

BERWICK BANK WIND FARM ONSHORE ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Chapter 7: Ecology

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7. ECOLOGY

7.1. INTRODUCTION

1. This chapter presents the assessment of the likely significant effects (as per the “EIA Regulations”) on the environment of the Berwick Bank Wind Farm onshore transmission works (OnTW) (the Proposed Development) on ecology. Specifically, this chapter considers the potential impact of the Proposed Development landward of Mean Low Water Springs (MLWS) during the construction, operational and maintenance, and decommissioning phases.
2. This assessment is informed by the following technical chapters:
 - Chapter 5 Proposed Development Description; and
 - Chapter 8: Onshore Ornithology.
3. This chapter summarises information contained within:
 - Volume 4, Appendix 7.1: Preliminary Ecological Appraisal (PEA) including Desk Study;
 - Volume 4, Appendix 7.2: Protected Species Survey Report;
 - Volume 5, Confidential Appendix 7.2a: Badger Survey Results;
 - Volume 4, Appendix 7.3: Bats; and
 - Volume 4, Appendix 7.4: Great Crested Newt Species Protection Plan.

7.2. PURPOSE OF THIS CHAPTER

4. This chapter:
 - Presents the existing environmental baseline established from desk studies, site-specific surveys, and consultation with stakeholders;
 - Identifies any assumptions and limitations encountered in compiling the environmental information;
 - Presents the potential environmental impacts on ecology arising from the Proposed Development, and reaches a conclusion on the likely significant effects on ecology based on the information gathered and the analysis and assessments undertaken; and
 - Highlights any necessary monitoring and/or mitigation measures recommended to prevent, minimise, reduce or offset the likely significant adverse environmental effects of the Proposed Development on ecology.

7.3. BASELINE STUDY AREA

5. Appropriate survey areas for each specific survey were derived from areas with available access plus best practice guidelines as follows:
 - Ecological Desk Study Area: the Planning Application Boundary (the ‘site’) and 5 km radius;
 - Extended Phase 1 Habitat Study Area: the site plus accessible areas¹ up to 250 m;

¹ Areas where land access was agreed, and land could be safely accessed.

- Great crested newt (*Triturus cristatus*) Study Area: Waterbodies within the site plus accessible waterbodies up to 500 m;
- Otter (*Lutra lutra*) Study Area: Watercourses within the site plus accessible watercourses up to 250 m;
- Bat Study Area: the site plus accessible areas up to 50 m;
- Water vole (*Arvicola amphibius*) Study Area: the site plus accessible areas up to 50 m; and
- Badger (*Meles meles*) Study Area: the site plus accessible areas up to 100 m.
- The extents of the above study areas are shown in Volume 2: Figure 7.1.

7.3.1. INTERTIDAL AREA – INTERFACE BETWEEN ONSHORE AND OFFSHORE PROJECTS

6. The planning application boundary for the Application extends to MLWS. The infrastructure to be located between MHWS and MLWS consists of cables to be installed via trenchless technology (e.g. Horizontal Directional Drilling (HDD)). Impacts associated with this infrastructure have been assessed in the Offshore EIA Report (Volume 2, Chapter 8), although given the commitment to use trenchless technology no likely significant effects have been predicted.
7. The Offshore EIA Report is available online at the Berwick Bank Wind Farm website; www.berwickbank.com. An electronic copy has been submitted to East Lothian Council Planning Department.
8. The potential effects of the onshore infrastructure located above MHWS on the intertidal area have been assessed in this chapter.

7.4. POLICY AND LEGISLATIVE CONTEXT

9. Policy, guidance and legislation in relation to ecology, is set out in detail in Volume 4, Appendix 7.1 of the Onshore EIA Report and, in addition, all relevant planning and legislative policy is detailed in full in Volume 1, Chapter 3. A summary of policy, guidance and legislative provisions relevant to ecology are provided in Table , 7.2 and 7.3 below.

Table 7.1: Summary of Planning Policy Relevant to Ecology

Summary of Relevant Policy Framework	How and Where Considered in the Onshore EIA Report
National Planning Framework 4 (NPF4) Policy 1 (Tackling the climate and nature crises); Policy 3 (Biodiversity); Policy 4 (Natural Places); Policy 5 (Soils); Policy 6 (Forestry, woodland and trees); Policy 8 (Green belts); Policy 11 (Energy); and Policy 20 (Blue and green infrastructure).	Considered throughout the assessment.
East Lothian Council (ELC) Local Development Plan (LDP) (ELC, 2018).	The recommendations of ELC LDP are considered throughout this chapter.

Table 7.2: Summary of Planning Guidance Relevant to Ecology

Summary of Relevant Policy Framework	How and Where Considered in the Onshore EIA Report
Planning Advice Note 60: Planning for Natural Heritage (Scottish Government, 2000),	The recommendations of PAN 60 are considered within methodology Section 7.6 and Section 7.9.
ELC LDP Supplementary Guidance: Green Network Strategy (ELC, 2019)	Details of Local Nature Conservation Sites (LNCS) included within Section 7.7.
The Scottish Biodiversity Strategy, with Scottish priority species and habitats listed on the Scottish Biodiversity List	Considered throughout the assessment of potential impacts on terrestrial receptors.

Summary of Relevant Policy Framework	How and Where Considered in the Onshore EIA Report
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(SBL), is also pertinent and is based on the former UK Biodiversity Action Plan (UK BAP), and regional biodiversity targets defined through the East Lothian LBAP (East Lothian Council, 2008).

Table 7.3: Summary of Legislation Relevant to Ecology

Summary of Relevant Legislative Framework	How and Where Considered in the Onshore EIA Report
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Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (i.e. the “Habitats Directive”)	Considered throughout the assessment.
The Wildlife and Countryside Act 1981 (as amended) (WCA)	Considered throughout the assessment.
The Conservation (Natural Habitats &c.) Regulations 1994 (as amended in Scotland) (i.e. the “Habitats Regulations”)	Considered throughout the assessment.
The Wildlife and Natural Environment (Scotland) Act 2011 (as amended) (WANE Act)	Considered throughout the assessment.
Nature Conservation (Scotland) Act 2004 (as amended) (NCA)	Considered throughout the assessment.
The Protection of Badgers Act 1992 (as amended)	Considered throughout the assessment.
The Scottish Biodiversity Strategy, with Scottish priority species and habitats listed on the Scottish Biodiversity List (SBL), is also pertinent and is based on the former UK Biodiversity Action Plan (UK BAP), and regional biodiversity targets defined through the East Lothian Local Biodiversity Action Plan (LBAP) (East Lothian Council, 2018);	Considered throughout the assessment.

7.5. CONSULTATION

10. A summary of the key issues raised during scoping and consultation activities undertaken to date specific to ecology are presented in Table 7.4 and 7.5, below, together with how these issues have been considered in the production of this ecology chapter. Further detail is presented within Volume 1, Chapter 2 of the Onshore EIA Report and the Pre-Application Consultation (PAC) Report.

Table 7.4: Consultation on the Proposed Development: Scoping Opinion

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
October 2020	ELC Scoping Response	The proposal has the potential to affect Barns Ness Site of Special Scientific Interest (SSSI) (although there is a low risk) and Local Biodiversity sites; there may also be protected species present and there is connectivity with some European sites.	Noted. All nature designations related to ecological interests are given full consideration within this assessment. Details of European nature designations related to ecological and ornithological interests are included within Volume 4, Appendix 7.1 and are given full consideration within Volume 1, Chapter 8.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
			<p>They are also considered as part of a Report to Inform Appropriate Assessment (See Volume 1, Chapter 8, and Standalone Document).</p>
October 2020	ELC Scoping Response	<p>Other than where noted below, the scope and methodology in the Scoping Report for biodiversity is acceptable. The scope and methodology for ecological and ornithological survey set out in the Scoping Report is acceptable. The Scoping Report considers sites designated for nature conservation including SSSI and European sites, as well as the Scottish Wildlife Trust's Thornton Glen Reserve.</p>	<p>Noted. All nature designations related to ecological interests are given full consideration within this assessment. Details of European nature designations related to ecological and ornithological interests are included within Volume 4, Appendix 7.1 and are given full consideration within Volume 1, Chapter 8. They are also considered as part of a Report to Inform Appropriate Assessment (See Volume 1, Chapter 8, and Standalone Document).</p>
October 2020	ELC Scoping Response	<p>European Sites and interaction with HRA</p> <p>Information to support Habitat Regulation Appraisal has not been considered. NatureScot advise that this proposal could affect the European sites listed below. Further information about these sites, and the special features they are designated to protect, can be found on the NatureScot Sitelink website (http://gateway.snh.gov.uk/sitelink/index.jsp) Firth of Forth Special Protection Area (SPA), St Abb's Head to Fast Castle SPA Outer Firth of Forth and St Andrews Bay Complex proposed (pSPA)</p> <p>The status of these sites means that the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 as amended (the "Habitats Regulations") or, for reserved matters the Conservation of Habitats and Species Regulations 2010 as amended apply. Consequently, the competent authority (East Lothian Council) is required to consider the effect of the proposal on these sites before it can be consented. See NatureScot's guidance note Legislative Requirements for European Sites for a summary of requirements.</p>	<p>Details of European nature designations related to ecological and ornithological interests are included within Volume 4, Appendix 7.1 and are given full consideration within Volume 1, Chapter 8. They are also considered as part of a Report to Inform Appropriate Assessment (See Volume 1, Chapter 8, and Standalone Document).</p>

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
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The above sites may also be notified as SSSIs and/ or Ramsar sites. However, any issues raised in relation to these designations are fully addressed as part of the following consideration of the respective European sites.

Table 7.5: Summary of Relevant Consultation Undertaken to Date

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
March 2020	NatureScot	NatureScot consulted following the outbreak of Covid-19 to confirm approach to timescales for surveys given restrictions.	Comments noted
		Our general position in relation to Covid-19 related constraints on site surveys is that each proposal is to be considered individually and on a risk-based approach. Please see https://www.nature.scot/coronavirus/planning-development-services . We note your proposed suite of site surveys, including additional measures aimed at compensating for lost time (e.g. use of experienced surveyors, identifying follow-up work, pre-construction surveys, use of buffers).	
April 2021	ELC Biodiversity Officer	Advised that direct impacts on ancient woodland should be avoided, and that, if necessary, horizontal directional drilling underneath ancient woodland may be acceptable. Advised that the Local Biodiversity Action Plan (LBAP) should be referred to.	Noted. Direct impacts on ancient woodland have been avoided through the site selection process. The LBAP has been considered within this assessment.
June 2021	NatureScot	Meeting to provide project update and discuss approach to bats and great crested newts. Great crested newts (GCN) The Applicant confirmed that GCN eDNA surveys had been undertaken, however population surveys of ponds within 500 m of a proposed watercourse crossings could not be undertaken within the survey window. Therefore, it was proposed to include pre-construction surveys and appropriate mitigation measures if required.	Further details of surveys undertaken are provided within Section 7.6.

Date	Consultee and Type of Consultation	Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		<p>Bats</p> <p>The Applicant proposed to undertake emergence surveys of trees with the potential for bat roosts within 15 m of the Proposed Development, and structures within 30 m of the proposed roosts.</p> <p>NatureScot agreed to proposed bat survey and GCN assessment approaches.</p>	
May 2022	NatureScot	<p>Great crested newts</p> <p>The Applicant advised of the surveys undertaken and confirmed that through the site selection process the potential watercourse crossing within 500 m of the potential GCN pond had been discounted. Construction works are within 500 m, however these are across unsuitable habitat and the likelihood of impacts is low. In their response dated 06.05.2022, NatureScot advised that as great crested newts are unlikely to be present within the footprint of the works, a licence and further survey would not be required. However, they advised that a Species Protection Plan (SPP) should be produced, detailing measures to prevent great crested newts moving into the works area (e.g. newt fencing) as well as a contingency plan in the unlikely event that great crested newts are encountered during works.</p>	A great crested newt Species Protection Plan has been produced (Volume 4, Appendix 7.4)

7.6. METHODOLOGY TO INFORM BASELINE

- This section identifies the ‘key ecology and nature conservation issues’ which have been considered as part of the Ecological Impact Assessment (EclA), describes the methods used to establish baseline conditions and assess the magnitude and significance of the likely ecological effects of the Proposed Development.

7.6.1. DESIGN ITERATION

- The following assessment is based on the final onshore cable route, which has undergone various iterations over an extended process that has taken into consideration a variety of potential constraints. Ultimately, the final design (Volume 2, Figure 5.1) is one that has taken into consideration all of these constraints to lessen the potential for any impacts to be experienced by any single receptor across the variety of disciplines that have all provided input into the Proposed Development’s final layout (further details on design iteration are provided in Volume 1, Chapter 4).

7.6.2. ECOLOGICAL DESK STUDY

13. Information on ecology within the ecological desk study area was collected through a detailed desktop review of existing studies and datasets.
14. In terms of statutory nature conservation designations, the desk study identified any international and national designations, such as Special Areas of Conservation (SACs), SSSIs, National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) within 5 km of the Site. Any non-statutory designations, such as Environmentally Sensitive Areas (ESA), Local Biodiversity Sites (LBS), Local Nature Conservation Sites (LNCS), Sites of Interest for Nature Conservation (SINCs), Scottish Wildlife Trust Reserves (SWTR) or woodland areas included on the Ancient Woodland Inventory (AWI), were identified within a 2 km distance of the Site. Note that only ecological (biological) features were considered relevant to the present study and that designations for bird interests are considered separately within Volume 1, Chapter 8 and therefore omitted from the present chapter.
15. Existing records for protected or otherwise notable species (e.g. Scottish Biodiversity List (SBL)/LBAP priority species) were identified within a 5 km distance of the Site. Only records from the last 10 years were considered relevant to the study.
16. These are summarised in Table 7.6 below.

Table 7.6: Summary of Key Desktop Studies & Datasets

Title	Source	Year	Author
SACs Dataset	https://sitelink.nature.scot/map	2021	NatureScot
SSSIs Dataset	https://sitelink.nature.scot/map	2021	NatureScot
NNRs Dataset	https://sitelink.nature.scot/map	2021	NatureScot
LNRs Dataset	https://sitelink.nature.scot/map	2021	NatureScot
Records of protected or notable species	The Wildlife Information Centre (TWIC)	2021	TWIC
AWI (Scotland)	https://data.gov.uk/dataset/c2f57ed9-5601-4864-af5f-a6e73e977f54/ancient-woodland-inventory-scotland	2018	Scottish Natural Heritage
Scottish Wildlife Trust Reserves Dataset	http://scottishwildlifetrust.org.uk/our-evidence-base/our-data/	2021	Scottish Wildlife Trust
Local Nature Conservation Sites Dataset	https://data.spatialhub.scot/dataset/local_nature_conservation_sites-is/resource/2a2fb277-f8be-498e-8339-06a179ed32d5	2021	Spatial Hub

7.6.3. SITE-SPECIFIC SURVEYS

17. To inform the ecology chapter, site-specific surveys were undertaken, to a scope agreed with NatureScot.(Table 7.4). A summary of the surveys undertaken to inform the EclIA is outlined in Table 7.7 below.

Table 7.7: Summary of Site-Specific Survey Data

Title	Extent of Survey	Overview of Survey	Survey Contractor	Date	Reference to Further Information
Extended Phase 1 Habitat Survey and National Vegetation Classification (NVC) of wetlands	Extended Phase 1 Habitat Study Area	Detailed assessment of habitats present.	ITP Energised	July 2020, October 2020, July 2021	Volume 4, Appendix 7.1
Badger Survey	Badger Study Area	Survey for evidence of badger (e.g. setts and field sign).	ITP Energised	October 2020, September 2021, February 2022	Volume 4, Appendix 7.2
Otter Survey	Otter Study Area	Survey of watercourses for evidence of otter (e.g. resting sites and field sign).	ITP Energised	October 2020, June 2021, February 2022	Volume 4, Appendix 7.2
Water vole Survey	Water Vole Study Area	Survey of watercourses for evidence of water vole (e.g. burrows and field sign).	ITP Energised	October 2020, June 2021, February 2022	Volume 4, Appendix 7.2
Great crested newt Survey	Great Crested Newt Study Area	Habitat Suitability Index (HSI) assessment and eDNA survey of suitable waterbodies.	ITP Energised	July 2020 and May 2021	Volume 4, Appendix 7.1 and Appendix 7.2
Bat Survey	Bat Study Area	Preliminary Roost Assessment and active season surveys.	ITP Energised	July 2020, June to August 2021, February 2022	Volume 4, Appendix 7.3

7.6.4. EVALUATION METHODS FOR ECOLOGICAL FEATURES

2. Table 7.8 below lists the criteria used to determine the value of ecological features in a geographical context.

Table 7.8: Geographical Evaluation Criteria

Value	Criteria	Examples
International	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of international importance. N.B. For designations, such as a SAC, this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	International nature conservation areas: <ul style="list-style-type: none">Any SAC;Any candidate SAC (cSAC); andAny Ramsar site (designated for wetland habitat). Significant numbers of a designated population outside the designated area. A site supporting more than 1% of the EU population of a species.
National (i.e. Scotland)	Nature conservation resource, i.e. designated nature conservation area, habitat or populations of species, of national importance. N.B. For designations, such as a SSSI or a NNR, this may also include off-site features on which the qualifying population(s) or habitat(s) are considered, from the best available evidence, to depend.	National nature conservation areas: <ul style="list-style-type: none">Any SSSI or NNR designated for biological feature(s). A site supporting more than 1% of the UK population of a species. Nationally important population / assemblage of a European Protected Species (EPS) or species listed on Schedule 5 of the WCA.
Council (i.e. East Lothian)	Nature conservation resource, i.e. nature conservation designation, habitat or species, of importance on a county scale.	Statutory and non-statutory nature conservation designations: <ul style="list-style-type: none">Any LNR;Any Wildlife Trust reserve;Any LBS; andAncient Woodland listed on the Ancient Woodland Inventory (SNH, 2018). A council-scale important population / area of a species listed on the SBL (Scottish Government, 2013) as requiring conservation action. A county-scale important population/area of a species or habitat listed on the LBAP. A county-scale important population / assemblage of an EPS or species listed on Schedule 5 of the WCA.
Local (i.e. within 2 km of the onshore site)	Nature conservation resource, e.g. a habitat or species of importance in the context of the local district.	A breeding population of a species on the SBL. A breeding population of a species or a viable area of a habitat that is listed in a LBAP because of its rarity in the locality. An area supporting 0.05-0.5 % of the UK population of a species.
Less than local	Unremarkable, common and widespread habitats and species of	Common, widespread, agricultural and/or exotic species.

Value	Criteria	Examples
	little/no intrinsic nature conservation value.	
3.	Where a feature qualifies under two or more criteria, the higher value is applied to the feature.	
4.	Within this chapter, any ecological feature of local or higher value is considered an Important Ecological Feature (IEF).	

7.7. BASELINE ENVIRONMENT

7.7.1. OVERVIEW OF BASELINE ENVIRONMENT

- This section of the chapter details the results of the ecological desk study and field surveys conducted along the onshore cable corridor and respective study areas, providing the baseline conditions from which an impact assessment is based. This includes:
 - Review of designated nature conservation sites and existing species data;
 - Habitat information from field surveys; and
 - Protected or otherwise notable species information from field surveys.
- The full list of protected species (including common and widespread species not considered as part of the assessment) identified in the desk study and/or field surveys are listed with their scientific names in Volume 4, Appendix 7.1.

7.7.2. NATURE CONSERVATION DESIGNATIONS

- As detailed in Table 7.9 below, five statutory nature conservation designations of national importance are present within 5 km of the Site. No international designation is present within this distance. In addition, five non-statutory local designations are present within 2 km. Statutory nature conservation designations are shown on Volume 2, Figure 7.2, and non-statutory nature conservation designations are shown on Volume 2, Figure 7.3.

Table 7.9: Nature Conservation Designations

Site / Designation	Distance from Onshore Site boundary	Qualifying Feature
Statutory Designations		
Barns Ness Coast SSSI	Part of the SSSI lies within the Site at the landfall location	<p>Designated for the following coastland habitats:</p> <ul style="list-style-type: none"> Saltmarsh; Sand dune; and Shingle. <p>The mineral enriched dune grassland, beach-head saltmarshes and shingle are of particular interest as examples of very uncommon habitats in the Lothians. The grassland contains an exceptionally diverse range of wildflowers, with species such as purple milk-vetch (<i>Astragalus danicus</i>), restharrow (<i>Ononis repens</i>), red campion (<i>Silene dioica</i>) and white campion (<i>S. latifolia</i>). The site as a whole supports a number of locally rare plant species, including sea milkwort (<i>Glaux maritima</i>), saltmarsh rush (<i>Juncus gerardii</i>), crested hair-grass (<i>Koeleria macrantha</i>), yellow horned-poppy (<i>Glaucium flavum</i>), sea arrow-grass (<i>Triglochin maritimum</i>), sea meadow-</p>

Site / Designation	Distance from Onshore Site boundary	Qualifying Feature
		grass (<i>Puccinellia maritima</i>) and various sedges such as sand sedge (<i>Carex arenaria</i>), distant sedge (<i>Carex distans</i>) and long-bracted sedge (<i>Carex extensa</i>). A good diversity of birds, butterflies, day flying moths and invertebrates also add to the interest of the site.
Pease Bay Coast SSSI	1.15 km south-east at nearest point	<p>Designated for the following coastland habitat:</p> <ul style="list-style-type: none"> Maritime cliff. <p>The range of para-maritime cliff-slope grassland communities at this site is also of national importance, as the most representative example of this grassland habitat for this rock type in the Scottish Borders. There are small areas of calcareous grassland on some of the smaller rocky outcrops, with neutral grassland along the top and upper slopes of the cliffs.</p>
Lammermuir Deans SSSI	3.3 km south-west at nearest point.	<p>Designated for the following habitats:</p> <p>Upland mixed ash woodland: The cleughs contain deciduous woodland which is uncommon in the context of the surrounding heath and grassland. The woodlands are mixed, with ash (<i>Fraxinus excelsior</i>), oak (<i>Quercus</i> spp.), birch (<i>Betula</i> spp.), hazel (<i>Corylus avellana</i>), rowan (<i>Sorbus aucuparia</i>) and other species.</p> <p>Subalpine calcareous grassland: Calcareous (mineral-rich) grasslands are found at Lammermuir Deans, principally found in Burn Hope Cleugh, which includes sheep's-fescue (<i>Festuca ovina</i>) and common bent (<i>Agrostis capillaris</i>). These are common species in the United Kingdom but this particular habitat type is rare and declining in the context of East Lothian.</p> <p>Valley fen: Valley fen marsh habitats are also rare and declining in East Lothian, and the Lammermuir Deans contain a mix of fen habitats dominated by soft-rush (<i>Juncus effusus</i>) and sharp-flowered rush (<i>Juncus acutiflorus</i>) and contain the rare plants hairy stonecrop (<i>Sedum villosum</i>) and grass-of-Parnassus (<i>Parnassia palustris</i>). These cleughs also support a number of rare mosses, liverworts and lichens such as the rare lichen <i>Graphis elegans</i>.</p>
Woodhall Dean SSSI	3.8 km south-west at nearest point	<p>Designated for the following habitats:</p> <ul style="list-style-type: none"> Broadleaved, mixed and yew woodland; and Upland oak woodland <p>The woodland is dominated by relatively pure forms of sessile oak (<i>Quercus petraea</i>) which show little hybridisation, a feature that is almost unique in south-east Scotland. This site supports a particularly large number of vascular plants, several of which are rare or uncommon in the area, as well as a large number of mosses and liverworts.</p>
Pease Bridge Glen SSSI	4.1 km south-east at nearest point	<p>Designated for the following habitats:</p> <ul style="list-style-type: none"> Upland oak woodland; and Bryophyte assemblage. <p>The site comprises steep valley woodland, ancient and well-documented throughout the last 500 years. The woodland has vascular plant communities typical of northern oakwoods which grade from acid, species-poor upland communities to more diverse oak/ash/ elm (<i>Ulmus</i> sp) communities.</p>

Site / Designation	Distance from Onshore Site boundary	Qualifying Feature
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Several regionally rare ferns occur in the humid woodland conditions, including soft shield fern (*Polystichum setiferum*) and intermediate polypody (*Polypodium interjectum*). A Continental lichen flora is present, yet the site has also Mediterranean-Atlantic bryophytes which are rare in Scotland and three of the hepatic liverwort species; *Lophocolea fragrans*, *Cololejeunea rossettiana*, *Lejeunea lamacerina* occur here at their only known eastern location in the United Kingdom. These species are dependent on the splash-zone rock faces along the stream.

The site also contains a number of locally rare woodland invertebrates, particularly beetles.

Non-Statutory Designations		
Thornton Glen SWT	Within the central area of the Site.	This steep, narrow gorge is lined with a broadleaved woodland of ash, elm and oak, and a ground flora of ramson (<i>Allium ursinum</i>) and ferns. A path along the edge of the reserve leads to the ruins of Innerwick Castle.
Dryburn Valley LNCS	Borders the Site at the landfall location and along the north-west boundary of the Site.	Habitat feature: Woodland, grassland, AWI, Native Woodland Survey Scotland (NWSS) and habitat connectivity. Notable species: Ancient woodland flora
Thurston Burn Valley LNCS	Runs through centre of the Site.	No description provided but overlaps with Thornton Glen (see above).
Dunglass Burn LNCS	Runs through centre of the Site and within 340 m southeast of the Site.	Habitat feature: Woodland, grassland, AWI, NWSS and habitat connectivity. Notable species: Ancient woodland flora.
Bilsdean Coast LNCS	135 m NE	Habitat features: Habitat connectivity, maritime cliff and foreshore. Notable species: lesser meadow-rue (<i>Thalictrum minus</i>), oysterplant (<i>Mertensia</i> sp) and sea sandwort (<i>Honckenya peploides</i>).

8. Additionally, 29 areas of AWI were identified within 2 km of the Site, including two AWI within or partly within, and three immediately adjacent to, the Site, as shown on Volume 2, Figure 7.3.

7.7.3. PROTECTED OR OTHERWISE NOTABLE SPECIES RECORDS – EXTERNAL DATA

9. Table 7.10 below summarises baseline ecology data from the ecological desk study (see Volume 4, Appendix 7.1).

Table 7.10: Protected or Otherwise Notable Non-avian Species

Common Name	Scientific Name	Legal / Conservation Status	Summary of Baseline Data
Land mammal			
Otter	<i>Lutra lutra</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Nine records of otter were identified: the most recent dates from 2020 and two records come from within the site.
Water vole	<i>Arvicola amphibius</i>	Partially protected under the Wildlife and Countryside Act (1981) as amended. This protection is restricted to the animal's place of shelter not the animal itself. SBL Priority Species LBAP Priority Species	One record of water vole was identified: dated from 2020 and located 2.3 km southeast of the site.
Badger	<i>Meles meles</i>	Fully protected under the Protection of Badgers Act 1992 as amended by the Wildlife and Natural Environment (Scotland) Act 2011. LBAP Priority Species	Six records of badger were identified: the most recent dates from 2019 and comes from a location 0.7 km northwest of the site.
European hedgehog	<i>Erinaceus europaeus</i>	Partially protected under the Wildlife and Countryside Act 1981 (as amended). SBL Priority Species	Twenty-four records of hedgehog were identified: the most recent dates from 2019. Two records come from within the site.
Brown hare	<i>Lepus europaeus</i>	Protected during the closed season under the Wildlife and Countryside Act 1981 (as amended). SBL Priority Species	Sixteen records of brown hare were identified: the most recent dates from 2019 and comes from a location 1.1 km southwest of the site.
Bats			
<i>Myotis</i> bats	<i>Myotis</i> species	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Five records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 1.6 km southeast of the site.
Daubenton's bat	<i>Myotis daubentonii</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Two records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 2.5 km south of the site.

Common Name	Scientific Name	Legal / Conservation Status	Summary of Baseline Data
Whiskered / Brandt's bat	<i>Myotis mystacinus / brandtii</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Four records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 2.5 km south of the site.
Natterer's bat	<i>Myotis nattereri</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species	Four records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 1.3 km southeast of the site.
Noctule bat	<i>Nyctalus noctula</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Four records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 3.6 km south of the site.
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Six records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 1.2 km southeast of the site.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	Six records within the last 10 years: the most recent dates from 2016, the closest record comes from a location 1.2 km southeast of the site.
Brown long-eared bat	<i>Plecotus auritus</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	One record within the last 10 years lies 1.3 km southeast of the site.
Amphibians and Reptiles			
Great crested newt	<i>Triturus cristatus</i>	Fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). SBL Priority Species LBAP Priority Species	A single record dates from 2012 and located 3.8 km southwest of the site.
Common toad	<i>Bufo bufo</i>	Partially protected under the Wildlife and Countryside Act 1981 (as amended). SBL Priority Species	One record of common toad was identified: the record was from 2013 and was located 4.7 km west of the site.

Common Name	Scientific Name	Legal / Conservation Status	Summary of Baseline Data
Common frog	<i>Rana temporaria</i>	Partially protected under the Wildlife and Countryside Act 1981 (as amended).	One record of common toad was identified: the record was from 2014 and was located 4.7 km west of the site.
Common lizard	<i>Zootoca vivipara</i>	Partially protected under the Wildlife and Countryside Act 1981 (as amended). SBL Priority Species	Two records were identified: the closest was recorded in 2015 1.65 km west of the site.
Adder	<i>Vipera berus</i>	Partially protected under the Wildlife and Countryside Act 1981 (as amended). SBL Priority Species	Seven records identified from Woodhall Dean approximately 4 km south-west of the site; the most recent dates to 2013.

10. Please refer to Volume 1, Chapter 8 for records of protected or otherwise notable bird species.

7.7.4. FIELD SURVEYS

11. Specific details relating to the field survey methodologies and results are included within each of the relevant Volume 4, Appendices 7.1, 7.2 and 7.3. The following sections summarise the baseline conditions with a summary of relevant results used to inform the assessment of likely ecological impacts provided below.
12. The locations of ecological features are presented in full in Volume 4, Appendices 7.1, 7.2 and 7.3 and associated Appendix Figures: 7.1.4-5, 7.2.1-2 (Appendix Figure 7.2.3 is confidential and presented in Confidential Volume 5), and 7.3.1-2.

7.7.5. HABITATS

13. In 2020 the extended Phase 1 habitat study area comprised the full site and a 250 m buffer, as shown in Volume 4, Appendix 7.1, Appendix Figures 7.1.4-5. In addition, a National Vegetation Classification (NVC) survey was undertaken of all wetland communities recorded. This level of survey effort aimed to inform the design process, to allow for mitigation through design and reduce potential negative impacts on ecological receptors.
14. This EclA considers habitats within the potential zone of influence of the Proposed Development, namely the potential works areas (i.e. the development footprint, temporary construction compounds/ laydown areas, access tracks) and a 250 m buffer as shown on Volume 2, Figure 7.4 (herewith referred to as the 'ecology study area').
15. The Phase 1 habitat survey results are shown on Volume 2, Figure 7.4 and summarised in Table 7.11. The Phase 1 analysis was informed by an extended Phase 1 habitat survey in July and October 2020. In addition to summarising the Phase 1 habitats within the site, Table 7.11 also details those specifically present within the ecology study area. Volume 4, Appendix 7.1 should be consulted for full descriptions, including Target Notes, of habitats found within the ecology study area. Note that the original Phase 1 habitat survey documented in Volume 4, Appendix 7.1 was undertaken to inform the location of the Proposed Development and the document therefore includes a larger survey area and describes some habitats that are not present within the ecology study area as defined above.

Table 7.11: Phase 1 Habitats within the Study Area

Phase 1 Code	Phase 1 Habitat	Extent in the Site	Extent in Ecology Study Area	% of Ecology Study Area
A1.1.1	Broadleaved, semi-natural woodland	8.07 ha	11.89 ha	2.53
A1.1.2	Broadleaved, plantation woodland	0.55 ha	1.60 ha	0.34
A1.2.1	Coniferous, semi-natural woodland	0.24 ha	0.11 ha	0.02
A1.2.2	Coniferous, plantation woodland	2.52 ha	2.67 ha	0.57
A1.3.1	Mixed, semi-natural woodland	2.79 ha	2.83 ha	0.60
A1.3.2	Mixed, plantation woodland	0.45 ha	0.70 ha	0.15
A2.1	Dense/Continuous Scrub	5.67 ha	10.96 ha	2.33
A2.2	Scattered scrub	1.83 ha	5.36 ha	1.14
A3.1	Broadleaved scattered trees	0.08 ha	-	-
B2.2	Semi-improved neutral grassland	18.49 ha	38.58 ha	8.20
B4	Improved grassland	352.60 ha	208.62 ha	44.35
C3.1	Tall ruderal	0.60 ha	0.24 ha	0.05
G1	Standing water	0.04 ha	0.09 ha	0.02
G2	Running water	9.1 km	10.64 km	-
H1.1	Intertidal mud/sand	2.91 ha	4.16 ha	0.88
H1.3	Intertidal boulders/rocks	27.33 ha	21.06 ha	4.48
H3	Shingle above high tide mark	0.14 ha	0.23 ha	0.05
H8.4	Coastal grassland	2.33 ha	3.29 ha	0.70
J1.1	Arable	134.12 ha	126.23 ha	26.83
J2.1.2	Intact species-poor hedgerow	15.57 km	6.78 km	-
J2.2.2	Defunct species-poor hedgerow	0.81 km	0.81 km	-
J2.5	Wall	15.62 km	7.79 km	-
J3.6	Buildings	0.09 ha	1.87 ha	0.40
J4	Bare ground	0.95 ha	1.88 ha	0.40
J5	Other (incl. roads/railway and grounds of properties)	40.53 ha	28.07 ha	5.97
Total		602.33 ha	470.43 ha	100

Please note approximate lengths of linear features (e.g. walls, hedgerows, watercourses) are provided in km but are excluded from habitat area totals in table.

16. A brief description of the Phase 1 habitats is presented below. For full descriptions and scientific names of species please refer to Volume 4, Appendix 7.1.

Broadleaved, semi-natural woodland (A1.1.1)

17. Mature, semi-natural broadleaved woodland extends along the Braidwood Burn, Thornton Burn, Thurston Burn and Ogle Burn corridors that run through the southern reaches of the ecology study area. The canopy is dominated by ash, beech and oak with occasional Scots pine. Thornton Glen SWT, Thurston Burn Valley LNCS and Dunglass Burn LNCS form part of this woodland area, though all sites lie outwith the footprint of the Proposed Development. A small area of broadleaved woodland lies to the south-east of Thorntonloch Holdings, also outwith the footprint of the Proposed Development. This woodland is listed on the AWI as Long-Established woodland of Plantation Origin (LEPO 2b).

Dense and scattered scrub (A2.1 and A2.2)

18. Dense and scattered scrub is mainly associated with the Braidwood Burn and Thornton Burn corridors with extensive areas of gorse and blackthorn recorded on the steep banks of the watercourses and bordering the woodland. Gorse scrub is also associated with the Dry Burn that runs through the northern reaches of the ecology study area.

Semi-improved neutral grassland (B2.2)

19. This habitat was mainly recorded within the northern reaches of the ecology study area near the landfall location, west of Torness Point, with smaller extents recorded along the Braidwood Burn corridor at the south of the ecology study area. Plant species recorded in this habitat included false oat-grass, cock's-foot, crested dog's-tail, wavy hair-grass, meadow fescue, sheep's-bit, devil's-bit scabious, common knapweed and tormentil.

Improved grassland (B4)

20. Improved grassland fields used for grazing and hay production account for almost half of the ecology study area. Due to the managed nature of this habitat, it was generally species-poor, with swards dominated by perennial rye-grass, Yorkshire-fog and white clover. Field boundaries include stone walls and species-poor defunct and intact hawthorn hedgerows. Greater species diversity was found along the field margins and hedgerow understorey.

Open and Standing water (G and G1)

21. Three waterbodies lie within the ecology study area, two are within the Viridor site to the northwest of the Proposed Development and one is located to the east of the Proposed Development, north of Skateraw. All waterbodies lie outwith the footprint of the Proposed Development. The North Sea lies within the northern reaches of the ecology study area.

Running water (G2)

22. Running water within the ecology study area includes Braidwood Burn, Thornton Burn, Thurston Mains, Ogle Burn and Branxton Burn which run through the southern reaches of the ecology study area. Skateraw Dean and the Dry Burn run through the northern reaches of the ecology study area. A network of drainage ditches and unnamed watercourses also cross the ecology study area. The Skateraw Dean, Braidwood Burn and an unnamed watercourse to the south of the A1, lie under the footprint of the Proposed Development.

Intertidal (H1.1 and H1.3)

23. The proposed landfall location at Skateraw, west of Torness, is characterised by coastal habitats including boulders and rocks within the intertidal zone. Species recorded within this habitat included biting stonecrop, bladder wrack, spiral wrack, oarweed and sea lettuce. The intertidal biotopes and habitats are described in more detail within Volume 2, Chapter 8, Section 8.7 of the Offshore EIA Report.

Arable (J1.1)

24. Arable fields used for cereal and crop production account for just over a quarter of the ecology study area. Monocultures of oat, barley and brussels sprouts were recorded at the time of the field survey. Field boundaries included stone walls and species-poor defunct and intact hawthorn hedgerows.

Other (J5)

25. The A1 trunk road runs through the site from east to west with smaller roads criss-crossing the site. The East Coast Main Line (ECML) railway also runs from the northwest of the site to the southwest, passing under the A1 trunk road. Ground within the boundaries of residential properties and farms was also mapped under this code.
26. All other habitat types present within the ecology study area make up a very small proportion of the overall site, each covering less than 1% of the total area (see Table 7.8).

7.7.6. INVASIVE NON-NATIVE SPECIES

27. Japanese knotweed and Himalayan balsam were recorded within the site; including one stand of Himalayan balsam within the ecology study area (i.e. within 250 m of the Proposed Development).

7.7.7. GROUNDWATER DEPENDENT TERRESTRIAL ECOSYSTEMS (GWDTE)

28. As described within Volume 4, Appendix 7.1, bryophyte spring corresponding to the M37 *Palustriella commutata-Festuca rubra* spring community of the NVC, which is likely to be highly groundwater dependent (SEPA, 2017), was recorded within 250 m of the site (for location refer to Volume 4, Figure 7.1.1). However, no M37 or other wetland with the potential to be a GWDTE has been identified within the site itself or within the ecology study area.

7.7.8. PROTECTED OR OTHERWISE NOTABLE SPECIES

29. Full details of the survey methods, results and scientific names are included in Volume 4, Appendices 7.1, 7.2 and 7.3, with a brief summary provided below.

Otter

30. Evidence of otter presence was found within the ecology study area including a number of potential and confirmed resting sites, as follows:
 - Two potential otter resting sites (hovers) identified along the Thornton Burn corridor;
 - Three potential hovers identified along the Braidwood Burn corridor;
 - Two potential and one active hovers identified along the Ogle Burn corridor; and
 - Three potential holts and one active hover identified along the Dry Burn corridor. Further camera monitoring of the potential holts along the Dry Burn found no evidence that these are currently used by otter.
31. The above watercourses, unnamed watercourses and drainage ditches that cross the site create a network of foraging and commuting routes for otter enabling movement of otter from coastal to inland habitats in response to prey availability.
32. All resting sites identified lie outwith 30 m of the footprint of the Proposed Development.

Badger

33. The survey confirmed that badgers are active within the ecology study area with setts and field signs identified (as detailed within Confidential Volume 5, Appendix 7.2a). No setts were located within 30 m of the Proposed Development. A large mammal hole was identified during GI works in July 2022. The hole was large enough for badger but no badger field sign was found to confirm current use. Details of the hole location are noted within Confidential Volume 5, Appendix 7.2a). Arable fields, improved grassland fields and

woodland areas within the Study Area provide suitable foraging, commuting and sett building habitat.

Water vole

34. No evidence of water vole was found during the surveys, and watercourses within the ecology study area were considered to be generally suboptimal for this species.

Bats

35. As described in Volume 4, Appendix 7.3, the Preliminary Roost Assessment survey identified a number of trees and one structure with features suitable for use by roosting bats. Further active season surveys were therefore completed in 2021 of features which lay within 30 m of the design options (based on the potential design options at the time of the survey). No evidence of roosting bats was found, with low numbers of soprano pipistrelle, common pipistrelle and *Myotis* bats being active. The habitats within the ecology study area were considered to have high suitability for use by foraging and commuting bats with riparian corridors, woodland edge habitat and linear features such as hedgerows and stone walls providing bats with excellent foraging and commuting routes through the ecology study area.

Great crested newts

36. As detailed in Volume 4, Appendix 7.2, an eDNA survey completed in 2021 confirmed great crested newt presence within a pond ('Pond 1') fed by Ogle Burn. The pond is located 450 m from the footprint of the Proposed Development at its nearest point. Suitable terrestrial habitat links the pond to the southern boundary of the site, along the Ogle Burn and Braidwood Burn corridor. However, the footprint of the Proposed Development, where it crosses the Braidwood Burn corridor, is over 500 m from the pond, which is generally considered to be the maximum distance great crested newts will migrate from their breeding ponds (Langton *et al.*, 2001). Where the works footprint extends 50 m into the 500 m buffer, the habitat is improved grassland, which is suboptimal for this species.

Other amphibians

37. No incidental evidence of amphibians was recorded during the surveys. The small waterbodies and areas of slow-moving water within drainage ditches are likely to support common frog, common toad and small newt species.

Reptiles

38. No incidental evidence of reptiles was found during the surveys. Improved grassland and arable fields, which represent the majority of the ecology study area, are generally suboptimal for reptiles providing limited foraging, commuting and refugia habitat. However, areas of rough grassland and scrub particularly along the Dry Burn corridor, but also along the Braidwood Burn corridor and field margins, may support common lizards. The habitats within the ecology study area are considered less likely to support adder.

Fisheries

39. Due to the presence of impassable weirs on Thornton Burn, Dry Burn and Bilsdean Burn, migration of fish upstream is considered unlikely, and the desk study has not identified any resident populations of species of conservation interest, such as brown trout (*Salmo trutta*) or brook lamprey (*Lampetra planeri*), upstream of these weirs. Therefore, fish are scoped out of further assessment.

7.7.9. EVALUATION OF BASELINE FEATURES

Nature Conservation Designations

40. The nature conservation designations identified are evaluated in Table 7.12: below. The value assigned to a nature conservation area corresponds to its level of designation, and where two or more designations overlap, the higher level applies.

Table 7.12: Nature Conservation Designations Evaluation Summary

Feature	Evaluation Reasoning	Level of Importance
Barns Ness Coast SSSI	The level of value follows the level of designation. Overlaps with site.	National
Pease Bay Coast SSSI	The level of value follows the level of designation. Located 1.15 km south-east of the site.	National
Lammermuir Deans SSSI	The level of value follows the level of designation. Located 3.3 km south-west of the site.	National
Woodhall Dean SSSI	The level of value follows the level of designation. Located 3.8 km south-west of the site.	National
Pease Bridge Glen SSSI	The level of value follows the level of designation. Located 4.1 km south-east of the site.	National
Thornton Glen SWT	The level of value follows the level of designation. Borders the central area of the site, outwith the footprint of the Proposed Development.	Local
Dryburn Valley LNCS	The level of value follows the level of designation. Borders the site at the landfall location and along the north-west boundary of the site.	Local
Thurston Burn Valley LNCS	The level of value follows the level of designation. Runs through centre of the site but outwith the footprint of the Proposed Development.	Local
Dunglass Burn LNCS	The level of value follows the level of designation. Runs through centre of the site and within 340 m south-east of the site, but outwith the footprint of the development.	Local
Bilsdean Coast LNCS	The level of value follows the level of designation. Lies 135 m north-east of the site.	Local

Ancient Woodland

41. Areas of AWI are of Council level importance. Of the 29 areas identified within 2 km of the Planning Application Boundary, two AWI lie within or partly within, and three immediately adjacent to the ecology study area. No AWI woodland lies within the footprint of the Proposed Development.

Habitats

42. The habitat types recorded within the ecology study area are evaluated in Table 7.13, below, with reference to their extent and condition and potential fit with nature conservation priorities, including the SBL which is, in part, based on the former UK Biodiversity Action Plan (including the Maddock (2011) review used here) and the East Lothian Council BAP (ELCBAP).

Table 7.13: Habitats Evaluation Summary

Phase 1 Habitat	Potential Conservation Status	Comments	Value
Broadleaved, semi-natural woodland	SBL: Lowland mixed, deciduous woodland	Locally extensive in the south of the ecology study area. An area of AWI woodland lies within Thornton Glen SWT and	Local (Thornton Glen SWT and AWI woodland evaluated separately).

Phase 1 Habitat	Potential Conservation Status	Comments	Value
	ELCBAP: Woodland habitats (veteran trees, dead wood).	immediately east of the site near Thornton Loch holdings.	
Broadleaved, plantation woodland	-	Small area recorded within ecology study area associated with a residential property in Skateraw. Limited diversity and not a conservation priority	Less than Local
Coniferous, semi-natural woodland	SBL: Native pine woodland	AWI woodland located south-east of the site, outwith footprint of Proposed Development.	Council (Evaluated as part of AWI woodland).
Coniferous, plantation woodland	-	Limited diversity and not a conservation priority	Less than Local
Mixed, semi-natural woodland	ELCBAP: Woodland habitats (veteran trees, dead wood)	Locally extensive in the south of the ecology study area, outwith the footprint of the Proposed Development.	Local
Mixed, plantation woodland	-	Limited diversity and not a conservation priority	Less than Local
Scrub (Dense/Continuous and scattered)	ELCBAP: Woodland (scrub)	Areas of scrub are locally extensive within the northern and southern reaches of the ecology study area along watercourses.	Local
Broadleaved scattered trees	-	Limited diversity and not a conservation priority	Less than Local
Semi-improved neutral grassland	-	Limited diversity and not a conservation priority	Less than Local
Improved grassland	-	Limited diversity and not a conservation priority	Less than Local
Tall ruderal	-	Limited diversity and not a conservation priority	Less than Local
Standing water	SBL: Ponds	The three ponds within the ecology study area do not meet the Maddock (2011) criteria to be defined as Priority Habitat	Less than Local
Running water	SBL: Rivers ELCBAP: Rivers and Burns	The Thornton Burn, Thurston Mains, Ogle Burn Braidwood Burn, Skateraw Dean and Dry Burn run through the ecology study area. The Proposed Development crosses the Skateraw Dean at the north and the Braidwood Burn at the south.	Local
Intertidal mud/sand	ELCBAP: Intertidal habitats	A small area of this habitat is found within the footprint of the landfall.	Local
Shingle above high tide mark	-	A small area of this habitat is found within the footprint of the landfall which lies within the Barns Ness SSSI. Shingle is one of the features for which the SSSI is designated.	Evaluated as part of Barns Ness SSSI.
Intertidal boulders/ rock	ELCBAP: Intertidal habitats	- This habitat is found within the footprint of the landfall	Evaluated as part of Barns Ness SSSI.

Phase 1 Habitat	Potential Conservation Status	Comments	Value
		location which lies within the Barns Ness SSSI. This habitat forms part of a geological feature 'the Lower Carboniferous-Dinarian-Namurian' which is one of the features for which the SSSI is designated.	
Coastal grassland	ELCBAP: Coastal Habitats	A small area of this habitat is present near the landfall location.	Local
Arable	SBL: Arable field margins ELCBAP: Farmland (cereal field margins)	Arable fields represent 27% of the ecology study area, but field margins are not managed for wildlife and therefore do not meet the Priority Habitat definition.	Less than Local
Intact and defunct species-poor hedgerow	ELCBAP: Farmland (hedgerow)	Species-poor hedgerows border arable and improved grassland fields across the ecology study area including within the footprint of the Proposed Development. The hedgerows are of limited species diversity.	Local
Wall	-	Not a conservation priority	Less than local
Buildings	-	Not a conservation priority	Less than local
Bare ground	-	Not a conservation priority	Less than local
Other (incl. roads/railway and grounds of properties)	-	Not a conservation priority	Less than local

Protected Species and Species Groups

43. Table 7.14 presents a summary of each non-avian species or species group, their conservation priority, a brief summary of condition and an evaluation in terms of ecological value.

Table 7.14: Species Evaluation Summary

Species / Species Group	Legal / Conservation Status	Comments	Ecological Value
Otter	European Protected Species Schedule 5 WCA SBL listed ELCBAP listed	Evidence of otter presence including resting sites found within the ecology study area along the Thornton Burn, Braidwood Burn, Dry Burn and Ogle Burn corridors. All resting sites lie outwith 30 m of the Proposed Development footprint.	Local
Water vole	Schedule 5 WCA SBL listed ELCBAP listed	No evidence of presence in the ecology study area	Less than Local
Badger	Protection of Badgers Act 1992 (amended by the WANE Act in Scotland)	Evidence of badger presence including setts found within the ecology study area, all outwith 30 m of the Proposed Development. Habitats within the Proposed Development suitable for foraging, commuting and sett building.	Local

Species / Species Group	Legal / Conservation Status	Comments	Ecological Value
Bats (all species)	European Protected Species SBL listed ELCBAP listed	Suitable roost features identified within trees and structures within the ecology study area. No potential roost features lie within 30 m of the Proposed Development. Suitable habitat features (e.g. woodland edge, riparian corridors, hedgerows) present throughout the ecology study area including within the footprint of the Proposed Development.	Local
Great crested newt	European Protected Species SBL listed ELCBAP listed	Pond 1 to the south-west of the Proposed Development, 450 m from the footprint of works contains great crested newts. Great crested newts occur in three main areas within Scotland – in the southwest, in the Central Belt and in Moray Firth (Wilkinson <i>et al.</i> , 2014) – but they are relatively uncommon within East Lothian.	Council
Reptiles (common lizard and adder)	Limited protection under the WCA SBL listed ELCBAP listed	Arable and improved grassland habitats are largely suboptimal for reptiles; however, rough grassland and scattered scrub provide suitable foraging, commuting and refugia habitat for common lizard. Within the Proposed Development these areas are limited to field margins, the Dry Burn corridor at the north of the ecology study area and along the Braidwood Burn corridor. Based on the habitats present within the site, adders are unlikely to be present.	Local

7.7.10. FUTURE BASELINE SCENARIO

44. The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017 require that a “*a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without development as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge*” is included within the Onshore EIA Report.
45. In order to ensure that the Proposed Development is assessed against a realistic baseline scenario, i.e. what the baseline conditions are likely to be once the Proposed Development is operational, a description of the likely future baseline conditions is provided within this section.
46. In the event that the site remained undeveloped, aside from slight variations in populations and distribution of the more mobile species, and variations associated with changes to arable cropping and livestock management, it is considered unlikely that there would be any significant change to the baseline conditions within the Ecology Survey Area.
47. A summary of the relevant climate change projections using the UK Climate Change Projections (Met Office, 2022) is as follows:
 - Temperatures are projected to increase, particularly in summer;
 - Winter rainfall is projected to increase and summer rainfall is most likely to decrease;

- Heavy rain days (rainfall greater than 25mm) are projected to increase, particularly in winter;
 - Near surface wind speeds are expected to increase in the second half of the 21st century with winter months experiencing more significant effects of winds; however, the increase is projected to be modest;
 - There will be an increase in the frequency of winter storms; and
 - Sea levels are expected to rise by between 8 cm and 90 cm (based on data for Edinburgh) by the end of the century.
48. The non-avian ecological baseline is unlikely to change significantly over the coming years as a direct result of climate change. Changes to the local climate, such as higher temperatures and reduced rainfall in the summer months, could gradually lead to conditions that today are more typical of locations further south in Great Britain, but in the case of agricultural and wooded habitats, changes to these and their associated species are unlikely to be significant over the lifetime of the Proposed Development. Higher sea levels and severe winter storms could potentially shift the coastline further inland but again this process is unlikely to be significant over the lifetime of the Proposed Development.
49. The Habitat Management Plan (to be produced post-consent) will include a planting schedule that contains species that are known to also occur in the south of Great Britain, thus ensuring future resilience against potential climatic change.

7.7.11. DATA ASSUMPTIONS AND LIMITATIONS

Extended Phase 1 Habitat Survey

50. The extended Phase 1 habitat survey was undertaken within the optimal survey season from April to September, inclusive, and conditions were suitable for survey. There were some areas of the study area that could not be accessed (e.g. the Viridor site to the west) however due to the nature of the habitats present, it was possible to assess broad habitat types from the site boundary which is considered suitable for assessment. Some targeted updates were made in mid-October but involved habitats that were readily classifiable, as species remained present and identifiable.

Badger Survey

51. The optimal survey period for badgers is spring or autumn when badgers are most active and vegetation has died back allowing field sign to be more visible. The badger survey was carried out in autumn 2020 and 2021 and in spring 2022 when vegetation density was generally low and any field signs, if present, more easy to detect. However, during the 2020 and 2021 surveys, bracken (*Pteridium aquilinum*) was still high, and areas of dense gorse (*Ulex europaeus*) were also impassable in some areas of the site, especially around the Thornton Burn and Braidwood Burn, and this may have obscured some badger field signs. The perimeter of any dense stands was therefore walked and mammal paths followed as far as possible to reduce this limitation. Areas apparently suitable for badger setts were noted to ensure that appropriate working methods can be adopted (e.g. supervised vegetation removal) during any site clearance works (as detailed within Volume 4, Appendix 7.2).

Bat Surveys

52. There was no access to private properties to complete detailed Preliminary Roost Assessments. Buildings were therefore assessed from a distance. No buildings with potential roost features were identified within 30 m of the Proposed Development and as such no further survey was required.

Otter and Water Vole

53. Heavy rainfall in October 2020 caused water levels within watercourses to rise and may have washed away otter and water vole evidence at lower levels such as prints and spraint. Water levels at the time of the survey were not considered to be a limitation and would not have obscured resting sites or burrows.
54. Areas of dense gorse scrub along some of the Thornton Burn and Dry Burn was often found to be impenetrable by surveyors when surveying 20 m from channel. In addition, steep, rocky banks through sections of the Thornton Burn and Braidwood Burn could not be safely accessed to survey. As a result, full assessment for resting sites could not be conducted in some areas of the bankside. These sections are highlighted in Volume 4, Appendix 7.2. and Appendix Figure 7.2.2.

Great Crested Newt

55. There was no access to some areas of the great crested newt study area as highlighted in Volume 4, Appendix 7.2, Appendix Figure 7.2.2. Three waterbodies, Pond 3 (177 m north-west of the site), Pond 4 (235 m north-west of the site) and Pond 5 (370 m north-west of the site) could therefore not be assessed for suitability to support great crested newt. The ponds lie outwith 500 m of the main footprint of the Proposed Development. A temporary access road is proposed that lies within 500 m of the ponds, however the proposed route is through an arable field and great crested newt are highly unlikely to be within the footprint of the works. No further survey or mitigation for this species is deemed necessary to that outlined within Volume 4, Appendix 7.4.

7.8. KEY PARAMETERS FOR ASSESSMENT

7.8.1. MAXIMUM DESIGN SCENARIO

56. The maximum design scenario involves a 40-month construction period, the only permanent habitat loss is the construction of the onshore substation and watercourse crossings. Even with a 40-month construction period the works within this time period are temporary and localised within the Proposed Development footprint.
57. The maximum design scenario(s) are shown in Table 5.1 of Volume 1, Chapter 5 which have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.
58. Potential ecology and nature conservation impacts considered within this assessment are the following:
 - temporary habitat loss or fragmentation from the maximum temporary infrastructure land take of the Proposed Development;
 - permanent habitat loss or fragmentation from the maximum permanent infrastructure land take of the Proposed Development;
 - direct or indirect impacts on the qualifying features of designated sites;
 - disturbance or direct mortality of protected or notable species due to construction activities; and
 - habitat enhancement during operation resulting in beneficial impacts on protected species.

7.8.2. IMPACTS SCOPED OUT OF THE ASSESSMENT

59. As noted in Section 7.6, under evaluation methods for IEFs, ecological features of local or higher value are considered IEF. Due to a range of factors, some of these IEFs can be scoped-out of further consideration if they are not vulnerable to effects from the Proposed Development.

7.8.3. IEFS SCOPED IN/OUT OF THE ASSESSMENT

60. Following the collation of the baseline data, including desk study and field survey data, and following the embedded mitigation measures described in Section 7.10, several potential effects on ecological features can be scoped out of further assessment, as described in Table 7.15 below. This is based on professional judgement and experience from other relevant projects in the region.
61. The habitats present and their respective areas within the ecology study area are presented in Table 7.11. Estimates of direct and indirect habitat losses from the Proposed Development are presented in Table 7.20. An estimated total of 58.5 ha will be directly lost due to the Proposed Development, approximately 12.44 % of the ecology study area. This includes 12.9 ha under the permanent footprint of works and 45.6 ha under the temporary footprint of works.
62. As listed in Table 7.15 the assessment of effects will be applied to IEFs that are known to be present within the site or surrounding area (as confirmed through survey results and consultations outlined above) and which could be susceptible to impacts from the Proposed Development.

Table 7.15: IEFs Scoped In or Out of the Assessment

IEF	Rationale for Scoping In/Out	Scoped In/Out
Designated Sites (Local Importance and Above)		
Barns Ness SSSI	The Barns Ness SSSI lies within the northern reaches of the site under the footprint of the Proposed development. Trenchless techniques (e.g. HDD) will be used for cable installation under the SSSI which will avoid direct habitat loss or disturbance. The footprint of the temporary works area for the cable pits is within 30 m of the SSSI. Mitigation is presented in Section 7.10 to protect habitats within the SSSI during works.	Out
Pease Bay Coast SSSI	The Pease Bay Coast SSSI is approximately 1.15 km south-east of the Proposed Development and designated for its maritime cliff habitat assemblage. Due to the separation distance and the nature of the designated interest, no pathway for significant effects on the SSSI has been identified.	Out
Lammermuir Deans SSSI	The Lammermuir Deans SSSI is approximately 3.3 km south-west of the Proposed Development designated for its upland mixed ash woodland, subalpine calcareous grassland and valley fen habitat assemblage. Due to the separation distance and the nature of the designated interest, no pathway for significant effects on the SSSI has been identified.	Out
Woodhall Dean SSSI	The Woodhall Dean SSSI is approximately 3.8 km south-west of the Proposed Development designated for its broadleaved, mixed and yew woodland; and upland oak woodland habitat assemblage. Due to the separation distance and the nature of the designated interest, no pathway for significant effects on the SSSI has been identified.	Out
Pease Bridge Bay SSSI	The Pease Bridge Bay SSSI is approximately 4.1 km south-east of the Proposed Development designated for its upland oak woodland and bryophyte assemblage. Due to the separation distance and the nature of the designated interest, no pathway for significant effects on the SSSI has been identified.	Out
Thornton Glen SWT	Thornton Glen SWT borders the site and forms part of the semi-natural, broadleaved woodland habitat that extends along the Thornton Burn and Braidwood Corridor. As part of the wider woodland lies within the footprint	In

IEF	Rationale for Scoping In/Out	Scoped In/Out
	of the Proposed Development, there is potential for indirect effects such as habitat fragmentation to impact the integrity of the designated site.	
Dryburn Valley LNCS	Dryburn Valley LNCS lies largely outwith the western reaches of the site. However, Skateraw Dean lies within the LNCS and extends under the footprint of the Proposed Development near the landfall.	In
Dunglass Burn LNCS	Dunglass Burn LNCS forms part of the semi-natural, broadleaved woodland habitat that extends along the Braidwood Burn corridor and lies under the footprint of the Proposed Development.	In
Thurston Burn Valley LNCS	Thurston Burn Valley LNCS forms part of the semi-natural, broadleaved woodland habitat that extends along the Thornton Burn corridor and overlaps with the Thornton Glen SWT.	Assessed as part of the Thornton Glen SWT.
Bilsdean Coast LNCS	Bilsdean Coast LNCS, which is designated for habitats, lies within 270 m of the site at its closest point and outwith 250 m of the Proposed Development. Due to the separation distance and the nature of the designated interest, no pathway for significant effects on the LNCS has been identified.	Out
AWI Woodland	Two areas of AWI woodland lie within Thornton Glen SWT noted to be Ancient of Semi-Natural Origin 1a and Ancient of Semi-Natural Origin 2b. Both lie outwith the footprint of the Proposed Development but may be indirectly impacted through habitat fragmentation, therefore these areas of AWI are scoped in but assessed under Thornton Glen SWT.	Assessed as part of Thornton Glen SWT.
	A further area of AWI which comprises an area of semi-natural broadleaved woodland and coniferous woodland lies adjacent to the east edge of the Proposed Development at a proposed site access point. This lies 10 m outwith the Proposed Development footprint and is separated from the site by a road. Therefore significant effects are very unlikely.	Out
	All other areas of AWI lie outwith Proposed Development, with the closest woodland located 425 m south-west of the Proposed Development footprint. These woodlands are also scoped out of the assessment.	Out
Habitats (Local Importance and Above)		
Broadleaved, semi-natural woodland	The semi-natural broadleaved woodland that extends along the Thornton Burn and Braidwood Burn corridor lies under the footprint of the Proposed Development at the proposed cable crossing (e.g. cable bridge) location. This area of woodland forms part of the Dunglass LNCS.	Assessed as part of Dunglass Burn LNCS
Mixed, semi-natural woodland	The woodland is approximately 370m at its closest point from the footprint of the Proposed Development. The habitat will not be directly or indirectly impacted by the Proposed Development and is therefore scoped out of the assessment.	Out
Scrub (Dense/Continuous and scattered)	Approximately 16.32 ha of this habitat lies within the ecology study area, of which approximately 0.29 ha or 1.78 % of the total extent of this habitat within the ecology study area will be lost.	In
Running water	The Proposed Development includes cable bridge crossings over the Braidwood Burn and the Skateraw Dean.	In
Intertidal mud/sand	Approximately 4.16 ha of this habitat lies at the landfall location within Barns Ness SSSI. Trenchless techniques (e.g. HDD) will be used for cable installation under the SSSI which will avoid direct habitat loss or disturbance. This habitat is scoped out of the assessment.	Out
Intertidal boulders/rocks	Approximately 21.06 ha of this habitat lies within the ecology study area at the landfall location within Barns Ness SSSI. Trenchless techniques (e.g. HDD) will be used for cable installation under the SSSI which will avoid direct habitat loss or disturbance. This habitat is scoped out of the assessment.	Out (Assessed as part of Barns Ness SSSI)
Shingle above high tide mark	Approximately 0.23 ha of this habitat lies within the ecology study area within the Barns Ness SSSI and is a designated feature of the SSSI. Trenchless techniques (e.g. HDD) will be used for cable installation under the SSSI which will avoid direct habitat loss or disturbance. This habitat is scoped out of the assessment.	Out (Assessed as part of Barns Ness SSSI)
Coastal grassland	Approximately 3.29 ha of this habitat lies within the ecology study area within the Barns Ness SSSI. Trenchless techniques (e.g. HDD) will be	Out (Assessed as

IEF	Rationale for Scoping In/Out	Scoped In/Out
	used for cable installation under the SSSI which will avoid direct habitat loss or disturbance. This habitat is scoped out of the assessment.	part of Barns Ness SSSI)
Intact and defunct species-poor hedgerow	Approximately 7.59 km of species-poor hedgerow lies within the ecology study area, approximately 120 m or 1.58 % will be lost as a result of the Proposed Development where the cable route crosses hedgerows.	In
Otter	Otter have been recorded within the ecology study area including three potential holts which lie over 30 m but within 200 m of the Proposed Development. Further camera monitoring has found no evidence that these potential holt features are in use by otter. All active resting sites identified during baseline surveys completed to date lie outwith 30 m of the Proposed Development. Due to their legal protection, mitigation is presented in Section 7.10 to reduce the risk to individual otters and minimise disruption to foraging and commuting behaviour during construction but significant effects on the local otter population are very unlikely.	Out
Badger	Badger have been recorded within the ecology study area but no setts have been identified within 30 m of the Proposed Development. Due to their legal protection mitigation is presented in Section 7.10 to reduce the risk to individual badgers moving within works areas, but significant effects on the local badger population are very unlikely.	Out
Bats	Potential roost features were identified within the ecology study area; however the final design has been routed to avoid these potential roost features, all of which are located outwith 30 m of the Proposed Development. Due to their legal protection, mitigation is presented in Section 7.10 to reduce the risk to individual bats and minimise disruption to foraging and commuting behaviour during construction but significant effects on local bat populations are very unlikely.	Out
Great crested newt	A great crested newt breeding pond is located 450 m south-west of the Proposed Development footprint at its closest point. Approximately 1.8 ha of land, within the 500 m buffer of the pond, lies under the footprint of temporary and permanent works. The habitat under the footprint of works is improved grassland which is suboptimal for newts. In consultation with NatureScot, it was agreed that, as it was unlikely that great crested newt would be present within the footprint of the works, a protected species licence was not required. A Species Protection Plan (SPP) has been produced detailing measures to minimise the impact of the Proposed Development on individual newts, and contingency measures should newts be encountered. The SPP is provided in Volume 4, Appendix 7.4.	Out
Reptiles	Limited suitable terrestrial habitat for reptiles is present within the footprint of works and significant effects on the local reptile population are unlikely.	Out

Operational and Maintenance Phase

63. Full details of the operational phase are outlined in Volume 1, Chapter 5 but in summary will involve regular maintenance checks, including annual checks of the cable corridor on foot. Works would only be required in the event of a fault. Should there be a fault within the cable, the area around the fault would be excavated and the fault repaired.
64. The temporary nature of the impacts associated with the onshore aspects of the Proposed Development indicate that any impacts experienced during the operational phase are anticipated to be significantly less severe and shorter in duration and scale than those assessed for the construction phase across all receptors.
65. Given the reduced impacts that are likely during the operational phase of the Proposed Development, it is considered that levels of disturbance that may result from general maintenance are unlikely to be greater than the levels of disturbance that IEFs will be habituated to and are therefore unlikely to generate a significant effect. For this reason potential impacts on IEFs resulting from operational and maintenance activities are not assessed separately in this chapter.

Decommissioning Phase

66. Impacts of decommissioning are also identified and are of a similar nature to construction impacts, although the existing baseline is difficult to define at the end of the 35-year operational lifetime of the Proposed Development. Assuming that the baseline conditions will be broadly similar to the current one described here for construction impacts, then the impacts would be of a similar, but likely reduced, scope. For this reason potential impacts on IEFs resulting from decommissioning activities are not assessed separately in this chapter. Good practice mitigation will be implemented during decommissioning, such as protected species surveys ahead of any ground works.

7.9. METHODOLOGY FOR ASSESSMENT OF EFFECTS

7.9.1. OVERVIEW

67. The approach to the EclA follows the Chartered Institute of Ecology and Environmental Management guidelines (CIEEM, 2018), which prescribe an industry-standard method to define, predict and assess potential ecological effects to a given proposed development. Starting with establishing the baseline through a mix of desk study and field survey, important ecological features (the IEFs) are identified and those requiring assessment established through a reasoned process of valuation and consideration of factors, such as statutory requirements, policy objectives for biodiversity, conservation status of the IEF (habitat or species), habitat connectivity and spatial separation from the Proposed Development. From this stage, these features are assessed for impacts with the assumption of this being in the presence of construction industry-standard mitigations to ameliorate impacts as far as practicably possible. Additional mitigation strategies can then be determined to minimise any residual impacts that would otherwise be experienced by the IEF and any opportunities for enhancement identified.
68. In summary, the impact assessment process (CIEEM, 2018) involves:
- Identifying and characterising impacts and their effects;
 - Incorporating measures to avoid and mitigate negative effects;
 - Assessing the significance of any residual effects after mitigation;
 - Identifying the appropriate compensation methods to offset significant residual effects; and
 - Identifying opportunities for ecological enhancement.

7.9.2. ECOLOGICAL ZONE OF INFLUENCE

69. The Ecological Zone of Influence (EZoI) is defined as the area within which there may be ecological features subject to effects from the Proposed Development. Such effects could be direct (e.g. habitat loss resulting from land-take or removal of a building occupied by bats) or indirect (e.g. noise or visual disturbance causing a species to move out of the EZoI). The EZoI was determined through:
- Review of the existing baseline conditions based on desk study results, field surveys and information supplied by the consultees;
 - Identification of sensitivities of ecological features, where known;
 - The maximum design scenario(s) of the Proposed Development and approach to construction; and
 - Through liaison with other technical specialists involved in the assessment (e.g. hydrologists and noise specialists).

7.9.3. CHARACTERISING ECOLOGICAL IMPACTS AND EFFECTS

70. In accordance with the CIEEM guidelines, the following definitions are used for the terms 'impact' and 'effect'.
- Impact – Actions resulting in changes to an ecological feature. For example, the construction activities of a development removing a hedgerow; and
 - Effect – Outcome to an ecological feature from an impact. For example, the effects on a species population from the loss of a hedgerow.
71. In accordance with the CIEEM guidelines, when determining impacts on IEFs, reference is made to the following:
- Beneficial or adverse – i.e. whether the impact has a beneficial or adverse effect in terms of nature conservation objectives and policy;
 - Magnitude – this refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population);
 - Extent – i.e. the area over which an impact occurs;
 - Duration – i.e. the time for which an impact is expected to last;
 - Timing and frequency – i.e. whether impacts occur during critical life stages or seasons; and
 - Reversibility – i.e. a permanent impact is one that is irreversible within a reasonable timescale or for which there is no reasonable chance of action being taken to reverse it. A temporary impact is one from which a spontaneous recovery is possible.
72. Both direct and indirect impacts are considered. Direct ecological impacts are changes that are directly attributable to a defined action (e.g. the physical loss of habitat occupied by a species during the construction process). Indirect ecological impacts are attributable to an action but affect ecological resources through effects on an intermediary ecosystem, process or feature (e.g. fencing of a development site may cause scrub to invade a grassland).
73. The CIEEM guidelines state that impacts should be quantified, if possible, and expressed in absolute or relative terms (e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population). That approach has been followed here, where possible. For the purposes of this assessment, the predicted impacts on an ecological feature are categorised as 'no impact', 'negligible', 'low', 'medium' or 'high', based on the definitions in Table 7.16.

Table 7.16: Level of Impact Magnitude

Level of Impact Magnitude	Definition
No impact	No detectable impacts on the ecological resource, even in the immediate term.
Negligible	Detectable impact but reversible within 12 months. Not expected to affect the conservation status of the nature conservation designation, habitat or species under consideration.
Low	Detectable impacts, and may be irreversible, but either of sufficiently small-scale or of short-term duration to have no material impact on the conservation status of the nature conservation designation, habitat or species population.
Medium	Detectable impact on the status of the nature conservation designation, habitat or species population in the medium term but is reversible / replaceable given time, and not a threat to the long-term integrity of the feature.
High	Irreversible impact on the status of the nature conservation designation, habitat or species and likely to threaten the long-term integrity of the feature. Not reversible or replaceable. Will remain detectable in the medium and long term.

Level of Impact Magnitude	Definition
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The following definitions have been applied in respect to timescales:

- Immediate: Within approximately 12 months;
- Short term: Within approximately 1-5 years;
- Medium term: Within approximately 6-15 years; and
- Long term: More than 15 years.

The following definitions have been applied in respect to reversibility:

- High reversibility: Reversible within 12 months (e.g removal and reinstatement of grassland habitat).
- Medium reversibility: Reversible in the medium term (6-15 years), not a threat to the long-term integrity of the feature (e.g. removal and reinstatement of scrub or hedgerow habitat).
- Low reversibility: Reversible but will take an extended period of time (e.g. 15 – 50 years) and will require mitigation (e.g. removal and reinstatement of immature or semi-mature woodland).
- Irreversible: the impact is one from which recovery is not possible within a reasonable timescale and there is no reasonable chance of action being taken to reverse it (e.g. removal of veteran trees or compaction of soil within ancient woodland which will irreversibly damage ground flora).

7.9.4. DETERMINING SENSITIVITY OF RECEPTORS

74. In determining the sensitivity of each ecological feature, the vulnerability, recoverability and value/importance of that ecological feature is taken into consideration. For the purposes of this assessment, the predicted sensitivity of an ecological feature is categorised as ‘negligible’, ‘low’, ‘medium’, ‘high’ and ‘very high’, based on the definitions in Table 7.17.

Table 7.17: Definitions of Terms Relating to the Sensitivity of the Ecological Feature

Value (sensitivity) of the Receptor	Definition
Negligible	Locally important ecological feature with low vulnerability and very high recoverability.
	Ecological feature is not vulnerable to impacts regardless of value/importance.
Low	Nationally and internationally important ecological feature with low vulnerability and high recoverability.
	Regionally important ecological feature with low vulnerability and medium to high recoverability.
	Locally important ecological feature with medium to high vulnerability and low to medium recoverability.
Medium	Nationally and internationally important ecological feature with medium vulnerability and medium recoverability.
	Regionally important ecological feature with medium to high vulnerability and low recoverability.
	Locally important ecological feature with high vulnerability and no ability to recover.
High	Regionally important ecological feature with high vulnerability and no ability to recover.
	Nationally and internationally important ecological feature with high vulnerability and low recoverability.
Very High	Nationally and internationally important ecological feature with high vulnerability and no ability to recover

7.9.5. DETERMINING ECOLOGICALLY SIGNIFICANT EFFECTS

75. The significance of the effect is then calculated using the following matrix (Table 7.18). Where two levels of significance are possible, for example moderate to major; in these situations professional judgement of the author is used.

Table 7.18: Matrix Used for the Assessment of the Significance of the Effect

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

76. An EclA is undertaken in relation to the baseline conditions that would be expected to occur in the absence of a Proposed Development and, therefore, may include possible predictions of future changes to the baseline conditions, such as environmental trends and other completed or planned development. Both adverse and beneficial impacts/effects are possible.

77. For the purpose of EclA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local (CIEEM, 2018).

78. In accordance with the CIEEM guidelines, the approach in this chapter aims to determine if the effect of an impact is significant or not based on a discussion of the factors that characterise it (i.e. the ecological significance of an effect is not dependent on the value of the feature in question). Rather, the value of a feature that will be significantly affected is used to determine the geographical scale at which the effect is significant.

79. In accordance with the current CIEEM guidelines, effects of impacts are assessed in the presence of standard (primary and tertiary) mitigation measures. Additional (secondary) mitigation may be identified where it is required to reduce a significant effect.

80. Any significant effect remaining post-mitigation (the residual effect); together with an assessment of the likelihood of success of the mitigation, will be material considerations to be weighed in the balance in determining the application.

81. For the purposes of this assessment:

- A level of residual effect of moderate or more will be considered a 'significant' effect in terms of the EIA Regulations; and
- A level of residual effect of minor or less will be considered 'not significant' in terms of the EIA Regulations.

82. In addition to determining the significance of effects on IEFs, this chapter also identifies any legal requirements in relation to wildlife (e.g. protected species licensing).

7.10. PRIMARY & TERTIARY MITIGATION

83. As part of the project design process, a number of measures have been proposed to reduce the potential for impacts on ecology (see Table 7.19). These include measures which have been incorporated as part of the Proposed Development's design (referred to as 'primary mitigation') and measures which will be implemented regardless of the impact assessment (referred to as 'tertiary mitigation'). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Proposed Development and have therefore been considered in the assessment presented in Section 7.11 below (i.e. the determination of magnitude and therefore significance assumes implementation of these measures). These measures are considered standard industry practice for this type of development.
84. Primary mitigation includes the following design measures:
- The onshore cabling will be installed alongside tracks and/or field margins wherever possible to minimise habitat loss and/or disturbance;
 - Proximity to watercourses has been avoided wherever possible;
 - Areas considered to be more sensitive in terms of protected habitats such as semi-natural woodland, wetland habitats, and coastal habitats have been avoided wherever possible;
 - Trenchless technology (e.g.HDD) is to be used to install sections of the onshore cable including at the landfall within Barns Ness SSSI. This method is an alternative to open trenching techniques and will minimise habitat loss and/or disturbance; and
 - A Habitat Enhancement and Management Plan (HEMP) will be produced for the Site detailing measures to protect existing ecological features, enhance habitats and increase biodiversity within the Site in line with NPF4 Policy 3 (Biodiversity) and LDP Policy NH5 (Biodiversity and Geodiversity Interests, including Nationally Protected Species). Biodiversity enhancement measures are to include the creation of species-rich grassland, hedgerow, and woodland habitats along the margins of the A1 trunk road and surrounding the onshore substation. These measures will benefit protected species such as badger and bats by maintaining and creating linear features used for foraging and commuting. The HEMP will also detail long-term monitoring and management measures to ensure its successful delivery. The HEMP is to be produced post-consent but prior to the construction phase of the Proposed Development commencing, and in consultation with the Planning Authority.
85. Tertiary mitigation includes the following standard mitigation measures:
- The Applicant will appoint a suitably qualified Ecological Clerk of Works (ECoW) prior to the commencement of any construction activities taking place. Prior to works commencing the ECoW will carry out preconstruction ecological surveys. During construction their role will be to provide ecological support including providing toolbox talks to all site personnel with regards to priority species and habitats, advising on works when working near or adjacent to sensitive habitats (e.g. watercourses) as well as undertaking monitoring works.
 - To protect scrub and woodland habitats within and adjacent to the site working methods should proceed in line 'BS 5837 (2012) – Trees in relation to Design, Demolition and Construction'.
 - To protect habitats within Barns Ness SSSI, protective fencing and signage will be installed as necessary, under the supervision of the ECoW, to delineate the edge of the designated site and prevent movement of plant and personnel, or storage of materials, within the SSSI.
 - A pre-construction survey for badger and otter will be carried out. This is to include monitoring of the large mammal hole identified by the ECoW during the GI works in July.

If evidence of either species is identified, additional mitigation may be identified and implemented to prevent impacts on individuals.

- A pre-construction survey for roosting bats will be carried out. This will be an initial update to the Preliminary Roost Assessment to identify any features with suitability for use by roosting bats within 30 m of the Proposed Development. Where potential is confirmed within the zone of influence, further survey will be carried to verify if roosting bats are present. If this is the case, additional mitigation and/or compensation will be identified and implemented to prevent significant impacts.
 - Newt fencing is to be installed to separate the works area from suitable great crested newt habitat to the south of the proposed substation at Branxton. This will protect individual newts by acting as a barrier to movement of newts into the works area. The location, extent and design of newt fencing is detailed within a great crested newt species protection plan (Volume 4, Appendix 7.4).
 - The badger and otter survey noted areas of dense vegetation and steep slopes which could not be fully inspected to confirm presence or absence of setts or resting sites (as detailed in Volume 4, Appendix 7.2). If works are required in these areas the vegetation will be cleared under the supervision of the ECoW.
 - A sensitive lighting scheme is to be adopted and construction phase lighting will be directed to where it is needed and light spillage (whether direct/or in-direct) avoided, particularly within the vicinity of edge habitat, riparian corridors and other linear features such as pathways, tree lines and hedgerows.
 - Himalayan balsam has been identified within the ecology study area and Japanese knotweed was recorded within the wider area. Works will be reviewed and if there is a risk that works are likely to be within 10 m of such stands, an Invasive Non-Native Species (INNS) plan will be produced to prevent the spread of these species within and off the site. The management plan will include suitable precautions to prevent spread of plant fragments/seeds including exclusion zones, biological control, on-site treatment or removal by an approved company that specialises in non-native species disposal.
 - The following good practice measures, endorsed by NatureScot, are to be applied during construction activity:
 - Cover/fence-off excavations, or provide escape ramps at the end of the working day to avoid animals becoming trapped (if an animal does become trapped, advice should be sought immediately from the ECoW);
 - Cap any temporarily exposed pipe systems out of work hours;
 - Clean fuel/chemical spillages immediately with spill kits and dispose of waste materials correctly;
 - Avoid unnecessary disturbance to habitats by minimising the extent of ground clearance, as far as possible; and
 - Ecological toolbox talks to be given to all new site personnel as part of the site induction process on the potential presence of protected species including badgers, otters and great crested newts and any measures that need to be undertaken should such species be discovered during construction activities.
86. In order to prevent pollution of watercourses within the site (with particulate matter or other pollutants such as fuel), best practice techniques will be employed. These are outlined in Volume 1, Chapter 11 and the Outline Construction Environmental Management Plan (CEMP) (Volume 4, Appendix 5.1) and will include:
- For water crossings (i.e. those not being negotiated by trenchless technology (e.g. HDD)): buffer strips around sections of workings adjacent to watercourse crossings and bund and embankment features are to be implemented;

- Where necessary CAR licences for works affecting watercourses will be applied for post-consent;
- There will be no storage of material within 10 m of any watercourse in line with SEPA requirements to reduce risk of runoff (SEPA, 2009); and
- General drainage: no direct discharges of water from works areas to existing drainage channels or surface watercourses; drainage will be directed to infiltration trenches, settlement swales or lagoons.

87. Full details of construction mitigation measures will be provided in a detailed CEMP to be agreed with the Planning Authority, in consultation with NatureScot, post-consent but prior to the construction phase of the Proposed Development commencing.

Table 7.19: Measures Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)

Measures Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)	Justification
A CEMP will be prepared and implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The CEMP will include Proposed Development mitigation/monitoring measures and commitments and a Pollution Contingency Plan (PCP) which will include key emergency contact details (e.g. Scottish Environment Protection Agency (SEPA)).	Measures will be adopted to ensure that the potential for release of pollutants from construction, operational and maintenance and decommissioning plant is minimised. These will likely include: designated areas for refuelling where spillages can be easily contained, storage of chemicals in secure designated areas in line with appropriate regulations and guidelines, double skinning of pipes and tanks containing hazardous substances, and storage of these substances in impenetrable bunds.
A HEMP will be produced in consultation with the Planning Authority prior to the construction phase of the Proposed Development commencing. The HEMP will include measures to protect existing ecological features and a detailed planting scheme which will increase biodiversity within the Site. It will also detail long-term management and monitoring measures to ensure its successful delivery.	The HEMP is to ensure that the development conserves, restores and enhances biodiversity within the Site. This is to be achieved through the protection of existing ecological features, creation of new habitats and enhancement of existing habitats.
A suitably qualified ECoW will be appointed prior to the commencement of any construction activities taking place.	The ECoW will be present to provide ecological support through the construction phase. The role will include but is not limited to providing toolbox talks to all site personnel with regards to priority species and habitats, undertaking monitoring works, installation of ecological buffer zones and undertaking watching briefs as required.
Preconstruction surveys for badger, otter and bats	Preconstruction surveys will be undertaken in advance of works commencing on site. The ECoW will survey the footprint of works and an appropriate buffer to update the baseline survey results and identify any new ecological constraints.
Supervised clearance of dense vegetation	The ECoW will supervise the clearance of any dense areas of scrub, bracken and ruderal vegetation to ensure that any badger setts or otter resting sites (where clearance works are along watercourses) are identified and protected.
Installation of great crested newt fencing	To prevent great crested newts moving into the works area, barrier fencing will be installed in advance of works commencing on the site, where works are required within 500 m of a confirmed breeding pond. Mitigation is detailed within Volume 4, Appendix 7.4 – Great Crested Newt SPP.
Sensitive lighting scheme	To prevent artificial light during the construction phase disrupting the foraging and commuting behaviour of bats (and other mammals) a sensitive lighting scheme

Measures Adopted as Part of the Proposed Development (Primary & Tertiary Mitigation)	Justification
INNS Management Plan	is to be adopted to avoid illumination of edge habitat features. This will be produced if works are within 10 m of invasive species stands to prevent spread of this species on or off the site.

7.11. ASSESSMENT OF SIGNIFICANCE

88. The potential impacts arising from the construction phase of the Proposed Development on the scoped-in IEF and the likely significance of the effects of the Proposed Development on ecological receptors caused by each identified impact is given below.
89. Impacts on designated sites and habitats may include direct losses e.g. permanent land-take for the onshore substation and other infrastructure, SuDS wetland creation, temporary land-take for access tracks, laydown areas and construction site compounds. Negative impacts on habitats can also be indirect e.g. through habitat fragmentation. It is estimated that of the total habitat loss under the temporary and permanent footprint of works (c. 58.5 ha), 77.9% of this will be temporary such as access tracks and site compounds, and will be restored at the end of the construction period.
90. All habitat loss calculations are presented in Table 7.20, **with habitat IEFs brought forward for assessment shown in bold**². As in Table 7.11, the ecology study area is defined as the potential works areas and a 250 m buffer. Note that the figures in the tables have been rounded to the nearest two digits but calculations have been completed using the unrounded figures.

Table 7.20: Estimated Loss of Habitat from Proposed Development Infrastructure

Phase 1 Habitat	Extent in Ecology Study Area	Direct Habitat Loss Permanent Works Areas (ha)	Direct Habitat Loss Temporary Works (ha)	Total Direct Permanent and Temporary Habitat Loss (% of Total Extent)
Broadleaved, semi-natural woodland	11.89	0.00	0.11	0.93
Broadleaved, plantation woodland	1.60	0.00	0.01	0.63
Coniferous, semi-natural woodland	0.11	0.00	0.00	0.00
Coniferous, plantation woodland	2.67	0.00	0.22	8.24
Mixed, semi-natural woodland	2.83	0.00	0.00	0.00
Mixed, plantation woodland	0.70	0.00	0.11	15.71
Dense/Continuous Scrub	10.96	0.00	0.09	0.82
Scattered scrub	5.36	0.00	0.20	3.73
Semi-improved neutral grassland	38.58	0.01	7.14	17.92
Improved grassland	208.62	6.23	19.65	12.41
Tall ruderal	0.24	0.00	0.00	0.00
Standing water	0.09	0.00	0.00	0.00
Running water (km)	10.64	0.00	0.33	3.10

² Habitat IEFs not brought forward for assessment detailed in Table 7.15.

Phase 1 Habitat	Extent in Ecology Study Area	Direct Habitat Loss Permanent Works Areas (ha)	Direct Habitat Loss Temporary Works (ha)	Total Direct Permanent and Temporary Habitat Loss (% of Total Extent)
Intertidal mud/sand	4.16	0.00	0.00	0.00
Intertidal boulders/rocks	21.06	0.00	0.00	0.00
Shingle above high tide mark	0.23	0.00	0.00	0.00
Coastal grassland	1.61	0.00	0.00	0.00
Arable	126.23	6.07	17.31	18.52
Species-poor hedgerow (intact and defunct) (km)	7.59	0.00	0.91	11.99
Wall (km)	7.79	0.00	0.43	5.52
Buildings	1.87	0.00	0.00	0.00
Bare ground	1.88	0.00	0.00	0.00
Other (incl. roads/railway and grounds of properties)	28.07	0.64	0.69	4.62
Total	470.43 ha	12.95 ha	45.57 ha	

DUNGLASS BURN LNCS

Nature Conservation Value and Conservation Status

91. Part of the Dunglass Burn LNCS lies under the footprint of the Proposed Development as shown on Volume 2, Figure 7.2. The site is designated for its broadleaved, semi-natural woodland habitat. Approximately c.11.89 ha of broadleaved semi-natural woodland extends along the Thornton Burn and Braidwood Burn corridor within the ecology study area and is comprised of native woodland which is semi-natural in its origins. Native woodlands are defined as those whose tree species arrived naturally in Scotland without any apparent direct human assistance. Most of native tree and shrub species colonised Scotland after the last Ice Age, which ended roughly 9,000 years ago. The cover of native woodlands in Scotland has been calculated to be 311,153 ha, of which 23,189 ha comprises lowland mixed deciduous woodland (Patterson *et al.*, 2014), which is the category of the best fit with the broadleaved semi-natural woodland at this location.
92. This woodland is connected to two areas of AWI which lie within Thornton Glen SWT. These AWI stands are defined as Ancient (of semi-natural origin) 1a and 2b. This indicates that part of this woodland corridor has been continuously wooded since 1750 (1a) and 1860 (2b).

Construction Phase

Impact

93. Impacts on the woodland habitat will include direct loss within the footprint of temporary works to install the cable bridge over the Braidwood Burn, as well as temporary disturbance of vegetation adjacent to works areas.

Magnitude of Impact

94. As shown on Volume 2, Figure 7.3 and 7.4 a cable bridge crossing is proposed across Braidwood Burn that passes through the Dunglass Burn LNCS for approximately 60 m. The

footprint of the temporary works areas for the cable bridge is approximately 1,100 m² and the route has been micro-sited to minimise tree felling requirements. At the location of the cable bridge, the canopy is comprised of a semi-mature, multi-stem, ash trees with no mature tree specimens recorded within the footprint of the works. Understorey vegetation includes ruderal species and scrub. Assuming this could affect a zone of up to 15 m on either side of the footprint of works, up to 2,900 m² of this habitat may be susceptible to temporary disturbance. The proposed cable bridge is 40 m in length and 10 m in width therefore the footprint of the permanent works is estimated to be 400 m². In total, permanent and temporary works directly impacts 1.24% the total extent of this habitat within the ecology study area.

95. The impact is predicted to be of local spatial extent, short-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

96. The Dunglass Burn LNCS is deemed to be of low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.

Significance of the Effect

97. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

98. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

THORNTON GLEN SWT

Nature Conservation Value and Conservation Status

99. Thornton Glen SWT is approximately 6.50 ha in area and lies within 45 m of the footprint of the Proposed Development at its closest point as shown on Volume 2, Figure 7.3. The site is designated for its broadleaved, semi-natural woodland habitat. The SWT includes two areas of AWI. These AWI stands are defined as Ancient (of semi-natural origin) 1a and 2b. This indicates that this area of the woodland corridor has been continuously wooded since 1750 (1a) and 1860 (2b). The Thurston Burn Valley LNCS overlaps the SWT.

Construction Phase

Impact

100. As the Thornton Glen SWT lies over 15 m from the footprint of the Proposed Development no direct impacts are anticipated (e.g. habitat loss). The Proposed Development bisects the wider Thornton Burn and Braidwood Burn corridor at the location of a proposed cable bridge crossing which is to be installed over the Braidwood Burn (as shown on Volume 2, Figure 7.3 and 7.4). These works may impact up to 2,900 m² of the woodland corridor as discussed under Dunglass Burn LNCS. As these works have been micro-sited to avoid the

removal of mature trees it is anticipated that loss of tree canopy will be minimal and therefore the works are unlikely to result in the fragmentation of the woodland corridor.

Magnitude of Impact

101. The cable bridge crossing is proposed across Braidwood Burn that passes through an area of broadleaved, semi-natural woodland that connects to Thornton Glen SWT to the east. The footprint of the temporary works areas for the cable bridge crossing is approximately 1,100 m² and the route has been micro-sited to minimise tree felling requirements. At the location of the cable bridge crossing the canopy is comprised of a semi-mature, multi-stem, ash trees with no mature tree specimens recorded within the footprint of the works. Understorey vegetation includes ruderal species and scrub. Assuming this could affect a zone of up to 15 m on either side of the footprint of works, up to 2,900 m² of this habitat may be susceptible to temporary disturbance. The cable bridge crossing is 40 m in length and 10 m in width therefore the footprint of the permanent works is estimated to be 400m². In total, permanent, and temporary works directly impacts 1.24% the total extent of this habitat within the ecology study area.
102. The impact is predicted to be of local spatial extent, short-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor indirectly. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

103. The Thornton Glen SWT is deemed to be of medium vulnerability, low recoverability and local value. The sensitivity of the receptor is therefore, considered to be low.

Significance of the Effect

104. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

105. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

DRYBURN VALLEY LNCS

Nature Conservation Value and Conservation Status

106. The Dryburn Valley LNCS lies under the footprint of the Proposed Development where a proposed cable bridge crosses the Skateraw Dean near the landfall, as shown on Volume 2, Figure 7.3. The features that this site is designated for include: woodland listed within the Native Woodland Survey Scotland (NWSS), AWI woodland, and grassland. Notable species are ancient woodland flora. The site extends over an area of approximately 115 ha (or 1,150,000 m²), of which 1,650 m² lies under the footprint of the Proposed Development (or 0.0014 % of the total area).
107. The habitat present within the footprint of the Proposed Development is mixed plantation woodland, with sycamore, Scots pine, silver birch, beech, elder and ash recorded in the stand. This habitat type is not considered to be a designated feature of the LNCS.

Construction phase

Impact

108. Impacts on the woodland habitat will include a direct and permanent loss to the cable bridge crossing over the Skateraw Dean as well as temporary disturbance of vegetation adjacent to works areas.

Magnitude of Impact

109. As shown on Volume 2, Figure 7.4 a cable bridge crossing is proposed across Skateraw Dean. The footprint of the temporary works areas for the cable bridge within the Dryburn Valley LNCS is approximately 25 m long, with an area of approximately 1,650 m². The route will use an existing culvert which will be widened from 18 m to 30 m to accommodate the cables. This will require felling works either side of the existing culvert. Assuming this could affect a zone of up to 15 m on either side of the footprint of works, up to 2,400 m² of the LNCS may be susceptible to temporary disturbance. The footprint of the cable bridge crossing is estimated to be 750 m². In total the footprint of temporary and permanent works is 3150 m² which represents 0.27% of the total area of the LNCS.
110. The impact is predicted to be of local spatial extent, short-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

111. The Dryburn Valley LNCS is deemed to be of medium vulnerability, medium recoverability and local value. The sensitivity of the receptors is therefore, considered to be low.

Significance of the Effect

112. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

113. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

DENSE AND SCATTERED SCRUB

Nature Conservation Value and Conservation Status

114. Dense and scattered scrub is a priority habitat on the East Lothian LBAP. Within the ecology study area, scrub vegetation is mostly dense and scattered gorse with some blackthorn and hawthorn recorded along the Braidwood Burn corridor. Approximately 16.32 ha of this habitat was recorded within the Proposed Development.

Construction phase

Impact

115. Impacts on the scrub habitat will include a direct loss where it lies under the footprint of temporary works as well as temporary disturbance of vegetation adjacent to works areas.

Magnitude of Impact

116. As shown on Volume 2, Figure 7.4 scrub habitat lies under the footprint of a proposed temporary access road that runs parallel to the northern edge of Braidwood Burn woodland corridor and also under the temporary works area for the proposed cable bridge crossing over the Braidwood Burn. The total temporary footprint for both works is 0.29 ha which represents 1.78 % of the total area of this habitat recorded within the ecology study area.
117. The impact is predicted to be of local spatial extent, short-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

118. The scrub habitat is deemed to be of low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.

Significance of the Effect

119. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

120. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

SPECIES-POOR HEDGEROW

Nature Conservation Value and Conservation Status

121. Hedgerow is listed under the East Lothian LBAP as a Priority Habitat. Approximately 7.59 km of species-poor hedgerow lies within the ecology study area.

Construction Phase

Impact

122. Impacts on species-poor hedgerows will include a direct and permanent loss where it lies under the footprint of the permanent works area as well as temporary disturbance of vegetation adjacent to works areas. Approximately 0.63 km of species-poor hedgerow lies under the footprint of permanent works and will be lost as a result of the Proposed Development. This is approximately 0.05% of the total extent of this habitat recorded within the ecology study area.

Magnitude of Impact

123. As shown on Volume 2, Figures 7.4 species-poor, intact hedgerow lies under both temporary and permanent work areas.

Temporary works area: A total of c.309 m of species-poor intact hedgerow lies under the footprint of temporary works areas and 132 m of species-poor intact hedgerow lies immediately adjacent to temporary works areas. Assuming works may impact a zone of up to 10 m either side of a hedgerow, approximately 500 m of hedgerow may be impacted by the temporary works.

Permanent works area: Approximately 320 m of species-poor intact, hedgerow lies under the proposed onshore substation. Assuming works may impact a zone of up to 10 m either side of a hedgerow, it is estimated that approximately 330 m of hedgerow may be impacted by the permanent works.

The total area impacted by temporary and permanent works is approximately 10.94% of the total area of hedgerow habitat recorded within the ecology study area.

124. The planting scheme for the Proposed Development will include replacement hedgerow planting within the temporary works areas, reducing the loss of hedgerows in the long-term to 4.22 % of the habitat recorded within the ecology study area.
125. The impact is predicted to be of local spatial extent, short-term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be low.

Sensitivity of the Receptor

126. The species-poor hedgerow habitat is deemed to be of low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.

Significance of the Effect

127. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

128. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

RUNNING WATER HABITAT

Nature Conservation Value and Conservation Status

129. The Thornton Burn, Thurston Mains, Ogle Burn, Braidwood Burn, Skateraw Dean, Dry Burn and an unnamed watercourse run through the ecology study area. Rivers are a Priority Habitat listed on the SBL and Rivers and Burns are a priority habitat under the East Lothian LBAP. In total approximately 10.64 km of watercourses run through the ecology study area. The Proposed Development crosses the Skateraw Dean at the north and the Braidwood Burn at the south, with cable crossings proposed at each location. It is proposed to temporarily divert, or overpump, the unnamed watercourse to allow for open cut trenching technique and burying of this section of cable. The remaining watercourses lie outwith the footprint of the Proposed Development, however the Braidwood Burn flows into the

Thurston Mains and Thornton Burn and Skateraw Dean flows into Dry Burn therefore these watercourses may be indirectly impacted.

Construction phase

Impact

130. Impacts on the running water habitat will include temporary disturbance to the riparian habitat of Skateraw Dean and Braidwood Burn at the proposed cable bridge crossings. The unnamed watercourse will be temporarily diverted.

Magnitude of Impact

131. As shown on Volume 2, Figure 7.4, cable bridge crossings are proposed across Skateraw Dean and Braidwood Burn. The width of the temporary works areas for the cable bridge crossing at Skateraw Dean is approximately 70 m and works are to include the widening of an existing culvert to cross the burn. At the Braidwood Burn, where the proposed cable bridge crossing is to be constructed, the width of the temporary works area is 45 m. Assuming the works may impact running water habitat 30 m either side of the footprint of works at each site, a combined length of up to 235 m of this habitat may be susceptible to temporary disturbance. This represents 2.21% of the undesignated running water habitat within the ecology study area.
132. The cable route is then proposed to be installed using open cut trenching underneath the unnamed watercourse to the south of the A1, directly north of the onshore substation, as shown on Volume 2, Figure 7.4. The width of the temporary works area at this location is 100 m and the footprint of the cabling is approximately 30 m. As a worst case scenario it is assumed that 100 m of running water habitat may be impacted at this location, though it is likely to be less as the width of the cable footprint is approximately 30 m. This represents 0.94% of the undesignated running water habitat within the ecology study area.
133. The impact is predicted to be of local spatial extent, short-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor indirectly (Skateraw Dean and Braid Burn) and directly (unnamed watercourse). The magnitude is therefore considered to be negligible.

Sensitivity of the Receptor

134. The running water habitat is deemed to be of medium vulnerability, medium recoverability and local value. The sensitivity of the receptors is therefore, considered to be low.

Significance of the Effect

135. Given the above consideration of sensitivity and magnitude, the effect significance is considered to be **negligible to minor** adverse and not significant under the EIA Regulations.

Secondary Mitigation and Residual Effect

136. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

7.11.2. PROPOSED MONITORING

137. Pre-construction surveys, and monitoring of new habitats created through the planting design scheme, will be completed as part of the ECoW works during the construction phase, as detailed within Section 7.10. Longer term monitoring will be secured through an HEMP.

7.12. CUMULATIVE EFFECTS ASSESSMENT

7.12.1. METHODOLOGY

138. The Cumulative Effects Assessment (CEA) takes into account the impact associated with the Proposed Development together with other relevant plans, projects and activities. Cumulative effects are therefore the combined effect of the Proposed Development in combination with the effects from a number of different projects, on the same receptor or resource. Please see Volume 1, Chapter 2 of the Onshore EIA Report for detail on CEA methodology.
139. A total of four projects and plans have been selected as relevant to the CEA presented within this chapter based upon the results of a screening exercise (see Volume 4, Appendix 2.4). Each project or plan has been considered on a case-by-case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.
140. The specific projects scoped into the CEA for ecology, are outlined in Table 7.21.

Developments Scoped into Assessment

141. Crystal Rig IV wind farm (Planning application ref: 18/00004/SGC) lies 7.9 km south-west of the site in upland areas, comprising a combination of moorland and forestry habitats. Though the site is upland areas within significantly different habitats from lowland farmland and there is a significant distance between the two developments, the results of the baseline species and habitat surveys overlap with those of the Proposed Development. Due to the overlap in ecology receptors assessed within the EIA and the Proposed Development, including designated sites, this development is scoped into the CEA.
142. A planning application for a cable route and sub-station which overlaps the site (SPEN Eastern Link- Branxton Grid Substation, 21/01569/PM) is currently withdrawn but expected to be resubmitted in the near future. A Preliminary Ecological Appraisal (including otter and badger survey) and bat surveys were completed in 2021. A similar range of species and habitats were recorded during the ecology surveys and the withdrawn EIA report scoped out all designated sites and species except bats. The predicted impacts on bats were concluded to be minor and not significant during construction, operation and cumulative.
143. The SPEN Eastern Link Project – Converter Station and Cabling (Planning application ref: 22/00852/PPM) is a scheme for a new 525kV electricity converter station, underground cables and associated works and overlaps the current site. Due to the overlap in ecology receptors assessed within the EIA and the Proposed Development, including designated sites, this development is scoped into the CEA.

Offshore Proposed Developments

144. Berwick Bank Offshore
- Up to 307 wind turbines (each comprising a tower section, nacelle and three rotor blades) and associated support structures and foundations;
 - Up to ten Offshore Substation Platforms (OSPs) and associated support structures and foundations;

- Estimated scour protection area of up to 2,280 m² per wind turbine and 11,146 m² per OSP;
- A network of inter-array cabling linking the individual wind turbines to each other and to the OSPs plus inter-connections between OSPs (approximately 1,225 km of inter-array cabling and 94 km of interconnector cabling); and
- Up to eight offshore export cables connecting the OSPs to Skateraw Landfall. It is possible that either High Voltage Alternating Current (HVAC) or High Voltage Direct Current (HVDC) cables will be used at the Proposed Development. The options currently considered include:
 - Up to eight HVAC offshore export cables; or
 - Up to four HVDC offshore export cables.
- Construction to start 2025 with a 8 year build programme.

Table 7.21: List of Other Projects Considered Within the CEA for Ecology

Project/Plan	Application Ref	Description	Status	Location	Construction Timescale
Berwick Bank Offshore Infrastructure	N/A	Offshore infrastructure and associated works of the Berwick Bank Project	Application	Offshore	2025 - 2033
SPEN Eastern Link Project – Converter Station & Cable Route	22/00852/PPM & 22/00002/SGC	<p>Planning permission in principle for a converter station and associated development including a landfall at Thorntonloch and connecting buried cabling, all in association with the Scottish Power Eastern Link 1 project, for a new subsea High Voltage Direct Current (HVDC) link</p> <p>Also includes S37 application (22/00002/SGC) to install and keep a new 265m section of 400 kV overhead line east of the proposed Branxton Grid substation.</p>	Application	Land Adjacent to Dunbar Landfill Site Oxwell Mains Dunbar East Lothian EH42 1SW.	2024-2027
SPEN Eastern Link - Branxton Grid Substation	21/01569/PM	Construction of a 400 kilovolt (kV) gas insulated switchgear (GIS)	Application (Application Withdrawn but	Fields To The South Of Thornton Bridge Sealing End	2023-2026

Project/Plan	Application Ref	Description	Status	Location	Construction Timescale
		substation and associated works	expected to be submitted again in near future)	Compound Branxton	
Crystal Rig IV Wind Farm	18/00004/SGC	Construction and operation of crystal rig wind farm (phase iv) – 11 turbines	Consented	5 km north of Cranshaw village	Unknown. Worst case assume to be overlapping.

7.12.2. MAXIMUM DESIGN SCENARIO

145. The maximum design scenarios summarised here have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the details provided in Volume 1, Chapter 5 of the Onshore EIA Report as well as the information available on other projects and plans, to inform a ‘maximum design scenario’. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope, to that assessed here, be taken forward in the final design scheme.

7.12.3. CUMULATIVE EFFECTS ASSESSMENT

146. An assessment description of the likely significance of the cumulative effects of the Proposed Development upon ecology receptors arising from each identified impact is given below.

147. Table 7.22 provides an overview of residual effects on IEFs from each of the scoped-in developments to allow an assessment of overall cumulative effect.

Table 7.22: Summary of Residual Effects of Scoped in Developments on IEFs

	Berwick Bank Onshore Infrastructure	Berwick Bank Offshore Infrastructure	SPEN Eastern Link Project	SPEN Branxton Grid Substation	Crystal Rig IV Wind Farm	Cumulative residual effect
Designated Sites						
Dunglass Burn LNCS	<p>Impacts on the woodland habitat will include direct loss within the footprint of the cable bridge and temporary disturbance of surrounding vegetation. The impact is considered to be of local spatial extent, short-term duration and medium recoverability. Overall significance of effect is Negligible to Minor adverse and not significant.</p>	NA	<p>Assessed under Thornton Burn LWS within the EclA. Braidwood Burn is to be crossed using either a cable bridge or culvert. Assessment assumes 10 m of vegetation removal on each bank. Significance: Not considered to be significant given small area to be affected and embedded mitigation measures in place for pollution control</p>	<p>No impact pathway identified. Scoped out of detailed assessment.</p>	<p>Located 240 m from the nearest infrastructure and downstream, therefore there is route to impact riparian habitats. Assessed as being of Local value. Mitigation measures proposed. Residual effect Low and Not Significant.</p>	<p>Not assessed under the Berwick Bank Offshore Infrastructure. No significant impacts from the construction of the scoped in developments on Dunglass Burn LNCS was predicted. The SPEN Eastern Link Project – Converter Station and Cable Route will affect the receptor directly and impacts are likely to be similar to the Proposed Development as a cable crossing (e.g. cable bridge) is also proposed. The Crystal Rig IV windfarm is assessed as having potential to impact the receptor indirectly and embedded mitigation is proposed to minimise the effect. Based on a worst-case scenario of the footprint of the SPEN Eastern Link – Converter Station & Cable Route Project, and therefore area of habitats to be impacted, being similar to the Proposed Development the cumulative impact is predicted to be of local spatial extent, medium-term duration, intermittent and medium reversibility. The magnitude is therefore increased to medium.</p> <p>Given the above, the cumulative effect significance is considered to be Minor adverse and Not Significant under the EIA Regulations.</p>

	Berwick Bank Onshore Infrastructure	Berwick Bank Offshore Infrastructure	SPEN Eastern Link Project	SPEN Branxton Grid Substation	Crystal Rig IV Wind Farm	Cumulative residual effect
Thornton Glen SWT	No direct impacts (e.g. habitat loss) anticipated. Potential impacts due to fragmentation of the woodland corridor as a result of works to install the cable bridge were assessed as Negligible to Minor adverse and not significant.	NA	No impact pathway identified. Scoped out of detailed assessment.	This site lies 25 m to the east of the application red line boundary. Given the embedded mitigation measures to protect water quality and that a 10 m buffer will be maintained between the construction works and the watercourse, no potential significant effects have been identified.	NA	Not assessed under Crystal Rig IV Wind Farm or Berwick Bank Offshore Infrastructure. Scoped out of detailed assessment within the EclA for the SPEN Eastern Link Project – Converter Station & Cable Route. No significant effects from the construction of the SPEN Eastern Link - Branxton Grid Substation on Thornton Glen SWT was predicted, this project will not affect the receptor directly and there is no planned vegetation removal within the woodland corridor to facilitate the project, therefore no increased risk of fragmentation. A significant cumulative effect on this designated site is considered unlikely.
Dryburn Valley LNCS	Impacts on the woodland habitat will include direct loss within the footprint of the cable bridge and temporary disturbance of surrounding vegetation. The impact is considered to be of local spatial extent, short-term duration and medium recoverability. Overall significance of effect is Negligible to	NA	The Dry Burn is to be crossed using either cable bridge or culvert. Assessment assumed 10 m of vegetation removal on each bank. Significance: Not considered to be significant given small area to be affected and embedded mitigation measures in place for pollution control.	NA	NA	Not assessed under Crystal Rig IV Wind Farm, Berwick Bank Offshore Infrastructure or the SPEN Eastern Link - Branxton Grid Substation. The SPEN Eastern Link Project – Converter Station and Cable Route will affect the receptor directly and impacts are likely to be similar to the Proposed Development as a cable crossing is also proposed. Based on a worst-case scenario of the footprint of the SPEN Eastern Link Project – Converter Station and Cable Route,

Berwick Bank Onshore Infrastructure	Berwick Bank Offshore Infrastructure	SPEN Eastern Link Project	SPEN Branxton Grid Substation	Crystal Rig IV Wind Farm	Cumulative residual effect
<p>Minor adverse and not significant.</p>					<p>and therefore area of habitats to be impacted, is similar to the Proposed Development the cumulative impact is predicted to be of local spatial extent, medium-term duration, intermittent and medium reversibility. The magnitude is therefore increased to medium.</p> <p>Given the above, the cumulative effect significance is considered to be Minor adverse and Not Significant under the EIA Regulations.</p>
Habitats					
<p>Dense and scattered scrub</p>	<p>Approximately 0.3 ha of this habitat lies under the temporary footprint of works and will be directly impacted (e.g. removed). Overall significance of effect is Negligible to Minor adverse and not significant.</p>	<p>NA</p>	<p>All common and widespread habitats the loss of which is not considered to be significant.</p>	<p>NA</p>	<p>All common and widespread habitats the loss of which is not considered to be significant.</p> <p>Not assessed under Crystal Rig IV Wind Farm or Berwick Bank Offshore Infrastructure. No significant effects from the construction of the SPEN Eastern Link – Converter Station and Cable Route Project or the SPEN Eastern Link - Branxton Grid Substation on scrub habitat was predicted. As all three projects require removal of sections of scrub a cumulative effect is considered though it is unlikely to affect the long-term integrity of the feature. The cumulative impact is predicted to be of local spatial extent, medium-term duration, intermittent and medium reversibility. The magnitude is therefore increased to medium.</p>

Berwick Bank Onshore Infrastructure	Berwick Bank Offshore Infrastructure	SPEN Eastern Link Project	SPEN Branxton Grid Substation	Crystal Rig IV Wind Farm	Cumulative residual effect
<p>Species-poor hedgerow</p> <p>Approximately 830 m of species-poor hedgerow lies under the temporary and permanent works and may be impacted by the Proposed Development. The planting scheme is to include replanting hedgerows within the temporary works areas and reinstatement of hedgerows where removed for the permanent works. Overall significance of effect is Negligible to Minor adverse and not significant.</p>	<p>NA</p>	<p>The majority of the hedgerows recorded within the site were species-poor, gappy and heavily managed. Nevertheless, they are of intrinsic nature conservation value for the connectivity they provide with the surrounding landscape, as well as providing habitat for foraging/commuting bats and foraging/nesting birds. Given that only small sections of hedgerows will be lost and these will be reinstated, no potential significant effects have been identified.</p>	<p>The majority of the hedgerows recorded within the site were species-poor, gappy and heavily managed. Nevertheless, they are of intrinsic nature conservation value for the connectivity they provide with the surrounding landscape, as well as providing habitat for foraging/commuting bats and foraging/nesting birds. Given that only small sections of hedgerows will be lost and these will be reinstated, no potential</p>	<p>NA</p>	<p>Given the above, the cumulative effect significance is considered to be Minor adverse and Not Significant under the EIA Regulations.</p> <p>Not assessed under Crystal Rig IV Wind Farm or Berwick Bank Offshore Infrastructure. No significant effects from the construction of the SPEN Eastern Link – Converter Station and Cable Route Project or the SPEN Eastern Link - Branxton Grid Substation on species-poor hedgerows was predicted.</p> <p>As all three projects require removal of sections of species-poor hedgerow a cumulative effect is considered though it is unlikely to affect the long-term integrity of the feature. The cumulative impact is predicted to be of local spatial extent, medium-term duration, intermittent and medium reversibility. The magnitude is therefore increased to medium.</p> <p>Given the above, the cumulative effect significance is considered to be Minor adverse and Not Significant under the EIA Regulations</p>

Berwick Bank Onshore Infrastructure	Berwick Bank Offshore Infrastructure	SPEN Eastern Link Project	SPEN Branxton Grid Substation	Crystal Rig IV Wind Farm	Cumulative residual effect
Running water	Approximately 235 m of this habitat will be indirectly impacted, and 100 m will be directly impacted. Overall significance of effect is Negligible to Minor adverse and not significant.	NA	Thornton Burn and Dry Burn assessed above. The unnamed watercourse to the south of the A1, is to be crossed using trenchless technique (e.g. HDD) or open cut. Worst case scenario is open cut which will effect a small area of habitat along the banks (the width of the swale). If trenchless technique is used no negative effect on the watercourse is expected. Embedded mitigation measures are to restore habitats and minimise risk of impacts from pollution. Impact assessed as not significant.	NA	significant effects have been identified.
				The watercourses within the Site are connected to the River Tweed SAC, via Bothwell Water and Monynut Water. Assessed as being of regional value. Watercourse crossings would be designed in keeping with best practice. Mitigation measures would minimise risk of sedimentation, erosion and risk of impacts from pollution incidents. Residual effect Negligible and Not Significant.	Not assessed under Berwick Bank Offshore Infrastructure or SPEN Eastern Link - Branxton Grid Substation. No significant effects from the construction Crystal Rig IV Wind Farm on running water habitat was predicted. The SPEN Eastern Link – Converter Station and Cable Route Project will affect the same unnamed watercourse directly and impacts are likely to be similar to the Proposed Development if open cut is undertaken. Based on a worst-case scenario of the footprint of the SPEN Eastern Link – Converter Station and Cable Route Project, and therefore area of habitats to be impacted, being similar to the Proposed Development the cumulative impact is predicted to be of local spatial extent, medium-term duration, intermittent and high reversibility. The magnitude is therefore negligible. Given the above, the cumulative effect significance is considered to be Negligible to Minor adverse and Not Significant under the EIA Regulations.

HABITAT LOSS/DISTURBANCE

Tier 1 & Tier 2

Construction phase

Magnitude of impact

Designated Sites

148. As described in Table 7.22, no significant impacts on designated site IEFs considered within this assessment were predicted during the construction of the scoped in developments.
149. The cumulative effect and magnitude are predicted to be as follows for each designated site:
- Dunglass Burn LNCS: local spatial extent, medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be medium.
 - Thornton Glen SWT: local spatial extent, short term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be low.
 - Dryburn Valley LNCS: local spatial extent, medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be medium.

Habitats

150. As described in Table 7.22, no significant impacts on habitat IEFs considered within this assessment were predicted during the construction of the scoped in developments.
151. The cumulative effect and magnitude are predicted to be as follows for each habitat IEF:
- Dense/scattered scrub: local spatial extent, medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be medium.
 - Species-poor hedgerow: local spatial extent, medium term duration, intermittent and medium reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be medium.
 - Running water: local spatial extent, medium-term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor indirectly (Skateraw Dean and Braid Burn) and directly (unnamed watercourse). The magnitude is therefore considered to be negligible.

Sensitivity of receptor

Designated Sites

152. The sensitivity of each designated site IEF is as per Section 121, 129, 136 and 144 above.
153. The overall sensitivity of each designated site is:
- Dunglass Burn LNCS: low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.

- Thornton Glen SWT: medium vulnerability, low recoverability and local value. The sensitivity of the receptor is therefore considered to be low.
- Dryburn Valley LNCS: medium vulnerability, medium recoverability and local value. The sensitivity of the receptors is therefore considered to be low.

Protected Habitats

154. The sensitivity of each habitat IEF is as per Section 151, 159, 167 above.

155. The overall sensitivity of each habitat IEF is:

- Dense/scattered scrub: low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.
- Species-poor hedgerow: low vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore considered to be low.
- Running water: medium vulnerability, medium recoverability and local value. The sensitivity of the receptor is therefore, considered to be low.

Significance of effect

Designated Sites

156. As summarised in Table 7.22 no significant cumulative effect on the designated site IEFs is considered likely.

- Dunglass Burn LNCS: overall the magnitude of the cumulative effect is deemed to be medium and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be of **minor** adverse significance, which is not significant in EIA terms.
- Thornton Glen SWT: overall the magnitude of the cumulative effect is deemed to be low and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be **negligible to minor** adverse significance, which is not significant in EIA terms.
- Dryburn Valley LNCS: overall the magnitude of the cumulative effect is deemed to be medium and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be of **minor** adverse significance, which is not significant in EIA terms.

Protected Habitats

157. As summarised in Table 7.22 no significant cumulative effect on the habitat IEFs is considered likely.

- Dense/scattered scrub: overall the magnitude of the cumulative effect is deemed to be medium and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be of **minor** adverse significance, which is not significant in EIA terms.
- Species-poor hedgerow: overall the magnitude of the cumulative effect is deemed to be medium and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be of **minor** adverse significance, which is not significant in EIA terms.
- Running water: overall the magnitude of the cumulative effect is deemed to be negligible and the sensitivity of the receptor is considered to be low. The cumulative effect will therefore be **negligible to minor** adverse significance, which is not significant in EIA terms.

Secondary mitigation and residual effect

158. No secondary mitigation is considered necessary because the likely effect in the absence of secondary mitigation is not significant in EIA terms.

7.12.4. PROPOSED MONITORING

159. No monitoring is considered necessary.

7.13. INTER-RELATED EFFECTS

160. A description of the likely inter-related effects arising from the Proposed Development on onshore ecology is provided in Volume 4, Appendix 15.1 of the Onshore EIA Report.

7.14. SUMMARY OF IMPACTS, MITIGATION MEASURES, LIKELY SIGNIFICANT EFFECTS AND MONITORING

161. Information on onshore ecology within the ecology study area was collected through a desktop study and site-specific surveys including a Preliminary Ecological Appraisal and targeted surveys for badger, otter, water vole, bats and great crested newts. The scope and area of survey was agreed in consultation with NatureScot. Table 7.23 presents a summary of the potential impacts, mitigation measures and the conclusion of likely significant effects in EIA terms in respect to onshore ecology. The impacts assessed include: habitat loss and disturbance. Overall, it is concluded that there will be no likely significant effects arising from the Proposed Development during the construction, operation and maintenance or decommissioning phases.
162. Table 7.24 presents a summary of the potential cumulative impacts, mitigation measures and the conclusion of likely significant effects. The cumulative effects assessed include: habitat loss and disturbance. Overall, it is concluded that there will be no likely significant cumulative effects from the Proposed Development alongside other projects/plans.

7.14.2. INTERTIDAL AREA

163. Given that the Applicant is committed to using trenchless techniques (e.g. HDD) to cross the intertidal zone, it has been concluded in both this assessment and Volume 2, Chapter 8, Section 8.15 of the Offshore EIA Report that there will be no effects on intertidal habitats from either the OnTW (see Section 7.8 - Table 7.15) or the offshore transmission works (OfTW). This includes no effects on features of the Barns Ness SSSI.

Table 7.23: Summary of Likely Significant Environmental Effects, Mitigation and Monitoring

Description of Impact	Phase			Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
	C	O	D						
Habitat loss / disturbance	✓			Low	Low (Dunglass Burn LNCS)	Negligible to Minor	None	-	None
	✓			Low	Low (Thornton Glen SWT)	Negligible to Minor	None	-	None
	✓			Low	Low (Dry Burn Valley LNCS)	Negligible to Minor	None	-	None
	✓			Low	Low (Dense and Scattered Scrub)	Negligible to Minor	None	-	None
	✓			Low	Low (Species-poor hedgerow)	Negligible to Minor	None	-	None
	✓			Negligible	Low (Running water habitat)	Negligible to Minor	None	-	None

Table 7.24: Summary of Likely Significant Cumulative Environment Effects, Mitigation and Monitoring

Description of Impact	Phase			Cumulative Impact Assessment Tier	Magnitude of Impact	Sensitivity of Receptor	Significance of Effect	Secondary Mitigation	Residual Effect	Proposed Monitoring
	C	O	D							
Loss/Disturbance Habitats	✓			Tier 1 & Tier 2	Medium	Low (Dunglass Burn LNCS)	Minor	None	-	None
					Low	Low (Thornton Glen SWT)	Negligible to Minor	None	-	None
	✓				Medium	Low (Dry Burn Valley LNCS)	Minor	None	-	None
	✓				Medium	Low (Dense and Scattered Scrub)	Minor	None	-	None
	✓				Medium	Low (Species-poor hedgerow)	Minor	None	-	None
	✓				Negligible	Low (Running water habitat)	Negligible to Minor	None	-	None

7.15. REFERENCES

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