Saturdays 13:00-23:00 (10 Hour Period)	>55	>60	>65

[105] ISO 9613-2:1996: Attenuation of Sound during Propagation Outdoors.

Period of Interest	Assessment Category dB $L_{Aeq, T}$		
	A	B	C
Sundays 07:00-23:00 (16 Hour Period)			
Night-Time			
Every day 23:00-07:00 (8 Hour Period)	>45	>50	>55

1. Notes: All sound levels are defined at the façade of the receptor.

Where predicted noise levels are above thresholds, other factors will be taken into account in determining whether, in EIA terms, the effect could be significant, such as the duration of the activity causing the noise impact. This process is summarised in Table 11.3.

TABLE 11.3 MAGNITUDE AND SIGNIFICANCE OF CONSTRUCTION NOISE EFFECTS

Exceedance of criteria, dB	Magnitude of predicted impact	Context Factors	Significance of effect
5 or more below the criteria	Negligible	Factors which may influence significance of effects, e.g. duration of construction activity	Not significant
> 5 below, up to the criteria	Small		Minor
Up to 5 dB above the criteria	Medium		Moderate
> 5 above the criteria	Large		Major

11.5.4 OPERATIONAL PHASE

The potential for significant noise effects will be assessed according to BS 4142:2014 +A1: 2019[102]. BS 4142 sets out guidance used for the assessment of sound of an industrial and/or commercial nature. The methods described in BS 4142 use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling used for residential purposes.

The assessment will include the following scenarios:

- Daytime (07:00 – 23:00 hours); and
- Night-Time (23:00 – 07:00 hours). As a number of the operational components of the Proposed Development will operate during daylight hours, a separate assessment will be included to assess noise during the early morning hours, during the summer period.

11.6 APPROACH TO MITIGATION

11.6.1 CONSTRUCTION

The construction contractor will use Best Practicable Means (BPM) as defined by the CoPA 1974 and EPA 1990, to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors. As part of BPM, mitigation measures will be applied following the guidance set out in Section 8 of BS 5228-1: Code of Practice on Noise Control.

11.6.2 OPERATION

Appropriate mitigation will be considered during the EIA. Noise control measures such as choosing low-noise versions of equipment, use of acoustic enclosures, noise barriers and bunding, siting equipment, and buildings to provide screening will be considered, where practicable, as the design proceeds.

11.7 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

TABLE 11.4 SUMMARY OF EFFECTS SCOPED OUT OF THE ASSESSMENT

Potential Receptor or Effect	Scoped Out	Rationale
Construction Phase		
Noise effects from construction traffic.	Scoped Out	Significant increases in road traffic noise off site due to construction traffic are not expected
Decommissioning Phase		
Noise effects from decommissioning phase traffic.	Scoped Out	Noise and vibration effects during decommissioning are expected to be similar to those generated during the construction phase.
Operational Phase		
Noise effects from traffic during the operational phase.	Scoped Out	Significant increases in road traffic noise offsite during operation are not expected to occur.
Vibration effects during operation.	Scoped Out	No significant vibration generating equipment will be required during operation.

11.8 CONSULTATION

Consultation will be carried out with the LPA when choosing appropriate noise monitoring locations and assessment receptors.

11.9 QUESTIONS FOR CONSULTEES

Q11.1 Do you agree with the proposed methodology for the noise assessment?

Q11.2 Are there any other relevant consultees that should be included in the consultation?

Q11.3 Is the scope of the noise assessment, particularly the effects to be excluded from the assessment, agreeable to you?

12. OTHER ISSUES

12.1 CLIMATE CHANGE

The lifecycle greenhouse gas emissions assessment carried out to inform NPF4[106] concluded that this development type will likely have an overall net positive impact on achieving national greenhouse gas emissions reduction targets. On this basis, it is proposed that climate change assessment is scoped out of the EIAR.

12.2 SOCIOECONOMICS

NPF4 acknowledges the potential for national development of this type to "support jobs and business investment, with wider economic benefits". In addition, NPF4 states, in relation to national development that: "Their designation means that the principle of the development does not need to be agreed in later consenting processes, providing more certainty for communities, business and investors". Given the anticipated positive impact of the Proposed Development on socioeconomic receptors it is proposed that this topic is scoped out of the EIAR. Potential visual effects in relation to tourism, recreational routes and receptors will be considered in the Landscape and Visual Impact Assessment (LVIA).

12.3 GLINT AND GLARE

A preliminary glint and glare assessment has been carried out for the Proposed Development. The study used the ForgeSolar tool and identified a total of forty-four receptors within a 1km radius of the Site. Receptors comprised forty buildings, three roads and one railway line.

Assessment findings indicate that approximately 85% of the glint and glare impact is of low magnitude. Four of the forty-four receptors experience moderate magnitude glint and glare impact, generally experienced over very short timescales, but this is likely to be offset by existing screening (e.g. trees and hedgerows). The study concluded that it is likely that material glint and glare impacts will be negligible under real-world conditions and therefore Glint and Glare is scoped out of the EIAR.

12.4 HUMAN HEALTH – ELECTROMAGNETIC FIELDS (EMF)

Electromagnetic fields (EMFs) are a product of the generation, transmission and use of electricity. Primary EMF sources associated with the Proposed Development include the substation, BESS, and underground cables. Given the separation distance between EMFs, which diminish rapidly with increasing distance from source, and potential receptors, no significant effects are predicted. Consequently, EMF is scoped out of the EIA.

[106] Scottish Government (October 2022) "National Planning Framework 4 – Research Project: Lifecycle Greenhouse Gas Emissions of NPF4 Proposed National Developments Assessment Findings". Available Online at: https://www.gov.scot/publications/national-planning-framework-4-lifecycle-greenhouse-gas-emissions-npf4-proposed-national-developments-assessment-findings/ [Accessed: August 2024].

12.5 MAJOR ACCIDENTS AND DISASTERS

The EIA Regulations state that an EIA must identify, describe, and assess in an appropriate manner, the expected effects deriving from the vulnerability of the Proposed Development to risks presented by unplanned events such as, major accidents and natural disasters. As the risks posed by many extreme natural hazards are highly unlikely given the location of the Proposed Development, and that those that remain are either assessed in another section of this report (for example flood risk, Section 8), or have their risks controlled by mitigations embedded in scheme design, these effects will be scoped out of the EIAR.

12.6 POPULATION – PUBLIC ACCESS

A Public Right of Way (PRoW) traverses the Site following the route of Bowshiel Farm access track from the A1 trunk road to the boundary of the Site to the south of the farm. The PRoW continues beyond the Site boundary, crossing Pease Burn before connecting with the Southern Upland Way (Core Path) on the approach to Blackburn Farm. The PRoW will be considered during design development. This will include identification of any requirement for temporary mitigation measures during the construction period in order to maintain access (to be reported upon within the Transport Statement) and will involve consultation with Scottish Borders Council Access Officer and ScotWays. No significant effects are anticipated in relation to public access, therefore, this topic has been scoped out of the EIAR. Visual impact will be evaluated as part of the Landscape and Visual Impact Assessment. Proposed Viewpoint 6, identified in Section 5 (Landscape and Visual) of this report, relates to the Southern Upland Way.

12.7 UTILITIES

Solar farms have the potential to affect existing below ground infrastructure. To identify any existing infrastructure constraints, both consultation and a desk-based study will be conducted.

The Proposed Development will be designed so that there are no effects on utilities with further consultation undertaken prior to construction to ensure there are no effects. As such, utilities are scoped out of the EIAR.

12.8 WASTE

At this stage, the exact quantities and types of waste are unknown. A Site Waste Management Plan (SWMP) will detail how waste streams are to be managed, following the Waste Hierarchy of prevention, reuse, recycle, recover and as a last resort, disposal to landfill. The SWMP will be agreed and implemented prior to construction commencing on site. Therefore, it is not considered necessary for waste to be assessed further within the EIAR and it is proposed waste is scoped out.

12.9 SUMMARY

Table 12.1 provides a summary of how the preceding Other Issues subject areas are proposed to be treated in the EIAR.

TABLE 12.1 PROPOSED TREATMENT OF SUBJECT AREAS IN EIA

Subject Area	Proposed Treatment Within EIA
Climate Change	Scoped Out
Socioeconomics	Scoped Out
Glint and Glare	Scoped Out
Human Health – Electromagnetic Fields	Scoped Out
Population – Public Access	Scoped Out
Utilities	Scoped Out
Waste	Scoped Out

APPENDIX A CULTURAL HERITAGE BASELINE

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB4054	Pease Bridge	A	1310 m N
Listed Building	LB4129	Cockburnspath Church And Graveyard	A	2460 m NW
Listed Building	LB4046	Old Manor House (Sparrow Castle)	A	2470 m NW
Listed Building	LB4047	Market Cross Cockburnspath	A	2530 m NW
Listed Building	LB4052	Old Tower Bridge	B	1170 m N
Listed Building	LB4048	Smithy, Cockburnspath	B	2400 m NW
Listed Building	LB4049	Old Stables And Cottage To Rear And At Side Of The Cockburnspath Inn	B	2420 m NW
Listed Building	LB4050	Premises Of Geo Hay And Sons General Merchants	B	2570 m NW
Listed Building	LB46624	Grantshouse, Eye View Including Garden Wall	C	2200 m SE

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB46627	Grantshouse, Ivy Bank And Ivy Bank Curios	C	2240 m SE
Listed Building	LB46594	Butterdean Farmhouse Including Ancillary Structures, Walled Garden, Boundary Walls And Gatepiers	C	2470 m SE
Listed Building	LB46625	Grantshouse, Harelawside Farmhouse, Including Garden Walls	C	2480 m SE
Scheduled Monument	SM369	Ewieside Hill,fort 640m NE of Edmondsdean	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	200m NW
Scheduled Monument	SM13317	Cockburnspath Tower, tower & ancillary buildings 390m N of Tower Farm	The monument is the remains of Cockburnspath Tower, built probably in the 15th century and now visible as a ruinous tower standing two stories high, with a basement level and ancillary range (or barmkin).	1200 m N

Designation	Reference	Name	Category	Distance from RLB (m)
Scheduled Monument	SM382	St Helen's Church, church & hog-backed monuments	Crosses and carved stones: tombstone; Ecclesiastical: church	2400 m NE
Scheduled Monument	SM12469	Winding Cairn	Prehistoric ritual and funerary: cairn (type uncertain)	2100 m NE
Conservation Area	CA596	Cockburnspath	Conservation Area encompassing Cockburnspath	2400 m NW
Garden and Designed Landscapes	GDL00154	Dunglass	Dunglass was one of Scotland's finest examples of the late 18th century picturesque style of landscape design, and although many of the core features have been lost, the basic structure can still be recognised	2700 m N
Non-Designated	Bowshiel	342730	Well (Post Medieval)	Within Site Boundary
Non-Designated	Bigchesters	353679	Aircraft (20Th Century)	Within Site Boundary
Non-Designated	Bowshiel	58751	Tower House (Medieval)	Within Site Boundary
Non-Designated	Bowshiel	241407	Ring Ditch (Period Unassigned)	Within Site Boundary

Designation	Reference	Name	Category	Distance from RLB (m)
Non-Designated	Big Chesters, Bowshiel	58717	Linear Earthwork (Period Unassigned)(Possible), Settlement (Period Unassigned)	Within Site Boundary
Non-Designated	Bowshiel	342727	Quarry (Post Medieval)	Within Site Boundary
Non-Designated	Bowshiel	58721	Enclosure (Period Unassigned)	Within Site Boundary
Non-Designated	Bowshiel	342725	Road (Post Medieval)	Within Site Boundary
Non-Designated	Bowshiel	342729	Mill Dam (Post Medieval)	Within Site Boundary
Non-Designated	Bowshiel	278499	Farmhouse (Post Medieval), Farmstead (Medieval), Farmstead (Post Medieval)	Within Site Boundary
Non-Designated	Bowshiel	342726	Road (Post Medieval)	Within Site Boundary
Non-Designated	Fermy Knowe	58719	Enclosure (Period Unassigned)	Within Site Boundary
Non-Designated	Little Chesters, Bowshiel	58720	Settlement (Prehistoric)	Within Site Boundary
Non-Designated	Bowshiel	58718	Enclosure (Period Unassigned)	Within Site Boundary

Designation	Reference	Name	Category	Distance from RLB (m)
Non-Designated	Big Chesters	360603	Pit Setting (Prehistoric)(Possible)	Within Site Boundary
Non-Designated	Cockburnspath, Glenfin Quarry	278501	Quarry (Period Unassigned)	20 m N
Non-Designated	Bankhouse	58725	Burial Cairn(S) (Prehistoric)(Possible), Urn (Prehistoric)	360 m N
Non-Designated	East Coast Route	343867	Railway (Modern)	96 m E
Non-Designated	Penmanshiel Tunnel	278493	Railway Tunnel (19Th Century)	121 m E
Non-Designated	Penmanshiel, Auxiliary Unit Operational Base	373014	Bunker (Second World War)	159 m SE
Non-Designated	Pease Burn	181367	Building(S) (Period Unassigned)	164 m E
Non-Designated	Mensie Potts	58750	Fort (Prehistoric)	467 m NW
Non-Designated	Penmanshiel Wood	58732	Findspot, Cinerary Urn	256 m SE
Non-Designated	Penmanshiel	58726	Cairn(S) (Period Unassigned), Scraper (Tool) (Flint)	275 m SE
Non-Designated	Penmanshiel	59816	Cairn(S) (Period Unassigned)	454 m E
Non-Designated	Mensie Potts	58744	Enclosure (Period Unassigned)	725 m NW
Non-Designated	Tower Farm	58736	Linear Feature(S) (Period Unassigned), Settlement (Period Unassigned)	666 m N

Designation	Reference	Name	Category	Distance from RLB (m)
Non-Designated	Tower Farm, Quarry	271420	Quarry (Period Unassigned)	220 m W
Non-Designated	Penmanshiel	59805	Settlement (Period Unassigned)(Possible)	409 m E
Non-Designated	Tower Farm	58737	Enclosure (Period Unassigned)	725 m NW
Non-Designated	The Chesters, Penmanshiel	59808	Cist(S) (Prehistoric), Fort (Prehistoric), Quern	492 m E
Non-Designated	Old Townhead	58722	Findspot, Food Vessel Urn	971 m NE
Non-Designated	Tower Farm	278500	Farmhouse (Period Unassigned), Farmstead (Period Unassigned)	825 m NW
Non-Designated	Penmanshiel	59807	Settlement (Period Unknown)(Possible)	650 m E
Non-Designated	Tower Farm West	58723	Earthwork (Period Unassigned)	551 m W
Non-Designated	Penmanshiel	359689	Cottage(S) (Post Medieval), Well (Period Unknown)	581 m E
Non-Designated	Penmanshiel	59851	Findspot, Lithic Implement(S) (Flint), Whetstone(S)	688 m SE
Non-Designated	Penmanshiel	354117	Farmstead (Post Medieval)	719 m SE
Non-Designated	Ewieside Hill	58733	Settlement (Period Unassigned)	722 m W
Non-Designated	Blackburn House	278495	Farmhouse (Period Unassigned), Farmstead (Period Unassigned)	748 m SW

Designation	Reference	Name	Category	Distance from RLB (m)
Non-Designated	Penmanshiel	59810	Cairn (Prehistoric)(Possible)	723 m E
Non-Designated	Mid Chesterfield	58749	Cist (Period Unassigned)	786 m NW
Non-Designated	Blackburn House	278494	House (Period Unassigned)	827 m S
Non-Designated	Craw's Cairn, Penmanshiel	59809	Burial Cairn (Prehistoric), Cinerary Urn (Prehistoric)	908 m SE
Non-Designated	East Coast Route	342554	Railway (Modern)	917 m S
Non-Designated	Mid Chesterfield, Stockbridge	58724	Fort (Prehistoric)	964 m NW

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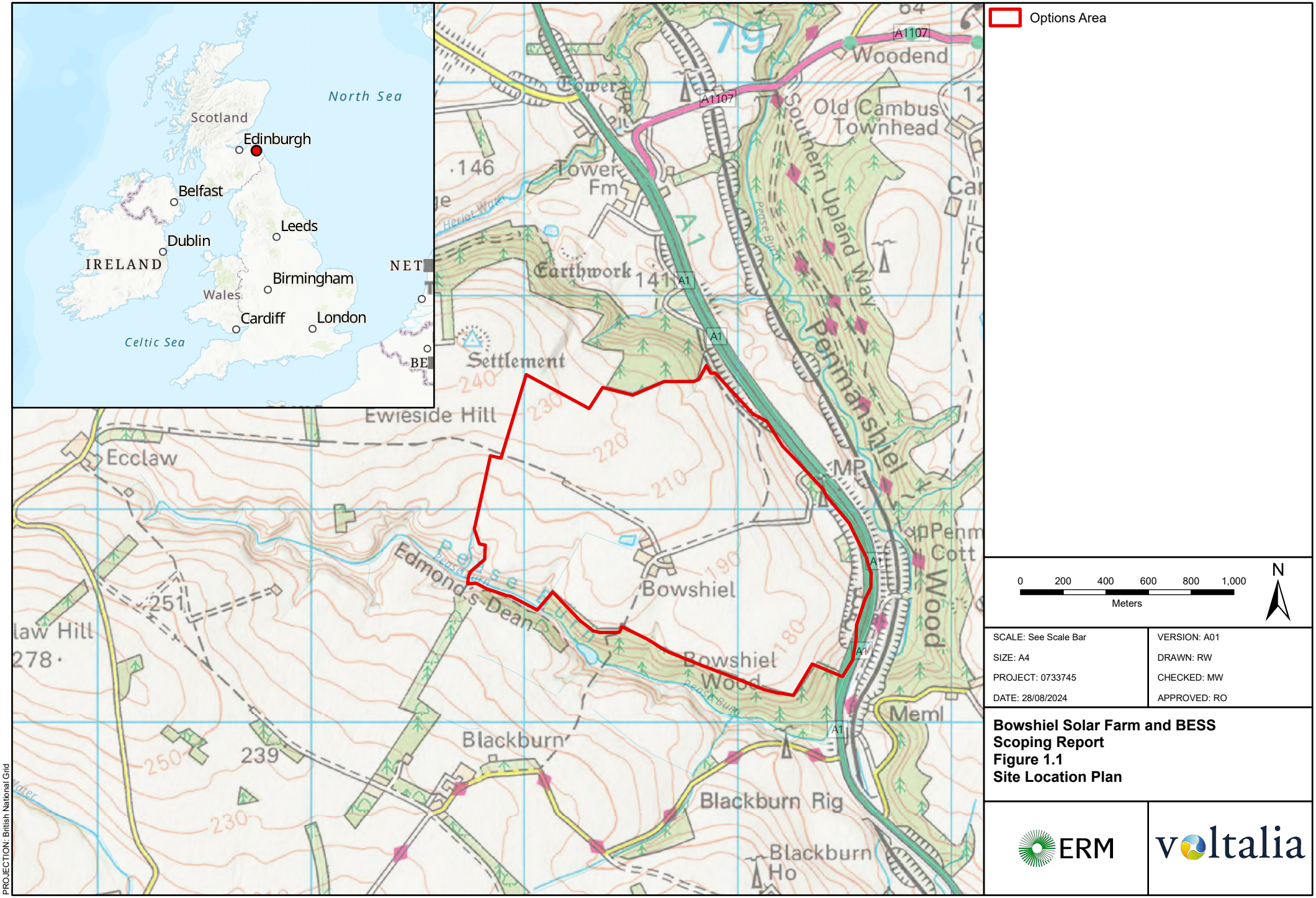

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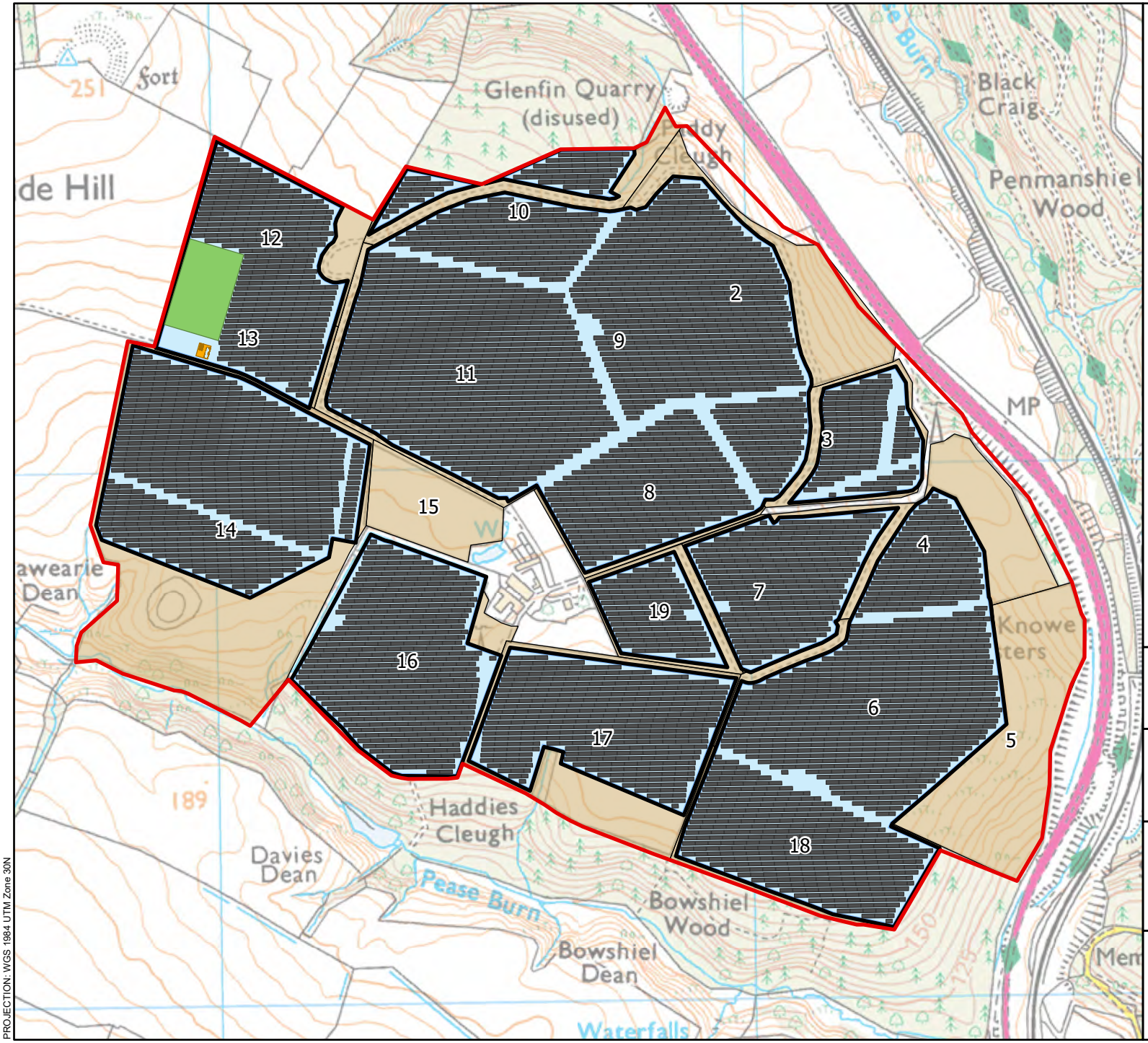
PROJECT: 0733745	CHECKED: MW
DATE: 28/08/2024	APPROVED: RO

Bowshiel Solar Farm and BESS
Scoping Report
Figure 1.1
Site Location Plan

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733745 - Bowshiel - PM - Figure 1.1 - Site Location Plan - A01



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DATE: 28/08/2024 | APPROVED: RO

Bowshiel Solar Farm and BESS
Scoping Report
Figure 1.2
Site Layout

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PROJECTION: WGS 1984 UTM Zone 30N

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733745 - Bowshiel - PM - Figure 1.2 - Site Layout - A01

Solar Panel Areas (modelled at 3.5m)

Distance from Panel Areas (0.5, 1, 2, 3km)

Gardens and Designed Landscapes

Local Landscape Areas

Landcover

Buildings

Woodland

Zone of Theoretical Visibility (Panel Areas - 3-5m)

Greater extent visible

Lesser extent visible

Proposed Viewpoints

Notes:
This drawing is based upon computer generated Zone of Theoretical Visibility (ZTV) studies produced using the Viewshed routine in the Visibility Analysis plugin for QGIS. The areas shown are the maximum theoretical visibility, taking into account topography, principal woodlands and buildings.

A digital surface model (DSM) has been derived from OS Terrain 5 height data with the locations of woodland and buildings taken from the OS Open Map Local dataset. Buildings have been modelled with an assumed height of 7.5m and woodland an assumed height of 15m, representing a conservative estimate of average heights within the study area. The model does not take into account some localised features such as small copses, hedgerows or individual trees and therefore still gives an exaggerated impression of the extent of visibility. The actual extent of visibility on the ground will be less than that suggested by this plan.

The ZTV includes an adjustment that allows for Earth's curvature and light refraction. It is based on a derived DSM and has a 5m^2 resolution.

FIGURE DATA:
Layout Version: L04
Object Height: 3.5m
Observer Height: 2m
DTM/DSM: DSM

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: SH
PROJECT: Bowshiel Farm	CHECKED: MF
DATE: 05/08/2024	APPROVED: MF

Figure 5.1:
ZTV Study (Panel Areas) - Including Screening by Woodlands and Buildings

ERM voltalia

PROJECTION: British National Grid

Path: C:\Users\MaryFisher\Abseline LLP\Projects 0001-0099 - 0036 Bowshiel Farm\04 Working\02 Figures\01 Scoping Figures\01 Scoping Figures Bowshiel Farm.aprx

BESS Area (modelled at 3.5m)

Substation Area (modelled at 7m)

Distance from Panel Areas (0.5, 1, 2, 3km)

Gardens and Designed Landscapes

Local Landscape Areas

Landcover

Buildings

Woodland

Zone of Theoretical Visibility

Substation (7m)

BESS (3.5m)

Notes:
This drawing is based upon computer generated Zone of Theoretical Visibility (ZTV) studies produced using the Viewshed routine in the Visibility Analysis plugin for QGIS. The areas shown are the maximum theoretical visibility, taking into account topography, principal woodlands and buildings.

A digital surface model (DSM) has been derived from OS Terrain 5 height data with the locations of woodland and buildings taken from the OS Open Map Local dataset. Buildings have been modelled with an assumed height of 7.5m and woodland an assumed height of 15m, representing a conservative estimate of average heights within the study area. The model does not take into account some localised features such as small copses, hedgerows or individual trees and therefore still gives an exaggerated impression of the extent of visibility. The actual extent of visibility on the ground will be less than that suggested by this plan.

The ZTV includes an adjustment that allows for Earth's curvature and light refraction. It is based on a derived DSM and has a 5m^2 resolution.

FIGURE DATA:
Layout Version: L04
Object Height: 3.5m (BESS) & 7m (Substation)
Observer Height: 2m
DTM/DSM: DSM

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: SH
PROJECT: Bowshiel Farm	CHECKED: MF
DATE: 05/08/2024	APPROVED:

Figure 5.2:
ZTV Study (BESS & Substation) - Including Screening by Woodlands and Buildings

ERM voltalia

PROJECTION: British National Grid

Path: C:\Users\MaryFisher\Abseline LLP\Projects 0001-0099 - 0036 Bowshiel Farm\04 Working\02 Figures\01 Scoping Figures\01 Scoping Figures Bowshiel Farm.aprx

BESS Area (modelled at 3.5m)

Solar Panel Areas (modelled at 3.5m)

Substation Area (modelled at 7m)

Buffers

Distance from Panel Areas (0.5, 1, 2, 3km)

Gardens and Designed Landscapes

Local Landscape Areas

Zone of Theoretical Visibility

Panel Areas (3.5m), BESS (3.5m), Substation (7m)

Notes:
This drawing is based upon computer generated Zone of Theoretical Visibility (ZTV) studies produced using the Viewshed routine in the Visibility Analysis plugin for QGIS.

The areas shown are the maximum theoretical visibility, taking topography into account. This visibility map is based on a 'bare earth' digital terrain model (DTM) and does not show the screening effect of any above ground features such as vegetation or buildings.

The ZTV includes an adjustment that allows for Earth's curvature and light refraction. It is based on OS Terrain 5 data and has a 5m^2 resolution.

FIGURE DATA:
Layout Version: L04
Object Height: 3.5m (Panel Areas, BESS), 7m (Substation)
Observer Height: 2m
DTM/DSM: DTM

0 100 200 300 400 500
Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A3	DRAWN: SH
PROJECT: Bowshiel Farm	CHECKED: MF
DATE: 05/08/2024	APPROVED: MF

Figure 5.3:
ZTV Study (Panel Areas, BESS & Substation) - Bare Ground

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PROJECTION: British National Grid

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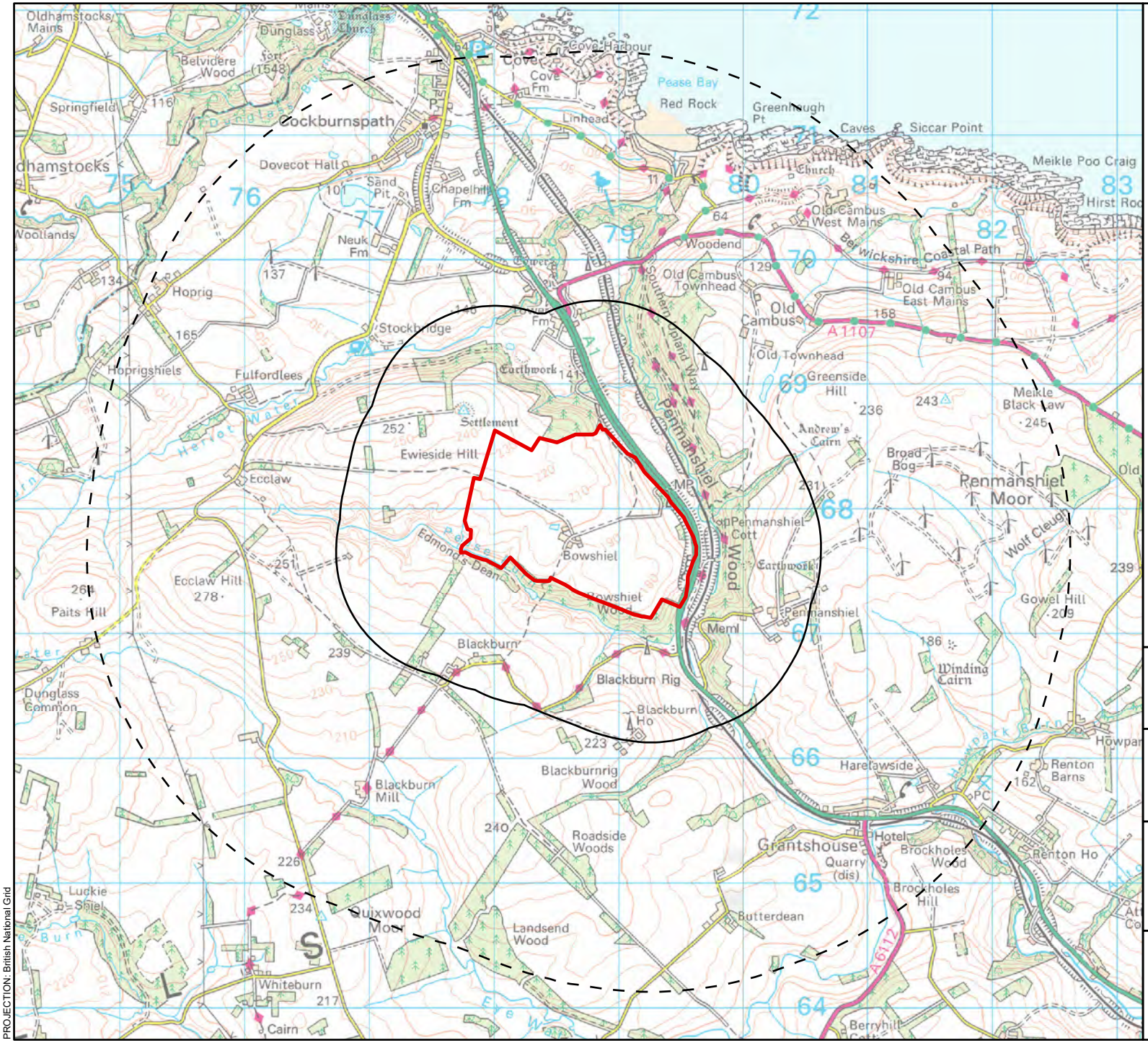

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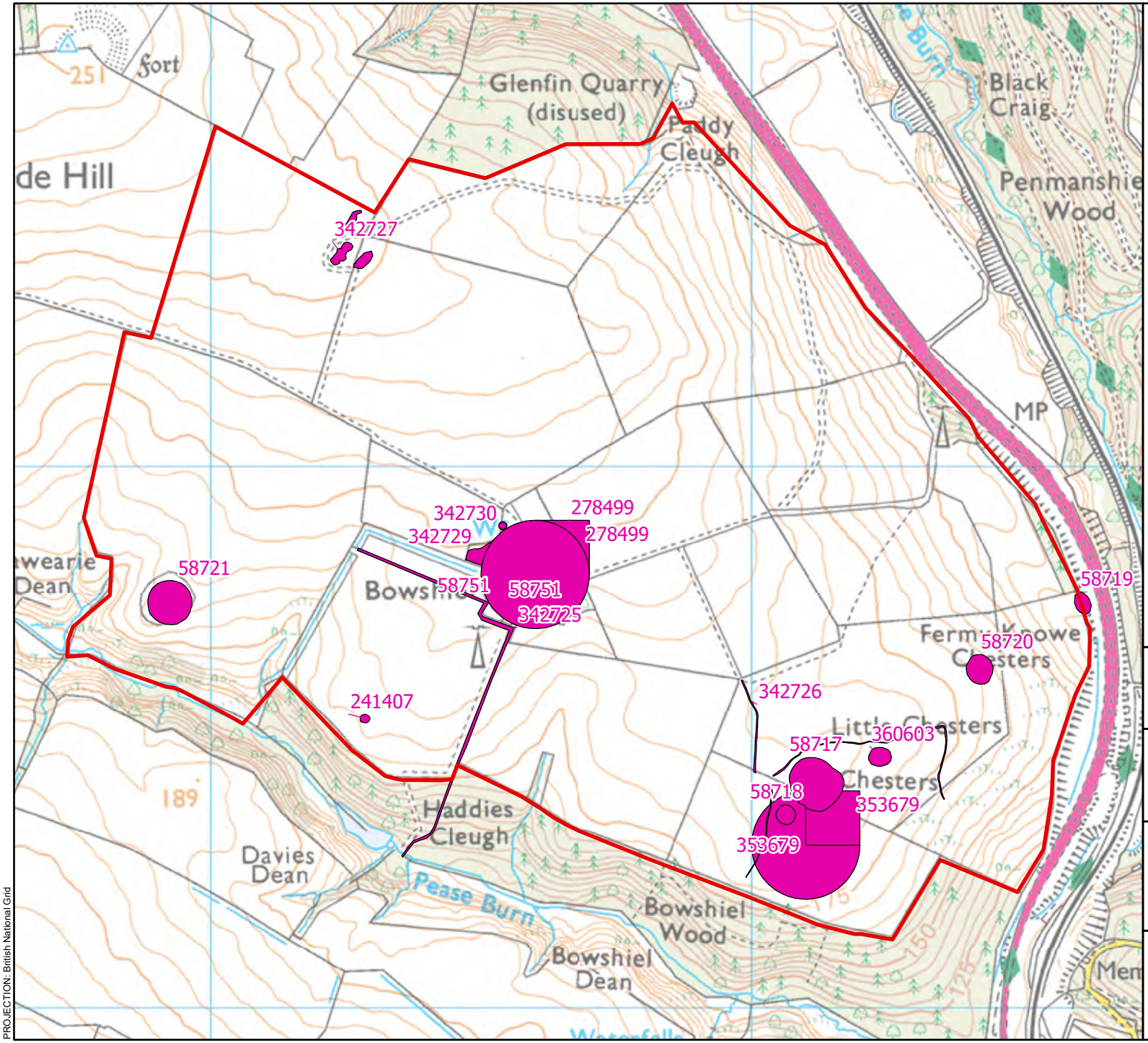
PROJECT: 0733784	CHECKED: RW
DATE: 17/09/2024	APPROVED: MW

Bowshiel Solar Farm and BESS
Scoping Report
Figure 6.1
Site Boundary and Study Area

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Scoping - Figure 6.1 - Site Boundary and Study Areas - A01



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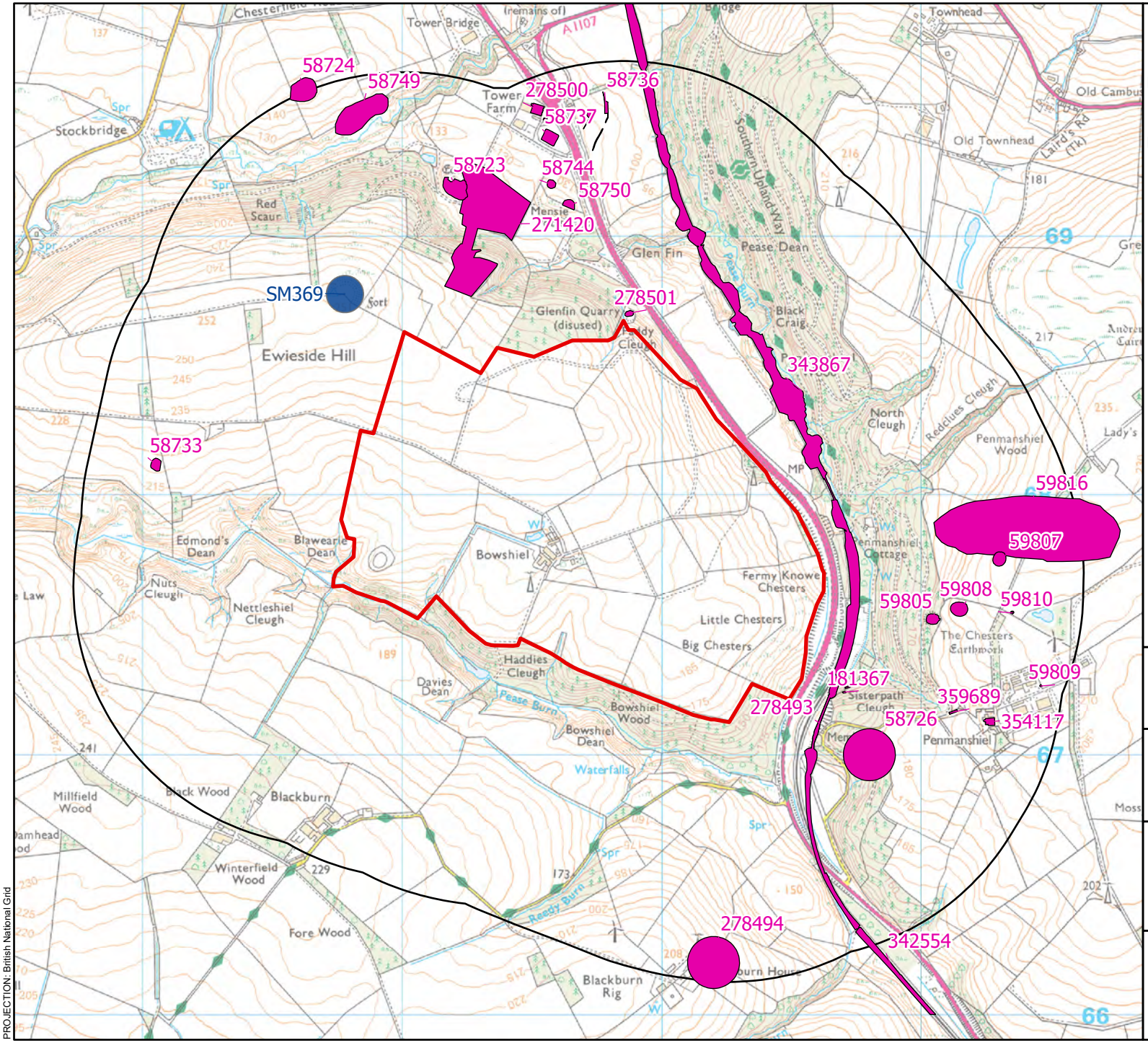
DATE: 17/09/2024	APPROVED: MW

Bowshiel Solar Farm and BESS
Scoping Report
Figure 6.2
Non-Designated Assets within Site Boundary

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Scoping - Figure 6.2 - Non-Designated Assets within Site Boundary - A02



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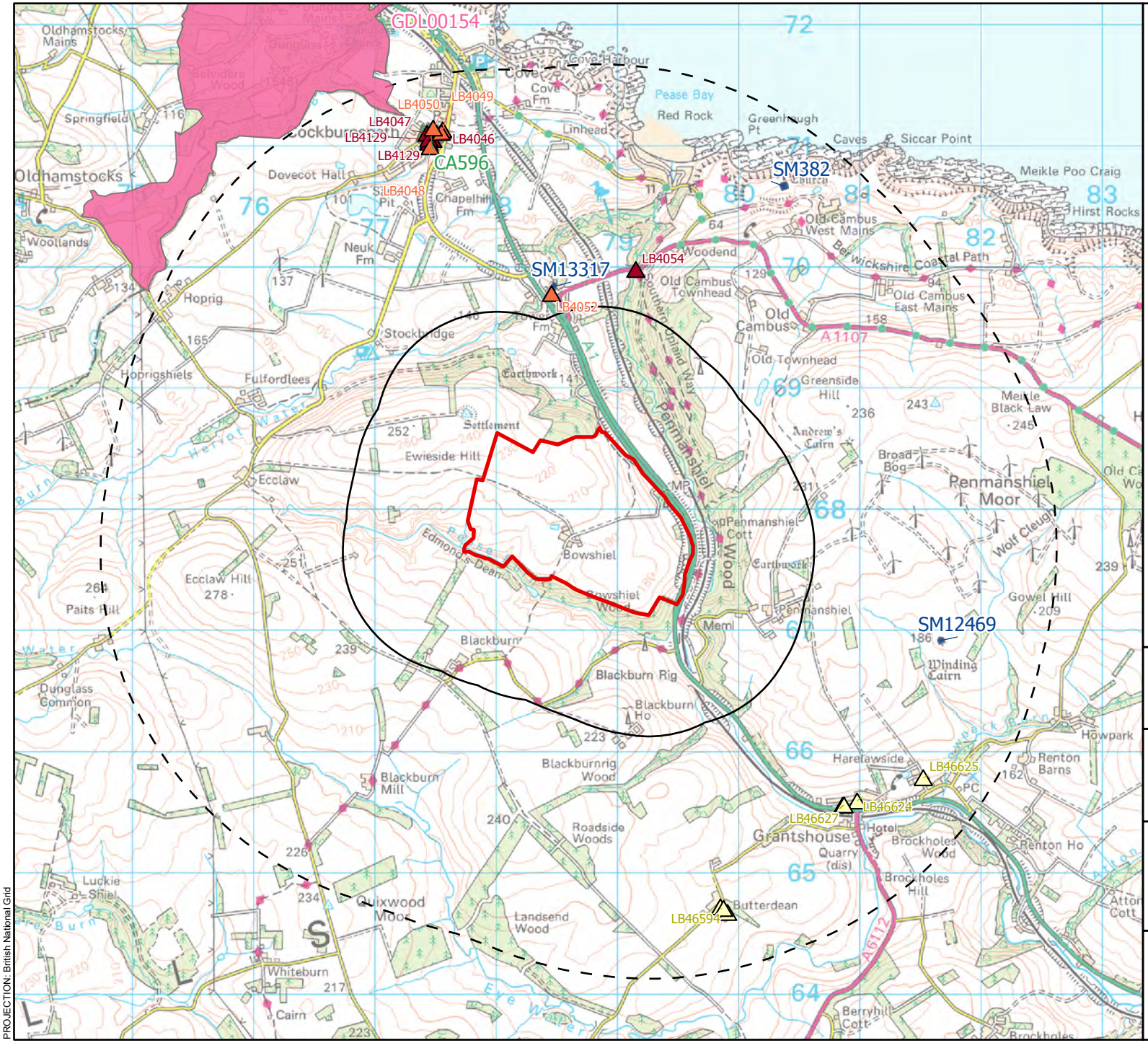
SIZE: A4	DRAWN: EL
PROJECT: 0733784	CHECKED: RW
DATE: 9/18/2024	APPROVED: MW

Bowshiel Solar Farm and BESS
Scoping Report
Figure 6.3
Heritage Assets within 1km

PROJECTION: British National Grid

Path: \\uksprdgisfs01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Scoping - Figure 6.3 - Heritage Assets within 1 km - A02



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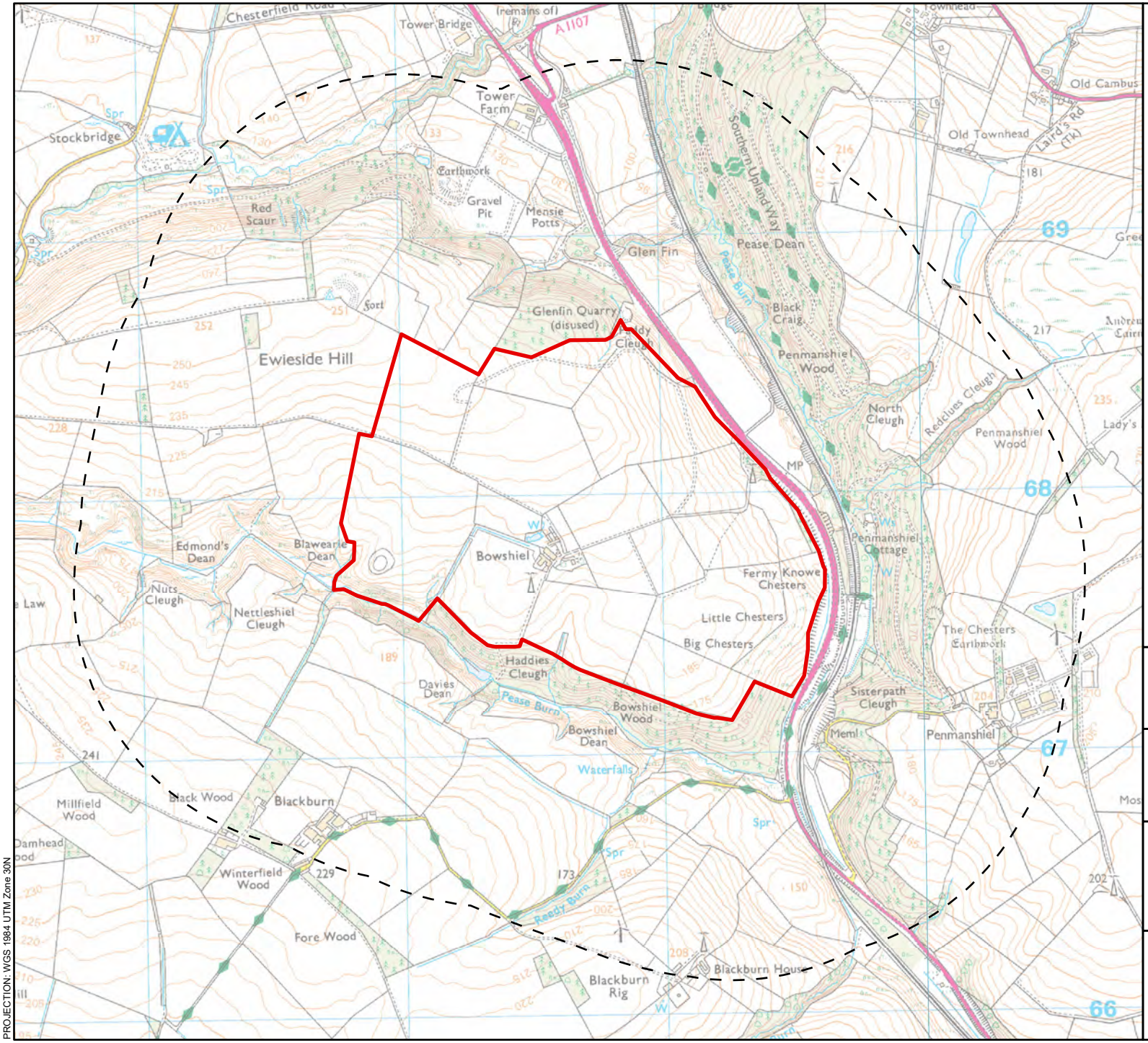
PROJECT: 0733784	CHECKED: RW
DATE: 9/18/2024	APPROVED: MW

Bowshiel Solar Farm and BESS
Scoping Report
Figure 6.4
Designated Assets within 3km

PROJECTION: British National Grid

Path: \\uksprdgisfs01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Scoping - Figure 6.4 - Designated Heritage Assets within 3 km - A01



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PROJECT: 0733784	CHECKED: RD
DATE: 13/09/2024	APPROVED: RO

Bowshiel Solar Farm and BESS
Scoping Report
Figure 8.1
Water Resources and Flood Risk Study Area

PROJECTION: WGS 1984 UTM Zone 30N

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Bowshiel - Water Resources and Flood Risk Study Area - A01

Options Area

1 km Buffer of Options Areas

River and Tidal Catchments

Berwick Coastal

Eye Water

0 200 400 600 800 1,000

Metres

N

SCALE: 1:20,979	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733784	CHECKED: RD
DATE: 18/09/2024	APPROVED: RO

Bowshiel Solar Farm and BESS
Scoping Report
Figure 8.2
Hydrological Catchments

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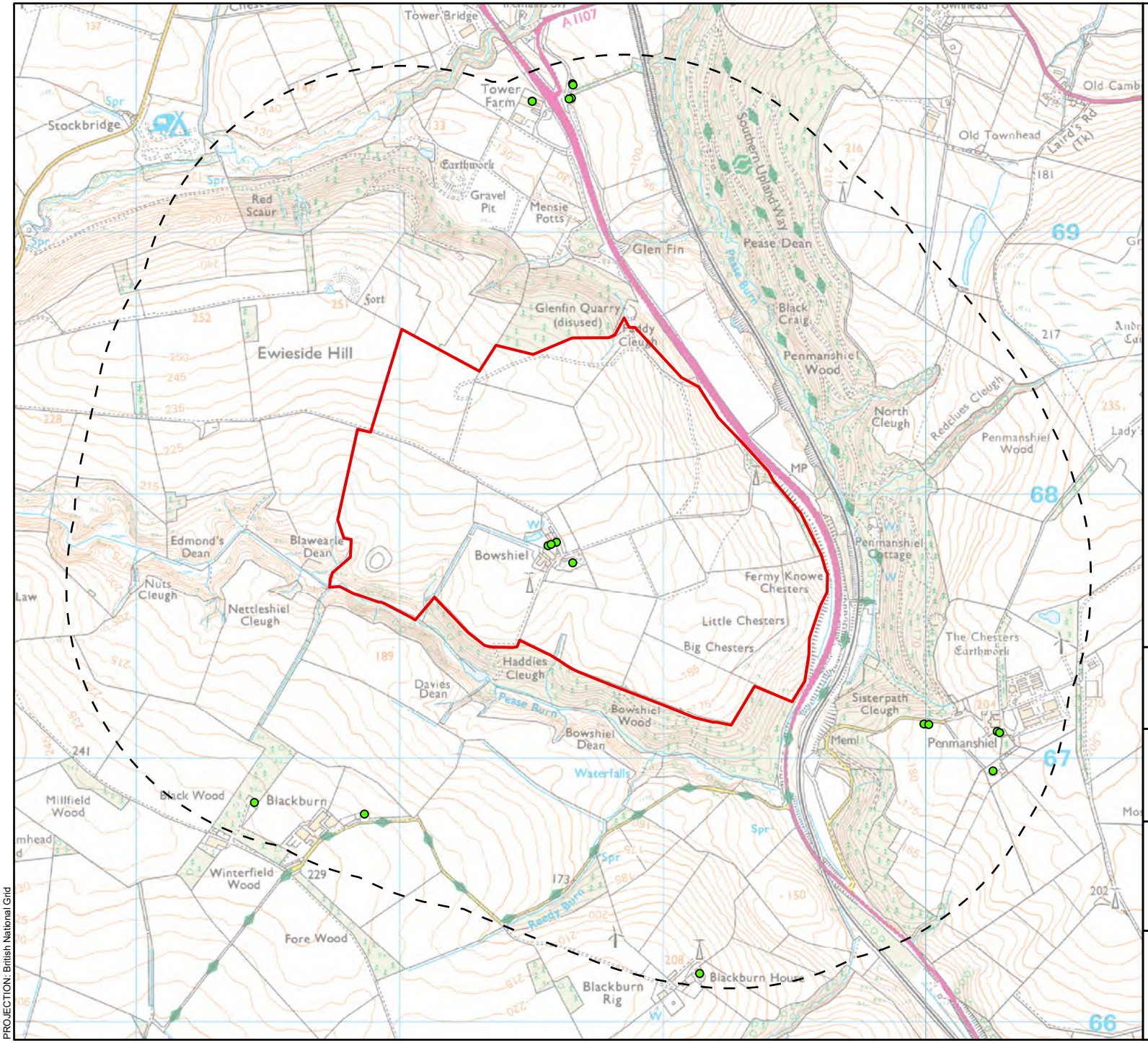
PROJECTION: WGS 1984 UTM Zone 30N

Path: \\uksprdgisfs01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733784 - Bowshiel - Hydrological Catchments - A01



Options Area

1 km Buffer

Noise Sensitive Receptor

0 200 400 600 800 1,000

Metres

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: VB
DATE: 13/09/2024	APPROVED: RO

Bowshiel Solar Farm and BESS
Scoping Report
Figure 11.1
Noise Sensitive Receptors

PROJECTION: British National Grid

Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733784 - Bowshiel\MAPS\0733784 - Bowshiel.aprx\0733745 - Bowshiel - NV - Noise Sensitive Receptors - A01