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Technical Appendix 4.1: EIA Scoping Report

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Springfield Solar Farm & Battery Energy Storage System (BESS)

EIA Scoping Report

PREPARED FOR

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Springfield Solar Farm & Battery Energy Storage System (BESS)

EIA Scoping Report

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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 165MW, Battery Electric 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 50m north of the village of Oldhamstocks at the closest point to the Proposed Development boundary ('the Site'). The closest infrastructure within the Proposed Development lies a greater distance from the village. 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 50m north of Oldhamstocks, and 7.8km southeast of Dunbar, centered on National Grid Reference ('NGR') NT 74514 71531. The closest infrastructure within the Proposed Development will lie a greater distance from the Village than the closest approach of the Proposed Development boundary. The Site will occupy an area of approximately 184 hectares (ha) and is wholly within the East Lothian 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 is centered on a ridge, rising to approximately 177m above ordinance datum (AOD). The site slopes to the north/northeast to approx. 85m AOD, as well as sloping to the south down to approx. 128m AOD at the southern boundary.

An existing 400 kV overhead power line (OHL) runs across the northeastern portion of the Site.

Settlements in the vicinity of the Site include:

- Oldhamstocks, 50m south of the Site;
- Bilsden, 0.86km east-northeast of the Site;
- Cockburnspath, 2km east of the Site;
- Innerwick, 2.4km north-northeast of the Site; and,
- Dunbar, 7.8km north-northwest of the Site.

Other sites of interest in the surrounding area include Torness Nuclear power station, approx. 2.5km north of the Site.

2.1.1 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.

2.1.2 ON-SITE SUBSTATION AND CABLING

The northern portion of field 5 (as shown in Figure 1.2) will contain the substation for the Proposed Development. The Proposed Development substation will have an approximate footprint of 40 x 80m. Immediately adjacent to the Proposed Development substation is a further substation planned by the network operator. This will have an approximate footprint of 80 x 80m. Further details of this substation are expected to be included in a separate planning application.

2.1.3 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 northern portion of Field 5. The BESS facility will have a footprint of approximately 245 x 68m. The BESS facility will be composed of containerised battery storage units.

2.1.4 ACCESS

Access to the Proposed Development is anticipated to be via the A1 at the Oldhamstocks Junction, then following the U219 Lawfield Road.

Where possible, to reduce the requirement for new field entrances, existing access points and tracks within the Site will utilise existing field entrances and trackways.

2.1.5 TEMPORARY CONSTRUCTION COMPOUND

A temporary construction compound will be located in the southern portion of field 5 (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.

2.1.6 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;
- Closed Circuit Television (CCTV) cameras, mounted on 4m poles.

2.2 DEVELOPMENT PHASES

2.2.1 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.

2.2.2 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.

2.2.3 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 potential 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 their 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 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.

3.9 CONSULTATION

Consultation with key stakeholders is an important component of a successful EIA process. This consultation ensures that all important information is assessed, and that the resulting EIAR is proportionate.

4. POLICY AND LEGISLATIVE CONTEXT

4.1 INTRODUCTION

National, regional, and local policies are relevant to the consideration of the Proposed Development. At all levels, policies are designed to protect, and where possible, appropriately enhance the environment. In undertaking an EIA, it is therefore important to identify those policies which are particularly relevant to the Proposed Development. This section of the Scoping Report aims to identify the relevant policies allowing policy context to be clear and provide the context for the Scoping Opinion.

A Planning Statement will accompany the application for consent for the Proposed Development.

4.2 CLIMATE CHANGE POLICY

The UK is a signatory to the Paris Climate Treaty[3] and this legally binding international accord is a significant driver of UK climate policy. Current UK Government policy is to achieve Net Zero greenhouse gas emissions by 2050 with that target set into law with the Climate Change Act 2008 (2050 Target Amendment) Order 2019[4].

4.2.1 CLIMATE CHANGE (SCOTLAND) ACT 2009

The Climate Change (Scotland) Act 2009[5] created the statutory framework for Green House Gas (GHG) emission reductions in Scotland by setting a target for net Scottish emissions for the year 2050 to be at least 80% lower than the 1990 baseline level with an interim target of a 42% reduction by 2020.

The 2009 Act also established Climate Change Duties required to be exercised by Public Bodies and which came into force in January 2011.

Subsequently, and based on advice from the UK Climate Change Committee (CCC) the Scottish Government introduced the Climate Change (Scotland) Act 2009 (Interim Target) Amendment Regulations 2023[6], which adjusted the interim 2020 target from 56% to 48.5%. It also revised down the annual targets for the 2020s in the lead up to the next key interim target of 75% in 2030.

[3] UN (2015). 'The Paris Agreement 2015' [Online] Available: https://unfccc.int/sites/default/files/english_paris_agreement.pdf (Accessed August 2024).
[4] UK Government (2019). 'The Climate Change Act 2008 (2050 Target Amendment) Order 2019' [Online] Available: https://www.legislation.gov.uk/uksi/2019/1056/contents/made. (Accessed August 2024).
[5] Scottish Government (2009). 'Scottish Government (2009) The Climate Change (Scotland) Act 2009'. [Online] Available: https://www.legislation.gov.uk/uksi/2019/1056/contents/made (Accessed August 2024).
[6] Scottish Government (2023). 'The Climate Change (Scotland) Act 2009 (Interim Target) Amendment Regulations 2023'. [Online] Available: https://www.legislation.gov.uk/sdsi/2023/9780111057247/data.pdf. (Accessed August 2024).

4.2.2 CLIMATE CHANGE (EMISSIONS REDUCTION TARGETS) (SCOTLAND) ACT 2019

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019[7] amends the Climate Change (Scotland) Act 2009 and introduces more ambitious GHG reduction targets. It commits Scotland to becoming a Net Zero society by 2045.

Interim targets introduced by the 2019 Act are:

- 56% reduction in emissions by 2020lower than the baseline (1990 being baseline)
- 75% reduction in emissions by 2030; and,
- 90% reduction in emissions by 2040.

4.2.3 CLIMATE EMERGENCY

In April 2019 the Scottish Government declared a climate emergency, which instigated a commitment to enforcing stronger climate change proposals and targets whilst delivering support to the transition to a low carbon economy.

4.2.3.1 EAST LOTHIAN COUNCIL CLIMATE EMERGENCY

A motion declaring a climate emergency was passed by East Lothian Council on August 27th 2019 with a call "*to make all our Council Services net Zero Carbon as soon as reasonably practicable or in any case by 2045 and to lobby, support and work with all relevant agencies, partners and communities to fulfil this commitment. East Lothian Council will also commit to work with our communities and partners towards making East Lothian a carbon neutral county as well as enabling the county to deliver its part of wider national and international commitments.*" [8]

4.3 ENERGY POLICY

4.3.1 THE ENERGY WHITE PAPER DECEMBER 2020

The UK Government published its Energy White Paper in December 2020, 'Powering our Net Zero Future'[9], this document set out the then current thinking on the way in which the UK should work towards meeting its Net Zero targets by 2050. It states that retiring base load generation capacity will need to be replaced, that the overall demand could double by 2050 and that in order to meet this demand there would need to be four times the current level of renewable electricity generation.

4.3.2 UK GOVERNMENT NET ZERO STRATEGY 2021

In October 2021 the UK Government published their Net Zero Strategy[10] which set out how the UK Government intends to halve UK emissions in slightly over a decade, and to eliminate

[7] Scottish Government (2019) 'Climate Change (Emissions Reductions Targets) (Scotland) (Act 2019)'. [Online]. Available: https://www.legislation.gov.uk/asp/2019/15/enacted. (Accessed August 2024).
[8] East Lothian Council (2019). 'East Lothian Council Climate Emergency Declaration'. [Online]. Available: Climate Emergency declared | East Lothian Council (Accessed August 2024)
[9] UK Government (2020). 'The Energy White Paper December 2020' [Online]. Available: https://www.gov.uk/government/publications/energy-white-paper-powering-our-net-zero-future (Accessed August 2024)
[10] UK Government (2021). 'UK Government Net Zero Strategy' [Online]. Available: https://www.gov.uk/government/publications/net-zero-strategy (Accessed August 2024).

them by 2050. It is highly likely that this document will be overhauled in the coming months as the new Government develops its clean energy and net zero policies.

4.3.3 UK ENERGY SECURITY STRATEGY 2022

The Energy Security Strategy[11] (ESS) was published in April 2022 amidst a great deal of uncertainty with the Russian invasion of Ukraine, the emergence of the UK from COVID 19 restrictions and the ongoing adaptation of the economy post Brexit.

Central to the strategy are its objectives to reduce the need for foreign energy imports; to see UK production and generation increase; and to maintain environmental standards. The ESS recognises that "*accelerating the transition from fossil fuels depends critically on how quickly we can roll out new renewables"*,

It goes on to state that "*We will also support solar that is co-located with other functions (for example, agriculture, onshore wind generation, or storage) to maximise the efficiency of land use. We have also included solar in the latest Contracts for Difference auction round and will include it in future rounds*".

It is worth noting that the delivery of the ESS will likely depend on the commitment by the UK Government to "*reduce consent time from up to four years down to one year*" and that pre-dates the newly elected Labour Government's stated mission to increase the scale of the renewables sector and to speed up implementation.

4.3.4 THE SCOTTISH ENERGY STRATEGY 2017: THE FUTURE OF ENERGY IN SCOTLAND

The Scottish Energy Strategy 2017: The Future of Energy In Scotland[12] outlines the vision for the future energy system in Scotland, up until 2050, with key priorities being the development of an integrated approach that considers both the use and supply of energy for heat, power and transport. It aims to strengthen the development of local energy projects, protect consumers and support the development of climate change policies. In addition, it states that Scotland's long term climate change targets will require the complete decarbonisation of its energy grid, with renewable energy therefore meeting a very significant share of the country's energy requirements.

4.3.5 DRAFT ENERGY STRATEGY AND JUST TRANSITION PLAN (JANUARY 2023)

Further support for large scale solar can be found in the draft Energy Strategy and Just Transition Plan for Scotland[13] which as a key ambition "*Increased contributions from solar… energy to our energy mix"*. It further states that "*Our aim is to maximise the contribution solar can make to a just, inclusive, transition to net zero. We will support the sector to minimise barriers to deployment wherever possible and continue to provide support through our renewable support schemes*".

[11] UK Government (2022). 'British Energy Security Strategy' [Online]. Available: https://www.gov.uk/government/publications/british-energy-security-strategy. (Accessed August 2024).
[12] Scottish Government (2017). 'The Scottish Energy Strategy: the future of energy in Scotland'. [Online] Available: https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2017/12/scottish-energy-strategy-future-energy-scotland-9781788515276/documents/00529523-pdf/00529523-pdf/govscot%3Adocument/00529523.pdf. (Accessed August 2024).
[13] Scottish Government (2023). 'Draft Energy Strategy and Just Transition Plan'. [Online] Available: https://www.gov.scot/publications/draft-energy-strategy-transition-plan/. (Accessed August 2024).

The draft Solar Vision for Scotland, contained in this document, lays out a strong supportive policy and enabling environment for additional solar energy developments, without naming specific targets for deployment.

4.4 PLANNING POLICY

4.4.1 OVERVIEW

National Planning Policy in Scotland is defined by the National Planning Framework 4 (published 13th February 2023)[14]. This is the national spatial strategy for Scotland and sets out the spatial principles, regional priorities, national developments and national planning policy.

The Planning (Scotland) Act 2019 introduced the concept of the Regional Spatial Strategy. These documents are not part of the Development Plan but are to be taken into account in the development of both the National Planning Framework and Local Development Plans. They are to be produced by local authorities, either collectively or in partnership with other authorities.

East Lothian has agreed to produce a Regional Spatial Strategy along with the other Lothian authorities, Scottish Borders Council and Fife Council.

An Interim Regional Spatial Strategy was produced in 2020 to assist the Scottish Government in the preparation of NPF4.

All planning authorities in Scotland are required to produce and maintain Local Development Plans to shape development in their authority areas.

The Local Planning Policy for East Lothian is defined by the East Lothian Council Local Development Plan[15], which is dated 27th September 2018.

The Local Development Plan 2[16] (LDP2) is in the early stages of development, with the Council seeking to gather evidence to inform the production of a new Plan. The Council expect to Adopt a new LPD in approximately Q1 of 2026.

4.4.2 NATIONAL PLANNING FRAMEWORK 4 (NPF4) (2023)

The NPF4 sets out the Scottish Government's planning policies for Scotland and how these are to be applied. National Policy now forms part of the Development Plan and takes precedence over the Local Development Plan where it postdates the Local Development Plan. This is of particular relevance to this application as the East Lothian Development Plan (see section 4.5 Local Policy Context) was adopted in 2018 with NPF4 coming into effect in 2023.

The National Planning Framework 4 identifies six overarching spatial principles, several of which are relevant to the Springfield Farm Solar PV and BESS development. These are:

- **Just transition.** We will empower people to shape their places and ensure the transition to net zero is fair and inclusive.

[14] Scottish Government (2023) 'National Planning Framework 4'. [Online]. Available at: https://www.gov.scot/publications/national-planning-framework-4/ (Accessed July 2024)
[15] East Lothian Council (2018) 'Local Development Plan' [Online]. Available at: https://www.eastlothian.gov.uk/info/210547/planning_and_building_standards/12242/local_development_plan (Accessed July 2024)
[16] East Lothian Council (2024) 'Local Development Plan 2'. [Online] Available at: https://www.eastlothian.gov.uk/info/210547/planning_and_building_standards/12726/ldp2_and_local_place_plans (Accessed July 2024).

- **Conserving and recycling assets.** We will make productive use of existing buildings, places, infrastructure and services, locking in carbon, minimising waste, and building a circular economy.
- **Rebalanced development.** We will target development to create opportunities for communities and investment in areas of past decline, and manage development sustainably in areas of high demand.
- **Rural revitalisation**. We will encourage sustainable development in rural areas, recognising the need to grow and support urban and rural communities together.

The aim of these principles is to support delivery of:

- **"*sustainable places,*** *where we reduce emissions, restore and better connect biodiversity;*
- ***liveable places,*** *where we can all live better, healthier lives; and*
- ***productive places,*** *where we have a greener, fairer and more inclusive wellbeing economy*."

4.4.2.1 NATIONAL DEVELOPMENTS

The NPF4 also identifies eighteen '*National Developments*' which are specifically supported by national planning policy.

National Development 3: '*Strategic Renewable Electricity Generation and Transmission Infrastructure*' supports "*On and off shore electricity generation, including electricity storage, from renewables exceeding 50 megawatts capacity*". This National Development is not geographically bound and applies throughout Scotland.

At +50MW capacity, the Proposed Development qualifies as a National Development under this policy.

4.4.2.2 REGIONAL PRIORITIES

The Proposed Development is located in the South region of Scotland as identified in NPF4.

Priorities for the South includes aiming to *"Protect environmental assets and stimulate investment in natural and engineered solutions to climate change and nature restoration..."* and to *"Support local economic development whilst making sustainable use of the area's world-class environmental assets to innovate and lead greener growth"*.

4.4.2.3 OTHER NPF4 POLICIES

In addition to the National Policies, the NPF4 lays out overarching detailed policies

Policy 1, Tackling the Climate and Nature Crises, states that *"When considering all development proposals significant weight will be given to the global climate and nature crises"*.

Policy 2, Climate Mitigation and Adaptation, intends to *"encourage, promote and facilitate development that minimises emissions…"* .

Policy 3, Biodiversity, states that *"Development proposals for national or major development, or for development that requires an Environmental Impact Assessment will only be supported where it can be demonstrated that the proposal will conserve, restore and enhance*

biodiversity, including nature networks so they are in a demonstrably better state than without intervention. This will include future management. To inform this, best practice assessment methods should be used. Proposals within these categories will demonstrate how they have met all of the following criteria:

1. *the proposal is based on an understanding of the existing characteristics of the site and its local, regional and national ecological context prior to development, including the presence of any irreplaceable habitats;*
2. *wherever feasible, nature-based solutions have been integrated and made best use of;*
3. *an assessment of potential negative effects which should be fully mitigated in line with the mitigation hierarchy prior to identifying enhancements;*
4. *significant biodiversity enhancements are provided, in addition to any proposed mitigation. This should include nature networks, linking to and strengthening habitat connectivity within and beyond the development, secured within a reasonable timescale and with reasonable certainty. Management arrangements for their long-term retention and monitoring should be included, wherever appropriate; and*
    i. *local community benefits of the biodiversity and/or nature networks have been considered."*

Policy 4, Natural Places, contains provisions designed to ensure that "*Natural places are protected and restored*" and that "*Natural assets are managed in a sustainable way that maintains and grows their essential benefits and services*". The policy includes specific provisions relating to developments affecting European Sites (Special Area of Conservation or Special Protection Areas), National Parks, National Scientific Areas, Sites of Special Scientific Interest or National Nature Reserves, Ramar Sites, Local nature conservation or landscape areas, protected species habitats, and '*wild land*'.

Policy 11, Energy, intends "*To encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage…*" etc.

Policy 26, Business and Industry, states that "*d) Development proposals for business, general industrial and storage and distribution uses outwith areas identified for those uses in the LDP will only be supported where:*

i. *It is demonstrated that there are no suitable alternatives allocated in the LDP or identified in the employment land audit; and*

ii. *The nature and scale of the activity will be compatible with the surrounding area."*

Policy 29, Rural Development, intends "*To encourage rural economic activity, innovation and diversification whilst ensuring that the distinctive character of the rural area and the service function of small towns, natural assets and cultural heritage are safeguarded and enhanced*".

4.4.3 REGIONAL POLICY CONTEXT

When considering '*Adaptation, a more resilient region*', the Regional Spatial Strategy for Edinburgh and South East Scotland City Region states with regards to renewable energy opportunities including solar that this "*should be promoted and linked in with future investment and development. The necessary transition to a greener economy will be pursued in a 'just' manner to avoid further exacerbating rural inequality…*".

4.4.4 EAST LOTHIAN LOCAL DEVELOPMENT PLAN

The Local Planning Policy context consists of the East Lothian Local Development Plan[15]. Given the scale of the proposals for the Development, the Council is not the decision maker, but it is an important consultee and its LDP is an important source of policy that will have to be given due regard as such compliance with it will assist in gaining consent from Scottish Ministers.

The LDP sets out its vision for East Lothian which includes a range of objectives that will work towards sustainable development. The policies in the document aim to support growth whilst protecting those characteristics that make East Lothian special.

The Plan includes the following policies of relevance to the Proposed Development as identified against the relevant EIA topic.

4.4.4.1 SUSTAINABILITY & CLIMATE CHANGE

- Policy SEH1: Sustainable Energy and Heat

"The Council supports the principles of the 'energy hierarchy' and promotes energy-efficient design in new development. The council supports the principle of combined heat and power schemes and energy generation from renewable or low carbon sources".

- Policy EGT4: Enhanced High Voltage Electricity Transmission Network

"The council supports enhancement of the high voltage electricity transmission network in locations defined by operational requirements, subject to acceptable impacts on the landscape, visual amenity, communities, natural and cultural heritage and the provision of appropriate mitigation where required.

The network infrastructure is identified on Strategy Diagram 3 elements of which, including strategic reinforcement points, will likely be subject of some upgrading during the lifetime of this plan. Development consisting of new and/or upgraded transmission lines, substations and transformer stations to enhance the network is designated as a national development in National Planning Framework 3.

The council will not support development proposals which could prejudice the implementation of the enhancements. The council will expect the removal of power lines which become redundant as a consequence of enhancements to the network."

4.4.4.2 RELEVANT OTHER LDP POLICIES

Traffic & Transport

- Policy T1: Development Location and Accessibility
- Policy T2: General Transport Impact
- Policy T4: Active Travel Routes and Core Paths as part of the Green Network Strategy

Socio-economics

- Policy DC1: Rural Diversification

Ecology, Ornithology & Biodiversity

- Policy NH2: Protection of Sites of Special Scientific Interest and Geological Conservation Review Sites

- Policy EH3: Protection of Local Sites and Areas
- Policy NH4: European Protected Species
- Policy NH5: Biodiversity and Geodiversity Interests, including Nationally Protected Species
- Policy DC10: The Green Network

Landscape & Visual

- Policy DC6: Development in the Coastal Area
- Policy DC9: Special Landscape Areas
- Policy DP1: Landscape Character

Geology & Soils

- Policy NH6: Geodiversity Recording and Alternative Exposures
- Policy NG7: Protecting Soils

Arboriculture

- Policy NH8: Trees and Development

Water Resources & Flood Risk

- Policy NG9: Water Environment
- Policy NH10: Sustainable Drainage Systems
- Policy NH11: Flood Risk

Air Quality

- Policy NH12: Air Quality

Noise

- Policy NH13: Noise

Cultural Heritage

- Policy CH1: Listed Buildings
- Policy CH2: Development Affecting Conservation Areas
- Policy CH4: Scheduled Monuments and Archaeological Sites
- Policy CH5: Battlefields

4.4.5 EAST LAMMERMUIR LOCAL PLACE PLAN 2024-2034 (JUNE 2024)

Local Place Plans are community-led plans that allow community bodies to actively plan for their future. The East Lammermuir Local Place Plan sets out the concerns and priorities of the community, grouped into three strands: Getting Around, Our Places, and The Land. The East Lammermuir Local Place Plan also includes an action plan structured around the three strands.

The Plan identifies the transition to net zero and its impact on the area as an overarching theme stating that "*Decarbonising the energy grid is a key concern in East Lammermuir, in the context of large scale energy infrastructure projects*". Community priorities in relation to "*managing change in the just transition*" are identified as follows:

- Meaningful consultation and joined up approach to developments;
- Information about the long-term impacts – including how to recycle the infrastructure;
- Planning traffic management – with advance communication on many channels, to be agreed with the community;
- Charter which commits the developers to ongoing, meaningful consultation and information sharing;
- Balance between energy infrastructure and environmental impact;
- Energy companies commit to jobs and opportunities to young people locally; and,
- Understanding of the environmental impact on the landscape and coast.

4.5 LEGISLATIVE CONTEXT

4.5.1 THE ELECTRICITY ACT 1989 AND THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) 2017.

The application is over 50MW and therefore an application under section 36 of the Electricity Act 1989[17] with the relevant EIA regulations being the Electricity Works (EIA) (Scotland) 2017[18] and will be considered by the Scottish Government's Energy Consents Unit (ECU).

The ECU is part of the Scottish Government's Energy and Climate Change Directorate. The ECU is responsible for processing energy applications for Scottish Ministers under The Electricity Act 1989. Scottish Ministers are responsible for approving applications to build, operate or modify onshore electricity generating stations with capacities exceeding 50 megawatts, as well as all applications to install overhead power lines, large oil and gas pipelines, and associated infrastructure. 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')[19].

[17] UK Government (1989). ' Electricity Act 1989 (As amended 2021)' [Online] Available: https://www.legislation.gov.uk/ukpga/1989/29/section/36. (Accessed July 2024).
[18] UK Government (2017). 'Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017' [Online] Available: https://www.legislation.gov.uk/ssi/2017/101/contents/made
[19] Scottish Government (1997) Town and Country Planning (Scotland) Act 1997. [Online] Available at: https://www.legislation.gov.uk/ukpga/1997/8/contents (Accessed 04/06/2024)

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

5.2.1 SITE CONTEXT

The Site is located within a transitional landscape of undulating small hills between the north-eastern end of the Lammermuir Hills and the sea; it lies in East Lothian, close to the boundary of the Scottish Borders. There are scattered properties and small settlements near the Site, including Oldhamstocks, Hoprig and Cockburnspath. A network of winding minor roads provides local access, whilst the A1 and East Coast Main Line railway route past the Site 0.9km to the north-east and facilitate major transport connections. There are small wind farms located within 2km to the south of the site, and larger schemes on the Lammermuir Hills beyond 3km to the south-west. Torness Nuclear Power Station is located 2.5km north. Within 2km of the Site, a network of Core Paths route east to west to connect the minor inland settlements with those on the coast; a Core Path routes through the southern part of the Site connecting Oldhamstocks to Dunglass. The Southern Upland Way and Berwickshire Coast Path route from the south-east and terminate at Cockburnspath.

5.2.2 LANDSCAPE CHARACTER

In the absence of solar specific landscape capacity or landscape sensitivity studies, the character areas identified in the East Lothian Special Landscape Areas (SLA) Supplementary Planning Guidance (SPG) will be used to identify the landscape character areas (LCAs) within the study area. The majority of the Site lies within the Innerwick Coast LCT, with the southern end of the Site near Oldhamstocks in the Eastern Lammermuir Fringe LCT.

The study area extends into the adjacent Scottish Borders, where the NatureScot 2019 landscape character assessment forms the most recent study of the area and will be used to identify the landscape character types (LCTs) within the study area.

5.2.3 LANDSCAPE DESIGNATIONS

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

Locally designated landscapes within 2km of the Site are shown on Figures 5.1, 5.2 and 5.3. The following areas are likely to have visibility of the Proposed Development and will be considered within the assessment:

- SLA4: Monynut to Blackcastle (partially within Site); and,
- SLA30: Thorntonloch to Dunglass Coast (0.8km, east).

SLA36: Berwickshire Coast (1.6km, east) would not have visibility of the Proposed Development within 4.5km of the Site. It is considered that significant effects are unlikely to occur on this SLA and it is proposed to be scoped out of the assessment.

Within 2km of the Site Dunglass Garden and Designed Landscape (GDL) is located just within, and adjacent to, parts of the southern and eastern boundaries of the Site. 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 will be considered in the Landscape and Visual Impact Assessment (LVIA).

5.2.4 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 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/seascape 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.

5.4 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; and 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.

There are woodlands near the Site in most directions and the topography falls to the coast in the north and east and becomes more undulating towards the Lammermuir Hills in the south and west. The main areas of visibility would arise within 1km to the north, less than 500m to the east and south and 1.5km to the west of the Proposed Development. Beyond these areas, woodland would fragment the extent of theoretical visibility, with the hills to the south and west limiting visibility beyond and providing occasional vantage points where views towards the Proposed Development would arise.

Beyond 2km the extent of theoretical visibility is increasingly fragmented, and the Proposed Development would form a more minor feature within the wider view. Whilst there is visibility in some directions beyond 2km, 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 at 5.4.1 above and informed by the baseline studies described at 5.2.2 above.

The assessment of effects on landscape designations will consider changes to the special qualities of the designations as set out in East Lothian Special Landscape Areas (SLA) Supplementary Planning Guidance (SPG).

5.4.4 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 Table 5.1.

TABLE 5.1 PROPOSED VIEWPOINTS

VP	Location	Distance, direction	Receptors
1	Local Road between A1 and Oldhamstocks	0.0km, N	Local road users
2	Near A1	0.8km, NE	Rail and road users, local residents, visitors to SLA.
3	Core Path through Dunglass GDL	0.5km, E	Residents, local road users, Core Path users, visitors to the GDL.
4	Hoprig	0.9km, S	Residents, local road users.
5	Local Road southeast of Oldhamstocks	0.6km, S	Residents, local road users.
6	Corepath near Oldhamstocks	Within Site	Core Path users.
7	Local road near Dirtside	0.2km, W	Residents, local road users, visitors to SLA.
8	Cocklaw Hill Core Path	1.6km, W	Core Path users, visitors to SLA.

5.4.5 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.

5.4.6 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 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

An initial search indicates that East Lothian planning applications 23/00616/PM and 23/00162/PPM which both relate to electrical infrastructure are likely to require consideration within the cumulative assessment.

5.4.7 RESIDENTIAL VISUAL AMENITY

Oldhamstocks Mains Farm lies within the centre of the Site and the Proposed Development has been designed with sufficient offsets around the property, taking into account existing screening. Beyond the Site boundary the nearest properties to the Site lie approximately 100m from the proposed development areas. It is atypical for properties at this distance to reach the Residential Visual Amenity Assessment (RVAA) threshold[20] for solar developments, and it is proposed that 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 assessment:

- All landscape and visual receptors beyond 2km of the Proposed Development;
- SLA36: Berwickshire Coast (1.6km, east);
- Effects on residential visual amenity; and,
- Landscape and visual receptors within the 2km study area where there would be no visibility of the Proposed Development.

5.7 CONSULTATION AND QUESTIONS FOR CONSULTEES

5.7.1 CONSULTATION TO DATE

Consultation for this Scoping Report in relation to landscape and visual effects has not yet been undertaken. Following receipt of the Scoping Opinion, consultation will be undertaken with the relevant parties, as appropriate.

5.7.2 QUESTIONS FOR CONSULTEES

- Do you agree that the relevant guidance has been identified to inform the assessment approach?
- Is the proposed 2km study area adequate to identify all potentially significant effects?
- Do you agree that the relevant baseline studies have been identified to inform the assessment of effects on landscape character and designations?

[20] 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."*

- Do you agree with the list of receptors to be scoped out?
- Do you agree with the proposed viewpoint locations?
- Are there any cumulative developments in planning or pre-application not listed above which you consider should be included?
- Do you agree that a residential visual amenity assessment is not required for this development?

6. ARCHAEOLOGY AND CULTURAL HERITAGE

6.1 INTRODUCTION

The Cultural Heritage and Archaeology chapter of the EIA Report will be supported by appropriate figures and visualisations and will be prepared by a certified 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:

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

The Cultural Heritage and Archaeology Assessment will consider Direct Physical Impacts, Indirect Physical Impacts, Setting Impacts and Cumulative Impacts upon cultural heritage.

6.2 BASELINE CONDITIONS

6.2.1 STUDY AREAS: DIMENSIONS AND RATIONALE

To assess potential Direct/Indirect Physical Impacts, Setting Impacts and Cumulative Impacts on the historic environment, three study areas have been established:

- the Site Study Area;
- 1 km Study Area; and,
- 3 km Study Area.

6.2.1.1 THE SITE STUDY AREA

The Site Study Area (Figure 6.1) will be used to identify potential Direct Physical Impacts. This Study Area includes the land within the Site Boundary.

6.2.1.2 THE 1KM STUDY AREA

The 1 km Study Area (Figure 6.2) will be used to identify potential Direct and Indirect Physical Impacts. This Study Area takes in the land within 1 km of the Site Boundary. The wider historic environment will be considered as and when pertinent to the Proposed Development.

6.2.1.3 THE 3KM STUDY AREA

The 3 km Study Area (Figure 6.3) will take in land within 1 - 3 km of the Site boundary and will be used to identify potential Setting Impacts to Designated assets, as well as any sensitive non-designated assets identified through consultation with East Lothian Council (ELC). For heritage assets located within the 3 km Study Area, a sieving exercise will be undertaken to determine those to be included within the setting assessment. A table listing assets for inclusion or exclusion within the forthcoming setting assessment will be provided to stakeholders, along with a rationale for any decisions made. The 3 km 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 3 km that fall within a shared bare earth ZTV, as well as heritage receptors specifically identified for inclusion within any cumulative assessment by HES and the ELC.

The 3 km Study Area will also serve as the initial extent of any assessment of Cumulative Impacts. Again, the 3 km Study Area will not be used as an arbitrary cutoff point for assessing these impacts. Due consideration will be given to developments beyond 3 km that fall within a shared bare earth ZTV, as well as developments specifically identified for inclusion within any cumulative assessment by HES and the ELC.

6.2.2 ASSETS WITHIN THE SITE STUDY AREA

Within the Site Study Area, there are two designated assets consisting of:

- one Scheduled Monument; and,
- one Conservation Area.

Additionally, Dunglass Garden and Designed Landscape (GDL) is located just within, and adjacent to, parts of the southern and eastern boundaries of the Site.

6.2.2.1 SCHEDULED MONUMENTS

A cluster of prehistoric settlement sites are located between Innerwick to the West and Dunglass to the East. Assets within this cluster are part of a wider prehistoric landscape encompassing the area around the Site. Notably, one of these assets, Oldhamstocks Mains enclosure (SM5891) is located within the site boundary.

6.2.2.2 CONSERVATION AREAS

Oldhamstocks Conservation Area (CA288) is located within the Site boundary. The Conservation Area encompasses a small village, located in Oldhamstocks burn valley at the eastern end of the Lammermuir Hills. The village itself dates to the Medieval period with physical remains dating to the 14th Century and documentation supporting a 12th century origin. The oldest surviving remains in the village consist of the Parish Church and Graveyard (LB14710) and the Watch House (LB14710), both of which are grade A listed. In total, the CA contains 10 Listed Buildings. The Conservation Area extends beyond the Site Study Area and into the 1 km Study Area.

6.2.2.3 GARDENS AND DESIGNATED LANDSCAPES

Dunglass Garden and Designed Landscape (GDL00154) is located just within the southern and eastern Site boundary. The GDL encompasses Dunglass House and associated designed landscape whose origins date back to the medieval period. The present landscape was laid out between 1776 and 1832 and incorporated an earlier landscape with existing house and church.

Within the GDL, Dunglass House stands on the site of its predecessors. The first structure to be erected here was the original Dunglass Castle, built in the 14th century by Sir Thomas Home. In 1403, the Collegiate Church was built nearby by Sir Alexander Home. Over the subsequent centuries, the grounds changed hands, and both the castle and its subsequent replacement house were destroyed. In 1680, the estate was purchased by John Hall, Provost of Edinburgh who designed the estate landscape into what can be seen today. This was once described as one of Scotland's finest examples of late 18th century landscape design.

Although many of the core features have been lost, the estate retains many of its historical buildings such as the walled garden. In total, the GDL contains 15 Listed Buildings. The GDL extends beyond the Site Study Area and into the 1 km Study Area.

6.2.2.4 NON-DESIGNATED HERITAGE ASSETS

There are six non-designated HER and Canmore assets located within the Site Study Area, with assets dating from the Early Prehistoric to Modern periods. These consist of:

- four possibly prehistoric enclosures; and,
- two post-medieval farmhouses.

Prehistoric non-designated assets within the Site Study Area can be seen predominantly located on areas of higher ground. Together with nearby Scheduled Monuments, these assets may suggest a wider prehistoric landscape, of settlement, ritual and funerary use of this coastal region.

The two possible post-medieval farmhouses within the Site Study Area support post-medieval-modern agricultural use of the area.

6.2.3 ASSETS WITHIN THE 1KM STUDY AREA

Within the 1 km Study Area, there are 32 designated assets consisting of:

- eight Scheduled Monuments; and,
- 24 Listed Buildings (within which there are four Category A Listed assets).

6.2.3.1 SCHEDULED MONUMENTS

The eight Scheduled Monuments (SM5892, SM5893, SM5894, SM5890, SM5850, SM5876, SM5958, SM3191) within the 1 km Study Area consist mainly of early to late prehistoric domestic and defensive sites, which are distributed across the area between Blackcastle Hill and the coast to the north. This cluster of assets are part of a prehistoric landscape. In addition to these prehistoric settlement sites, a 16th Century French camp and one late medieval defensive settlement are recorded.

6.2.3.2 LISTED BUILDINGS

There are four Category A Listed Buildings (B14710, LB14710, LB14710, LB14725) and 20 Category B and C Listed Buildings within the 1 km Study Area, most of which date to the post-medieval period. The listed buildings within the 1 km Study Area are mainly clustered around the areas of Dunglass and Oldhamstocks and typically date to the 19th Century and later. They comprise country houses, associated estate buildings and churches as well as 19th-century agricultural improvements and rural industry in the form of mills and quarries.

6.2.3.3 NON-DESIGNATED HERITAGE ASSETS

There are 125 non-designated HER and Canmore assets located within the 1 km Study Area, with assets dating from the early prehistoric to modern periods.

Within the wider 1 km Study Area, there are at least 14 heritage assets dating to the early and late prehistoric periods, consisting of settlement and subsistence sites as well as ritual and funerary monuments. This includes a long cist cemetery, a barrow and multiple prehistoric enclosures. These assets, although widely distributed in the landscape, are mainly clustered around settlement areas such as Oldhamstocks and Dunglass as well as seen in higher concentrations along waterways such as Oldhamstocks burn.

Within the 1 km Study Area there is one asset that may date to the medieval period, Oldhamstocks Black Castle. Although no longer extant above-ground, this asset evidences a medieval presence in the region between the uplands to the south and the coast to the north. Documentary sources also evidence possible medieval origins for Dunglass estate, which is located within the 1 km study area.

The remaining assets within the 1 km Study Area are predominantly post-medieval in date, consisting of townships, farmsteads and associated infrastructure as well as bridges, mills and quarry sites. These assets provide evidence of the local rural economy in the area throughout the period.

6.2.4 DESIGNATED ASSETS WITIN 3KM STUDY AREA

Within the 3 km Study Area, there are 50 designated assets consisting of:

- nine Scheduled Monuments;
- 39 Listed Buildings (within which there are five Category A Listed assets); and,
- a further two Conservation Areas.

6.2.4.1 SCHEDULED MONUMENTS

The Scheduled Monuments within the 3 km Study Area which consist of mainly early to late prehistoric domestic and defensive sites are distributed across the area between Blackcastle Hill and the coast to the north. A cluster of these settlement sites are located between Innerwick to the West and Dunglass to the East. Assets within this cluster may form part of a larger prehistoric landscape within the Site environs.

6.2.4.2 LISTED BUILDINGS

There are five Category A Listed Buildings (LB4046, LB4047, LB4129, LB4129, LB14731) and 34 Category B and C Listed Buildings within the 3 km Study Area, most of which date to the post-medieval period. These assets are made up of transport infrastructure such as bridges and roads, public buildings such as churches, private houses and lodges, farmhouses and assets associated with country houses and estates such as gate piers, stables and mills. Many of these assets are associated with Oldhamstocks CA and Dunglass GDL.

6.2.4.3 CONSERVATION AREAS

A further two Conservation Areas sit within the 3 km Study Area, these are Cockburnspath CA (CA596) located to the northeast and Innerwick CA (CA285) located to the northwest of the Proposed Development. Both of these areas encompass traditional Scottish settlements which retain many historic features.

See Appendix A Cultural Heritage Baseline for further information on assets within the 3 km Study Area.

6.3 POTENTIAL ENVIRONMENTAL IMPACTS AND 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 boundary are likely to experience Direct/Indirect impacts as a result of the Proposed Development.

As such, there is the potential for Direct/Indirect physical impact upon the following assets which are located within the Site boundary:

- one Scheduled Monument, Oldhamstocks Mains Enclosure (SM5891);
- one Conservation Area, Oldhamstocks (CA288);
- four non-designated possibly prehistoric enclosures; and,
- two non-designated post-medieval farmhouses.

Assets located within the 1 km Study Area are considered to be more susceptible to Indirect impact as a result of the Proposed Development (such as through vibration, dust etc.). Assets within this Study Area comprise primarily of prehistoric Scheduled Monuments, post-medieval-modern Listed buildings as well as 125 non-designated HER and Canmore assets dating from the early prehistoric to modern periods.

Dunglass Garden and Designed Landscape (GDL) is located just within, and adjacent to, parts of the southern and eastern boundaries of the Site. Consultation with the Local Planning Authority and Historic Environment Scotland is required to determine the true extent of the GDL and ascertain its relationship with the Proposed Development boundary. However, as there is no anticipated infrastructure within this area, there are no expected direct impacts to the GDL.

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

6.3.1.1 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 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.

Given the location of the proposed Site infrastructure at the point of Scoping, any Direct/Indirect Physical impacts are not expected to be significant, should suitable mitigation measures be put in place.

6.3.2 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 3 km Study Area.

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

6.3.3 CUMULATIVE IMPACTS

Cumulative Impacts typically occur during the construction and operational phases of a project. There is the potential for cumulative impacts to occur as a result of Setting Impact interactions with other developments.

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

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[21];
- The Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997[22]; and,
- The Historic Environment Scotland Act 2014[23].

6.4.2 POLICY AND GUIDANCE CONTEXT

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

[21] 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)
[22] 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)
[23] 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)

- Planning Advice Note (PAN) PAN 2/2011: Planning and Archaeology[24];
- The East Lothian Development Plan Scheme 14 (2022/23), 2022[25];
- CIfA Standards and Guidance for Desk-Based Assessments (2020)[26];
- Our Place in Time: The Historic Environment Strategy for Scotland (2014)[27];
- HES. Managing Change in the Historic Environment Series, specifically 'Managing Change in the Historic Environment: Setting (2016)[28]'
- Scottish Natural Heritage (now known as NatureScot) and Historic Environment Scotland (HES) EIA Handbook (2018)[29];
- Historic Environment Policy for Scotland (HEPS, 2019)[30];
- Scotland's Fourth National Planning Framework (NPF4)[31]; and,
- ALGAO Scotland: Delivery of Public Benefit and Social Value for Archaeology in the Planning Process (2023)[32];

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. Data will be gathered from the following sources:

- Historic Environment Scotland (HES) Datasets including:
  - Canmore Archaeological Records;
  - Database of World Heritage Sites;

[24] 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)
[25] East Lothian Council (2022) *Development Plan Scheme 14* [Online] Available at: https://www.eastlothian.gov.uk/downloads/file/33521/development_plan_scheme_14_2022 (Accessed 08/07/2024)
[26] 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)
[27] 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)
[28] 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)
[29] 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)
[30] 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)
[31] 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)
[32] 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)

  - Database of Scheduled Monuments;
  - Database of Listed Buildings;
  - Database of Inventoried Garden and Designed Landscapes;
  - Database of Inventoried Battlefields;
  - ELCs Historic Environment Record (HER);
  - ELCs catalogue of Special Landscape Areas (SLA); and,
  - Scottish Landscape Character Types.
- Aerial photographs and other cartographic information detailing previous land uses;
  - The Statistical Accounts of Scotland;
  - The National Records of Scotland;
  - Conservation Area Appraisals and maps as held by the ELC;
  - 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; and,
  - Published and grey literature archaeological journals and monographs.
- 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 boundary, 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, for example as a result in 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 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 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, taking in the uplands of the Proposed Development Site or views across the Site; and,
- an asset's setting, and cultural significance, is 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.

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 and historic landscape recording and the dissemination of the results of these works.

6.5.2 SETTING IMPACTS

The production of the EIA Report and mitigation process is iterative. The first phase of mitigation to any possible Setting Impacts will be through 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 EIA report.

Proposed Scope of EIA Chapter Table 6.1 contains a list of all environmental factors relating to cultural heritage and archaeology that will be **scoped in** to or **scoped out** of the assessment.

TABLE 6.1 ENVIRONMENTAL FACTORS TO BE SCOPED IN OR OUT OF THE ASSESSMENT

Environmental Receptor, Assessment or Effect	Scoped In/Out	Rationale
Direct Physical Impacts to Heritage Assets within the Site boundary.	Scoped In	Direct physical impacts to heritage assets as a result of the Proposed

Environmental Receptor, Assessment or Effect	Scoped In/Out	Rationale
		Development are considered possible and would have a significant impact if identified.
Indirect Physical Impacts to Heritage Assets within 1 km	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 3 km Study Area.	Scoped In	Additional assets beyond 3 km 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 3 km Study Area, with inclusion for assessment decided following consultation and sieving exercise.	Scoped In	Additional assets beyond 3 km 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.
The Cumulative Effect of the Proposed Development in conjunction with other developments within 3 km.	Scoped In	Additional developments beyond 3 km 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.
Assessment of the direct physical impacts to heritage assets outwith the Site, with the exception of designated	Scoped Out	Significant, direct physical impacts to heritage assets outwith the Site are considered unlikely.

Environmental Receptor, Assessment or Effect	Scoped In/Out	Rationale
assets such as bridges along transport routes.		
Indirect physical impacts to heritage assets outwith the 1 km 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.
Setting Impacts to Category B and C Listed Buildings within 3 km 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.

6.6 CONSULTATION AND QUESTIONS FOR CONSULTEES

6.6.1 CONSULTEES

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

- ELC Historic Environment Team; and
- HES.

6.6.2 QUESTIONS FOR CONSULTEES

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

- Do Consultees agree with the proposed methodology and scope of assessment?
- 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?
- Are Consultees aware of any further sites with statutory protection within the wider landscape whose settings may be affected by the Proposed Development?
- 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?

- 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 and ornithological interests (including ornithology) present within the Site and the surrounding area. This includes any locally, 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 (EIA) Report.

7.2 BASELINE CONDITIONS

7.2.1 DESIGNATED SITES

An initial search of protected areas using NatureScot's SiteLink[33] identified 17 nature conservation designations with ecological interests within 20 km of the Site. The 20 km search buffer was selected using professional judgement, as it is considered the maximum distance that a mobile species, including pink-footed goose (*Anser brachyrhynchus)* may be significantly affected by a development of this type and scale. The Proposed Development is outwith any sites designated for ecological interests. There are two Special Areas of Conservation (SACs), four Special Protection Areas (SPA), one Ramsar site, and 12 Sites of Special Scientific Interest (SSSI) with ecological interests within 20 km of the Site. These sites are detailed in Table 7.1, overleaf, and on Figure 7.1**.**

[33] NatureScot. SiteLink. [Online] Available at: SiteLink - Home (nature.scot) (Accessed 25 July 2024)

TABLE 7.1 STATUTORY DESIGNATED SITES WITH ECOLOGICAL INTERESTS WITHIN UP TO 20 KM OF THE PROPOSED DEVELOPMENT

Name	Designation	Distance from Site	Qualifying Features
Outer Firth of Forth and St. Andrew's Bay Complex	SPA	1.2 km northeast	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*) • 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*)

Name	Designation	Distance from Site	Qualifying Features
			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
Pease Bay Coast	SSSI	1.7 km east	The Site is designated for the following features: • The range of para-maritime cliff-slope grassland communities. • Saltmarsh
Barns Ness Coast	SSSI	2.1 km north	The Site is designated for the following features: • Variety of coastal habitats, including shingle and sandy shores, sand dunes and rocky stacks. • The mineral enriched dune grassland • Saltmarshes and shingle • Wildflowers

Name	Designation	Distance from Site	Qualifying Features
			• Birds • Invertebrates including, butterflies and day flying moths
Lammermuir Deans	SSSI	3 km southwest	The site is designated for the following features: • Upland mixed ash (*Fraxinus excelsior*) woodland • Subalpine calcareous grassland • Valley fen
Pease Bridge Glen	SSSI	4.1 km southeast	The site is notified for its diverse intact ancient woodlands and its nationally important bryophyte flora.
Woodhall Dean	SSSI	4.8 km west	Woodhall Dean SSSI is designated for the following features: • Broadleaved, mixed and yew (*Taxus baccata*) woodland. • Upland oak (*Quercus robur*) woodland.
River Tweed	SAC	6.2 km southwest	Annex I Habitats that are a primary reason for selection: • Water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitrichio-Batrachion* vegetation (Rivers with floating vegetation dominated by water crowfoot) Annex II species that are a primary reason for selection: • Otter (*Lutra lutra*) • Atlantic salmon (*Salmo salar*)

Name	Designation	Distance from Site	Qualifying Features
			Annex II species present as a qualifying feature, but not a primary reason for selection: • Sea lamprey (*Petromyzon marinus*) • Brook lamprey (*Lampetra planeri*) • River lamprey (*Lampetra fluviatilis*)
Abbey St. Bathans Woodland	SSSI	6.9 km south	The site is a composite site comprised of seven woodland compartments. This has been designated for the following natural features: • Upland oak woodland • Lichen assemblage.
St. Abb's Head to Fast Castle	SPA	7.4 km southeast	St. Abb's Head to Fast Castle SPA qualifies under article 4.2 by regularly supporting more than 20,000 seabirds. The site regularly supports 79,560 seabirds including nationally important populations of the following species: • Razorbill • Common guillemot • Black-legged kittiwake • Herring gull • European shag
Rammer Cleugh	SSSI	7.7 km west	Rammer Cleugh SSSI is designated for: • Woodlands

Name	Designation	Distance from Site	Qualifying Features
			• Upland oak woodland
River Tweed	SSSI	8.2 km south	The site is notified for the following natural features: • Trophic range river/stream • Vascular plant assemblage • Atlantic salmon • Brook lamprey • River lamprey • Sea lamprey • Otter • Beetle assemblage • Fly assemblage.
St. Abb's Head to Fast Castle	SAC	8.3 km southeast	Qualifying interests for which the site is designated: • Vegetated sea cliffs of the Atlantic and Baltic Coasts.
St. Abb's Head to Fast Castle	SSSI	8.3 km southeast	The series of sea cliffs and wave-cut platforms present an outstanding diversity of habitats including scrub woodland, tall herb grassland, coastal grassland, coastal heath, running and standing water, flushes, rock face seepage, and splash zone communities on variety of rock and soil types. Of particular interest is the coastal grassland and heath. Over 260 plant species have been recorded from the site including several which are rare in southeast Scotland or are at the edge of their British distribution.

Name	Designation	Distance from Site	Qualifying Features
			The coastal cliffs rise to 150 m in places and support the largest mainland breeding seabird site between Angus and Yorkshire. The site is a good landfall for autumn and spring passage migrants.
Firth of Forth	Ramsar	8.5 km northwest	The Firth of Forth site qualifies under Ramsar Criterion 2 by supporting: • Red-throated diver • Golden plover (*Pluvialis apricaria)* Firth of Forth Ramsar site qualifies under Ramsar Criterion 5 by regularly supporting waterbirds in numbers of 20,000 individuals or more. The site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Scaup (*Aythya marila*) • Great crested glebe (*Podiceps cristatus*) • Cormorant (*Phalacrocorax carbo*) • Curlew (*Numenius arquata*) • Eider • Long-tailed duck • Common scoter • Velvet scoter • Red-breasted merganser

Name	Designation	Distance from Site	Qualifying Features
			• Oystercatcher (*Haematopus ostralegus*) • Ringed plover (*Charadrius hiaticula*) • Grey plover (*Pluvialis squatarola*) • Dunlin (*Calidris alpina alpina*) The assemblage additionally included nationally important populations greater than 2,000 individuals of: • Mallard (*Anas platyrhynchos*) • Lapwing (*Vanellus vanellus*) • Wigeon (*Anas Penelope*) The site also qualifies under Ramsar Criterion 6 by regularly supporting 1 % or more of the individuals in a population of waterbirds: • Slavonian grebe • Pink-footed goose (*Anser bracyrhynchus*) • Shelduck (*Tadorna tadorna*) • Knot (*Calidris calidris*) • Redshank (*Tringa tetanus*) • Turnstone (*Arenaria interpres*) • Goldeneye

Name	Designation	Distance from Site	Qualifying Features
			• Bar-tailed godwit (*Limosa lapponica)* • Sandwich tern (*Sterna sandvicensis*)
Firth of Forth	SPA	8.5 km northwest	The Firth of Forth SPA qualifies under article 4.1 by regularly supporting populations of European importance of the following Annex I species: • Red-throated diver • Slavonian grebe • Golden plover • Bar-tailed godwit The firth of forth qualifies under Article 4.1 by regularly supporting a population of European importance of the Annex I species: sandwich tern during the passage period. The site further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: • Pink-footed goose • Shelduck • Knot • Redshank • Turnstone

Name	Designation	Distance from Site	Qualifying Features
			The site also qualifies under Article 4.2 by regularly supporting more than 20,000 individual waterfowl, including nationally important populations of the following species: • Scaup • Slavonian grebe • Golden plover • Bar-tailed godwit • Pink-footed goose • shelduck • knot • redshank • turnstone • great crested grebe • cormorant • red-throated diver • curlew • eider • long-tailed duck • common scoter • velvet scoter

Name	Designation	Distance from Site	Qualifying Features
			• goldeneye • red-breasted merganser • oystercatcher • ringed plover • grey plover • dunlin.
Firth of Forth	SSSI	8.5 km northwest	The Firth of Forth SSSI comprises an extensive mosaic of intertidal and coastal habitats, and is of special interest for the following habitats and species: • Maritime cliff • Saltmarsh • Sand dunes • Mudflats • Saline lagoon and Transition grassland • Lowland neutral grassland • Vascular plant assemblage • Beetle assemblage and northern brown argus (*Aricia Artaxerxes*) • Birds: Wintering • Birds: Breeding

Name	Designation	Distance from Site	Qualifying Features
Drone Moss	SSSI	9.8 km southeast	Drone Moss SSSI represents the best example of raised bog in Berwickshire.
Forth Islands	SPA	17.46 km northwest	Forth Islands SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex I species Arctic tern; roseate tern; common tern and sandwich tern Forth Islands SPA further qualifies under article 4.2 by regularly supporting populations of European importance of migratory species including: northern gannet, European shag, lesser black-backed gull, and Atlantic puffin. Forth Islands SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual seabirds, including nationally important populations of the following species: razorbill, common guillemot, black-legged kittiwake, herring gull, great cormorant, northern gannet, lesser black backed gull, European shag, Atlantic puffin, Arctic tern, common tern and sandwich tern.
Forth Islands	SSSI	17.46 km northwest	Forth Moss SSSI is notified for breeding cormorant, puffin and for its breeding seabird colony.

In addition to the above statutory designated sites, there are nine areas of woodland, listed on the Ancient Woodland Inventory (Scotland)[34], which are present within 500m of the Site. Eight of these areas are defined as Long-established (of plantation origin), with one defined as Ancient (of semi natural origin). The nearest of these is an area of long-established (of plantation origin), which lies within the Site; (Cockit Hat Strip). There are also a further three areas of ancient woodland immediately adjacent to the Site. The position of these ancient woodland relative to the Site are shown on Figure 7.2.

The Carbon and Peatland Map (Scotland 2016)[35] shows the Site is not on peatland and lies on mineral soil. There is no Class 1 or Class 2 peatland within 500 m of the Site.

7.2.2 PROTECTED AND PRIORITY SPECIES RECORDS

An initial search of available records using the National Biodiversity Network (NBN) Atlas shows several protected species have been recorded within 2 km of the Proposed Development within the last ten years. Therefore, there is potential for these species to be affected by the Proposed Development. A summary of each species is provided below:

7.2.2.1 BATS

There were 2416 records of bats returned on NBN Atlas within 2 km of the Site within the last ten years. None of these records lie within the Site and are flights rather than roosts. The large number of records can be attributed to the southern Scotland bat surveys which took place over the wider area. These encompassed seven different species / species groups of bats: brown long-eared bats (*Plecotus auratus*), common pipistrelle (*Pipistrellus pipistrellus)*, soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bats (*Myotis daubentoniid*), noctule (*Nyctalus noctula*), *Myotis sp.,* and *Pipistrellus sp*. All bats found within 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).

The habitat within the Site is dominated by a mixture of arable fields and grazing pasture, which is unlikely to be notable for bats; however, there are areas of woodland, both within and immediately adjacent to the Site, as well as a small watercourse within the Site, which are more likely to support bats, including roosting bats. Due to the presence of suitable foraging, roosting and commuting habitat within the Site, which may be of use to bats for foraging, commuting, and roosting, bat surveys will be required.

7.2.2.2 BADGER

There are no badger (*Meles meles*) records within 2 km of the Proposed Development within the last ten years. Both badgers 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[36], hedgerows or in dense patches of scrub on steep banks close to

[34] Scottish Government (2024) *Ancient Woodland Inventory (Scotland)* [Online] Available from: https://www.data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland (Accessed 21 June 2024)
[35] Carbon and Peatland (Scotland) 2016 [Online] Available at: Map | Scotland's environment web.
[36] NatureScot. *Standing Advice for Planning Consultations – Badgers*. [Online] Available at: Standing advice for planning consultations - Badgers | NatureScot (Accessed 21 June 2024)

fields. However, setts can also be found in open fields, as well as railway embankments, old quarries, rock cavities and landfill sites.

The habitat within the Site is suitable for badgers; with hedgerows, woodland and patches of scrub within an arable landscape providing ample habitat for sett building and foraging. Therefore, badger surveys will be required.

7.2.2.3 OTTER

No records of otter (*Lutra lutra*) were returned within the data search. Otter is found throughout Scotland, anywhere close to watercourses, wetland, coastline, or estuary[37]. 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 1981 (as amended).

There is a small watercourse which runs through the northeastern part of the Site; and there are other watercourses close by, therefore, suitable habitat exists for otter within the Site and close by, and as such otter surveys will be required.

7.2.2.4 WATER VOLE

No records of water vole (*Arvicola amphibious)* were returned within the data search. 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; this can sometimes be in intensive farmland[38]. Within the Site, is a small, slow flowing watercourse, and several field drains, with other field drains and watercourses close to the Site. There is potential for water vole to be present, and as such surveys for water vole will be required.

7.2.2.5 RED SQUIRREL

There are no records of red squirrels (*Sciurus vulgaris*) within 2 km of the Proposed Development. 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[39]. As the Site contains woodland that is listed on the AWI (Scotland), there is potential for red squirrels to present within the Site; therefore, surveys for red squirrel will be required.

7.2.2.6 WILDCAT

There are no historical records of wildcat (*Felis sylvetsris sylvestris)* within 2 km of the Site. Wildcat is an EPS under the Conservation (Natural Habitats, &c.) Regulations 1994 (as

[37] NatureScot. *Standing Advice for Planning Consultations – Otters* [Online] Available at: Standing advice for planning consultations - Otters | NatureScot (Accessed 20 June 2024)
[38] NatureScot. *Standing Advice for Planning Consultations – Water Vole* [Online] Available at: Standing advice for planning consultations - Water Voles | NatureScot (accessed 20 June 2024).
[39] NatureScot. *Standing Advice for Planning Consultations – Red Squirrels* [Online] Available at: https://www.nature.scot/doc/standing-advice-planning-consultations-red-squirrels/ (Accessed 20 June 2024)

amended). According to the Scottish Wildlife Trust, wildcats are restricted in their distribution to small parts of the Scottish Highlands[40], and the Site is not in these areas. Therefore, wildcat is unlikely to be present and surveys for wildcat are not required.

7.2.2.7 GREAT CRESTED NEWT

There are no records of great crested newt (GCN) (*Triturus cristatus*) within 2 km of the Site within the last ten 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 freshwater ponds, but also live on land in lowland grassland, scrub, hedgerows, or woodland, normally within 500 m of breeding ponds[41]. Satellite imagery suggests that there may be a waterbody present within the Site, however a walkover was undertaken on Thursday 2nd May 2024, which showed that the pond had been filled in, and thus no longer exists. Therefore, there is no suitable habitat within the Site, and 250 m from the Site, and as such surveys for GCN are not required.

7.2.2.8 REPTILES

No records of any reptile species within the last ten years were returned within the data search within 2 km of the Proposed Development. 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[42].

The Site is dominated by a mixture of arable fields and grazing pasture, though there are some small areas of woodland both within and adjacent to the Site, meaning that suitable habitat for reptiles is limited, and as such it is unlikely reptiles will be present, and so specific surveys for reptiles are not required.

7.2.2.9 BIRDS

Desk Study

The data search returned 266 records of 41 species of conservation importance within 2 km of Proposed Development within the last ten years. Species of conservation importance are defined as any species matching one or more of the following criteria:

[40] Scottish Wildlife Trust (2024). *Wildcat* [Online] Available at: Wildcat | Mammal | Species profile | Scottish Wildlife Trust (Accessed 20 June 2024)
[41] NatureScot. *Standing Advice for Planning Consultations – Great Crested Newts.* [Online] Available at: Standing advice for planning consultations - Great Crested Newts | NatureScot (Accessed 20 June 2024)
[42] 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 20 June 2024).

- Listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)[43]
- Listed on Annex I of the Birds Directive[44]
- Red- or amber-listed bird of UK Conservation Concern (BoCC)[45]; and / or,
- Scottish Biodiversity List (SBL)[46].

Species returned within the desk study included barn owl (*Tyto alba*), skylark (*Alauda arvensis)*, curlew (*Numenius arquata*), reed bunting (*Emberiza schoeniclus*) and yellowhammer (*Emberiza citrinella*).

Habitats onsite are largely dominated by arable fields and pasture fields, demarked by hedgerows, with some areas of woodland. These are all habitats which could be used by birds.

The Site lies within the foraging range of pink-footed geese (*Anser brachyrhynchus*) from the Firth of Forth SPA; however, the designated site is approximately 10 km from the Site, with the main goose roost within the designated site at Aberlady Bay, lying approximately 28 km from the Site. Therefore, the Site is out with the predicted foraging range of pink-footed goose[47]. 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. Gulls are opportunistic species and suitable farmland habitat for foraging is very extensive in the wider area beyond the Site. It is considered highly unlikely that the loss of foraging habitat because of the Proposed Development would have any significant impacts on these two gull species. Therefore, wintering bird surveys are not required. As breeding bird surveys have been completed, no further bird surveys are required

Bird Survey Results

Ornithology surveys, in accordance with NatureScot's guidance document for solar farm development[48] were completed in 2023. These surveys included a breeding bird survey undertaken within the Site and survey buffer of 500 m, and a scarce breeding bird survey, which incorporated the Site and a 2 km buffer. Four visits were undertaken between April and July, with the focus of the surveys being those species of conservation importance

[43] UK Government (1981). *Wildlife and Countryside Act 1981, Chapter 69, Part 1*. [Online] Available at: Wildlife and Countryside Act 1981 (legislation.gov.uk) (Accessed 21 June 2024)
[44] 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 21 June 2024)
[45] 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.
[46] Scottish Government (2020). *Scottish Biodiversity List*. [Online]. Available at: Scottish Biodiversity List | NatureScot (Accessed 21 June 2024).
[47] Mitchell (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 25 July 2024)
[48] 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).

Results of the surveys indicate that the breeding bird assemblage within the Site was typical of the lowland habitats present. Twelve species of conservation importance noted, with the most frequently encountered species being skylark. Other notable species being yellowhammer and tree sparrow (*Passer montanus*). There was no evidence of breeding Schedule 1-listed raptors recorded within the Site or 2 km buffer.

7.2.3 HABITATS

The Site is in an agricultural setting and is dominated by a mixture of grazing pasture and arable fields, which are in the main delineated by hedgerows. There are some old farm buildings and a property in the centre of the Site. The Site also contains a watercourse, and several minor roads, and contains some areas of woodland, two of which are defined as Long-established (of plantation origin) on the Ancient Woodland Inventory (Scotland). There are also a further three areas of ancient woodland immediately adjacent to the Site. There is no connection between the Site and any statutory designated sites.

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, badgers, and otter.

Construction, operation and decommissioning of the Proposed Development has the potential to lead to disturbance, displacement, harm, or fatality to breeding, foraging, and roosting birds, as well as nest destruction.

Key potential effects on Important Ecological Features (IEFs) that will require assessment are anticipated to be:

- Displacement, disturbance, injury, or mortality of protected ecological features from construction (and decommissioning) of the Proposed Development;
- Loss or degradation of habitat used by protected ecological features through the construction (and decommissioning) of the Proposed Development;
- Loss or degradation of protected and / or priority habitats through the construction and decommissioning of the Proposed Development;
- Disturbance and displacement of nocturnal fauna (e.g. bats, otter, badger, birds and invertebrates) due to operational lighting; and,
- Disturbance and displacement of ecological features species through operational activities.

7.4 PROPOSED ASSESSMENT METHODOLGY

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)[49], 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.

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 will be applied to baseline and contextual information to determine the level of importance and to identify IEFs. Additionally, in accordance with CIEEM guidance, where a legally protected species is present within the zone of influence, and there is potential for legislative breach, such species are considered IEFs.

7.4.1.2 CHARACTERISATION OF POTENTIAL EFFECTS

In line with CIEEM EcIA guidance where possible, consideration is given to the following characteristics when identifying potential effects of the Proposed 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;

[49] CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: terrestrial, Freshwater, Coastal and Marine version 1.2.* [Online] Available at: Guidelines for Ecological Impact Assessment (EcIA) | CIEEM. (Accessed 21 June 2024)

- 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; and,
- 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 to effects 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 EIA Report a matrix approach is used; however, as CIEEM Guidance 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 Chapter. 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.

7.4.2 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 online sources, such as National Biodiversity Network (NBN) data base, NatureScot (NS) Sitelink; as well as via data requests to local biological recording groups, such as The Wildlife Information Centre (TWIC).

A radius of 20 km from the Site will be used to search for internationally and nationally designated sites for nature conservation. A radius of 2 km will be used for biological records. Local sites of nature conservation interest will be searched for, within a 2 km radius of the Site, with woodland listed on the AWI (Scotland), and nationally important peatlands within 500 m of the Site.

Any features beyond the above distances are considered outside the Zone of Influence (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 considered 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[50], a Phase 1 Habitat Survey of accessible areas within, and up to 250 m 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.

[50] Joint Nature Conservation Committee (JNCC) (2010). *Handbook for Phase 1 habitat survey. A technique for environmental audit.* [Online] Available at: Handbook for Phase 1 habitat survey (jncc.gov.uk) (Accessed 20 June 2024)

National Vegetation Classification (NVC)

An NVC, in accordance with latest guidelines[51], 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 250 m from the Site, where access is available. NVC communities will be classified in accordance with current SEPA guidance[52] to identify the extent of any potential Groundwater Dependent Terrestrial Ecosystems (GWTDE).

Bat Surveys

The majority of the Site is open arable land and therefore is not suitable for bats, however the Site contains habitat that has potential to be used by foraging, commuting and roosting bats, such as hedgerows, woodland edge and minor watercourses, largely field drains. Outwith the Site Boundary there is extensive bat habitat, including large areas of broadleaved woodland and watercourses, satellite imagery suggests these areas are connected to the Site, however further surveys will need to be undertaken to understand the suitability of the site for bats, and if further surveys for bats are required. The following section explains these survey requirements.

Daytime Bat Walkover

Daytime Bat Walkover (DBW) will be carried out to establish the suitability of the site for bats, and to assess whether further surveys should be carried out. This will be completed in accordance with the latest version of Bat Conservation Trust (BCT) Guidelines[53].

Nighttime Bat Walkover

Nighttime Bat Walkover (NBW) surveys will be undertaken, to listen for, and record bat flights and behaviour to gain an understanding on how bats are physically utilising the Site. The NBW surveys will be completed in accordance with the latest BCT Guidelines[53], with three walked transects being undertaken, one per season (Spring, Summer, Autumn), throughout the period bats are active[54].

Automated Bat Detector Surveys

This survey will include the deployment of five automated full spectrum remote, static bat detectors (Anabat Swift). These bat detectors will be deployed for a minimum of five consecutive nights. From aerial imagery, the Site appears to be of low suitability for commuting and foraging bats and as such detectors will be deployed once per season (Spring, Summer, Autumn), throughout the period bats are active[54].

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[51] Rodwell. J.S. (2006). *National Vegetation Classification: Users' handbook*. [Online]. Available at: National Vegetation Classification: Users' handbook (jncc.gov.uk) (Accessed 21 June 2024)

[52] 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 21 June 2024).

[53] Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edition)*. Bat Conservation Trust, London.

[54] For Scotland (and Northern England) the BCT broadly defined this period as between May and September.

Otter Survey

An otter survey, in accordance with NatureScot guidelines[37], will be carried out on all accessible watercourses within, and up to 200 m 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[38] a water vole survey will be completed on all accessible waterbodies within the Site, and a buffer of 50 m. The survey will include an assessment of habitat suitability, based on professional judgement and established criteria[55]. 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[36], will be conducted in accessible areas within, and up to 100 m 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.

Red Squirrel Survey

In line with the latest NatureScot guidelines[39], surveys for red squirrel will be undertaken in accessible areas within, and up to 50 m 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 MITIGIATION

As per the CIEEM guidelines[49] 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; and,
- Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation, or compensation.

[55] Dean, M. (2021). *Water Vole Field Signs and Habitat Assessment*: A practical guide to Water Vole Surveys. Pelagic Publishing.

As detailed in CIEEM guidance[49] 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 Landscape and Biodiversity Management Plan (LBMP), with the measures within the LBMP agreed with the developer, prior to any planning application being submitted Such commitments will then be agreed with the Local Planning Authority (LPA) via for example planning conditions.

As per CIEEM Guidelines[49] 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 Bay Coast SSSI;
- Barns Ness Coast SSSI;
- Lammermuir Deans SSSI;
- Pease Bridge Glen SSSI;
- Woodhall Dean SSSI;
- Abbey St. Bathans Woodland SSSI;
- St. Abb's Head to Fast Castle SAC / SSSI;
- Firth of Forth SSSI; and,
- Drone 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 utilise fields within the Site for foraging, gulls are opportunistic species and comparable farmland extensive 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 foraging opportunities available 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)[56] 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 7.4 km 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 SUMMARY

The following designated sites of European importance will not be affected by the Proposed Development, and as such will not require a Habitats Regulations Appraisal:

- Outer Firth of Forth SPA;
- Outer Firth of Forth Ramsar;
- St. Abb's Head to Fast Castle SPA;
- St. Abb's Head to Fast Castle SAC;
- Firth of Forth SPA;
- Firth of Forth Ramsar; and,
- Forth Islands SPA.

7.6.2 PEATLAND HABITATS

Significant effects to peatland habitats have been scoped out since The Carbon and Peatland Map (Scotland 2016)[57] shows there is no Class 1 or Class 2 peatland within 500m of the Site, with the Site laying on mineral soil.

[56] Mitchell, C. (2012). *Mapping the distribution of feeding Pink-footed and Iceland Greylag Geese in Scotland.* Wildfowl and Wetland Trust / Scottish Natural Heritage Report. [Online] Available: mitchel 2012 mapping distirbution feeding pinkfooted and greylag geese scotland wwtsnh report.pdf (bto.org) (Accessed 21 June 2024)
[57] Carbon and Peatland (Scotland) 2016 [Online] Available at: Map | Scotland's environment web.

7.6.3 PROTECTED AND PRIORITY SPECIES

7.6.3.1 WILDCAT

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

7.6.3.2 GREAT CRESTED NEWT

The Site contains no habitat, which could be used for breeding by GCN; therefore, effects to GCN have been scoped out of the assessment.

7.6.3.3 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.

7.6.3.4 WINTERING BIRDS

The Site lies within the foraging range of pink-footed geese from the Firth of Forth SPA; however, the designated site is approximately 10 km from the Site, with the main goose roost within the designated site at Aberlady Bay, laying approximately 28 km from the Site. 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 beyond the Site. It is highly unlikely that the loss of foraging habitat because of the Proposed Development would have any significant impacts on these two gull species. Therefore, wintering bird surveys are not required, and effects to wintering birds are scoped out of the assessment.

7.6.3.5 SUMMARY

Effects to the following protected and / or priority species have been scoped out of the assessment:

- Wildcat;
- Great crested newt;
- Reptiles; and,
- Wintering Birds.

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:

- Do you agree with the baseline survey scope and assessment approach?

- Do you agree with the use of Phase 1 Habitat Survey, and its conversion to UKHab, or should habitat surveys be completed using UKHab?
- Are there any relevant consultees who should be contacted, or other sources of information that should be referenced with respect to the ecology and ornithology assessment?
- Are there any known projects that should be considered within the cumulative assessment, beyond planning applications?
- 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 all designated sites can be scoped out of the assessment.

8. WATER RESOURCES AND FLOOD RISK

8.1 INTRODUCTION

This section sets out 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 EIAR 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 (the Study Area) is defined by the zone of influence of the Proposed Development up to a distance of 1 km from the Site boundary as shown in Figure 8.1.

At distances greater than 1 km 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

SEPA River and Loch catchment mapping[58] shows that most of the Site is not located within a specified catchment, although the southern area of the Site is located within the Dunglass Burn/Old Hamstocks Burn. SEPA main river and coastal catchment mapping does however show the Proposed Development is located within the East Lothian Coastal catchment.

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

Dunglass Burn (referred to as Old Hamstocks Burn before merging with Berwick Burn downstream of the Site) flows northeasterly past the southern boundary before eventually discharging into the North Sea. Dunglass Burn/Old Hamstocks Burn (ID: 3901) is located, at its closest point, less than 100m from the southern boundary of the Site. The waterbody has a SEPA water quality classification (created for the Water Framework Directive) of ‘High’ and an overall classification of ‘Good’.

Bilsdean Burn is a non-WFD designated watercourse that flows through the western boundary to the northeastern boundary of the Site. It then flows northeastwards parallel to Dunglass Burn before discharging into the North Sea.

[58] SEPA (2014) Water Environment Hub [online] Available at https://www.sepa.org.uk/data-visualisation/water-environment-hub/ [accessed 9 July 2024]

A review of aerial mapping indicates that there is a network of surface water drains (e.g. Oldhamstocks mains) within the Study Area that originate both outside of and within the Site boundary. These drains all flow into Bilsdean Burn. The watercourses are small and have correspondingly low volumes of water draining the surrounding agricultural land.

Ogle Burn is a non-WFD designated watercourse that flows into and out of the northwest portion of the Study Area, approximately 570m from the Site.

There are three drains in the northwest part of the Study Area, approximately 320m from the Site, that are part of the Thorntonloch bathing water catchment. The Thorntonloch bathing water site has a classification of 'Excellent'.

8.2.2 COSTAL HYDROLOGY

Barns Ness to Wheat Stack is a coastal waterbody (ID: 200038) located approximately 1.1km northeast of the Site boundary and less than 100m from the edge of the Study Area. The waterbody has an overall classification of 'Good'. The Proposed Development is hydrologically connected to this waterbody via Dunglass Burn and Bilsdean Burn.

The Barns Ness to Wheat Stack waterbody also forms part of the Outer Firth of Forth and St Andrews Bay Complex SPA, approximately 1.2km from the Proposed Development.

8.2.3 FLOOD RISK

The SEPA Flood Map identifies modelled river (for watercourses with a catchment of 3 km^2 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 boundary or Study Area. The local topography between the Proposed Development and the sea, in addition to existing infrastructure such as the A1 and railway line, inhibits the risk of coastal flooding.

The SEPA Flood Map indicates there is modelled river flooding of a medium to high likelihood within the Study Area from Ogle Burn, Dunglass Burn and Bilsdean Burn, but not within the Site boundary.

There is modelled surface water flooding of a medium to high likelihood from Bilsdean Burn (and other smaller watercourses that are part of the drainage network) within the Site boundary and surrounding Study Area.

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. There is no proposed infrastructure located within modelled river or surface water flood extents.

8.2.4 HYDROGEOLOGY

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'.

The British Geological Survey (BGS) 1:50,000 scale superficial deposits mapping indicates the Site is underlain by:

- Alluvium deposits (clay, silt, sand, and gravel) in the northeastern part of the Site where Bilsdean Burn intersects the eastern and northern Site boundaries;
- Devensian till (diamicton) deposits across the central main area of the Site; and,
- Glaciofluvial deposits (gravel, sand, and silt) across the southeastern and northeastern corners of the Site.

The BGS 1:625,000 scale digital hydrogeology mapping indicates these deposits are classified as a moderately productive aquifer.

The BGS 1:50,000 scale bedrock geology mapping indicates the Site is underlain by predominantly:

- Stratheden group and Inverclyde group (undifferentiated) - sandstone and [subequal/subordinate] argillaceous rocks, interbedded. This is a moderately productive aquifer with significant intergranular flow; and,
- Ballagan formation - sandstone, siltstone and dolomitic limestone. This is a moderately productive aquifer where flow is virtually all through fractures and other discontinuities.

8.2.5 PUBLIC AND PRIVATE WATER SUPPLIES

East Lothian Council have been contacted to obtain details on Private Water Supplies (PWS) within the Study Area, but no response has been received at the time of writing. As part of the Environmental Impact Assessment Report details on the PWS location, source, and supply type will be obtained to inform the assessment.

The Scottish Government Drinking Water Protected Areas dataset[59] indicates there are no public water supplies within the Study Area.

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

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

[59] 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)

8.2.6 GROUNDWATER DEPENDENT TERRESTRIAL ECOSYSTEMS (GWDTE)

A National Vegetation Classification (NVC) survey will be completed as part of the suite of field-based surveys which inform the EIA. The NVC survey will record areas of potential GWTDEs throughout the Site based on the methodology within SEPA Land Use Planning System SEPA Guidance Note 31, where GWDTEs are designated either Highly or Moderately groundwater dependent.

Should any GWDTEs be located within 100 m of excavations less than 1m or 250m deeper than 1 m associated with the Proposed Development a GWDTE risk assessment will be completed as part of the EIA in accordance with SEPA Land Use Planning System SEPA Guidance Note 31.

8.2.7 DESIGNATED HYDROLOGICAL RECEPTORS

NatureScot GIS datasets[60] available through the Scotland's Environment mapping service show there are no statutory designated sites related to the hydrological and geological environment within the Study Area.

8.2.8 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 watercourses hydrologically connected to the Proposed Development are Dunglass Burn/Old Hamstocks Burn; Bilsdean Burn; and a network of surface water drains. Given the 'Good' WFD rating of Dunglass Burn/Old Hamstocks Burn, a High sensitivity is presumed.
Designated Receptors	Low	No designated receptors are hydrologically connected to the Proposed Development.
Public and Private Water Supplies	High	Consultation is required to ascertain the presence of any Private and/or Public Water Supplies. Given the use of PWS to supply potable water to residential properties the sensitivity is High.
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.

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

Receptor	Sensitivity	Sensitivity Description
Coastal Waters	High	The Proposed Development is hydrologically connected to the Barns Ness to Wheat Stack coastal waterbody via Dunglass Burn/Old Hamstocks Burn and Bilsdean Burn. Due to this waterbody's overall WFD classification of 'Good' and the proximity of the Outer Firth of Forth and St Andrews Bay Complex SPA, a High sensitivity is presumed.
Hydrogeology (groundwater)	Medium	The Study Area is underlain by a moderately productive aquifer.

8.3 POTENTIAL ENVIRONMENTAL EFFECTS

Given the nature of the Proposed Development and based on the commitment by the Applicant that all land that may be temporarily disturbed during construction will be restored to its pre-construction condition, 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, felling, excavation works or insufficient sediment mitigation;
- Changes to groundwater interflow patterns from temporary works such as borrow pits, physical cut-offs 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;
- Increased risk of chemical pollution and battery fire from a potential battery energy storage facility onsite;
- Increase in runoff and flood risk due to increased impermeable hardstanding 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.

8.3.1 ENVIRONMENTAL EFFECTS SCOPED OUT OF THE ASSESSMENT

8.3.1.1 MIGRATION OF POLLUTANTS FROM CONTAMINATED LAND

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, the migration of pollutants from contaminated land into the water environment is to be scoped out of the EIA Report.

8.3.1.2 IMPACTS ON THE QUANTITY AND QUALITY OF PUBLIC WATER SUPPLIES

Consultations with the Sustainable Land Management and Abstraction Team within Scottish Water confirmed that the Proposed Development is not located within a drinking water catchment and the Proposed Development poses no risk to drinking water quality. As such effects on public water supplies are scoped out.

Tree felling associated with construction is unlikely and therefore effects from resultant acidification of watercourses are scoped out.

8.3.1.3 WFD ASSESSMENT

The design of the Proposed Development will incorporate a sequential approach that avoids new crossings over WFD designated waterbodies, ensuring that as far as is reasonably practicable the construction contractor will only cross lower value watercourses.

This construction methodology will be adopted as embedded mitigation within the Construction Environmental Management Plan (CEMP), to ensure that there is no deterioration in the current ecological status of WFD waterbodies because of the Proposed Development. As such, it is considered that a formal WFD compliance assessment will not be required and can be scoped out of the assessment.

8.3.1.4 STANDALONE FLOOD RISK ASSESSMENT

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% Annual Exceedance Probability (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 EIA Report.

8.4 PROPOSED ASSESSMENT METHODOLOGY

8.4.1 LEGISLATION, POLICY, AND GUIDANCE

The Policy and Legislative context relating to the Scoping Report and EIA process is detailed in Chapter 4. The assessment and methodology of the water resources and flood risk chapter 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)[61] (as implemented in Scotland via the Water Environment and Water Services (Scotland) Act 2003[62]);
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011[63] Pollution Prevention and Control (Scotland) Regulations 2012;
- Industrial Emissions Directive (IED) [64] The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013;
- The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2013[65]; and,
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017[66] Policy.

8.4.1.2 POLICY

- The East Lothian Local Development Plan[67] (Policy NH9 Water Environment, Policy NH10 Sustainable Drainage Systems, and Policy NH11 Flood Risk; and,
- The National Planning Framework 4[68].

8.4.1.3 GUIDANCE

- Planning Advice Note 61: Planning and Sustainable Urban Drainage Systems[69];
- Construction Industry Research and Information Association (CIRIA) Control of Water Pollution from Construction Sites (C532)[70];

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[61] 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

[62] Scottish Government (2003). Water Environment and Water Services (Scotland) Act 2003. Available online at: https://www.legislation.gov.uk/asp/2003/3/contents (Accessed 10 July 2024)

[63] Scottish Government (2011). The Water Environment (Controlled Activities) (Scotland) Regulations 2011. Available online at: https://www.legislation.gov.uk/ssi/2011/209/contents/made (Accessed 10 July 2024)

[64] Scottish Government (2012). The Pollution Prevention and Control (Scotland) Regulations 2012. Available online at: https://www.legislation.gov.uk/ssi/2012/360/contents/made (Accessed 10 July 2024)

[65] 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

[66] 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 (Accessed 10 July 2024)

[67] East Lothian Council (2018), *Local Development Plan 2018*. Available online at: https://www.eastlothian.gov.uk/info/210547/planning_and_building_standards/12242/local_development_plan (Accessed 10 July 2024)

[68] Scottish Government (2023). National Planning Framework 4. Available online at: https://www.gov.scot/publications/national-planning-framework-4/ (Accessed 10 July 2024)

[69] 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/

[70] 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 (Accessed 10 July 2024)

- CIRIA Development and flood risk: guidance to the construction industry, C624D[71];
- Planning Advice Note 79: Water and Drainage[72];
- British Standard Code of Practice for Earthworks BS 6031 200928[73];
- Scottish Environment Protection Agency (SEPA) Engineering in the Water Environment Good Practice Guide: River Crossings[74];
- SEPA Controlled Activities Regulations (CAR) – A Practice Guide, Version 7.2[75];
- CIRIA The SuDS Manual (C753)[76];
- CIRIA Environmental Good Practice on Site (C741)[77];
- Highways Agency's Design Manual for Roads and Bridges (DMRB) LA 113 – Road drainage and the water environment, formerly HD45/09, Revision 1, 2020[78];
- SEPA Supporting Guidance (WAT-SG-75) Sector Specific Guidance: Water Runoff from Construction Sites[79];
- SEPA Guidance for Pollution Prevention[80]; and
- Recommended Riparian Corridor Layer for use in Land Use Planning[81].

[71] 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 (Accessed 10 July 2024)
[72] 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/ (Accessed 10 July 2024)
[73] 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 (Accessed 10 July 2024)
[74] 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 (Accessed 10 July 2024)
[75] 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 (Accessed 10 July 2024)
[76] CIRIA (2015). The SuDS Manual (C753). Available at: https://www.susdrain.org/resources/SuDS_Manual.html (Accessed 10 July 2024)
[77] 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 (Accessed 10 July 2024)
[78] 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(Accessed 10 July 2024)
[79] 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 (Accessed 10 July 2024)
[80] SEPA (various). Available online at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/ (Accessed 10 July 2024)
[81] SEPA (2024). Recommended Riparian Corridor Layer for use in Land Use Planning. Available online at: recommended-riparian-corridor-note.docx (live.com)

8.4.2 DESK STUDY

A desk-based study has been conducted as part of the production of this Chapter (Section 8). This involved the collection, analysis and interpretation of a range of data and information sourced from published documents and datasets and consultations relating to the water environment. The data and information sources used and referred to within this Chapter are listed in Table 8.2.

This Chapter also uses information from other Chapters within the Scoping Report, particularly Chapter 7: Ecology and Ornithology and Chapter 9: Geology and Soils.

TABLE 8.2 DATA TYPES AND SOURCES USED FOR BASELINE STUDY

Data Type	Source(s)
Mapping and topography	• Ordnance Survey (OS) 1:25,000 mapping
Surface hydrology	• SEPA Water Environment Hub • Water Framework Directive River Classifications • Water Framework Directive River Basin Districts
Hydrogeology	• British Geological Survey (BGS) Hydrogeological Map
Private and public water supplies	• Drinking Water Protected Areas Map
Groundwater Dependent Terrestrial Ecosystems	• NVC survey results [TBC]
Designated Hydrological Receptors	• Sites of Special Scientific Interest • Special Areas of Conservation • Water Framework Directive River Classifications • Wetlands of International Importance (RAMSAR) • Local Nature Reserves Map
Flood risk	• SEPA Flood Map

8.4.3 SITE BASED FIELD 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 aim to do the following to inform the EIA Report:

- Verify the findings of desk-based studies;
- Take field notes and photographs to identify and assess the key surface water characteristic and networks;
- Identify any existing drainage networks;
- Visit GWDTEs where identified by the project ecology team; and,
- Visit locations of any proposed 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 CONSULTATIONS

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

- East Lothian Council (ELC);
- 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.

8.4.5 ASSESSMENT METHODOLOGY

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

The receptor sensitivity and magnitude of change definition criteria which will be applied in the Water Resources and Flood Risk chapter of the EIA Report is set out in Table 8.3 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 8.5.

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

Receptor Sensitivity	Definition
	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 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 acts 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; • 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.

Receptor Sensitivity	Definition
Negligible	The receptor is resistant to change and is of little environmental value.

TABLE 8.4 MAGNITUDE OF CHANGE DEFINITION 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. 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;

Magnitude of Change	Definition
	• 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 • 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. The mitigation measures relating to water resources and flood risk which are embedded into the design and construction of the Proposed Development are detailed in this section.

8.5.1 WATERCOURSE BUFFERS

The watercourse buffers detailed in 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 10 m 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 WATER COURSE BUFFERS

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

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 EIA Report and best practice guidance to account for and minimise 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 50 m 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).

8.5.3 SURFACE WATER DRAINAGE

An Outline Surface Water Drainage Strategy will be conducted for the Proposed Development to confirm the change in surface water runoff between the baseline conditions and after construction of the Proposed Development.

The study will also help to outline the attenuation requirements based on the calculated runoff rates. As PV arrays sit on narrow footed frames it is proposed that PV arrays will not contribute towards hard standing areas within the Proposed Development, on the basis that suitable surface water management techniques typical of solar developments are implemented. Any new access tracks within the Proposed Development will be made up of a permeable aggregate (e.g., Type 2) and will therefore also not contribute to hard standing areas. As such the Outline Surface Water Drainage Strategy scope will focus on hard standing areas associated with the BESS, transformers and inverters.

East Lothian Council will be consulted to ascertain their own requirements for Sustainable Drainage Systems (SuDS) design.

8.6 CONSULTATION AND QUESTIONS FOR CONSULTEES

- Do you agree that the topics proposed to be scoped out of the EIA Report do not require further assessment?
- Do you agree that due to the sequential approach that avoids crossing important waterbodies and the implementation of measures to be detailed within a CEMP will prevent

significant effects on surface watercourses, and that a WFD assessment can therefore be scoped out?

- Do you agree that a standalone FRA can be scoped out?
- 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 and impediments to surface water flows can therefore be scoped out?
- 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.

9.2 BASELINE CONDITIONS

9.2.1 SUPERFICIAL SOILS

The BGS Onshore Geoindex Superficial Soils Viewer[82] shows the Site to be underlain by the following superficial soils:

- Devensian – Diamicton Till throughout the centre of the Site;
- Gravel, Sand and Silt Glacofluvial Deposits around the northern, eastern and southern boundaries of the Site; and,
- Clay, Silt, Sand, and Gravel Alluvium around the northern, eastern and southern boundaries of the Site.

The 2016 Carbon and Peatland Map[83] shows the Site to be underlain by Mineral Soils with no peat recorded at the Site.

The National Soils Map of Scotland[84] shows the Site to be underlain largely by Calcareous Soils and a small portion in the northeast of the Site to be underlain by Mineral Gleys.

9.2.2 BEDROCK GEOLOGY

The BGS Onshore Geoindex Bedrock Geology Viewer[85] shows the Site to be underlain by the following geology types:

- Sandstone, Siltstone and Dolomitic Limestone from the Ballagan Formation in the northern half of the Site; and,
- Interbedded Sandstone and Argillaceous Rocks from the Stratheden Group and Inverclyde Group in the southern half of the Site.

9.2.3 COAL MINING

The Coal Authority Interactive Map Viewer[86] shows that the northern portion of the Site lies within a coal mining reporting area. The web viewer does not show that there are any coal

[82] British Geological Survey (2024) Onshore Geoindex Superficial Soils Viewer [online] Available at: GeoIndex - British Geological Survey (bgs.ac.uk) (Accessed 08 July 2024)
[83] Scotland's Environment (2016) 2016 Carbon and Peatland Map [online] Available at: Scotland's Soils - soil maps (environment.gov.scot) (Accessed 08 July 2024)
[84] Scotland's Environment (2024) National Soils Map of Scotland [online] Available at: Scotland's Soils - soil maps (environment.gov.scot) (Accessed 09 July 2024)
[85] British Geological Survey (2024) Onshore Geoindex Bedrock Geology Viewer [online] Available at: GeoIndex - British Geological Survey (bgs.ac.uk) (Accessed 08/07/2024)
[86] The Coal Authority (2024) The Coal Authority Interactive Map [online] Available at: Interactive Map Viewer | Coal Authority (bgs.ac.uk) (Accessed 09 July 2024)

deposits, surface mining, past or probable coal mining workings within the Site boundary, and the Site is not situated in a Development High Risk Area.

9.2.4 UNEXPLODED ORDNANCE (UXO)

A Preliminary Desk Study Assessment for the Site was completed by Zetica to assess the UXO Risk on the Site. This assessment found the following that could pose a risk of UXO:

- Two WWI strategic targets located in the vicinity of the Site;
- Barbed wire obstacles were set up on the southern portion of the Site as part of the Dunglass Stop Line in WWII; and,
- 1 Allied aircraft crashed in the vicinity of the Site.

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

9.2.5 LANDFILL SITES

The UK Government[87] 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 are 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.

[87] UK Government (2024) Historic Landfill Sites [online] Available at: Historic Landfill Sites - data.gov.uk (Accessed 09 July 2024)

9.3.2 SOILS AS A WASTE MATERIAL

As discussed in the section above, the loss of soils has negative effects on the environment. Furthermore, if the soils that are 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 Site could pose a threat to workers during the construction phase of the Proposed 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 represents 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 red line 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.

9.4 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 peat outside this area.

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

NatureScot Guidance – General pre-application and scoping advice for solar farms[88];and,

- Environmental Good Practice on Site[89].

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.

[88] NatureScot (2022) – General pre-application and scoping advice for solar farms. Version:. [Online] Available: General pre-application and scoping advice for solar farms | NatureScot (Accessed August 2024)
[89] The Construction Industry Research and Information Association (2015) Environmental Good Practice on Site (C741). CIRIA, UK.

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 9.1 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 9.1 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	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); 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 Project, the degree of change to baseline conditions predicted as a result of the Project, 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 approach to mitigation Table 9.2.

TABLE 9.2 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. • 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.

Sensitivity of Receptor	Definition
	• 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 used as a guise, in addition to a professional judgement, to predict the significance of the likely effects on the geology and peat resource as a result of the Project. Table 9.3 summarises guideline criteria for assessing the significance of effects.

TABLE 9.3 FRAMEWORK FOR ASSESSMENT OF 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 9.4 shows the results of the scoping assessment as well as the rationale for scoping potential effects in or out of the assessment.

TABLE 9.4 ENVIRONMENTAL FACTORS SCOPING RESULTS

Potential Effect	Assessment	Effect	Scoped In/Out	Rationale
Loss of Soils	EIA Chapter	Unlikely Effect	Scoped Out	There is no evidence of peat

Potential Effect	Assessment	Effect	Scoped In/Out	Rationale
				on the Site and soils will be reused on Site. The compaction of soils is avoided through employing good practice construction procedures on Site. Therefore, the loss and compaction of peat and soils is scoped out of the assessment.
Soil as Waste Material	EIA Chapter	Likely Effect	Scoped In	Soil will be reused on Site where possible. The EIA Chapter will evaluate and discuss soils as a waste material.
Contaminated Land	EIA Chapter	Likely Effect	Scoped In	The Site is largely vacant and there is no history of landfills, mining, or water/waste treatment facilities that could have led to contamination within the Site boundary. There is however the past presence of coal mining directly north of

Potential Effect	Assessment	Effect	Scoped In/Out	Rationale
				the Site boundary which could have resulted in contamination to be present within the Study Area.
Geology	EIA Chapter	Likely Effect	Scoped In	The effects on geology are unclear until further assessment is undertaken. Geology is therefore scoped in.
Transboundary Effects	EIA Chapter	Unlikely Effect	Scoped Out	Transboundary effects will not affect the soils 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/peat excavated from the ground will be reused on Site.
Cumulative Effects	EIA Chapter	Unlikely Effect	Scoped Out	Cumulative Developments will not affect the soils at the Site. Construction and

Potential Effect	Assessment	Effect	Scoped In/Out	Rationale
				Decommissioning will affect excavated soils or loaded soils; therefore, 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:

- Do you agree that the data sources identified are sufficient to inform the Geology and Soils baseline for the EIA (and therefore that no further baseline data collection is merited)?
- Have all Geology and Soils receptors and potential impacts that could result from the Project been identified?
- Do you agree with the proposed approach to assessment (scoped in or out) for each of the impacts in the Likely Significant Effects EIA Scoping Assessment table for Geology and Soils?
- Do you agree with the proposed methodology and scope of the Geology and Soils assessment?
- 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 Report 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 Springfield Farm Solar 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 number of minor roads including the U218 U219 Lawfield Road, U220 Dunglass Road, and the C120 which provides access to isolated residential properties and settlements including the village of Oldhamstocks located to the south of the Proposed Development. There are no local amenities directly fronting the A1(T) as well as the U218, U219, U220, or the C120.

Construction traffic associated with the Proposed Development would generally approach from the north from the A1(T) via the roads highlighted above. Immediate access to the Site will be via existing field access points which will be formalised. The finalised Study Area will be confirmed once the initial access assessment has been completed and may include additional roads from the local authorities adopted road network.

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 upon 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 East Lothian 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 [90].

10.2.2 U220 DUNGLASS ROAD

The U220 leading from the A1(T) to Bilsdean is a two-way single carriageway which is subject to the national speed limit. The road has centre line markings which indicates that the road is wide enough for HGVs to pass each other safely. The U220 is unlit and has no footway provision although, it connects Core Path 309 (located along the A1(T)) with Bilsdean and is

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

designated as 'suggested links on quiet roads', so it may likely be used by non-motorised users. That notwithstanding, it is advised that due to the lack of physical infrastructure (footpaths/cycle paths) along this route, non-motorised users should assess the safety risks and take extra caution whilst using this route. Roads of this type and size have a capacity of circa 6,720 vehicles movements per day [91].

10.2.3 MINOR ROADS (U218, U219, C120)

The U218, U219, and C120 are single carriageway roads with a rural aspect, having no centre line markings and are subject to the national speed limit. The roads provide access to residential properties and small settlements and are not wide enough for HGVs to pass each other safely, therefore it would require mitigation measures to minimise the impact of construction traffic. The roads are unlit, have no footway provision and are bound by mainly grass verges, hedgerows, or trees.

10.2.4 NON-MOTORISED USER NETWORK

As noted above, there is generally no footway provision along the key road links within the Study Area, and the impacted sections of road are generally unlit. There is a core path (Core Path 8) within the Site boundary, and it is intended that this will remain open throughout construction. It is noted that there are a number of coastal paths including the John Muir Link and the John Muir Way located north of the Proposed Development although these core paths are unlikely to be impacted by construction traffic. A review of Sustrans' National Cycle Network (NCN) map indicates that a section of NCN Route 76 is located to the northwest of the Proposed Development along the A1(T).

10.2.5 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) [92] 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 at the A1(T) is summarised in Table 10.1 below.

TABLE 10.1 EXISTINGANNUAL DAILY FLOW (2023)

Road/Location	Total AADF	HGV AADF	HGV % of Total AADF
A1 near Bilsdean, DfT Point ID 50710	11,486	1,586	5.4 %

[91] Standards for Highways (2013) Volume 15, Economic Assessment of Road Schemes in Scotland, DMRB.
[92] UK Government, Department for Transport, Road Traffic Statistics. Available at: https://roadtraffic.dft.gov.uk/manualcountpoints/50510. (Accessed on 23 July 2024).

10.3 POTENTIAL ENVIRONMENTAL EFFECTS

In accordance with the the Institute of Environmental Management and Assessment[93] ("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.

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 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.

This number of vehicles, when compared against the baseline traffic flows on the A1(T) will lead to a temporary increase of 1% (and 1.9% 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).

Traffic count information for the minor roads was not available at the time of completing this report, however, it is expected that the percentage increase in traffic will be higher on these roads due to a lower baseline flow level.

When considering increases in traffic on roads with a low baseline traffic flow, it is important to consider the overall and residual capacity of the road in question. Although there is no traffic count information available, existing levels are expected to be lower than that on the A1(T), and therefore the effect of the Proposed Development will be well below the predicted daily capacity of 6,720 vehicles. The magnitude of the predicted increase is low in absolute terms (76 vehicles per day, 40 cars/vans & 30 HGVs), and is not anticipated to cause a disruption to the current traffic flow. There is significant residual capacity on this route to accommodate the temporary increase in traffic and therefore the impact of this on the minor roads is expected to be not significant.

Given the relatively short construction period and the nature of the Site and the Proposed Development, a number of environmental effects (particularly community effects) are considered 'unlikely to be significant' due to an absence of sensitive receptors or source of effects to necessitate an EIA for traffic and transport.

[93] 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 (Accessed on 23 July 2024).

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 the Proposed Development. This will detail the likely traffic movements generated during the construction phase, review the suitability of access routes to Site and address any potential road safety and delay issues on road links within the Study Area including the A1(T) among 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 East Lothian Council and Transport Scotland to agree the scope of the Transport Statement.

Vehicle movements generated during the operational phase of the Proposed Development will comprise activities associated with inspection, monitoring, and general site up-keep. 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 numbers of vehicle movements anticipated, it is unlikely that the operation of the Proposed Development will have any significant impact 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 therefore the TS will focus mainly on construction impacts.

Traffic and transport effects associated with decommissioning of the Proposed Development are expected to comprise 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 decommissioning of the Proposed Development will be the same or less than that experienced during construction. It is not possible to accurately forecast 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 East Lothian Council and Transport Scotland at the time of decommissioning.

10.4 PROPOSED ASSESSMENT METHODOLOGY

The TS would be completed with reference to NPF4, relevant technical/planning guidance (listed below) and in consultation with the East Lothian Council and Transport Scotland:

- The Transport Assessment Guidance[94];
- Planning Advice Note (PAN7)5: Planning for Transport[95];

[94] Scottish Government (2012). 'Transport Assessment Guidance'. [Online]. Available: TRANSPORT ASSESSMENT GUIDANCE (Accessed on 23 July 2024).
[95] 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).

- East Lothian Local Transport Strategy[96]; and,
- Design Manual for Roads and Bridges (DMRB)[97].

Any new suitable access arrangement will be designed in accordance with National Road Development Guide[98] 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 with East Lothian Council and Transport and finalised post-consent but prior to the commencement of construction of the Proposed Development.

10.6 CONSULTATION AND QUESTIONS FOR CONSULTEES

Consultation will be conducted with the following consultees:

- East Lothian Council; and,
- Transport Scotland.

Key questions for consultees are:

- Are consultees content that it is more appropriate to address potential issues in a Transport Statement rather than an EIA assessment?
- Are Consultees content with the proposed methodology and scope of the traffic and transport assessment?
- Are you aware of any relevant policies or guidance documents not specifically mentioned in this chapter of the report?
- Are there any developments or infrastructure schemes which should be taken into account when considering potential cumulative traffic and transport impacts?

[96] East Lothian Council (2018). 'Local Transport Strategy 2018 -2024'. [Online]. Available: Local Transport Strategy 2018-2024 | East Lothian Council (Accessed on 23 July 2024).
[97] Standards for Highways (2024) [Online] Available: Standards For Highways(Accessed on 23 July 2024).
[98] SCOTS (2017). 'National Roads Development Guide'. [Online]. Available: SCOTS (scotsnet.org.uk)

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 EIA and details 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 RELEVANT POLICY, LEGISLATION, AND GUIDANCE

11.2.1 LEGISLATION

The following legislation is relevant to the Proposed Development:

- The Control of Pollution Act 1974 (CoPA 1974)[99] ; and,
- The Environmental Protection Act 1990 (EPA 1990)[100] .

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.

The Environmental Protection Act 1990 (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*

[99] UK Government (1974). '*Control of Pollution Act*, 1974' [Online] Available: *Control of Pollution Act 1974 (legislation.gov.uk)* (Accessed 11 July 2024)
[100] 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)[101], PAN 1/2011 (PAN) Planning and Noise[102] and Technical Advice Note: Assessment of Noise (TAN)[103] .

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*".

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.

Technical Advice Note (TAN): Assessment of Noise

[101] Scottish Government, 2023. National Planning Framework 4. [online] Available at: https://www.gov.scot/publications/national-planning-framework-4/ (Accessed 11 July 2024).
[102] 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).
[103] 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).

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 East Lothian Local Development Plan 2018[15], current guidance adopted on 27th September 2018, 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.

Early consultation with the Council's Environmental Protection Service is recommended to determine if a Noise Impact Assessment (consistent with PAN 1/2011: Planning and Noise or its revisions) is required. If such an assessment indicates potential noise issues, appropriate mitigation measures must be specified. Any noise mitigation must be acceptable in landscape terms. Developments resulting in or subject to unacceptable noise levels will not be supported, according to Policy NH13: 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)[104] 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[105] ;
- BS 8233 (Guidance on Sound Insulation and Noise Reduction for Buildings)[106] ; and
- ISO 9613-2:1996: Attenuation of Sound during Propagation Outdoors[107].

[104]BSI Group (2009). 'BS 5228:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites'.
[105] BSI Group (2019). 'BS 4142:2014+A1:2019 - Methods for rating and assessing industrial and commercial sound'.
[106] BSI Group (2014). 'BS 8233: 2014 Guidance on Sound Insulation and Noise Reduction for Buildings'.
[107] ISO (1996). 'ISO 9613-2:1996 - Attenuation of Sound during Propagation Outdoors'. BSI Standards Publication

11.3 BASELINE CONDITIONS

11.3.1 DATA SOURCES USING 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 1 km 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 (Oldhamstock Mains and Moudieworps). Beyond the site boundary, a number of isolated residential properties surround the site on all sides. The nearest villages include Birnieknowes (approximately 100 m to the northwest), Cockburnspath (approximately 2 km to the east), Thorton (approximately 1 km to the north) and Oldhamstocks (approximately 50m to the south).

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. Natural sources of noise such as birds, wind in the trees and 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).

11.4 POTENTIAL ENVIRONMENTAL EFFECTS

Noise sources during the operation phase are expected to predominantly come from electrical equipment such as inverters, transformers, and other machinery associated with the substation(s) and battery storage components of the Proposed Development.

A noise assessment of significant operational noise sources will be included. The primary environmental concern is the disturbance to nearby residents caused by noise during the

construction, operation, and decommissioning of the Proposed Development. The findings from the noise assessment will inform the final design to ensure that noise impacts are minimized.

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. As a result, the magnitude of change during the construction and decommissioning phases would be minimal.

Traffic volumes generated by the Proposed Development during construction, operation and decommissioning are not likely to lead to any long-term delays or other traffic-related effects. Consequently, there is no potential for significant effects due to traffic noise and will not be considered in the EIA.

11.4.2 OPERATION

During the operational phase of the Proposed Development, noise is generated by the electrical systems such as the transformers, inverters, 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 negligible noise generated during the hours of darkness, when ambient noise levels are typically at their lowest.

Regarding operational traffic, no permanent staff will be stationed at the site. Vehicle access will therefore 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 SCOPED-IN EFFECTS

TABLE 11.1 SUMMARY OF LIKELY SIGNIFICANT EFFECTS

Potential Effects	Proposal for Assessment Within EIA
Construction Phase	
Noise from construction activities (not including traffic noise) e.g., digging trenches for on-site cable routing, ground excavation or driving steel frames into the ground.	Scoped In
Operational Phase	
Noise generated by fixed electrical plant associated with the Solar Farm and Battery Energy Storage System.	Scoped In
Decommissioning Phase	
Noise and vibration effects during decommissioning are expected to be similar to those generated during the construction phase.	Scoped In

11.4.4 SCOPED-OUT EFFECTS

TABLE 11.2 SUMMARY OF LIKELY INSIGNIFICANT EFFECTS

Potential Effects	Proposal for Assessment Within EIA
Construction Phase	
Vibration from construction activities e.g., digging trenches for cable routing, ground excavation or driving steel frames into the ground.	Scoped Out

Potential Effects	Proposal for Assessment Within EIA
Operational Phase	
Significant increases in road traffic noise during operation are not expected to occur.	Scoped Out
No significant vibration generating equipment will be required during operation.	Scoped Out
Operational noise from the cable corridor is not expected.	Scoped Out
Decommissioning Phase	
Noise and vibration effects during decommissioning are expected to be similar to those generated during the construction phase.	Scoped Out

11.5 CUMULATIVE EFFECTS

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

11.6 PROPOSED ASSESSMENT METHODOLOGY

11.6.1 BASELINE MONITORING

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

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 for a period of at least one week in accordance with BS 4142. Meteorological data such as rain and wind speed and direction will also be measured during the survey. It would not be feasible to undertake baseline monitoring at all identified receptors around the Site.

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. Where baseline data are not collected, e.g. along the cable corridor, a conservative approach will be followed within the construction assessment by assuming baseline levels are low.

11.6.2 SPECIFIC METHODOLOGIES

Noise level predictions for the operational phase will be carried out using a computer software package. The widely recognised software package SoundPLAN will be used, implementing the prediction method set out in ISO 9613-2[108] . Construction noise level predictions would be carried out according to BS 5228-1.

11.6.3 CONSTRUCTION AND DECOMMISSIONING PHASES

Construction noise will be assessed using BS 5228-1[102], 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 11.3.

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

TABLE 11.3 AIRBORNE SOUND FROM CONSTRUCTION – IMPACT CRITERIA AT RESIDENTIAL RECEPTORS

Period	Assessment Category dB $L_{Aeq, T}$		
	A	B	C
Day			
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) Sundays 07:00-23:00 (16 Hour Period)	>55	>60	>65
Night			
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 11.4.

[108] ISO (2024), 'ISO 9613-2:2024 Acoustics; Attenuation of sound during propagation outdoors – Part 2: General method of calculation'.

TABLE 11.4 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

Construction traffic noise will be predicted in terms of the Basic Noise Level (BNL), according to CRTN[109] . Traffic noise magnitudes are assessed as Negligible for noise changes less than 1 dB(A), and Small for changes between 1.0 and 2.9 dB, with Medium changes between 3.0 and 4.9 dB and Large changes above 4.9 dB based on the guidance in the Design Manual for Roads and Bridges (DMRB). If construction traffic noise is above a Small magnitude, the effect will be considered significant if it lasts for at least 10 or more days or nights in any window of 15 consecutive days or nights.

11.6.4 OPERATIONAL PHASE

The potential for significant noise effects will be assessed according to BS 4142:2014 +A1: 2019[105]. 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.

11.6.5 ASSESSMENT PERIODS

The assessment will include the following scenarios:

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

11.7 APPROACH TO MITIGATION

11.7.1 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

[109] Department of Transport. (1988). Calculation of Road Traffic Noise. [online] Available at: https://www.easybib.com/guides/citation-guides/harvard-referencing/how-to-reference-a-pdf-harvard/ (Accessed: 11 July 2024).

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. BS5228-1 describes measures to control noise at source including for example:

- Control at source, e.g:
  - the selection of quiet and low vibration equipment;
  - review of construction methodology to consider quieter methods;
- direct control of noisy equipment, e.g. use of acoustic enclosures, retrofitting controls, regular inspection and maintenance of noise control measures; and,
  - the use of less intrusive alarms, such as broadband vehicle reversing warnings.
- Control of noise across the Proposed Development, e.g.:
  - screening, e.g. local screening of equipment, perimeter hoardings or the use of temporary stockpiles;
- location of equipment on-site; and,
  - control of working hours.

11.7.2 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.

11.8 CONSULTATION

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

11.9 KEY QUESTIONS FOR CONSULTEES

- Do you agree with the proposed methodology for the noise assessment?
- Are there any other relevant consultees that should be included in the consultation?
- 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 (National Planning Framework 4 – Research Project: Lifecycle Greenhouse Gas Emissions of NPF4 Proposed National Developments Assessment Findings, Scottish Government, October 2022) 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 EIA.

12.2 SOCIO-ECONOMICS

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 socio economic receptors it is proposed that this topic is scoped out of the EIA. Potential visual effects in relation to tourism, recreational routes and receptors will be considered in the Landscape and Visual Impact (LVIA).

12.3 GLINT AND GLARE

Preliminary assessment in relation to glint and glare has identified the following receptors with 1 km of the Site:

- 40 buildings;
- 1 railway line; and,
- 3 roads

Initial assessment concluded that 19 buildings will not be subject to glint and glare from the Proposed Development.

Of the remaining receptors, approximately 75% of the glint and glare impact is considered negligible, and of lesser intensity than that of reflective surfaces such as metals and water bodies, with a low chance of an after-image on receptors. The other 25% constitutes impacts that can potentially create an after-image and approximately half of this is experienced by the two roads running through the middle and to the west of site (C121 and C218, respectively). This will occur as instantaneous flashes on road users (i.e. not persistent glint & glare as with building receptors)..

Some areas have been identified where existing hedgerows are not tall enough to mitigate the impacts of glint and glare and further analysis will be carried out to determine the effectiveness of existing screening. Mitigation will be considered in the form of establishment of hedgerows or fencing around portions of the site from which glint and glare emanates.

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.

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, or have their risks controlled by mitigations embedded in scheme design, these effects will be scoped out of the EIA.

12.6 POPULATION – PUBLIC ACCESS

Core Path 12 routes through the southern part of the site connecting Oldhamstocks to Dunglass. This access route 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 East Lothian Council Outdoor Access Officer and ScotWays. No significant effects are anticipated in relation to public access, therefore, this topic has been scoped out of the EIA. Visual impact will be evaluated as part of the Landscape and Visual Assessment. Proposed Viewpoint 6 (Core Path near Oldhamstocks), identified in Section 5 (Landscape and Visual) of this report relates to this route.

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 to ensure 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 further assessment.

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 EIA and it is proposed waste is scoped out of further assessment.

APPENDIX A CULTURAL HERITAGE BASELINE

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB14710	Oldhamstocks Parish Church, Oldhamstocks	A	351.5
Listed Building	LB14710	Burial Ground, Oldhamstocks Parish Church, Oldhamstocks	A	354.7
Listed Building	LB14710	Watch House, Oldhamstocks Parish Church, Oldhamstocks	A	376.4
Listed Building	LB14725	Gazebo, Dunglass House	A	968.5
Listed Building	LB14731	Dunglass Viaduct	A	1592.0
Listed Building	LB4047	Market Cross, The Square, Cockburnspath	A	2192.7
Listed Building	LB4129	Cockburnspath Parish Church	A	2223.5
Listed Building	LB4129	Churchyard, Cockburnspath Parish Church	A	2232.7
Listed Building	LB4046	Old Manor House, Cockburnspath	A	2254.8

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB14734	Oldhamstocks Bridge, Oldhamstocks Burn, Oldhamstocks	B	197.8
Listed Building	LB14733	Brae View, Oldhamstocks	B	270.3
Listed Building	LB14712	Pump, Village Green, Oldhamstocks	B	299.4
Listed Building	LB14713	The Wight House, Oldhamstocks	B	324.3
Listed Building	LB14711	Market Cross, Village Green, Oldhamstocks	B	359.9
Listed Building	LB14709	Manse, Oldhamstocks	B	391.6
Listed Building	LB14709	Walled Garden, Manse, Oldhamstocks	B	398.9
Listed Building	LB14732	Hot Houses, Dunglass House	B	770.7
Listed Building	LB14732	Garden Service Buildings, Dunglass House	B	770.9
Listed Building	LB14732	Walled Garden, Dunglass House	B	776.8
Listed Building	LB14698	Bilsdean Bridge	B	855.0

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB14702	Farm Dairy, Dunglass House	B	868.3
Listed Building	LB14714	Stottencleugh Farmhouse	B	1098.8
Listed Building	LB14729	Stables, Dunglass House	B	1157.0
Listed Building	LB14730	Sundial, Dunglass House	B	1281.4
Listed Building	LB4055	New Bridge, Dunglass	B	1521.8
Listed Building	LB14726	New Bridge, Dunglass	B	1521.8
Listed Building	LB4057	Dunglass Bridge	B	1627.8
Listed Building	LB14699	Dunglass Bridge	B	1627.8
Listed Building	LB4058	Old Bridge, Dunglass	B	1734.2
Listed Building	LB14727	Old Bridge, Dunglass	B	1734.2
Listed Building	LB7708	Cottage And Adjoining Ingleneuk, Thorntonloch	B	1988.9
Listed Building	LB7708	Cottage, Thorntonloch	B	2003.2

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB4050	George Hay And Sons General Merchants, Hoprig Road, Cockburnspath	B	2225.1
Listed Building	LB4048	Smithy, Cockburnspath	B	2258.6
Listed Building	LB4049	Cottage To Rear Of Cockburnspath Hotel, Cockburnspath	B	2299.5
Listed Building	LB4049	Stables, Cockburnspath Hotel	B	2303.5
Listed Building	LB7717	The Stables, Mansewood, Innerwick	B	2691.3
Listed Building	LB7717	Mansewood, Innerwick	B	2695.7
Listed Building	LB7721	Tyme Cottage, Innerwick	B	2729.4
Listed Building	LB7720	Cartshed And Granary, Temple Mains Farm, Innerwick	B	2790.9
Listed Building	LB7720	East Range, Temple Mains Farm, Innerwick	B	2800.8

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB7720	Mill And Chimney Stalk, Engine House, Temple Mains Farm, Innerwick	B	2802.3
Listed Building	LB6417	Tunnel, Cove Harbour	B	2944.6
Listed Building	LB7714	Steading Cottage, Thurston Mains	B	2969.0
Listed Building	LB14708	October Cottage, Oldhamstocks	C	91.6
Listed Building	LB18958	Mill Cottage, Oldhamstocks Mill, Oldhamstocks	C	267.5
Listed Building	LB14735	Greenend Cottage, Oldhamstocks	C	334.1
Listed Building	LB14736	Hill Crest, Oldhamstocks	C	357.2
Listed Building	LB14728	Old Gardener's House, Dunglass House	C	704.1
Listed Building	LB14704	Gardener's House, Dunglass House	C	846.7
Listed Building	LB14724	West Lodge And Gate Piers, Dunglass House	C	859.7
Listed Building	LB14703	Farm Lodge, Dunglass House	C	892.7

Designation	Reference	Name	Category	Distance from RLB (m)
Listed Building	LB14701	East Lodge With Gate Piers And Quadrant Wall, Dunglass House	C	1477
Listed Building	LB6414	Merse Lodge	C	1539.7
Listed Building	LB48937	Cockburnspath Station	C	2163.1
Listed Building	LB48937	Cockburnspath Station House	C	2171.9
Listed Building	LB7704	Innerwick House With Gatepiers And Parapet	C	2587.5
Listed Building	LB7716	Knock Cottage, Innerwick	C	2621.2
Listed Building	LB7705	Birrell's House, Innerwick	C	2681.2
Listed Building	LB7718	Innerwick Parish Church	C	2724.5
Listed Building	LB7719	Temple Mains House, Innerwick	C	2762.8
Listed Building	LB7713	Walled Garden, Thurston Mains	C	2957.5
Listed Building	LB7713	Thurston Mains	C	2990.2

Designation	Reference	Name	Category	Distance from RLB (m)
Scheduled Monument	SM13313	Dunglass Collegiate Church, 70m E of 2 Stable Cottages	Ecclesiastical: collegiate church	1206.2
Scheduled Monument	SM5891	Oldhamstocks Mains,enclosure 300m NNW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	0
Scheduled Monument	SM5892	Springfield,enclosure 300m NNE of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	36.3
Scheduled Monument	SM5894	Springfield,enclosure 400m SSE of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	218.6
Scheduled Monument	SM5890	Branxton Cottage,enclosure 300m E of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	397.1
Scheduled Monument	SM5850	Black Castle,enclosure	Prehistoric domestic and defensive: enclosure	725.2

Designation	Reference	Name	Category	Distance from RLB (m)
			(domestic or defensive)	
Scheduled Monument	SM5958	Branxton,enclosure 350m NNW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	741.0
Scheduled Monument	SM5849	Castledene,enclosure SW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	1498.1
Scheduled Monument	SM5848	Braidwood,enclosure 200m NE of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	1930.4
Scheduled Monument	SM5770	Crowhill,enclosure WNW of	Prehistoric domestic and defensive: enclosure (domestic or defensive)	2132.5
Scheduled Monument	SM5876	Black Castle Cottage,promontory fort 300m SW of	Prehistoric domestic and defensive: fort (includes hill and	634.5

Designation	Reference	Name	Category	Distance from RLB (m)
			promontory fort)	
Scheduled Monument	SM5771	Innerwick Castle,fort and ring ditch	Prehistoric domestic and defensive: fort (includes hill and promontory fort)	1678.5
Scheduled Monument	SM3916	Blackcastle Hill,homestead 370m ENE of Post Office Mast	Prehistoric domestic and defensive: homestead	1669.0
Scheduled Monument	SM3933	Blackcastle Hill,homestead 1300m SSE of Thurston Mains	Prehistoric domestic and defensive: homestead	2345.5
Scheduled Monument	SM5893	Springfield,palisaded enclosure and ring ditch 200m E of	Prehistoric domestic and defensive: palisaded enclosure	349.6
Scheduled Monument	SM3990	Thornton Mill,enclosure 350m ESE of	Prehistoric ritual and funerary: enclosure (ritual or funerary)	1596.3
Scheduled Monument	SM773	Innerwick Castle	Secular: castle	1655.8

Designation	Reference	Name	Category	Distance from RLB (m)
Scheduled Monument	SM3191	French Camp,fort,Dunglass	Secular: fort (non-prehistoric)	833.5
Conservation Area	CA288	Oldhamstocks	n/a	0
Conservation Area	CA596	Cockburnspath	n/a	2127.3
Conservation Area	CA285	Innerwick	n/a	2221.5
Garden and Designed Landscape	GDL00154	Dunglass	A	0
Non-designated	MEL1883	Oldhamstocks mains	Farmhouse; farmstead	0
Non-designated	MEL1894	Oldhamstocks mains	Enclosure	0
Non-designated	MEL1906	Oldhamstocks mains	Enclosed settlement; field boundary	0
Non-designated	58952	Oldhamstocks mains	n/a	0
Non-designated	58963	Oldhamstocks mains	n/a	0
Non-designated	58975	Oldhamstocks mains	n/a	0

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	58847, MEL1816	Dunglass	Long cist; long cist cemetery	39.7
Non-designated	MEL13329	Oldhamstocks mains	Enclosure	51.2
Non-designated	MEL1820	Springfield	Enclosed settlement; enclosure	73.6
Non-designated	211911, MEL4505	Oldhamstocks, old smithy and smithy cottage / the smithy house	House; blacksmiths workshop	81.0
Non-designated	211905, MEL4502	Oldhamstocks, october cottage	House	89.1
Non-designated	211896, MEL4496	Oldhamstocks, the cottage	House	89.9
Non-designated	211923, MEL4510	Oldhamstocks, east cottage	House	92.7
Non-designated	211897, MEL4497	Oldhamstocks, dovecot / dovecot cottage	House	94.6
Non-designated	211946, MEL4515	Oldhamstocks, dunain	House	95.6
Non-designated	58874	Springfield	n/a	99.1
Non-designated	378826	Branxton	n/a	103.6

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	MEL2650	Branxton, roc observation post	Observation post; royal observer corps monitoring post	129.1
Non-designated	278508, MEL8930	Springfield	Farmstead; farmhouse	137.0
Non-designated	156615	Branxton, roc observation post	n/a	138.2
Non-designated	357577, MEL11517	Oldhamstocks, cromwellhall	Inn	157.5
Non-designated	211891, MEL4494	Oldhamstocks, candy cottage	House	161.1
Non-designated	278507, MEL8929	Birnieknowes / palmerton	Farmhouse; farmstead	179.6
Non-designated	211944, MEL4514	Birnieknowes farm cottages	Farmstead	187.9
Non-designated	211922, MEL4509	Oldhamstocks, oldhamstocks burn, oldhamstocks bridge	Road bridge	201.6
Non-designated	211910, MEL4504	Oldhamstocks, rose cottage and daisy cottage / tacoma, talomee	House	214.9
Non-designated	MEL1837	Springfield	Enclosed settlement;	227.2

Designation	Reference	Name	Category	Distance from RLB (m)
			palisaded settlement	
Non-designated	211970, MEL4516	Oldhamstocks, the cottage	House	230.6
Non-designated	MEL2080	Branxton	Site; natural feature	237.7
Non-designated	MEL11909	Springfield	Field boundary	238.4
Non-designated	211879	Oldhamstocks, general	n/a	246.7
Non-designated	211888, MEL4493	Oldhamstocks, brae view / braeview	House	254.9
Non-designated	211904, MEL4501	Oldhamstocks, oldhamstocks mill, mill cottage	Mill house; mill	260.2
Non-designated	MEL13259	Springfield	Pit; geological marks	261.8
Non-designated	58899	Springfield	n/a	262.2
Non-designated	211917, MEL4507	Oldhamstocks, village green, pump / wellhead	Well head; pump	284.4
Non-designated	MEL11325	Springfield	Barrow	292.8
Non-designated	58900	Springfield	n/a	294.8

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	311923	Springfield	n/a	299.4
Non-designated	82828	Branxton	n/a	304.0
Non-designated	58914, MEL1845	Black castle, oldhamstocks	Castle	307.0
Non-designated	211920, MEL4508	Oldhamstocks, the wight house / the white house	House	309.4
Non-designated	181432, MEL2823	Oldhamstocks	Building	310.8
Non-designated	MEL1838	Springfield	Enclosure; pit	314.9
Non-designated	211929, MEL4511	Oldhamstocks, oldhamstocks primary school / schoolhouse and schoolroom	School; school house	334.1
Non-designated	211901, MEL4499	Oldhamstocks, hill crest / hillcrest, hillrest	House	342.0
Non-designated	211898, MEL4498	Oldhamstocks, greenend cottage	House	343.9
Non-designated	58933, MEL1864	Oldhamstocks, village green, market cross	Market cross	343.9

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	339222, MEL11368	Oldhamstocks, oldhamstocks war memorial	War memorial	350.8
Non-designated	MEL1844	Oldhamstocks, oldhamstocks parish church / church of scotland, hepburn burial-aisle	Church; sundial	355.9
Non-designated	58913	Oldhamstocks parish church	n/a	357.0
Non-designated	211903, MEL4500	Oldhamstocks, leeside / leaside	House	357.8
Non-designated	211912, MEL4506	Oldhamstocks, sunnyside	House	358.5
Non-designated	271333, MEL7945	Oldhamstocks, oldhamstocks parish church, burial ground	Cemetery; churchyard	359.5
Non-designated	211895, MEL4495	Oldhamstocks, the cottage	Building	364.2
Non-designated	297393, MEL9840	Lawfield	Coal workings	371.5
Non-designated	271336, MEL7946	Oldhamstocks, oldhamstocks parish church, watch house	Watch house	382.1
Non-designated	MEL1836	Springfield	Enclosure	382.7

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	262032, MEL7446	Oldhamstocks, manse, walled garden	Walled garden	383.3
Non-designated	58898	Springfield	n/a	390.9
Non-designated	MEL1822	Springfield	Settlement; palisaded enclosure	399.0
Non-designated	211906, MEL4503	Oldhamstocks, oldhamstocks house / the old manse	Manse	399.1
Non-designated	MEL12191	Branxton / threepland hill	Farmstead	410.5
Non-designated	MEL1886	Branxton / branxton cottage	Enclosure; enclosed settlement	414.0
Non-designated	58879	Springfield	n/a	419.1
Non-designated	58955	Branxton	n/a	451.7
Non-designated	MEL10318	Branxton / branxton cottage	Trackway; linear feature	454.8
Non-designated	MEL12217	Cocklaw	Farmstead	527.4
Non-designated	MEL7730	Hoprig	Settlement; farmstead;	542.8

Designation	Reference	Name	Category	Distance from RLB (m)
			enclosed settlement	
Non-designated	58940, MEL1871	Cocklaw	Findspot	546.7
Non-designated	76236, MEL2023	Dunglass	Burgh	564.3
Non-designated	MEL12218	Wallycleugh / woollands	Farmstead	582.3
Non-designated	58869	Cockburnspath	n/a	616.5
Non-designated	MEL1873	Branxton cottage / black castle cottage	Fort; trackway	625.6
Non-designated	MEL12215	Lawfield	Farmstead	627.6
Non-designated	145579, MEL2604	Lawfield	Farmhouse	648.6
Non-designated	262971	Hoprig		651.0
Non-designated	MEL7063	Cocklaw	Linear feature	653.6
Non-designated	351931	Dunbar, innerwick, black castle farm	n/a	674.5
Non-designated	58942	Branxton cottage	n/a	675.2

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	MEL10319	Harp law	Ring ditch	683.5
Non-designated	312785	Lawfield	n/a	696.5
Non-designated	MEL10345	Ferneylea	Farmhouse; farmstead; mill pond; lade	709.6
Non-designated	211937, MEL4513	Dunglass house, old gardener's house	House	711.3
Non-designated	MEL1889	Blackcastle cottage / black castle	Enclosure; enclosed settlement	725.2
Non-designated	58863	Kirklands	n/a	731.0
Non-designated	58905	Dunglass dean	n/a	742.4
Non-designated	58958	Blackcastle cottage	n/a	752.4
Non-designated	58861	Kirklands	n/a	763.5
Non-designated	MEL1872	Branxton	Enclosure; enclosed settlement	764.3
Non-designated	260790	Cocklaw		773.5

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	262012, MEL7426	Dunglass house, hot houses	Glasshouse	778.3
Non-designated	262014, MEL7428	Dunglass house, garden service buildings	Outbuilding	778.4
Non-designated	209377, MEL3769	Dunglass house, walled garden with glasshouses	Walled garden; glasshouse	784.1
Non-designated	58860	Kirklands		787.2
Non-designated	347977, MEL11414	Lawfield	Ring ditch; pit	788.2
Non-designated	58909	Hoprig, dean dykes	n/a	801.1
Non-designated	MEL10317	Branxton	Linear feature	803.0
Non-designated	MEL11335	Lawfield	Trackway; enclosure	803.1
Non-designated	58941	Branxton	n/a	805.9
Non-designated	278503	Berwick bridge	n/a	822.2
Non-designated	312786	Lawfield	n/a	838.5
Non-designated	365103	Torness power station sub-station	n/a	852.0

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	211935, MEL4512	Dunglass house, gardener's house	House	853.6
Non-designated	58890, MEL1830	Dunglass mains, estate office	Office	853.7
Non-designated	MEL12216	Dunglass mains	Farmstead	854.3
Non-designated	MEL1839	French camp / dunglass	Artillery fort	854.9
Non-designated	58884, MEL1827	Bilsdean bridge	Road bridge	855.8
Non-designated	MEL1834	Dunglass house, west lodge and gate piers	Gate pier; gate lodge	857.3
Non-designated	58894	Dunglass house, west lodge and gate piers	n/a	860.6
Non-designated	MEL10445	Harp law	Fort	871.4
Non-designated	234455, MEL6160	Dunglass house, farm dairy	Dairy	874.4
Non-designated	145564, MEL2602	Bilsdean, road bridge / bilsdean, railway underbridge	Road bridge	886.1
Non-designated	209335, MEL3757	Bilsdean toll house	Toll house	886.4

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	58883	Dunglass house, farm lodge	n/a	895.6
Non-designated	MEL1826	Dunglass house, farm lodge	Gate lodge	897.0
Non-designated	119981, MEL2395	Cydum: lunciwick, firth of forth / thorntonloch, thornton loch, cockburns path, cockburnspath, outer forth estuary	Marine casualty	904.7
Non-designated	MEL9278	Bilsdean / salt pan hall	Salt works	918.7
Non-designated	58858	Kirklands	n/a	919.4
Non-designated	96354	Hoprig	n/a	923.0
Non-designated	373348	Torness	n/a	927.5
Non-designated	319172	Harp law	n/a	937.3
Non-designated	MEL13144	Harp law	Ditch; rampart	937.6
Non-designated	MEL13145	Harp law	Drain; ditch	945.5
Non-designated	58891, MEL1831	Dunglass house, gazebo	Gazebo; summerhouse	974.9

Designation	Reference	Name	Category	Distance from RLB (m)
Non-designated	58903	Dunglass, 'french camp'	n/a	979.9
Non-designated	MEL13147	Harp law	Pit; ditch	983.4
Non-designated	58871	Kirklands	n/a	983.6
Non-designated	MEL13146	Harp law	Ditch; enclosure	989.2
Non-designated	MEL13155	Harp law	Ridge and furrow	995.3
Non-designated	MEL11950	Thornton bridge	Pit; fire pit	998.9

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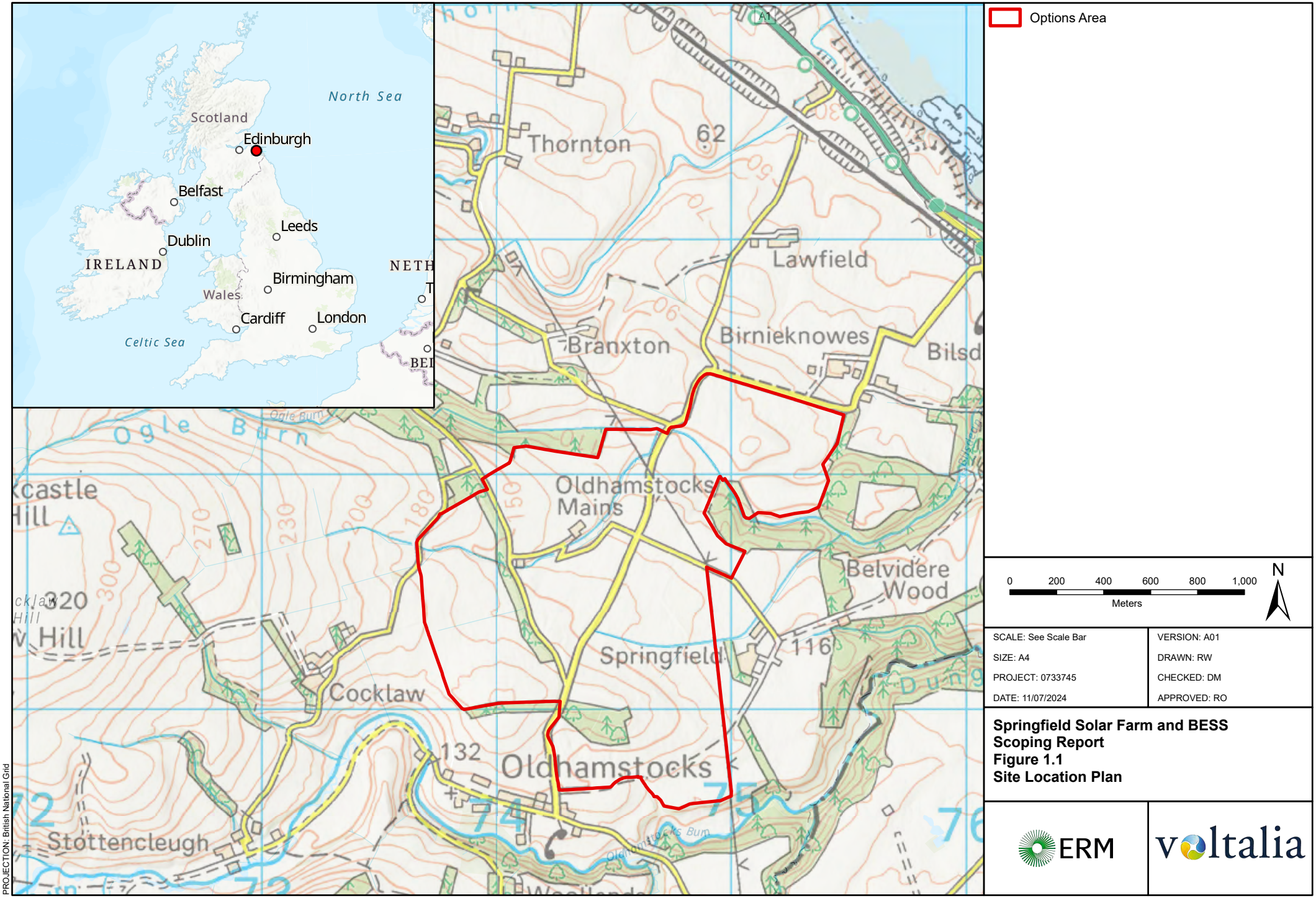

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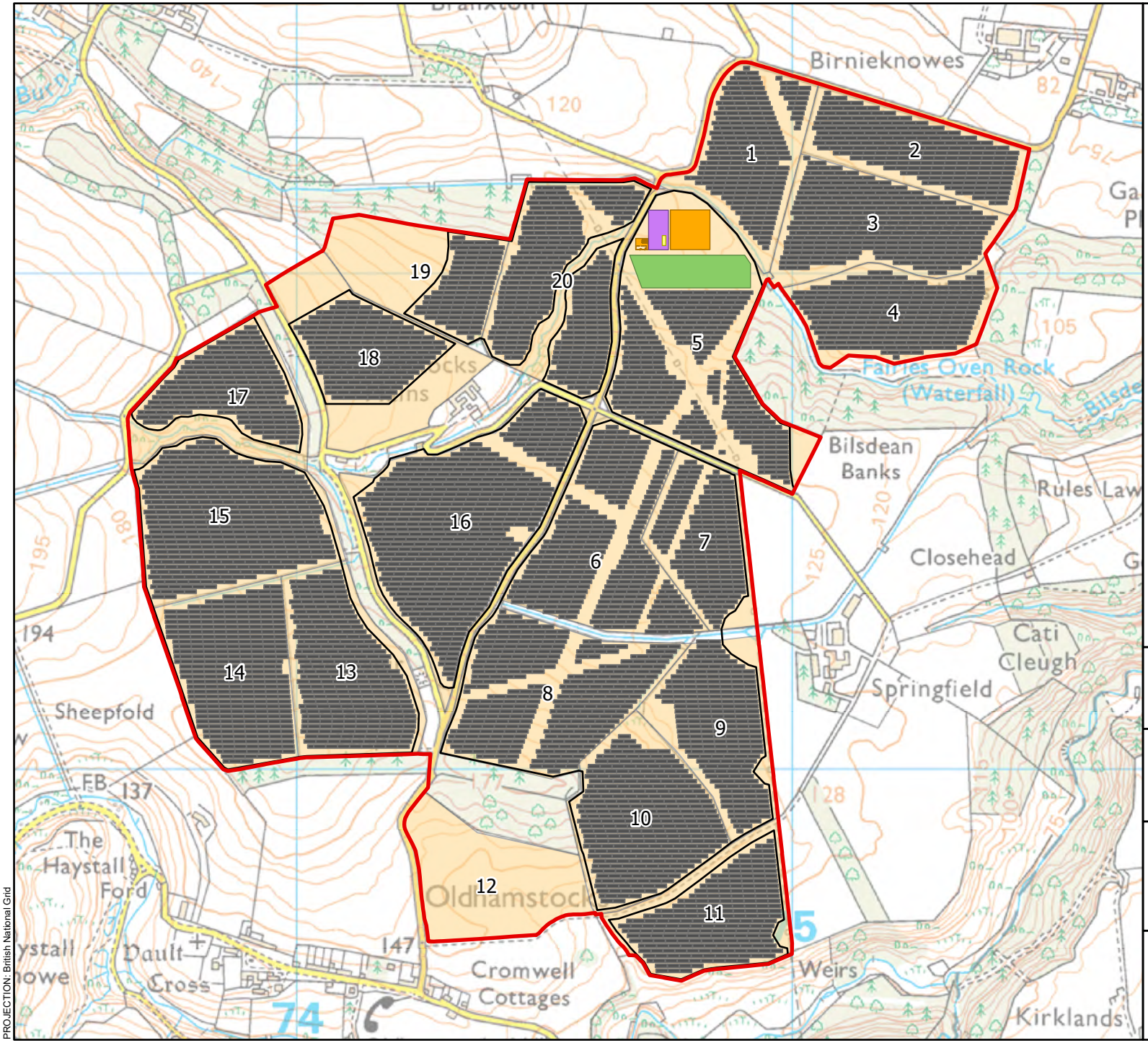
Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733745 - Springfield\MAPS\0733745 - Springfield.aprx\0733745 - Springfield - PM - Figure 1.1 - Site Location Plan - A01



Options Area
Land Parcels

Site Infrastructure

Delivery Station
Consumer Substation
DNO Substation
BESS Compound
PV Module Frames
Fence

0 100 200 300 400 500
Meters

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: DM
DATE: 11/07/2024	APPROVED: RO

Springfield Solar Farm and BESS
Scoping Report
Figure 1.2
Site Layout

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PROJECTION: British National Grid

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

Solar Panel Areas (modelled at 3.5m)

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

Proposed Viewpoints

Gardens and Designed Landscapes

Local Landscape Areas

Landcover

Buildings

Woodland

Zone of Theoretical Visibility (Panel Areas - 3.5m)

Greater extent visible

Lesser extent visible

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: L06
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: Springfield Farm	CHECKED: MF
DATE: 26/07/2024	APPROVED: MF

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

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PROJECTION: British National Grid

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BESS Area (modelled at 3.5m)

Substation Area (modelled at 7m)

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

Proposed Viewpoints

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: L06
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: Springfield Farm	CHECKED: MF
DATE: 26/07/2024	APPROVED: MF

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

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BESS Area (modelled at 3.5m)

Solar Panel Areas (modelled at 3.5m)

Substation Area (modelled at 7m)

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

Proposed Viewpoints

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: L06
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: Springfield Farm	CHECKED: MF
DATE: 26/07/2024	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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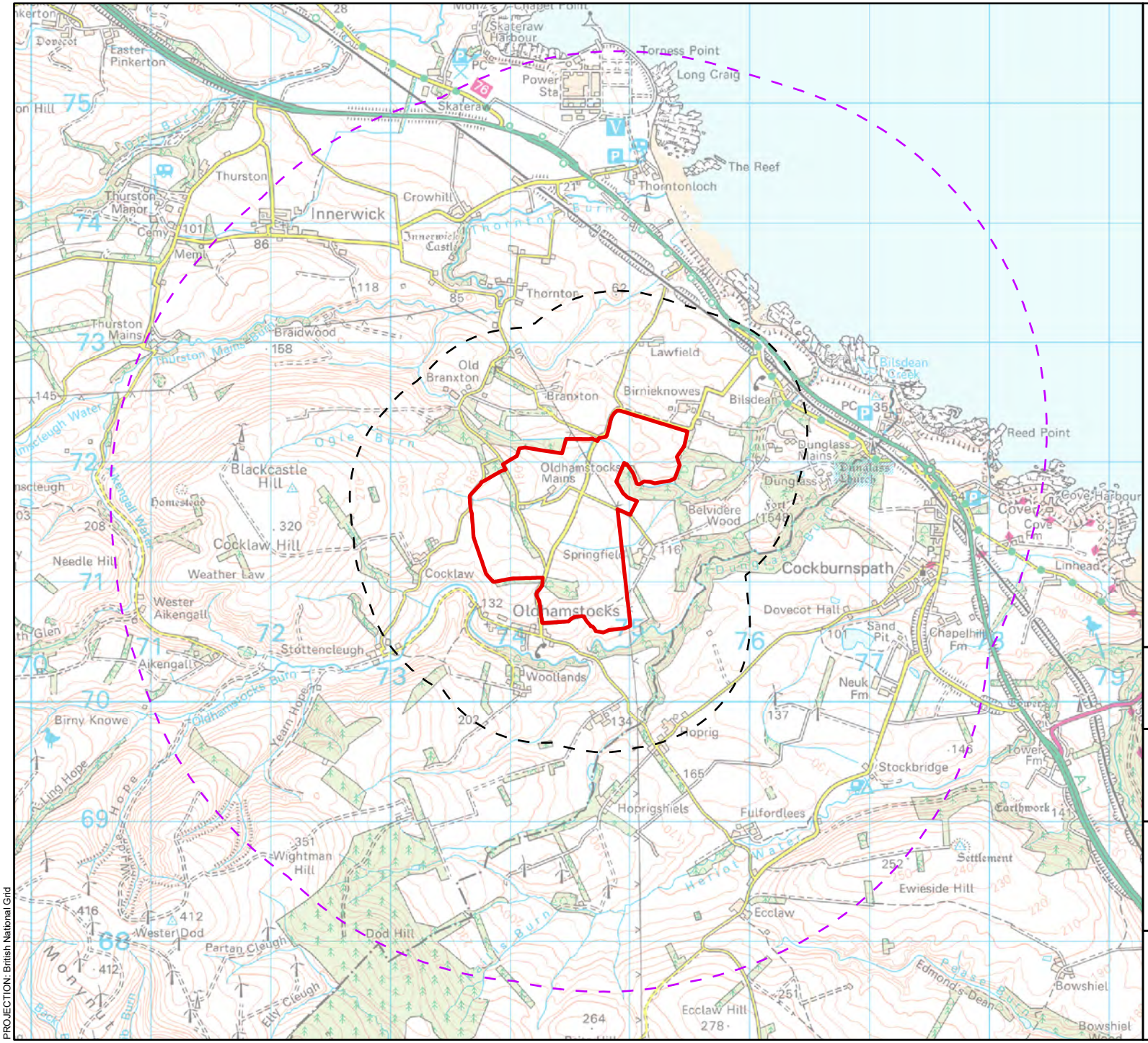
Options Area
1 km Study Area
3 km Study Area
0
500
1,000
1,500
2,000
Meters
N
SCALE: See Scale Bar
VERSION: A01
SIZE: A4
DRAWN: RW
PROJECT: 0733745
CHECKED: DM
DATE: 11/07/2024
APPROVED: RO
Springfield Solar Farm and BESS
Scoping Report
Figure 6.1
Site Location
ERM
voltalia
PROJECTION: British National Grid
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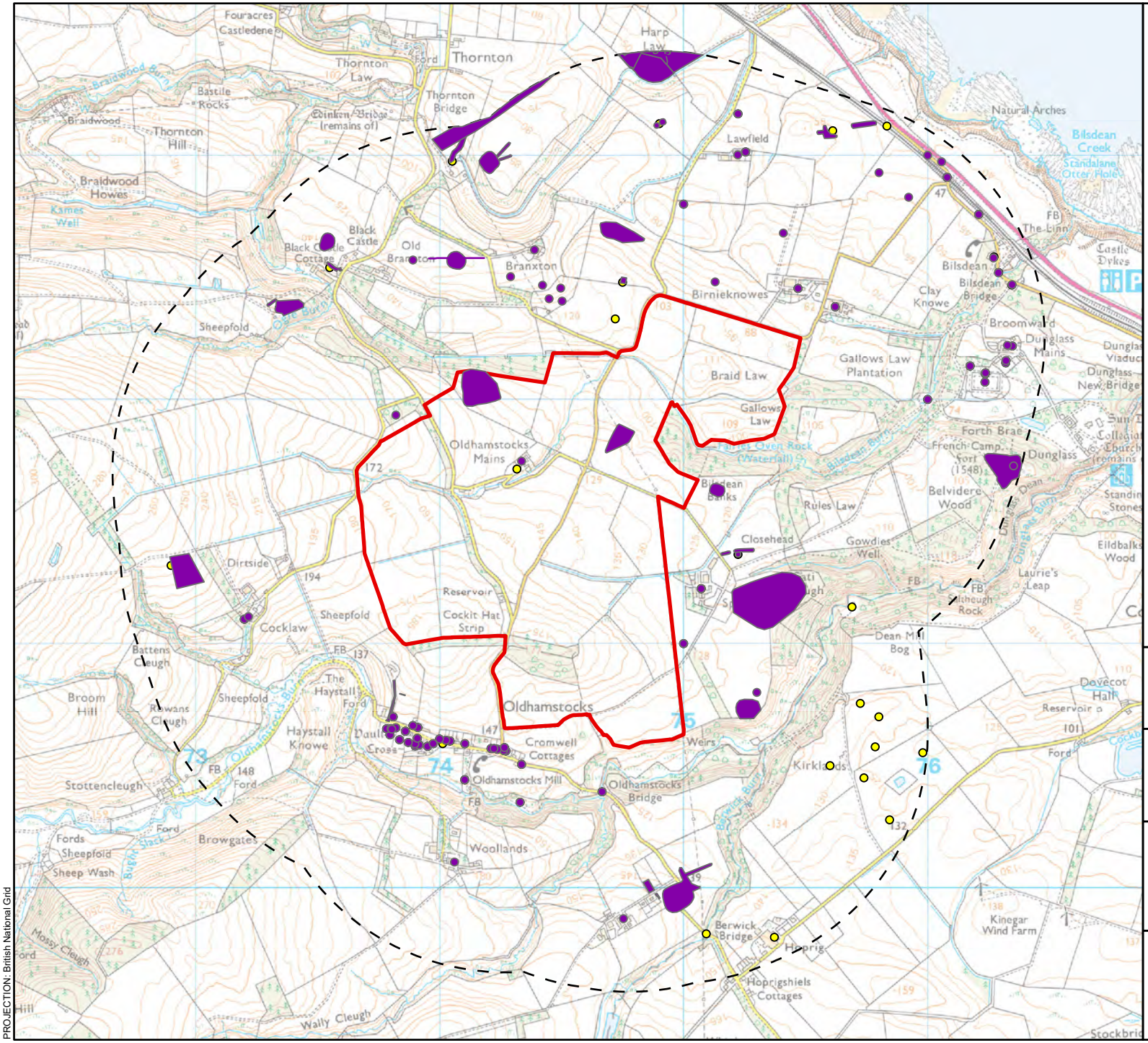
Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733745 - Springfield\MAPS\0733745 - Springfield.aprx\0733745 - Springfield - CH - Figure 6.1 - Site Location - A01



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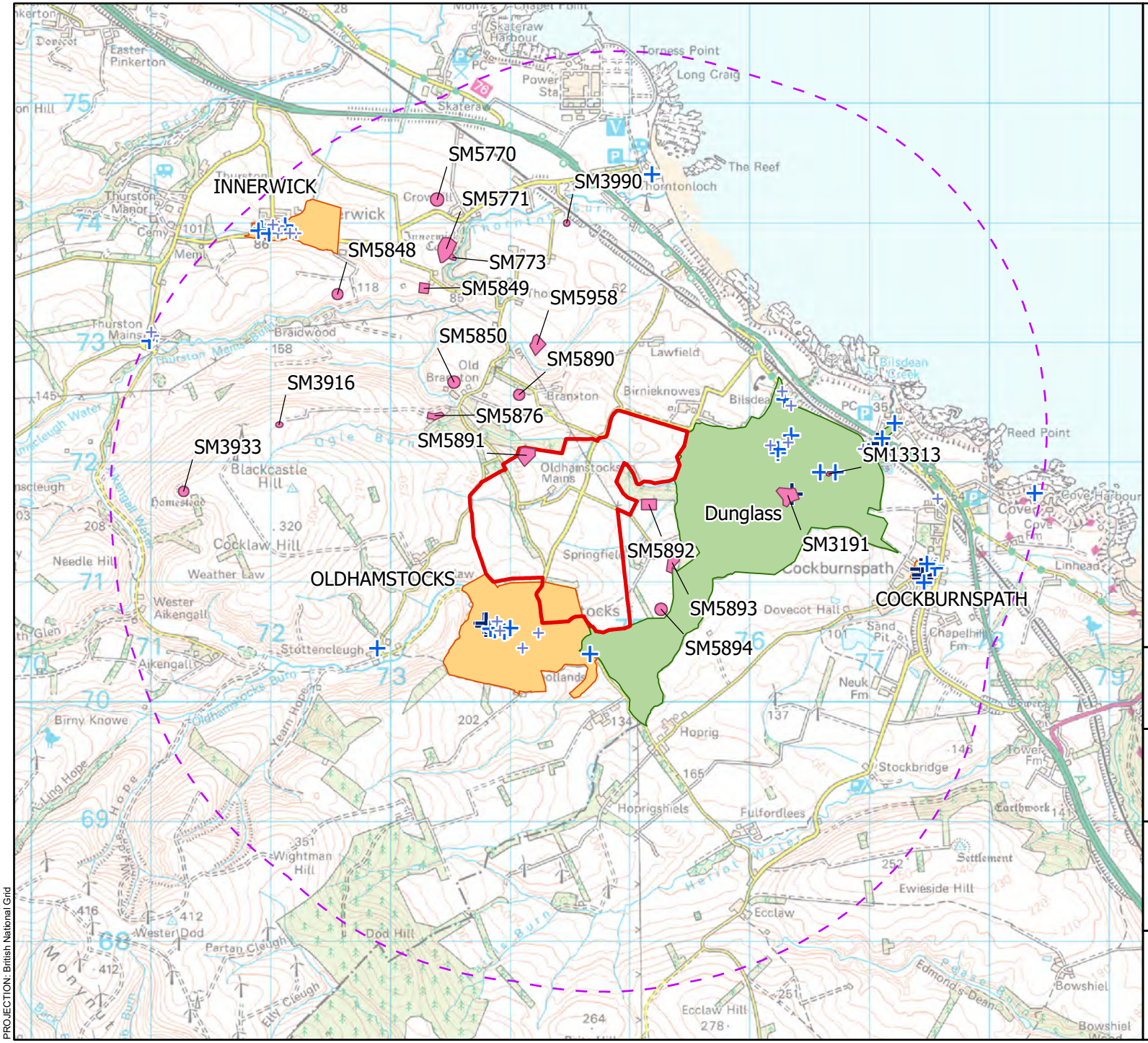

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SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: DM
DATE: 15/07/2024	APPROVED: RO

Springfield Solar Farm and BESS
Scoping Report
Figure 6.3
Designated Assets within 3 km

PROJECTION: British National Grid

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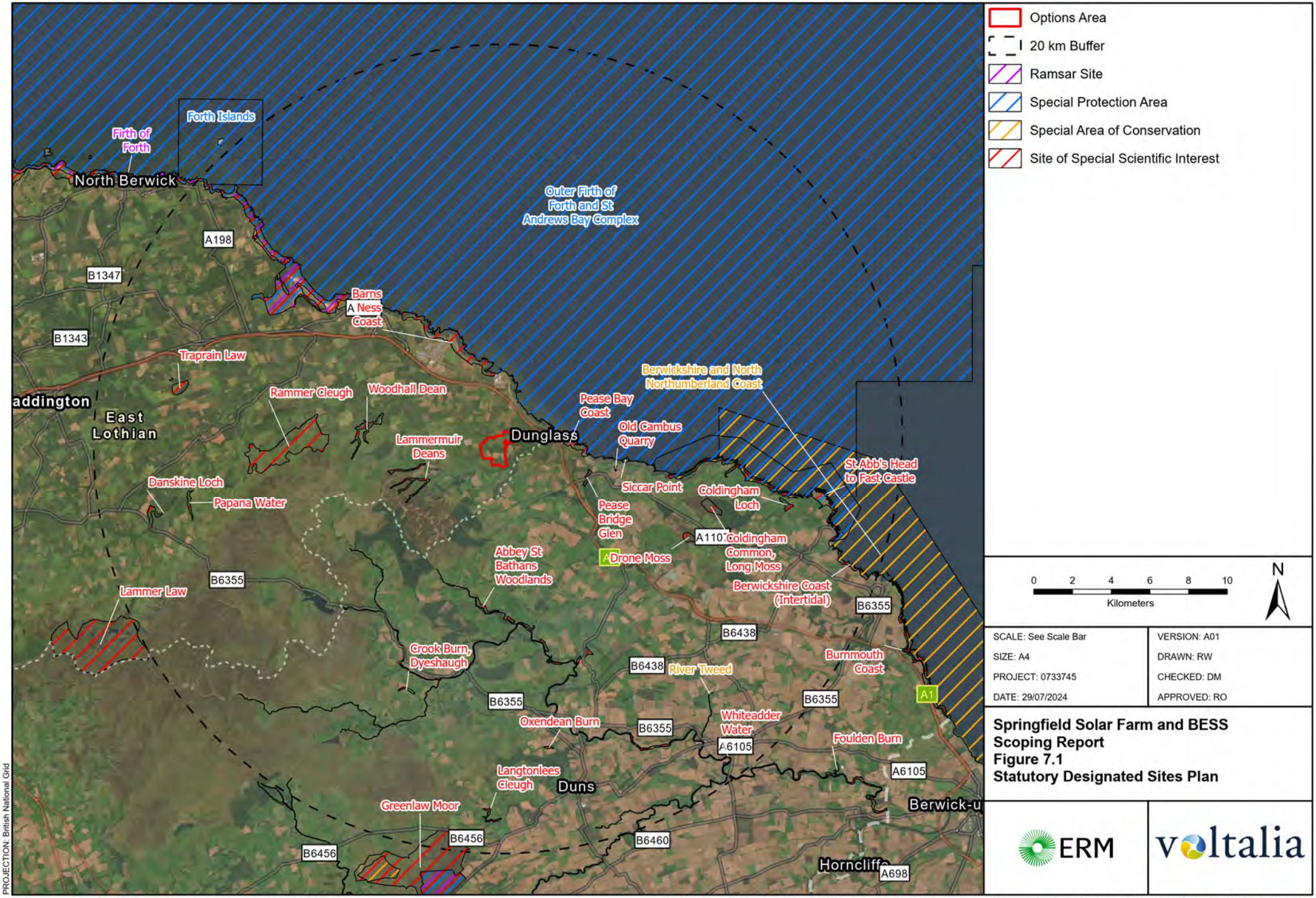
Options Area
20 km Buffer
Ramsar Site
Special Protection Area
Special Area of Conservation
Site of Special Scientific Interest
Forth Islands
Firth of Forth
North Berwick
Outer Firth of Forth and St Andrews Bay Complex
A198
B1347
B1343
Barns Ness Coast
Traprain Law
Rammer Cleugh
Woodhall Dean
East Lothian
Lammermuir Deans
Dunglass
Pease Bay Coast
Old Cambus Quarry
Berwickshire and North Northumberland Coast
St Abb's Head to Fast Castle
Siccar Point
Coldingham Loch
Danskine Loch
Papana Water
Pease Bridge Glen
A1107
Coldingham Common, Long Moss
Drone Moss
Abbey St Bathans Woodlands
Berwickshire Coast (Intertidal)
B6355
Lammer Law
B6438
Crook Burn, Dyeshaugh
River Tweed
Burnmouth Coast
A1
Oxendean Burn
Whiteadder Water
Foulden Burn
A6105
Langtonlees Cleugh
Duns
Greenlaw Moor
B6456
B6460
Berwick-u
Horncliffe
A698
0 2 4 6 8 10
Kilometers
N
SCALE: See Scale Bar
SIZE: A4
PROJECT: 0733745
DATE: 29/07/2024
VERSION: A01
DRAWN: RW
CHECKED: DM
APPROVED: RO
Springfield Solar Farm and BESS
Scoping Report
Figure 7.1
Statutory Designated Sites Plan
ERM
voltalia
PROJECTION: British National Grid
Earthstar Geographics, Esri UK, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS
Path: \\UKSPRDGISFS01\Data\Arcus\Projects\0733745 - Springfield\MAPS\0733745 - Springfield.aprx\0733745 - Springfield - EC - Figure 7.1 - Statutory Designated Sites - A01

Options Area
500 m Buffer
Ancient Woodland

0 100 200 300 400 500
Meters

N

SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: DM
DATE: 26/06/2024	APPROVED: RO

Springfield Solar Farm and BESS
Scoping Report
Figure 7.2
Ancient Woodland

ERM

voltalia

PROJECTION: British National Grid

Esri Community Maps Contributors, Esri UK, Esri, TomTom, Garmin, Foursquare, GeoTechnologies, Inc, METI/NASA, USGS, Maxar, Microsoft

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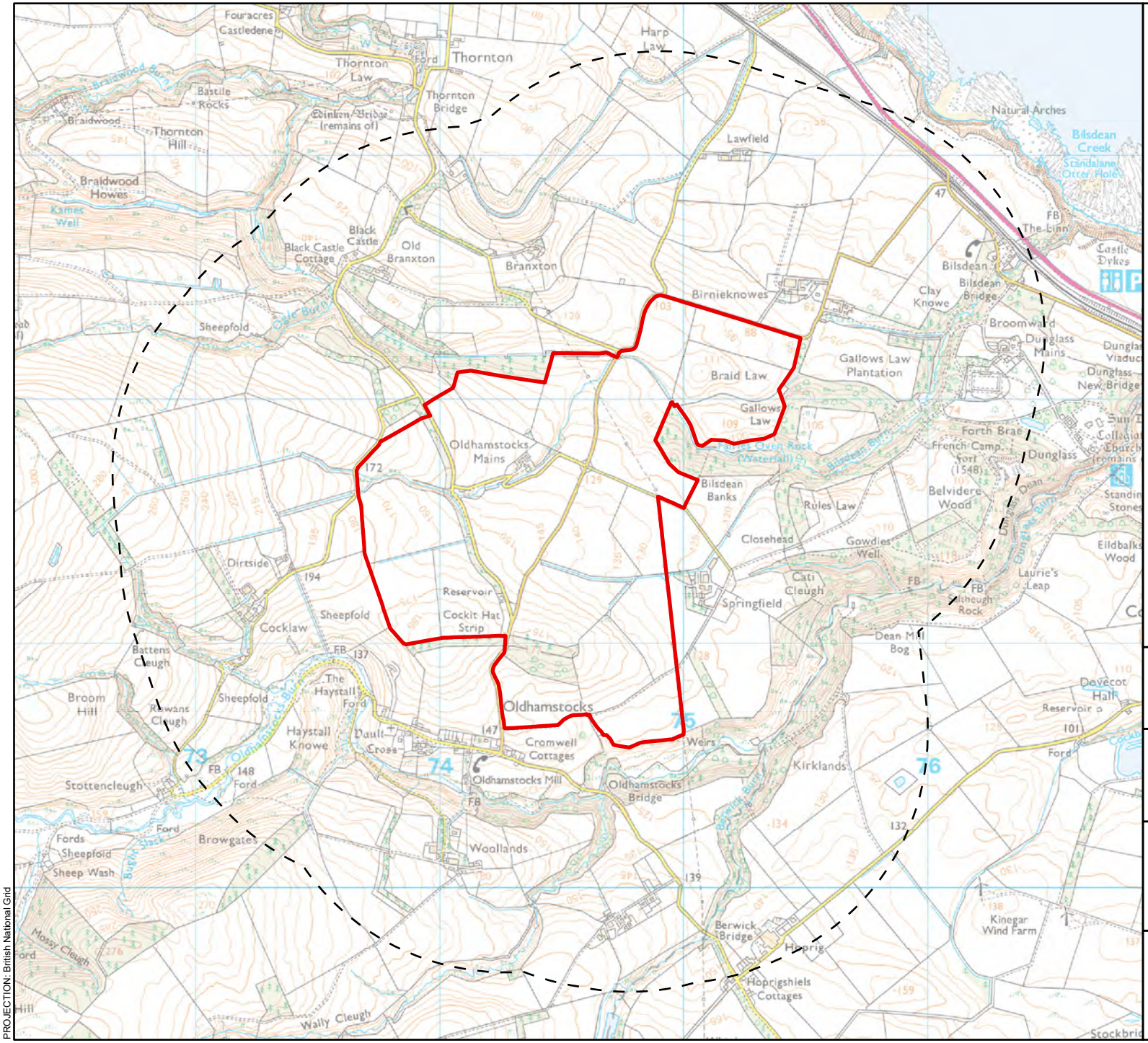

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SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: DM
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Springfield Solar Farm and BESS
Scoping Report
Figure 8.1
Study Area and Site Boundary

PROJECTION: British National Grid

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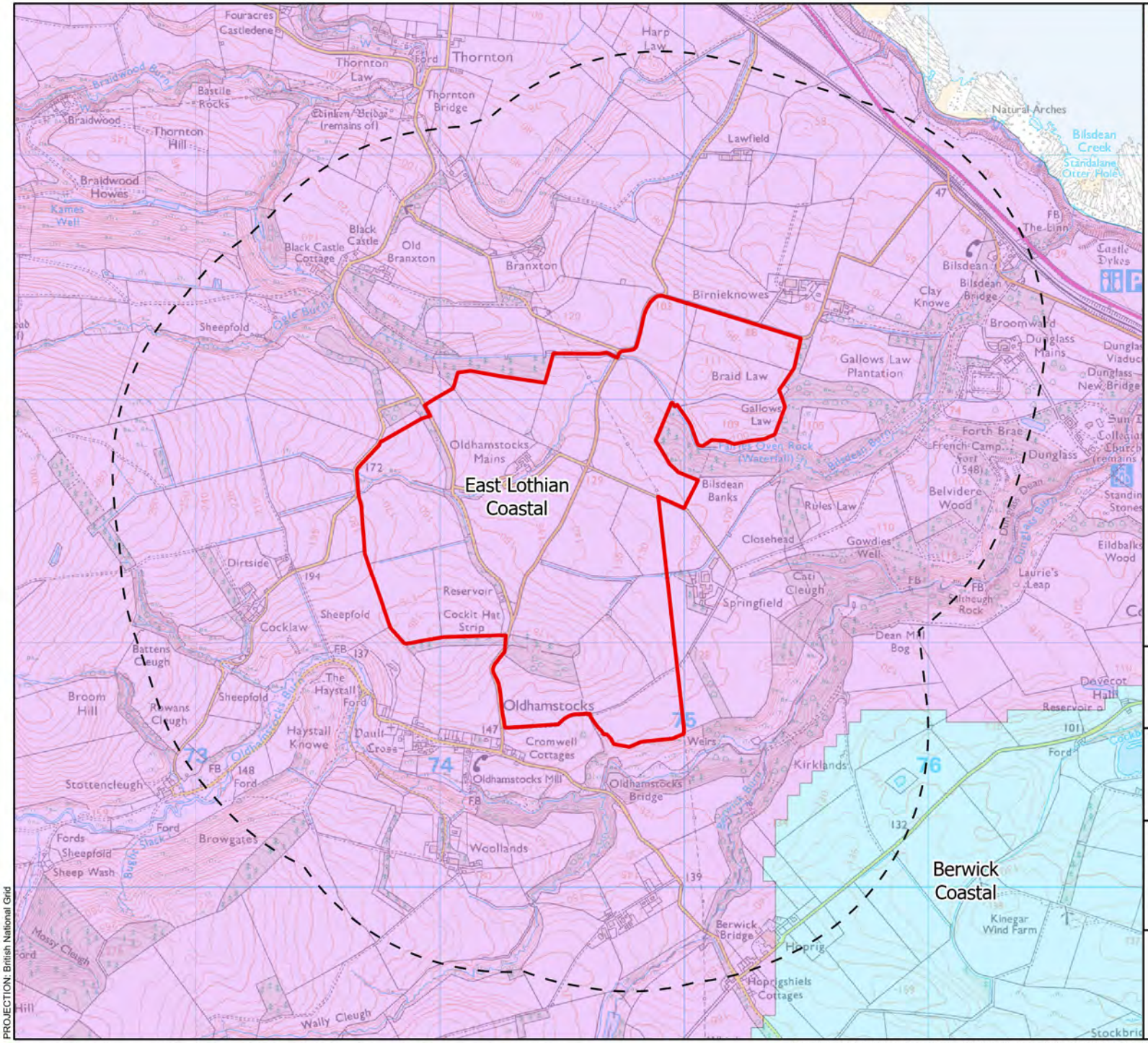

PROJECTION: British National Grid

SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: DM
DATE: 02/08/2024	APPROVED: RO

Springfield Solar Farm and BESS
Scoping Report
Figure 8.2
SEPA Main River and Coastal Catchments

ERM voltalia

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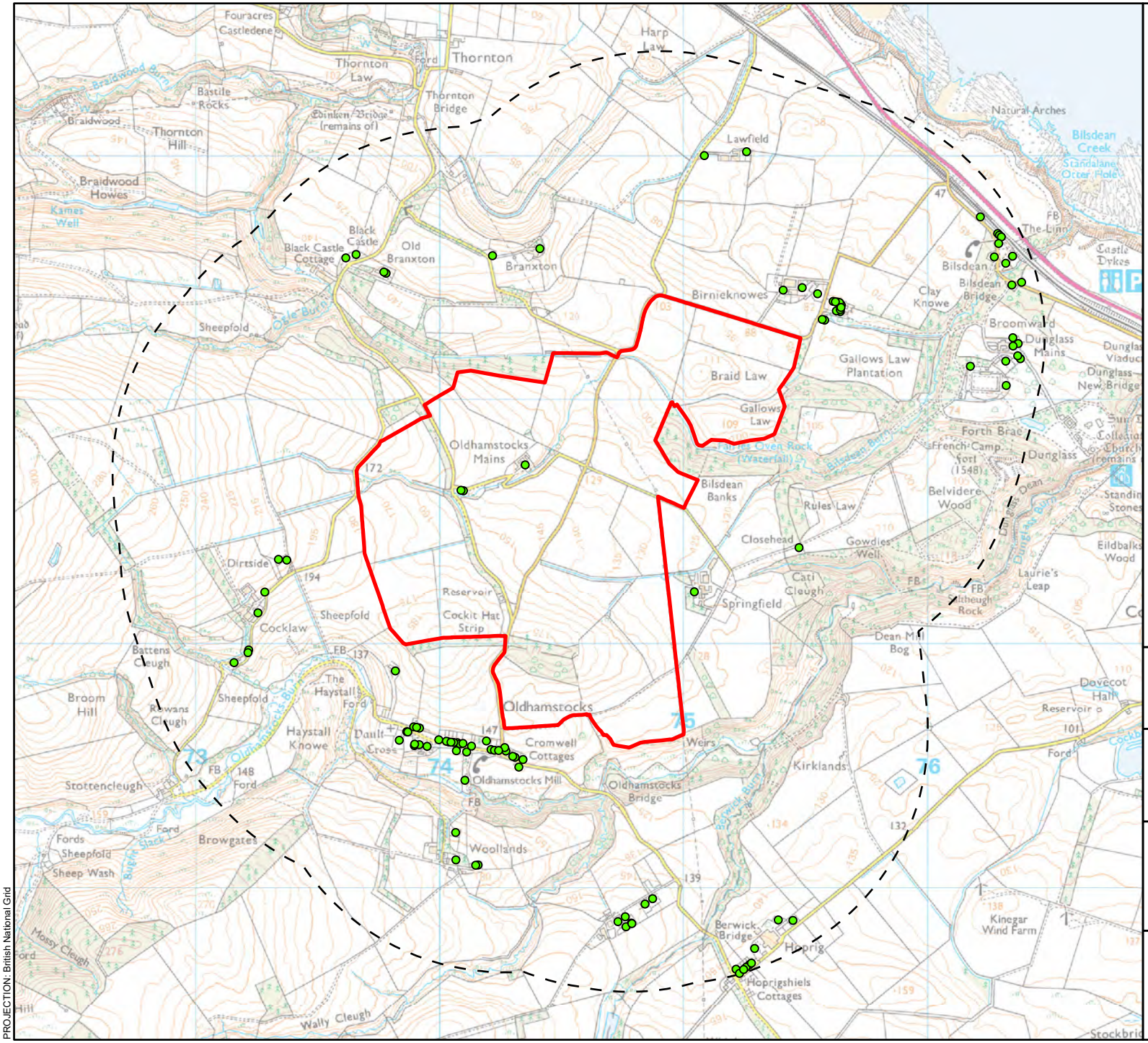
Path: \\uksprdgisfs01\Data\Arcus\Projects\0733745 - Springfield\MAPS\0733745 - Springfield.aprx\0733745 - Springfield - HY - Figure 8.2- River and Tidal Catchments - A01



SCALE: See Scale Bar	VERSION: A01
SIZE: A4	DRAWN: RW
PROJECT: 0733745	CHECKED: VB
DATE: 28/06/2024	APPROVED: RO

Springfield
Noise Sensitive Receptors

PROJECTION: British National Grid

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