

Alternating Current Harmonic Filter – Crossaig North 275 / 132 kV Substation

Environmental Appraisal

May 2026



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GLOSSARY AND ABBREVIATIONS

132 kV	132 kilovolt (132,000 volt) operating voltage electrical circuit
275 kV	275 kilovolt (275,000 volt) operating voltage electrical circuit
ABC	Argyll and Bute Council
AWI	Ancient Woodland Inventory
BAP	Biodiversity Action Plan
BGS	British Geological Survey
CAR	Controlled Activities Regulations
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CTMP	Construction Traffic Management Plan
DWPA	Drinking Water Protection Area
EA	Environmental Appraisal
ECoW	Ecological Clerk of Works
EnvCoW	Environment Clerk of Works
EIA	Environmental Impact Assessment
ENA	Energy Network Association
GEMPs	General Environmental Management Plans
GIS	Geographic Information System
GPP	Guidance for Pollution Prevention
GWDTE	Groundwater Dependent Terrestrial Ecosystems
Ha	Hectare. An area measuring 10,000 square metres
HER	Historic Environment Record
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
IEMA	Institute of Environmental Management and Assessment
ISEP	Institute of Sustainability and Environment Professionals
LB	Listed Building
LBAP	Local Biodiversity Action Plans
LI	Landscape Institute
LGV	Light Goods Vehicle
NBN	National Biodiversity Network
NGR	National Grid Reference
NPF4	Fourth National Planning Framework

NS	NatureScot
OHL	Overhead Line. An electric line installed above ground, usually supported by lattice steel towers or wooden poles.
OS	Ordnance Survey
PPG	Pollution Prevention Guidance Notes
Proposed Development	The Proposed Development is taken to be the description of a 132 kV Alternating Current (AC) Harmonic Filter and ancillary works
PWS	Private Water Supply
SBL	Scottish Biodiversity List
SEPA	Scottish Environment Protection Agency
SSEN Transmission	Scottish and Southern Electricity Networks Transmission, operating under licence as Scottish Hydro Electric Transmission plc – part of Scottish and Southern Electricity Networks, and the transmission licence holder for the transmission of electricity in the north of Scotland
SM	Scheduled Monument
SPPs	Species Protection Plans
SuDS	Sustainable Drainage System
TCP	Town and Country Planning (Scotland) Act 1997
UGC	Underground Cable. An electric line installed below ground.
UKBAP	United Kingdom Biodiversity Action Plans
UKHab	UK Habitat Classification

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1. INTRODUCTION

1.1 Overview

- 1.1.1 This Environmental Appraisal (EA) has been prepared by ASH design+assessment Limited ("ASH") on behalf of Scottish Hydro Electric Transmission plc ("the Applicant") who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), own, operate and develop the high voltage electricity transmission system in the north of Scotland and remote islands. In this EA "the Applicant" and "SSEN Transmission" are used interchangeably unless the context requires otherwise. The EA has been prepared to accompany a planning application for consent under the Town and Country Planning (Scotland) Act 1997 (as amended)¹.
- 1.1.2 The Applicant seeks consent under the Town and Country Planning (Scotland) Act 1997 (as amended)¹ to install and operate a 132 kV Alternating Current (AC) Harmonic Filter adjacent to the consented and under construction Crossaig North 275 / 132 kV substation, which is located approximately 8 km south-west of the village of Claonaig and 19 km south-west of Tarbet in Kintyre, Argyll and Bute (see **Figure 1.1: Location Plan**), and is hereafter referred to as 'the Proposed Development'.
- 1.1.3 The Proposed Development would also include the following works, which would fall under the Applicant's permitted development rights²:
- Approximately 110 m of underground cable (UGC) between the 132 kV AC Harmonic Filter platform and the Crossaig North 275/132 kV substation platform. This does not require planning consent under Class 40(1)(a) of the Town and Country Planning (General Permitted Development) (Scotland) Order 1992.
 - Construction and use of a temporary construction compound that adjoins the red line boundary. This does not require planning consent under Class 14(1) of the Town and Country Planning (General Permitted Development) (Scotland) Order 1992.

1.2 The Need for the Proposed Development

- 1.2.1 SSEN Transmission has a statutory duty under Schedule 9 of the Electricity Act 1989 to develop and maintain an efficient, coordinated and economical electrical transmission system in its licensed areas.
- 1.2.2 SSEN Transmission have established through regular monitoring that there are elevated levels of harmonic distortion, especially at the 5th harmonic, at Crossaig 132 kV substation. Harmonic distortion refers to the distortion of the electrical waveform, which deviates from the ideal sine wave shape.
- 1.2.3 The Energy Networks Association (ENA) has published a document titled '*Engineering Recommendation G5, Issue 5 - Harmonic voltage distortion and the connection of harmonic sources and/or resonant plant to transmission systems and distribution networks in the United Kingdom*', which is abbreviated to 'EREC G5/5', and specifies the recommended planning levels for harmonic distortion³. The levels monitored at Crossaig 132 kV substation have breached the recommended planning levels that are set out in 'EREC G5/5'.
- 1.2.4 Investigations of the 5th harmonic distortion that had been measured at Crossaig 132 kV substation have identified that the harmonic distortion is likely to have arisen due to the transfer of background harmonics from the Hunterston Substation (located on the North Ayrshire coast) through the two subsea cables that connect it to Crossaig 132 kV substation. It was further established that the presence of harmonic filters associated with

¹ Town and Country Planning (Scotland) Act 1997 Available at: <https://www.legislation.gov.uk/ukpga/1997/8/section/46> [last accessed January 2026]

² Town and Country Planning (General Permitted Development) (Scotland) Order 1992

³ EREC – G5 defines the good engineering practices applicable to the management of harmonic voltage distortion on the transmission systems and distribution networks in the UK. Available at: https://www.dcode.org.uk/assets/uploads/ENA_EREC_G5_Issue_5_2020_.pdf

the Western HVDC⁴ link at Hunterston Converter Station has a reduction effect on the levels observed at Crossaig 132 kV substation.

- 1.2.5 Harmonic distortion can be detrimental as it can lead to equipment stress and operational issues and to resolve this, the Applicant has determined that there is a requirement to establish an AC Harmonic Filter. The harmonic filter would work like a ‘tuned absorber’ for the distorted waves; it would be tuned to a specific harmonic frequency and would create an easy path for that frequency, so the harmonic current flows into the filter instead of spreading through the network.
- 1.2.6 Engineers at SSEN Transmission have completed a site optioneering exercise which identified that the area to the west / south-west of the (under construction) Crossaig North 275 / 132 kV substation is the optimal location for the proposed AC Harmonic Filter and its associated switchgear. The location of the Proposed Development is illustrated on **Figures 1.1 and 1.2**.

1.3 Legislative and Statutory Context

- 1.3.1 Consent for construction and operation of the Proposed Development is being sought by way of a planning application to Argyll and Bute Council under the Town and Country Planning (Scotland) Act 1997. Due to the size of the red line boundary being under 2 hectares, the development falls within the category of ‘Local Development’ under the Town and Country Planning (Hierarchy of Development) (Scotland) Regulations 2009 (The Hierarchy Regulations).
- 1.3.2 Installation and operation of the UGC and use of a temporary construction compound falls under the Applicant’s permitted development rights². As such these works do not require specific express consent. The appraisal of potential effects from these elements are however included in **Appendix 1.1: Permitted Development Works Appraisal** for completeness.

1.4 The Need for the Environmental Appraisal (EA)

- 1.4.1 Applications under the Town and Country Planning (Scotland) Act 1997 are subject to the requirements of the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017⁵, hereafter referred to as “the EIA Regulations”.
- 1.4.2 The Proposed Development is not covered under the developments listed within Schedule 1 or Schedule 2 of the EIA Regulations.
- 1.4.3 A Screening Opinion was sought from Argyll and Bute Council, as consenting authority, for consideration under the EIA Regulations to determine whether the planning application for the AC Harmonic Filter would constitute ‘EIA Development’. The Screening Request was submitted on 23rd January 2026⁶. A Screening Opinion was received on 20th April 2026, noting that a full Environmental Impact Assessment (EIA) Report would not be required. The Screening Opinion received is included as **Appendix 1.2: Alternating Current Harmonic Filter - Crossaig North 275 / 132 kV Substation: Environmental Impact Assessment (EIA) Screening by the Planning Authority under the Town and Country Planning (EIA) Regulations 2017 (April 2026)**.
- 1.4.4 The Applicant recognises that the Proposed Development may give rise to some environmental effects. As such, whilst a formal EIA is not required, a voluntary Environmental Appraisal (EA) has been undertaken, including a number of environmental studies, the results of which are detailed in this EA. Mitigation measures

⁴ High Voltage Direct Current

⁵ The Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017, available at: <https://www.legislation.gov.uk/ssi/2017/102/contents> (last accessed April 2026)

⁶ SSEN Transmission (2026) Alternating Current Harmonic Filter - Crossaig North 275 / 132 kV Substation: Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017: Screening Request (January 2026). Available at: <https://publicaccess.argyll-bute.gov.uk/online-applications/applicationDetails.do?keyVal=T9H5J8CH01O00&activeTab=summary>

that have been identified to prevent, reduce or offset an effect, are identified within the relevant technical chapters and consolidated within **Chapter 7: Schedule of Mitigation**.

1.4.5 The comments and advice received as part of the Screening Opinion informed the appraisals carried out and information presented within this EA. Further details are included within the relevant technical chapters of this EA.

1.5 Structure of the Environmental Appraisal

1.5.1 The EA is reported in one volume including text, figures and appendices.

1.5.2 The EA is structured as follows:

- Chapter 1 – Introduction;
- Chapter 2 – The Proposed Development;
- Chapter 3 – Terrestrial Ecology;
- Chapter 4 – Geology, Hydrology and Hydrogeology;
- Chapter 5 – Landscape and Visual;
- Chapter 6 – Cultural Heritage; and
- Chapter 7 - Schedule of Mitigation.

1.5.3 These Chapters are supported by a series of figures and appendices, as appropriate.

1.5.4 As described in **Section 1.3**, the appraisal of effects likely to arise from installation of the UGC and use of a temporary construction compound, are included in **Appendix 1.1**, rather than within the chapters noted above, given that they fall under the Applicant's permitted development rights.

1.6 Representations to the Application

1.6.1 Representations with respect to the planning application should be made to Argyll and Bute Council. These can be made via the Argyll and Bute Council planning portal at: <https://www.argyll-bute.gov.uk/planning-and-building/find-and-comment-planning-applications>

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2. THE PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This Chapter describes the elements that constitute the Proposed Development. It provides a description of the key components and information regarding the construction, operation and maintenance of the Proposed Development.

2.2 Proposed Development

2.2.1 Planning consent under the Town and Country Planning (Scotland) Act 1997, as amended is sought for the following works:

- The construction of a level platform and the installation of a new 132 kV AC Harmonic Filter and associated switchgear located adjacent (to the west) of the consented (and under construction) Crossaig North 275 / 132 kV substation, centred on Ordnance Survey (OS) grid reference NR 82432, 50301.
- Ancillary works required to facilitate the construction and operation of the Proposed Development, including tree felling and vegetation clearance, the construction of a short section of new temporary access track and drainage provisions.

2.2.2 The Proposed Development would also include the following works, which would fall under the Applicant's permitted development rights¹:

- Approximately 110 m of UGC between the 132 kV AC Harmonic Filter platform and the Crossaig North 275/132 kV substation platform.
- Construction and use of a temporary construction compound / laydown area to provide site offices and welfare facilities for on-site construction workers.

2.2.3 All elements of the Proposed Development are described further in this Chapter and shown on **Figure 2.1: Proposed Development**.

2.2.4 The environmental effects of the installation of the permitted development elements are considered within **Appendix 1.1: Permitted Development Works Appraisal**.

2.3 Description of the Proposed Development

2.3.1 The Site area encompassed by the red line boundary measures 1.9 ha. The platform (excluding earthworks and drainage) would be approximately 41.5 metres (m) x 77.15 m and would occupy approximately 0.32 ha. The platform would contain the AC Harmonic Filter and switchgear with a maximum height of 15 m. The platform would be surrounded by a palisade security fence up to 2.4 m in height with CCTV surveillance.

2.3.2 The Site would not be illuminated at night for normal operation. Floodlights would be installed but only used in the event of a fault during the hours of darkness.

2.3.3 The general arrangement of the Site is shown on **Figure 2.1²**.

2.3.4 Landscape mitigation measures are proposed to provide reinstatement of areas disturbed, landscape assimilation and to improve biodiversity (as discussed in Section 2.11 and shown on **Figure 2.2: Landscape Mitigation Plan**).

¹ Town and Country Planning (General Permitted Development) (Scotland) Order 1992

² The electrical layout of the platform is displayed on confidential planning drawings

2.4 Access during Construction

2.4.1 Vehicle movements would be required to deliver components and materials to site along with the transportation of the workforce. Access arrangements for use during construction of the Proposed Development are expected to comprise the following:

- Construction access to the site for Heavy Goods Vehicles (HGVs) would utilise the same access route as the consented Crossaig North 275 / 132 kV substation, via the A83 and existing accesses. This includes the Cross Kintyre Haul Road and the Cour Estate track, which run from the west coast of the Kintyre peninsula near Killean, heading east across the peninsula and then in a northerly direction before finishing south of the existing Crossaig 132 kV substation (see **Figure 2** in **Appendix 2.1: Transport Assessment Report**).
- Construction access to the site for Light Goods Vehicles (LGVs) and cars would utilise the B8001 between Kennacraig and Claonaig, and the B842 between Claonaig and the existing Crossaig 132 kV substation, approaching from the north (see **Figure 3** in **Appendix 2.1**).
- Use of the consented (and under construction) Crossaig North 275 / 132 kV substation permanent access track, linking the existing Crossaig 132 kV substation and the consented Crossaig North 275 / 132 kV substation, would also be utilised. No works would be required to these existing tracks.
- To facilitate access to the Proposed Development the construction of a short section of new temporary stone access track, approximately 400 m in length, would be required between the consented (and currently under construction) Crossaig North 275 / 132 kV substation and the Proposed Development. Depending on the ground conditions, the Principal Contractor may use geo-textile within the track to provide stability.

2.4.2 Any additional hardcore required for construction of the Proposed Development would be won from the site as part of a cut and fill exercise. However, if the rock extracted is deemed unsuitable for construction, hardcore would be imported to the site.

2.4.3 It is expected that a Construction Traffic Management Plan (CTMP) would be produced by the Principal Contractor to manage traffic during the construction period. There will also be a requirement for the Principal Contractor to provide a site-specific Construction Traffic Estimator on completion of detailed design, and prior to construction of the Proposed Development (see **Appendix 2.1**).

2.5 Temporary Construction Compound / Laydown Area

2.5.1 A temporary construction compound / laydown area would also be required to provide site offices and welfare facilities for on-site construction workers.

The proposed temporary construction compound / laydown area is proposed to be located on land that is currently being utilised for the construction of the Crossaig North 275/132 kV substation, which lies adjacent to the Proposed Development's red line boundary, as displayed on **Figure 2.1**. Following construction of the Proposed Development, this area would be reinstated in accordance with the approved Crossaig North 275 / 132 kV Substation Landscape Mitigation Plan (ERM, 2024)³ (see **Appendix 2.5: Crossaig North 275/132 kV Substation Landscape Mitigation Plan (LMP) (ERM, 2024)**).

2.5.2 As stated in Section 2.2, the temporary construction compound / laydown area would fall under the Applicant's permitted development rights. The environmental effects are considered within **Appendix 1.1: Permitted Development Works Appraisal**.

³ SSEN Transmission, Crossaig North 275/132 kV Substation. Argyll and Bute Council Planning Reference: 23/00382/PP – Discharge of Planning Condition 10.

2.6 Felling Requirements

2.6.1 While the Proposed Development has been designed to minimise woodland felling requirements where practicable, construction would require the removal of a small extent of commercial conifer plantation along the western boundary. A total of 0.41 hectares (ha) of mature conifer woodland would be felled to accommodate the Proposed Development which would be undertaken in consultation with the affected landowners. The Applicant is committed to making arrangement to plant off-site the equivalent area of woodland lost as compensatory planting, meeting the Scottish Government's Control of Woodland Removal (CoWRP)⁴ objective of no net loss of woodland. Compensatory planting to be undertaken will comply with UK Forestry Standard (UKFS) and associated guidelines which may apply.

2.6.2 After felling, any timber removed that is commercially viable would likely be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations. Compensatory planting will be undertaken for woodland removed as a direct result of the project.

2.6.3 Forestry considerations are discussed further in **Appendix 2.2: Woodland Report**.

2.7 Typical Construction Activities

2.7.1 Key tasks during construction of the Proposed Development would relate to the following:

- Establishment of a temporary construction compound / laydown area for materials;
- Construction of a new temporary access track;
- Earthworks on embankment to extend existing platform area;
- Earthworks to level the site, construct platform and install drainage;
- Installation of component foundations;
- Delivery of components and materials to site;
- Installation of electrical equipment and security fencing;
- Removal of temporary access track and reinstatement; and
- Inspections and commissioning.

2.8 Construction Programme and Hours of Work

2.8.1 It is anticipated that construction of the Proposed Development would take place over a period of approximately 18-months, following the granting of consents and discharge of any prior to commencement conditions. Detailed programming works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

2.8.2 Construction activities would in general be undertaken during daytime periods only. Working hours are anticipated between approximately 07:00 to 19:00 on weekdays, 07:00 to 18:00 on Saturdays, and for short periods (for non-construction work) on Sundays 08:00 to 13:00. Working hours would be confirmed by the Principal Contractor and agreed with Argyll and Bute Council.

2.9 Environmental Management during Construction

2.9.1 All works would be carried out in accordance with industry best practice construction measures, guidance, and legislation, together with the procedures set out within the Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) (see **Appendices 2.3: SSEN Transmission GEMPs** and **2.4: SSEN Transmission SPPs** respectively).

⁴ Forestry Commission Scotland (2009) Control of Woodland Removal Policy

- 2.9.2 In addition, a contractual management requirement of the Principal Contractor would be the development and implementation of a Construction Environmental Management Plan (CEMP). This document would detail how the Principal Contractor would manage the site in accordance with all commitments and mitigation detailed in the EA, statutory consents and authorisations, and industry best practise and guidance. The CEMP would also reference the Applicant's GEMPs and SPPs.
- 2.9.3 The implementation of the CEMP would be managed on site by a suitably qualified and experienced Environmental Clerk of Works (EnvCoW), with support from other environmental professionals as required.

2.10 Reinstatement

- 2.10.1 Reinstatement works are generally undertaken during construction (and immediate post-construction phase) and aim to address any areas of ground disturbance and changes to the landscape as part of the construction works. This would form part of the contract obligations for the Contractor.
- 2.10.2 The following paragraphs provide a summary of the working areas that would be reinstated, and typically how this would be achieved.

Reinstatement of Access Track

- 2.10.3 A temporary access track would be required to facilitate the construction of the Proposed Development which following construction would be removed and the land reinstated.
- 2.10.4 Reinstatement would involve replacement of subsoil, then topsoil, grading and installation of drainage as required with turves replaced vegetation side up. Where there are insufficient turves, the ground would be allowed to vegetate naturally, although some seeding⁵ may be required to stabilise and prevent erosion, or where landowner requirements dictate otherwise.

Reinstatement of Work Areas

- 2.10.5 Soil would be stored within the working area for each element during construction. Subsoils and topsoil removed to enable the construction of the foundations, or excavation of trenches, would be temporarily stockpiled in separate bunds within the working area or corridor, with stripped turves stored on top of the bunds.
- 2.10.6 Reinstatement would involve replacement of subsoil, then topsoil with turves replaced vegetation side up. Where there are insufficient turves, the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise.
- 2.10.7 A soils management plan would be prepared as part of the final CEMP, which will outline the required mitigation measures regarding the handling and safeguarding of soils (see **Chapter 4: Geology, Hydrology and Hydrogeology**).

Reinstatement of Construction Compound / Laydown Area

- 2.10.8 At the end of construction of the Proposed Development all materials, buildings, and temporary compounds would be removed, and the temporary construction compound / laydown area would be reinstated and revegetated in accordance with the approved North Crossaig 275 / 132 kV Substation Landscape Mitigation Plan (ERM, 2024)³ (see **Appendix 2.5**).

⁵ The specific seed mix would be made in agreement with the project ecologist.

2.11 Landscape and Biodiversity Enhancement

Landscape Mitigation Plan

- 2.11.1 Landscape mitigation measures are proposed to provide reinstatement of the areas disturbed, provide landscape assimilation, and to improve biodiversity (as shown on **Figure 2.2: Landscape Mitigation Proposals**).
- 2.11.2 Cut and fill earthworks would be required to create a level area for the construction of the Proposed Development, and this would also serve to ease the platform into the gently sloping hill side. Proposed upland acid grassland is considered ecologically appropriate to the soil conditions present in the area. The reinstatement of areas disturbed during construction would be fundamental to ensure that the proposal is successfully accommodated within the existing landscape. This would be supported by the use of the Highland Grassland Mix (from Scotia Seeds or similar approved) composed of native species which are considered to be suited to the acidic soils naturally present on site and within the wider area. Disturbed ground within the Proposed Development red line boundary that overlaps with the approved North Crossaig 275/132 kV Substation Landscape Mitigation Plan (2024)³ (see **Appendix 2.5**) would be seeded with Wet Meadow Seed Mix (by Scotia Seeds or similar approved). Post development enhancement would aim to improve upland acid grassland habitat, to be achieved through reseeded with Highland Grassland Mix.

SSEN Transmission's Biodiversity Ambition

- 2.11.3 Biodiversity Net Gain (BNG) is a process which leaves nature in a better state than before development work started. SSEN Transmission has developed a BNG toolkit based upon Natural England Biodiversity Metric^{6, 7} (in the absence of an agreed Scottish metric) which aims to quantify biodiversity based upon the value of habitats for nature. It is an efficient and effective method for demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.
- 2.11.4 The scope of the BNG assessment is to quantify the overall potential biodiversity impacts for the Proposed Development; this includes a biodiversity baseline assessment, quantification of habitat losses due to temporary works and permanent structures, and analysis of biodiversity gains following reinstatement of habitats in areas of temporary construction work and additional habitat enhancement and creation (whether onsite and / or offsite).
- 2.11.5 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission has made commitments to ultimately ensure a 10% net gain for biodiversity in line with their biodiversity ambition and environmental legacy commitments⁸, Sustainability Strategy⁹ and Sustainability Plan¹⁰. New infrastructure projects must:
- Ensure natural environment considerations are included in decision making at each stage of a project's development;
 - Utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design;

⁶ Natural England (2019) *The Biodiversity Metric 2.0: auditing and accounting for biodiversity value. User Guide (Beta Version, July 2019)*. Online at: <http://publications.naturalengland.org.uk/file/5366205450027008>, [accessed: 6th August 2024].

⁷ Further versions of the Natural England Biodiversity Metric have since been published. SSEN Transmission are in the process of incorporating this into their guidance and toolkit.

⁸ SSEN Transmission (2023). *Delivering a positive environmental legacy*. Online at: <https://www.ssen-transmission.co.uk/globalassets/documents/sustainability-and-environment/environmental-legacy-booklet>, [accessed: 21st April 2026].

⁹ SSEN Transmission (2018). *Delivering a smart, sustainable energy future: The Scottish Hydro Electric Transmission Sustainability Strategy* (2018) <https://www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf>, [accessed: 21st April 2026].

¹⁰ SSEN Transmission (2019). *Our Sustainability Plan: Turning Ambition into Action*. <https://pre-dxp.ssen-transmission.co.uk/globalassets/documents/sustainability-strategy/our-sustainability-plan-consultation-report.pdf>, [accessed: 21st April 2026].

- Positively contribute to the UN and Scottish Government Biodiversity strategies by achieving an overall Net Gain; and
- Work with their supply chain to gain the maximum benefit during asset replacement and upgrades.

2.11.6 A BNG assessment will be provided and agreed upon with relevant consultees post submission of the planning application and prior to determination.

2.12 Future Maintenance of the Site

2.12.1 The Proposed Development would be unmanned, with operations largely being controlled remotely from SSEN Transmission's control centre in Perth.

2.12.2 The plant will require routine inspection and maintenance at regular intervals. Most substations have annual inspections; varying degrees of maintenance would be undertaken during these inspections. There would be other visits as required for operational duties and occasional repairs, as necessary. Traffic flows associated with operation would be very low.

2.13 Decommissioning

2.13.1 The Proposed Development would not have a fixed operational life.

2.13.2 Should the Proposed Development be decommissioned the site would be restored as follows:

- The switchgear infrastructure would be removed;
- Where removal of infrastructure such as foundations would result in more damage than leaving them in place, they would be left in-situ; and
- Disturbed ground would be reinstated.

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3. TERRESTRIAL ECOLOGY

3.1 Executive Summary

- 3.1.1 Scottish Hydro Electric Transmission plc ("the Applicant") who, operating and known as Scottish and Southern Electricity Networks Transmission ("SSEN Transmission"), intends to submit an application for planning permission under the Town and Country Planning (Scotland) Act 1997¹ (as amended) to install a 132 kV Alternating Current (AC) Harmonic Filter and ancillary works (referred to hereafter as 'the Proposed Development'), located adjacent to the consented and under construction, Crossaig North 275 / 132 kV substation.
- 3.1.2 As part of a detailed desk study, ecological data pertaining to the project footprint and the wider area was obtained, following a review of previous studies and assessments (including confidential bird data) for the adjacent Crossaig North 275/132 kV substation, as set out in the 'North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal (February 2023)'².
- 3.1.3 Baseline information from the desk study review was verified during a site visit undertaken on 15th October 2025 (referred to hereafter as the 'baseline survey'). The site visit focused on receptors within the project footprint and the relevant survey area, including habitats, Groundwater Dependent Terrestrial Ecosystems (GWDTEs), Invasive Non-Native Species (INNS), and a range of fauna, according to best practice methodologies.
- 3.1.4 The Proposed Development is not located within or adjacent to any statutory or non-statutory sites designated for nature conservation. No areas of woodland included on the Ancient Woodland Inventory (AWI) would be impacted by the Proposed Development.
- 3.1.5 Habitats recorded within the project footprint during the baseline survey include a total of three UK Habitat (UKHab) primary habitats, including other coniferous woodland, sparsely vegetated urban land and artificial unvegetated unsealed surfaces. A Sustainable Drainage System (SuDS) and a bioswale are also present. All of the above habitats are considered to be of a low botanical value and as such no substantial negative effects or impacts are expected on habitats themselves, as a result of the construction of the Proposed Development.
- 3.1.6 No signs of protected or notable species were recorded during the desk review or the baseline survey. The site is not considered to provide substantial opportunities for most faunal species; however, limited opportunities for pine marten and red squirrel are present within the coniferous forestry to the west, as well as occasional potential opportunities for sett creation by badger. The woodland edge is also considered to provide some limited opportunities for commuting bats and the bare ground with gravel on site could potentially provide some localised opportunities for basking reptiles.
- 3.1.7 Some limited opportunities for birds such as Oystercatcher are present within the project footprint and the opportunities for Crossbill and Black Grouse are limited but can be found within the coniferous forestry plantation to the west.
- 3.1.8 Potential negative impacts on faunal species identified as a result of the Proposed Development works could primarily include a minor reduction of woodland cover, resulting in potential localised disturbances to pine marten, red squirrel, bats and badgers, as well as the reduction of potential

¹ Town and Country Planning (Scotland) Act 1997 Available at: <https://www.legislation.gov.uk/ukpga/1997/8/section/46>

² SSEN Transmission. North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal (ERM; February 2023). Available at: <https://www.ssen-transmission.co.uk/globalassets/projects/crossaig-north-town-and-country-planning-application/chapter-1-contents-introduction-and-scope.pdf>

basking habitat for reptiles if areas of gravel are removed. Potential disturbance, injury or death to nesting birds is also considered possible if vegetation removal works are undertaken during nesting bird season (March to August inclusive)

- 3.1.9 Embedded mitigation relevant to identified ecological receptors includes the development and implementation of a site specific Construction Environmental Management Plan (CEMP), which would be used in conjunction with the Applicant's detailed General Environmental Management Plans (see **Appendix 2.3: SSEN Transmission GEMPs**) and Species Protections Plans (SPPs) (see **Appendix 2.4: SSEN Transmission SPPs**). Furthermore, a suitably experienced Ecological Clerk of Works (ECoW) would be appointed to oversee construction works and undertake pre-construction walkover surveys to identify any changes to the ecological baseline or habitat use by protected species in advance of works commencing to inform any additional actions or mitigation to be implemented. Furthermore, if vegetation removal works are to be undertaken during the nesting bird season (March to August), then a pre-works nesting bird check should also be undertaken by a qualified ecologist.

3.2 Introduction

- 3.2.1 This Chapter provides an outlook on the ecological baseline present within the project footprint and an appraisal of the potential impacts on ecology including designated sites, habitats and protected species (including ornithology), as a result of the construction of the Proposed Development.

- 3.2.2 The specific objectives of this Chapter are to:

- Describe the ecological baseline of the Proposed Development.
- Describe the potential impacts on ecological features.
- Describe the mitigation measures proposed to address likely effects.

- 3.2.3 In this Chapter, the project footprint (also referred to as the 'Site'), refers to the area within the red line boundary. The survey area refers to the project footprint and related disturbance buffers as detailed in **Table 3.1: Species/Species Groups Surveyed** and displayed in **Figure 3.1: Ecology Survey Area Plan**.

3.3 Scope of Appraisal

- 3.3.1 The appraisal is based on the description of the Proposed Development provided in **Chapter 2: The Proposed Development**.

- 3.3.2 The scope of the appraisal has been informed by appropriate policy, legislation and guidance relevant to ecology. This appraisal determines the ecological baseline of the Site and the potential impacts within the project footprint during the construction phase of the Proposed Development. The appraisal assumes that embedded mitigation (design features and construction good practice) will be successfully delivered. Effects that will require additional mitigation measures in order to be avoided or reduced have been addressed.

- 3.3.3 Operational effects on habitats and protected species (including ornithology) have been scoped out of this appraisal. Any future maintenance activities are assumed to be confined to the project footprint and therefore unlikely to have any effect on ecological receptors.

3.4 Consultation

- 3.4.1 A request for an EIA Screening Opinion in relation to the Proposed Development was issued to Argyll and Bute Council in January 2026 (Argyll and Bute Council Reference: 26/00153/SCREEN). A

Screening Opinion was received from Argyll and Bute Council in April 2026 confirming that a full EIA Report would not be required.

- 3.4.2 While consultations were not undertaken directly in relation to the Proposed Development, this appraisal utilises data from the Confidential Bird Annex included in the North Argyll 275 kV Upgrade: Crossaig North Substation EA (2023)². This included consultations with the Argyll Raptor Study Group (ARSG), Scotland's Raptor Study Group (SRSG) and The Royal Society for the Protection of Birds (RSPB).

3.5 Methodology

- 3.5.1 This section describes the methodologies used to gather baseline information as well as identify and appraise effects resulting from the Proposed Development on features of ecology and nature conservation interest.

Survey Area

- 3.5.2 The survey area for this appraisal incorporates all land within the red line boundary (the Site).
- 3.5.3 **Table 3.1: Species/Species Groups Surveyed** includes all ecological receptors that have potential to utilise the Site and surrounding habitat, along with appropriate survey buffers. The survey buffers are displayed on **Figure 3.1**.

Table 3.1: Species/Species Groups Surveyed

Habitat/Species/Species Group	Survey Area
Habitats	Project footprint
GWDTE	Project footprint plus up to 250 m buffer
Invasive Non-Native Species (INNS)	Project footprint plus 50 m buffer
Bats (<i>Chiroptera</i> spp.)	Project footprint plus 50 m buffer
Badger (<i>Meles meles</i>)	Project footprint plus 100 m buffer
Red Squirrel (<i>Sciurus vulgaris</i>)	Project footprint plus 50 m buffer
Pine Marten (<i>Martes martes</i>)	Project footprint plus 50 m buffer
Birds	Project footprint plus 50 m buffer
Reptiles	Project footprint plus 50 m buffer
Amphibians	Project footprint plus 50 m buffer
Invertebrates	Project footprint

Desk Study

3.5.4 In order to inform the appraisal, a desk study was conducted in advance of the baseline survey. The following sources were checked:

- NatureScot Sitelink website³ for statutory designated sites up to 5 km from the site.
- Data Spatial Hub⁴ for non-statutory designated sites up to 2 km from the site.
- Records of ancient woodland and Scottish native woodland available through Scotland's Environment Web⁵, within or adjacent to the site.
- National Biodiversity Network (NBN) Atlas⁶ for records of priority species within 2 km of the site within the last ten years.
- Buglife for the locations of Important Invertebrate Areas (IIAs)⁷ and B-Lines⁸: a series of 'insect pathways', present across landscapes.
- The Scottish Biodiversity List⁹ for Priority Habitats and Species.
- The Argyll and Bute Local Biodiversity Action Plan (LBAP) 2010 - 2015¹⁰ for Local Priority Habitats and Species.
- Aerial imagery from Google Earth¹¹.

3.5.5 In addition, a review was undertaken of the following relevant documents:

- The Ecology and Ornithology Chapter (Chapter 4) of the North Argyll 275 kV Upgrade: Crossaig North Substation EA (2023)², for data pertaining to habitats and faunal species present within the site and surrounding area.
- The 2023 Confidential Bird Annex for the North Argyll 275 kV Upgrade: Crossaig North Substation EA (2023) for data pertaining to bird activity on site and within the surrounding area.

Baseline Survey

3.5.6 Field work was conducted by EnviroCentre Limited Lead Ecological Consultant Luigi Cristofaro who is an Associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM). The baseline survey took place on 15th October 2025. Weather during the survey was partly cloudy, with an average temperature of 7°C, and no wind.

3.5.7 A UK Habitat Classification (UKHab) survey was carried out in accordance with the user manual¹². UKHab is a hierarchical system for rapidly recording and classifying habitat via satellite imagery and baseline survey. The system comprises five levels of Primary Habitats which include ecosystems, broad habitats, priority habitats and Annex I habitats, along with non-hierarchical secondary codes which provide information on the environment, management, and origin of Primary Habitats. The secondary codes are also used to map habitat mosaics and identify notable species features. The

³ NatureScot Sitelink Available at: <https://sitelink.nature.scot/map>

⁴ Data Spatial Hub (2024). Local Nature Conservation Sites. Available at: https://data.spatialhub.scot/dataset/local_nature_conservation_sites-is

⁵ Scotland's Environment Web. Available at: <https://www.environment.gov.scot/maps/scotlands-environment-map/>

⁶ NBN Atlas (2021). Datasets. [Online] Available at: <https://nbnatlas.org>

⁷ Available at: <https://www.buglife.org.uk/our-work/important-invertebrate-areas/>

⁸ Available at: <https://www.buglife.org.uk/our-work/b-lines/>

⁹ Available at: <https://www.nature.scot/scottish-biodiversity-list>

¹⁰ Argyll and Bute Council (2010). Local Biodiversity Action Plan 2010-2015. [Online] Available at: https://www.argyll-bute.gov.uk/sites/default/files/migrated_files/Unknown/AandB%2520BAP%2520Draft.pdf

¹¹ Available at: <https://www.google.com/earth/>

¹² UKHAB Ltd (2023). UK Habitat Classification Version 2.0. Available at: <https://www.ukhab.org>

information collected is used to identify ecologically sensitive features and recommend mitigation and enhancement measures in connection with a proposed development.

- 3.5.8 The surveyor utilised the UK Habitat Classification (UKHab) Professional edition with a Minimum Mapping Unit (MMU) of 25 m². The UKHab is a hierarchical system designed for environmental surveying. It consists of five primary levels of detail:
- **Level 1: Major Ecosystems:** The highest level, dividing habitats into terrestrial, freshwater, or marine.
 - **Level 2: Ecosystem Types:** Nine ecosystem types based on MAES (Mapping and Assessment of Ecosystems and their Services) and EUNIS classifications.
 - **Level 3: Broad Habitats:** Comprises 20 broad habitat types corresponding directly with UK Biodiversity Action Plan (BAP) Broad Habitats.
 - **Level 4: Habitats:** Includes 85 habitats, such as 46 UK BAP Priority Habitats.
 - **Level 5: Detailed Habitats:** Includes 119 habitats, such as EU Habitats Directive Annex I habitats.

3.5.9 The UKHab survey undertaken aimed to categorise habitats up to level 5. Where the level 5 habitat could not be determined or is not reflective of the habitat type due to a lack of indicative species, habitats were categorised to level 4 or the broader level 3 habitat.

3.5.10 During the survey a habitat assessment for protected and/or notable faunal species was also undertaken. A complete survey methodology for faunal species is included in **Appendix 3.1: Faunal Survey Methodology**.

Appraisal of Effects

3.5.11 The appraisal has been undertaken in accordance with the CIEEM Guidelines for Ecological Impact Assessment in the UK and Ireland¹³.

3.5.12 Impacts on designated sites, habitats and flora, and GWDTE within the project footprint, have been appraised separately to identify the contribution of each to potential effects.

3.5.13 Impacts on protected species have been appraised at the project scale (including the Proposed Development and wider substation development), as habitats potentially used by protected species occur across the project footprint and adjacent development areas.

3.5.14 The appraisal considers potential effects during the construction phase of the Proposed Development, including:

- Direct habitat loss resulting from permanent and temporary infrastructure.
- Indirect effects on surrounding habitats (e.g. workforce activity, pollution or spillages, dust, and effects on surface or groundwater).
- Direct impacts on fauna, including injury or mortality and damage or destruction of places of shelter.
- Indirect impacts on fauna, such as disturbance or displacement.

¹³ CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester

Baseline Surveys Scoped Out

- 3.5.15 Baseline surveys for Otter (*Lutra lutra*), Beaver (*Castor fiber*), water vole (*Arvicola amphibius*), great crested newt (*Triturus cristatus*), west European hedgehog (*Erinaceus europaeus*), wildcat (*Felis silvestris*) brown hare (*Lepus europaeus*) and mountain hare (*Lepus timidus*) were scoped out of the appraisal due to the geographical location of the Site and/or due to the absence of suitable habitat within the project footprint and the wider survey area for these species.

Limitations to the Assessment

Desk Study

- 3.5.16 Desk studies are limited by the reliability of third-party information and the geographical availability of biological and/or ecological records and data. This emphasises the need to collate up-to-date, site-specific data based on baseline surveys by experienced surveyors. The absence of a species from biological records cannot be taken to represent actual absence. Species distribution patterns should be interpreted with caution as they may reflect survey/reporting effort rather than actual distribution.

Baseline Survey

- 3.5.17 As the baseline survey was undertaken outside the core growing season, many flowering plants had died back, making full identification difficult for some species. As a result, some plants were identified to the genus or family level rather than to the species level. However, this limitation is not expected to have significantly impacted the classification of broad habitats.

3.6 Baseline Conditions

- 3.6.1 This section provides details of the baseline ecological conditions within the survey areas.

General Ecological Context

- 3.6.2 Part of the project footprint, and much of the surrounding survey area to the west, are dominated by commercial forestry, which is managed on a rotational felling basis and served by an associated network of access roads and tracks. Habitats within the wider area are largely characterised by mature conifer plantation woodland, with a boggy understory present in places.
- 3.6.3 The remaining part of the project footprint is predominantly bare ground, stripped for the construction of Crossaig North 275/132 kV substation.
- 3.6.4 To the east, within the wider survey area and beyond the existing and under construction substations, marshy grassland, neutral grassland, areas of broadleaved woodland and continuous scrub habitats are more frequent. To the north-east, an existing wayleave associated with the Inveraray to Crossaig 275 kV Overhead Line (OHL) Reinforcement Project is present.
- 3.6.5 In the wider area, habitats adjacent to the existing estate track, which extends for approximately 24 km along the Kintyre Peninsula, beginning at the A83 near Killean on the west coast and running eastwards across the peninsula before terminating south of the existing Crossaig 132 kV substation, are dominated by heath communities, including an expanse of blanket bog at the highest elevation. Pockets of semi-natural broadleaved woodland and recently felled conifer plantation are also present at several points along the track.

Designated Sites for Nature Conservation

- 3.6.6 No designated sites for nature conservation are present within the project footprint, or within 5 km of the project footprint. Although a number of designated sites for nature conservation were identified within 10 km of the site, as illustrated on **Figure 3.2: Sites Designated for Nature Conservation**, none of the sites are considered to be ecologically or hydrologically connected to the Proposed Development site for their qualifying features.

Ancient Woodland

- 3.6.7 No ancient woodlands, as detailed within the Ancient Woodland Inventory (AWI) of Scotland, are identified within the project footprint or wider survey area. A small parcel of ancient woodland of semi-natural origins (Woodland ID: ASNO1750) and an area of ancient plantation woodland on the Other Roy dataset, are located approximately 750 m northeast of the project footprint. Due to their distance and due to the high degree of habitat fragmentation present, these parcels are not considered to be connected to any of the habitats present within the project footprint.

Summary of Recorded Habitats

- 3.6.8 The following UKHab Primary Habitats were recorded within the project footprint, as displayed on **Figure 3.3: UKHab Habitats Plan**:
- Other Coniferous Woodland – w2c
 - Sparsely Vegetated Urban Land - u1f
 - Artificial Unvegetated Unsealed Surface – u1c
 - Standing Open Water and Canals - r1
- 3.6.9 The four UKHab Primary Habitats recorded within the project footprint are described below:
- **Other Coniferous Woodland (w2c)** – found only within a small strip along the western project footprint boundary but previously covering the majority of the project footprint extent prior to being felled. This habitat comprised a monoculture of Sitka spruce (*Picea sitchensis*), with minimal vascular plant cover present in the woodland understorey, primarily comprising rarely occurring purple moor-grass (*Molinia caerulea*). Bryophytes were more abundant and included dominant *Hylocomium splendens* and occasional *Sphagnum fallax* and *Polytrichum commune*.
 - **Sparsely Vegetated Urban Land (u1f)** – found within an area of cleared habitat, on bare soil, comprising a mixture of ephemeral and early coloniser vascular plant species, including occasional soft rush (*Juncus effusus*), Yorkshire fog (*Holcus lanatus*), carnation sedge (*Carex panicea*), with rarely occurring bulbous rush (*Juncus bulbous*).
 - **Artificial Unvegetated, Unsealed Surface (u1c)** – covering the majority of the project footprint, comprising areas of bare ground with often gravel present.
 - **Standing Open Water and Canals (r1)** – Within the artificial unvegetated, unsealed surface a waterlogged Sustainable Drainage Systems (SuDS) basin, as well as a smaller bioswale basin were found. Both artificial features did not display any presence of bank or aquatic vegetation.

GWDTE

- 3.6.10 No habitats were recorded within the project footprint or within the wider survey area that would be considered to comprise a potential GWDTE. No sources of groundwater emergence (e.g. springs) were recorded during the survey, and it was noted that some of the forestry within the project footprint had already been felled and cleared. Therefore, it is considered that the habitats within the project

footprint have been previously disturbed and are predominantly sustained by surface water runoff and waterlogging of soils, rather than emergent groundwater.

INNS

3.6.11 No plants were recorded within the project footprint or wider survey area that are considered INNS.

Protected Species

3.6.12 No protected or notable species were returned from the desk study within 2 km of the project footprint, nor was any field evidence of protected species identified within the project footprint or within the wider survey area.

3.6.13 The majority of the habitats present within the project footprint, are not considered to provide significant resources for any protected or notable species.

Bats

3.6.14 No evidence of bats was identified within the project footprint or adjacent area, and none of the buildings associated with the existing substation or trees located in the coniferous woodland to the west are considered to offer suitable roosting opportunities.

3.6.15 The habitats within the project footprint are considered to only provide a low suitability for foraging bats; with, the edge of the coniferous woodland constituting a linear feature for commuting bats.

3.6.16 Overall, it is considered unlikely that significant numbers of bats regularly utilise areas associated with the project footprint.

Badger

3.6.17 The habitats within the project footprint do not offer opportunities for foraging badger, with the majority comprising of artificially created bare ground. The coniferous plantation contains wet soils with limited suitability for sett creation; however, sett creation within this woodland is not deemed to be impossible within drier areas further to the west.

3.6.18 Overall, it is considered unlikely that badger utilise areas associated with the project footprint; however, a small number of badgers may occasionally utilise the wider coniferous woodland to the west.

Red Squirrel

3.6.19 No evidence of red squirrel was identified within the project footprint or wider survey area. The coniferous forestry plantation could provide some resources for drey creation as well as commuting red squirrel; however, Sitka spruce plantations are not considered to provide significant foraging opportunities for red squirrel.

3.6.20 Overall, it is possible for a small number of red squirrels to occasionally utilise areas of the coniferous forestry plantation associated with the project footprint.

Pine Marten

3.6.21 No evidence of pine marten was identified within the project footprint or wider survey area. The coniferous forestry plantation is likely to provide some suitable habitat for commuting and foraging pine marten, with the potential presence of occasional denning sites under lifted roots and large cavities under rocks and trees. The remainder of the Site is considered unsuitable for pine marten.

3.6.22 Overall, it is considered likely that pine marten may occasionally utilise habitats associated with the project footprint.

Reptiles

3.6.23 The habitats within the project footprint do not offer suitable opportunities for foraging or commuting reptiles. However, the presence of bare ground with gravel could potentially be utilised occasionally for basking by a small number of reptiles, particularly common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*); however, the area of gravel within the project footprint likely lacks suitable cover from predation, thus reducing the suitability for basking reptiles.

3.6.24 Overall, it is considered unlikely that reptiles utilise habitats associated with the project footprint.

Amphibians

3.6.25 The habitats within the project footprint do not offer suitable opportunities for foraging or commuting amphibians. Despite the presence of a SuDS ponds, due to the current conditions (murky waters from nearby earthworks, machinery presence around the ponds and frequently dry conditions), were not considered to offer opportunities for amphibians. Some opportunities for sheltering and hibernating amphibians could, however, be found within the strip of forestry plantation in the west.

3.6.26 Overall, it is considered unlikely that significant numbers of amphibians utilise any areas within the project footprint.

Invertebrates

3.6.27 The habitats within the project footprint currently lack flowering plants, thus limiting opportunities for pollinators. The presence of a strip of coniferous forestry plantation could potentially offer some resources for xylophagous (wood-eating) species. However, it is overall considered unlikely for the project footprint to currently host any important invertebrate species assemblages.

Ornithology

3.6.28 A previous data request made in February 2023 for the Crossaig North 275/132 kV Substation EA¹⁴ did not return any records of protected or notable birds within the project footprint. However, records of protected and/or notable raptor species were recorded within 2 km of the project footprint.

3.6.29 Previous ornithological surveys commissioned in 2012¹⁵, 2015-16¹⁶ and 2021¹⁷ covering the local and wider area, only recorded low numbers of common woodland and upland birds.

3.6.30 No bird activity was observed during the baseline survey in October 2025 within the project footprint or within the survey area.

3.6.31 The absence of significant areas of ground vegetation cover drastically reduces opportunities for ground nesting birds, and the presence of an active substation site is considered to constitute an existing disturbance in the area, which is likely to limit bird activity in and around the Proposed Development. However, suitable (albeit limited) habitat for a small number of nesting bird species, such as Oystercatcher (*Haematopus ostralegus*), can be found within the wider project footprint.

¹⁴ North Argyll 275 kV Upgrade Crossaig North Substation – Confidential Bird Annex (February 2023).

¹⁵ Crossaig 132 kV Substation (surveys undertaken in 2012)

¹⁶ Breeding Bird - Inverary to Crossaig 275 kV OHL (surveys undertaken in 2015-16)

¹⁷ Vantage Point surveys (Inverary to Crossaig OHL Reinforcement Project in 2021).

3.6.32 The extended coniferous forestry plantation in the west (past the boundaries of the project footprint) could, potentially, sustain small numbers of birds, including Crossbill (*Loxia curvirostra*) and Black Grouse (*Lyrurus tetrix*); however, their presence in the vicinity of the project footprint is considered unlikely.

3.7 Potential Effects

3.7.1 This section describes the embedded mitigation which forms part of the design details of the Proposed Development. Potential effects are then considered and appraised for ecological receptors with consideration of the embedded mitigation.

Embedded Mitigation

3.7.2 Prior to appraising effects upon ecological receptors, the embedded mitigation measures relevant to this appraisal are considered. The embedded mitigation relevant to this appraisal include:

- The Applicant's General Environmental Management Plans (GEMPs) (see **Appendix 2.3**), particularly oil storage and refuelling, soil management, working in sensitive habitats.
- The Applicant's Species Protection Plans (SPPs) (see **Appendix 2.4**), particularly for birds. This SPP details a mitigation hierarchy to avoid or minimise effects on protected bird species and bird nests.
- Application of a site-specific Construction Environmental Management Plan (CEMP) and Construction Traffic Management Plan (CTMP) to avoid / manage effects on habitats in the surrounds of the areas to be directly affected, for example to prevent spillages, discharges, incursion into habitats not required for the footprint and to allow construction, control dust etc.
- Timing of installation and careful siting of permanent and temporary structures at detailed design stage to avoid or minimise interaction with sensitive receptors.
- Employment of an ECoW to provide advice, guidance and monitoring during pre-construction and construction stages of work.

Effects and Ecological Receptors Scoped Out

3.7.3 Based on the findings from the desk studies and baseline data collection, and with consideration of the embedded mitigation measures described above, certain ecological receptors can be scoped out of the appraisal as a result of the absence of suitable habitat and/or opportunities within the project footprint and wider survey area, as listed below in **Table 3.2: Ecological Receptors Scoped Out**, alongside reasoning.

Table 3.2: Ecological Receptors Scoped Out

Effects and Ecological Receptor Scoped Out	Reasoning
Badger	Although some localised drier areas of the wider forestry plantation to the west of the Proposed Development are considered to potentially offer suitable opportunities for sett creation, these opportunities are considered to be absent within areas of the forestry found within or adjacent to the project footprint and, as a result, no significant negative effects on badger are expected.
Amphibians	None of the habitats within the project footprint are deemed suitable for amphibians and, as a result, no significant negative effects on amphibians are expected.

Effects and Ecological Receptor Scoped Out	Reasoning
Reptiles	None of the habitats within the project footprint are deemed to provide sufficiently suitable conditions for reptiles and, as a result, no significant negative effects on reptiles are expected.
Invertebrates	None of the habitats within the project footprint are deemed to provide sufficiently suitable conditions for notable species of invertebrates and, as a result, no significant negative effects on invertebrate communities are expected.

Potential Effects - Habitats

- 3.7.4 The Proposed Development would result in permanent loss of habitat within the footprint of the platform and associated drainage measures. In addition, there would be temporary disturbance of habitats within the new temporary access track during the construction period.
- 3.7.5 **Table 3.3: Habitat Loss and Disturbance Resulting from the Proposed Development** below sets out the total area in hectares (Ha) of baseline habitat expected to be lost either permanently or temporarily as a result of the Proposed Development.

Table 3.3: Habitat Loss and Disturbance Resulting from the Proposed Development

Habitat Type	Permanent Habitat Loss (Ha)	Temporary Habitat Disturbance (Ha)
Other Coniferous Woodland (w2c)	0.35	0.00
Standing Open Water and Canals (r1)	0.00	0.00
Sparsely Vegetated Urban Land (u1f)	0.15	0.00
Artificial Unvegetated Unsealed Surface (u1c)	1.05	0.00
Total	1.55	0.00

- 3.7.6 Given the generally low botanical value of the habitats affected by the Proposed Development, and the relatively small area of their respective footprints, effects on habitats or flora from the Proposed Development are predicted to be negligible; following the implementation of the proposed embedded mitigation. However, limited negative effects on faunal species utilising the habitats are considered possible (see sections 3.7.8 and 3.7.9 below).

Potential Effects - Faunal Species

- 3.7.7 Due to the limited suitable habitat for most protected and/or notable species, significant negative impacts on the local fauna are considered unlikely; however, some potential negative effects are still considered possible.
- 3.7.8 The following potential negative impacts on faunal species were identified as a result of the Proposed Development works:
- Minor reduction of woodland cover for foraging pine marten and red squirrel (however, similar or better habitat is expected to remain intact in the area).

- Injury and/or death of pine marten and red squirrel if dens and/or drey are accidentally destroyed during vegetation removal works.
- Minor reduction of a woodland edge providing a low suitability for commuting bats.
- Disturbances to nocturnal and crepuscular species such as bats and pine marten as a result of an increase in artificial lighting within the project footprint during the construction of the Proposed Development.

3.7.9 There is potential for positive impacts as a result of the Proposed Development including increased opportunities for reptiles resulting from the creation of grassland habitats providing resources for prey species.

Potential Effects - Ornithology

3.7.10 Due to the limited ornithological features present within the project footprint and locally, significant negative impacts on birds are considered unlikely; however, some potential negative effects on a limited number of birds are still considered possible.

3.7.11 Although records of protected and/or notable raptor species are present within 2 km of the project footprint, the habitats within the project footprint and immediately adjacent are not considered to provide significant opportunities for raptor species and no substantial negative effects on raptors are expected as a result of the Proposed Development.

3.7.12 The following potential negative impacts on birds were identified as a result of the Proposed Development works:

- Disturbance and/or injury/death of nesting birds within the coniferous plantation, if felling works are undertaken during bird nesting season (March to August inclusive).
- Increased disturbances to commuting and foraging birds resulting from an increased level of activity and noise within the project footprint.

3.8 Mitigation

Biodiversity Protection Measures

3.8.1 Biodiversity protection measures will include a pre-construction walkover survey undertaken by a suitably qualified ECoW to identify any changes in habitat use by protected species. Where protected species are identified, the relevant Species Protection Plans (SPPs), contained within the CEMP, will be implemented during construction. The Applicant has established SPPs for a range of protected species, developed in consultation with NatureScot, which are currently applied across SSEN Transmission projects. These plans set out the procedures to be followed should protected species be encountered during construction (see **Appendix 2.4**).

3.8.2 To mitigate the effects of increased lighting disturbance on nocturnal or crepuscular species, any newly installed lights, during the construction phase of the Proposed Development, should be designed to be 'wildlife friendly' following a sensitive lighting strategy following recommendations within the 'Bats and Artificial Lighting at Night' UK guidance¹⁸. Where lighting is required, mitigation options include:

- Temporary lighting utilised during the construction phase should not illuminate bat commuting, foraging, and roosting habitats.

¹⁸ Bat Conservation Trust (2023). Bats and Artificial Lighting at Night [Online] Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

- Only luminaires with an upward light ratio of 0% will be used, and low-level bollard lighting will be used where feasible to retain darkness above the luminaire.
- All luminaires will lack UV elements and will be warm-white coloured (ideally <2700 Kelvin) to reduce blue-light components.
- LED luminaires will be used due to sharp cut-off, lower intensity, good colour retention, and dimming capabilities.
- Where security lighting is installed, it must be motion-activated to allow periods of darkness surrounding the development. If possible, motion sensors should be designed not to be easily set-off by nocturnal species.
- Lights will not be directed at the project footprint boundary vegetation.
- Lights should be fitted with hoods, baffles, or louvres to reduce back-spill.

Ornithological Protection Measures

- 3.8.3 If vegetation removal works are to be undertaken during the nesting bird season (March to August inclusive), then a pre-works nesting bird check should be undertaken by a qualified ecologist.
- 3.8.4 If a nesting bird is found, then an exclusion buffer zone (the size of which is species-dependent) will be erected around the nest, and no works shall proceed within this zone until the fledgelings have left the nests and following a final inspection by a qualified ecologist.

3.9 Biodiversity Enhancement

- 3.9.1 In line with National Planning Framework 4 (NPF4), consideration has been given to how the Proposed Development can deliver enhancement to biodiversity over its lifetime. A BNG assessment will be provided and agreed upon with relevant consultees post submission of the planning application and prior to determination.
- 3.9.2 The Proposed Development would not result in the loss of any irreplaceable habitat.
- 3.9.3 The following recommendations for biodiversity enhancements are aimed at improving on the ecological baseline recorded during the survey:
- Areas of the Proposed Development site not utilised during the operational phase of the project, could be utilised for the creation of habitats such as upland acid grassland (considered suitable due to the acidic soil conditions in the area). The Highland Grassland Seed Mix from Scotia Seeds, or similar approved is recommended to achieve the above habitat (see **Figure 2.2: Landscape Mitigation Proposals**).

3.10 Summary

- 3.10.1 **Table 3.4: Summary of the Appraisal** below provides a summary of the ecological receptors included within the appraisal, the associated potential effects and the mitigation measures recommended where required.

Table 3.4: Summary of the Appraisal

Ecological Receptor	Project Interaction	Embedded Mitigation	Additional Mitigation Measures
All Habitats (Other Coniferous)	Considered unlikely to be significantly negatively impacted by	<ul style="list-style-type: none"> • CEMP • Appointment of a site ECoW 	Not required

Ecological Receptor	Project Interaction	Embedded Mitigation	Additional Mitigation Measures
Woodland, Artificial Unvegetated Unsealed Surface, Sparsely Vegetated Urban Land and Standing Open Water and canals)	the Proposed Development due to their current low botanical value.		
Bats	<ul style="list-style-type: none"> • Potential reduction of commuting habitat via the felling of a woodland edge • Increased lighting disturbances within the project footprint • Increased opportunities for foraging bats resulting from an increase in invertebrates' presence within the project footprint. 	<ul style="list-style-type: none"> • CEMP • Appointment of a site ECoW • Species Protection Plans if required. 	<ul style="list-style-type: none"> • Implementation of a sensitive lighting strategy
Pine Marten	<ul style="list-style-type: none"> • Potential loss of foraging and commuting habitats resulting from the minor felling of the woodland edge. • Potential destruction of dens incurring the death/injury of pine marten • Increased lighting disturbances within the project footprint 	<ul style="list-style-type: none"> • CEMP • Appointment of a site ECoW • Species Protection Plans if required 	<ul style="list-style-type: none"> • Pre-works checks prior to tree felling and vegetation removal • Implementation of a sensitive lighting strategy
Red Squirrel	<ul style="list-style-type: none"> • Potential loss of foraging and commuting habitats resulting from the minor felling of the woodland edge. • Potential destruction of dreys incurring in 	<ul style="list-style-type: none"> • CEMP • Appointment of a site ECoW • Species Protection Plans if required 	<ul style="list-style-type: none"> • Pre-works checks prior to tree felling and vegetation removal

Ecological Receptor	Project Interaction	Embedded Mitigation	Additional Mitigation Measures
	the death/injury of red squirrel		
Badger	<ul style="list-style-type: none"> Scoped out of the appraisal due to the absence of suitable habitat within the project footprint 	Not required	Not required
Amphibians	<ul style="list-style-type: none"> Scoped out of the appraisal due to the absence of suitable habitat within the project footprint 	Not required	Not required
Reptiles	<ul style="list-style-type: none"> Scoped out of the appraisal due to the absence of suitable habitat within the project footprint 	Not required	Not required
Invertebrates	<ul style="list-style-type: none"> Scoped out of the appraisal due to the absence of suitable habitat within the project footprint 	Not required	Not required
Birds	<ul style="list-style-type: none"> Potential disturbances, injury and/or death to nesting birds 	<ul style="list-style-type: none"> CEMP Species Protection Plans if required 	<ul style="list-style-type: none"> Pre-works nesting bird checks if felling works are undertaken during bird nesting bird season (March to August inclusive)

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4. GEOLOGY, HYDROLOGY AND HYDROGEOLOGY

4.1 Executive Summary

- 4.1.1 An appraisal has been undertaken of the potential effects the construction and operation of the Proposed Development may have on geology (including soils and peat), hydrology and hydrogeology (the water environment).
- 4.1.2 Information on the study area was compiled using baseline information from a desk study that was verified by a site visit undertaken by experienced geotechnical consultants and hydrologists. There is existing data about the site as a result of previous studies and assessments completed for the Crossaig North 275/132 kV substation¹ and these studies have been referred to as part of this appraisal. The mitigation included in the site design (embedded mitigation) and good practice measures that will be implemented as standard are detailed and potential effects of the Proposed Development have then been assessed. It has been shown, subject to this mitigation and the use of industry standard best practice that the soils, geology and water environment can be safeguarded.

4.2 Introduction

- 4.2.1 This appraisal outlines the baseline conditions of the Proposed Development with respect to geology (including soils and peat), hydrology and hydrogeology (the water environment). It also details the embedded mitigation included in the site design, industry standard good practice mitigation measures which will be adopted and considers the likely potential effects the development might have on geology and the water environment.
- 4.2.2 This appraisal has been carried out by SLR Consulting Limited (SLR) under the supervision of a Technical Director who has worked extensively in Scotland and has extensive experience in the appraisal of electrical transmission infrastructure, and its potential effects on geology and the water environment.

4.3 Scope of Appraisal

Study Area

- 4.3.1 The study area encompasses the area over which desk-based and field data were gathered to inform the appraisal. The study area includes a buffer of 500 m around the red line boundary to ensure relevant soil, geological, hydrological, and hydrogeological features are identified. The study area and identified features are presented in the supporting figures (**Figures 4.1 to 4.8**).

Legislation and Planning Policy

- 4.3.2 Soils, geology, and the water environment in Scotland are afforded significant protection through key statutes and the regulatory activity of the Scottish Environmental Protection Agency (SEPA), NatureScot, and local authorities. The appraisal has been undertaken in accordance with relevant policy, legislation, and guidance for electrical transmission infrastructure in Scotland.
- 4.3.3 Of particular relevance to this assessment are the following:
- Argyll and Bute Council, Local Development Plan 2², 2024, specifically policies 55, 56, 58, 59, 61, 62, 79 and 80;

¹ SSEN Transmission. North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal (ERM; February 2023). Available at: <https://www.ssen-transmission.co.uk/globalassets/projects/crossaig-north-town-and-country-planning-application/chapter-1-contents-introduction-and-scope.pdf>

² Argyll and Bute Council (2024) Local Development Plan 2, available online at [Local Development Plan 2 | Argyll and Bute Council](#) [Accessed April 2026]

- Environmental Authorisation (Scotland) Regulations 2018 (EASR)³;
- National Planning Framework 4 (NPF4)⁴, 2024, specifically policies 5, 11, 20 and 22;
- NatureScot, Advising on Peatland, Carbon-rich Soils and Priority Peatland Habitats in Development Management, 2023⁵;
- NatureScot, Peatland Condition Assessment Guide, 2016⁶;
- SEPA, Guidance on Assessing the Impacts of Development on Groundwater Abstractions, 2024⁷;
- SEPA, Guidance on Assessing the Impacts of Development on Groundwater Dependent Terrestrial Ecosystems, 2024⁸;
- SEPA, Guidance for Pollution Prevention documents⁹;
- SEPA, Planning Advice Note: Assessing the Impact of Developments on Peatland and Carbon Rich Soils, 2025¹⁰;
- SEPA, Recommended Riparian Corridor Layer for use in Land Use Planning, 2024¹¹;
- SEPA, Standing Advice on Peaty Soils, 2025¹²;
- Scottish Government, Proposed Electricity Generation Developments: Peat Landslide Hazard Best Practice Guide, 2017¹³;
- Scottish Government, Peatland survey guidance, 2017¹⁴;
- The Flood Risk Management (Scotland) Act 2009¹⁵;
- The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017¹⁶;
- Water Environment and Water Services (Scotland) Act 2003¹⁷; and
- Water Environment (Drinking Water Protected Area) (Scotland) Order 2013¹⁸.

³ Scottish Environment Protection Agency (2018) Environmental Authorisation (Scotland) Regulations, available online at [EASR authorisations | Beta | SEPA | Scottish Environment Protection Agency](#) [Accessed April 2026]

⁴ Scottish Government (2023) National Planning Framework 4, available online at [National Planning Framework 4 - gov.scot](#) [Accessed April 2026]

⁵ NatureScot (2023) Advising on peatland habitats and carbon-rich soils in development management. Available online at [Advising on peatland habitats and carbon-rich soils in development management | NatureScot](#) [Accessed April 2026]

⁶ NatureScot (2016) Peatland condition assessment. Available online at [Guidance-Peatland-Action-Peatland-Condition-Assessment-Guide-A1916874.pdf](#) [Accessed April 2026]

⁷ Scottish Environment Protection Agency (2024) Guidance on assessing the impacts on development on groundwater abstractions. Available online at [guidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx](#) [Accessed April 2026]

⁸ Scottish Environment Protection Agency (2024) Guidance on assessing the impacts on development on groundwater dependent terrestrial ecosystems. Available online at [guidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx](#) [Accessed April 2026]

⁹ Scottish Environment Protection Agency, Guidance for Pollution Prevention documents. Available online at [Guidance for Pollution Prevention \(GPP\) documents | NetRegs | Environmental guidance for your business in Northern Ireland & Scotland](#) [Accessed April 2026]

¹⁰ Scottish Environment Protection Agency (2025) Assessing the impact of developments on peatland and carbon rich soils. Available online at [pan-on-peat-and-soils.docx](#) [Accessed April 2026]

¹¹ Scottish Environment Protection Agency (2024) Recommended riparian corridor layer for use in land use planning. Available online at [recommended-riparian-corridor-note.docx](#) [Accessed April 2026]

¹² Scottish Environment Protection Agency (2025) Standing advice on peaty soils. Available online at [sa-on-peaty-soil.docx](#) [Accessed April 2026]

¹³ Scottish Government (2017) Proposed electricity generation developments: peat landslide hazard best practice guide. Available online at [Proposed electricity generation developments: peat landslide hazard best practice guide - gov.scot](#) [Accessed April 2026]

¹⁴ Scottish Government (2017) Peatland survey: guidance. Available online at [Peatland survey: guidance - gov.scot](#) [Accessed April 2026]

¹⁵ Scottish Government (2009) Flood Risk Management (Scotland) Act 2009. Available online at [Flood Risk Management \(Scotland\) Act 2009](#) [Accessed April 2026]

¹⁶ Scottish Government (2017) The Water Intended for Human Consumption (Private Supplies) (Scotland) Regulations 2017. Available online at [The Water Intended for Human Consumption \(Private Supplies\) \(Scotland\) Regulations 2017](#) [Accessed April 2026]

¹⁷ Scottish Government (2003) Water Environment and Water Services (Scotland) Act 2003. Available online at [Water Environment and Water Services \(Scotland\) Act 2003](#) [Accessed April 2026]

¹⁸ Scottish Government (2013) The Water Environment (Drinking Water Protected Areas) (Scotland) Order 2007. Available online at [The Water Environment \(Drinking Water Protected Areas\) \(Scotland\) Order 2007](#) [Accessed April 2026]

4.4 Methodology

4.4.1 This section outlines the methodology used for the appraisal of potential effects on geology, hydrology, and hydrogeology.

Desk Study

4.4.2 An initial desk study has been undertaken to determine and confirm the baseline characteristics of the study area by reviewing available information relating to geology, soils, peat, hydrology, and hydrogeology. The following sources of information have been consulted to characterise and assess the baseline conditions within the study area:

- SSEN Transmission, North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal (February 2023)¹;
- Ordnance Survey (OS) 1:50,000 and 1:25,000 scale mapping;
- NatureScot SiteLink¹⁹;
- Scottish Natural Heritage (now NatureScot) Carbon and Peatland 2016 Map²⁰;
- James Hutton Institute, The National Soil Map of Scotland (1:250,000)²¹;
- British Geological Survey (BGS) Onshore GeoIndex (1:50,000)²²;
- BGS Hydrogeological maps of Scotland (1,100,000 scale Aquifer Productivity and Groundwater Vulnerability datasets)²³;
- SEPA flood maps²⁴;
- SEPA reservoir flooding maps²⁵;
- SEPA environmental data²⁶;
- Flood Estimation Handbook (FEH) Web Service²⁷; and
- SEPA Water Classification Hub²⁸

Field Survey

4.4.3 A peat depth survey and hydrological walkover survey was undertaken by SLR in November 2025. The site work was undertaken to allow an appreciation of the study area, verify the information that was collected during the desk study, gather peat depth and condition data and complete a private water supply survey. This information was used to inform the emerging project design and to complete this assessment.

Appraisal Methodology

4.4.4 The appraisal of potential effects to receptors identified by the baseline and field study has been undertaken considering the safeguards incorporated into the site design and industry good practice that would be used during construction and operation of the Proposed Development.

¹⁹ NatureScot SiteLink, available at <https://sitelink.nature.scot/home> [Accessed February 2026]

²⁰ Scottish Natural Heritage available at <https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/> [Accessed February 2026]

²¹ James Hutton Institute, National soil map of Scotland <https://soils.environment.gov.scot/maps/soil-maps/national-soil-map-of-scotland/> [Accessed February 2026]

²² British Geological Survey, GeoIndex (onshore), available at <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> [Accessed February 2026]

²³ British Geological Survey Hydrogeological maps of Scotland, available at <https://www.bgs.ac.uk/datasets/hydrogeological-maps-of-scotland/> [Accessed February 2026]

²⁴ SEPA, Flood Maps, available at <https://www.sepa.org.uk/environment/water/flooding/flood-maps/> [Accessed February 2026]

²⁵ SEPA, Reservoir inundation map, available at <https://map.sepa.org.uk/reservoirsfloodmap/Map.htm> [Accessed February 2026]

²⁶ SEPA, Environmental data, available at <https://www.sepa.org.uk/environment/environmental-data/> [Accessed February 2026]

²⁷ UK Centre for Ecology and Hydrology, FEH Web Service, available at <https://fehweb.ceh.ac.uk/Map> [Accessed February 2026]

²⁸ SEPA Water Classification Hub, available at <https://informatics.sepa.org.uk/WaterClassificationHub/> [Accessed February 2026]

4.5 Baseline Conditions

4.5.1 This section outlines the baseline geology, soils (including peat), and water conditions within the study area.

Site Setting

4.5.2 The Proposed Development is located on land adjacent (to the west) of the consented (and under construction) Crossaig North 275 / 132kV substation, centred at British National Grid NR 82432 50301 (referred to as 'the site' throughout this appraisal). The site currently comprises recently cleared ground and an area of commercial forestry.

4.5.3 Ground elevations range from approximately 85 m Above Ordnance Datum (AOD) within the northern corner of the site to approximately 70m AOD along the southern boundary of the site.

4.5.4 SEPA precipitation data for Dippen rainfall gauge (station ID: 133077), located approximately 13 km south of the site, recorded an annual precipitation total of 1,462.2mm in 2025. The standard annual average rainfall (SAAR) has also been obtained from the FEH webpage²⁷ for the site and an average rainfall of 1,712mm is reported for the period between 1991 and 2020.

Designations

4.5.5 Review of the NatureScot SiteLink¹⁹ indicates that there are no statutory geological or water dependent designated sites within the study area.

Soils and Geology

Soils

4.5.6 An extract of 1:250,000 National Soil Map of Scotland²¹ is shown on **Figure 4.3: Soils** and indicates that the Proposed Development is entirely underlain by peaty gleys.

Peat and Superficial Geology

4.5.7 Review of BGS superficial deposit mapping²² (see **Figure 4.4: Superficial Geology**) indicates that superficial deposits are absent from the Proposed Development footprint and wider study area.

4.5.8 Peatland classification mapping published by NatureScot⁵ (see **Figure 4.5: Peatland Classification**), indicates that the site is underlain entirely by Class 5 peatland. Class 5 peatlands are not considered priority peatland habitats, however where present soils may remain carbon rich with areas of deep peat.

4.5.9 Peat depth surveys were undertaken for the adjacent consented Crossaig North 275/132 kV substation, and an additional peat depth probing and characterisation survey was undertaken as part of the baseline assessment during the field survey in November 2025 (see **Figure 4.6: Peat Depth Plan** which presents a combined peat depth plan). Peat depths of between 0 to 3.3 m have been recorded within the site. The deepest areas of peat (areas where peat was noted to be >1 m deep) are recorded within the southern extent of the site and along the southern boundary of the red line boundary.

4.5.10 Where the platform is proposed, peat depths of <0.5 m were recorded.

4.5.11 During the field survey it was noted that some of the peat within the site had already been stripped and safeguarded in a restoration area as part of the consented Crossaig North 275/132 kV substation works.

Bedrock Geology

- 4.5.12 An extract of the BGS bedrock and linear features geology mapping²² is shown on **Figure 4.7: Bedrock Geology** and shows that the entire site is underlain by psammite and pelite of the Beinn Bheula Schist Formation. There are no linear features, such as geological faults, recorded within the site.

Hydrogeology

Aquifer Classification and Groundwater Vulnerability

- 4.5.13 Extracts of the BGS 1:625,000 scale Hydrogeological Map of Scotland²³ and 1,100,000 scale Aquifer Productivity and Groundwater Vulnerability datasets were reviewed as part of this appraisal and are shown on **Figure 4.8: Aquifer Classification and Groundwater Vulnerability**.
- 4.5.14 The bedrock is confirmed to be a very low productivity aquifer generally without groundwater except at shallow depth with flow almost entirely through fractures and other discontinuities.
- 4.5.15 The 1:625,000 scale regional hydrogeological data confirms that the bedrock underneath the site has been classified as a low productivity aquifer, whereby limited amounts of groundwater may be present within the near surface weathered zone and secondary faults or fractures, where present.
- 4.5.16 The Aquifer Productivity and Groundwater Vulnerability datasets classify the underlying aquifer (superficial and bedrock) according to the predominant groundwater flow mechanism (fracture or intergranular) and the estimated groundwater productivity. Groundwater vulnerability is divided into five classes (1 to 5) with 1 being least vulnerable and 5 being most vulnerable.
- 4.5.17 The potential groundwater vulnerability in the uppermost aquifer within the site has a vulnerability of Class 5. This is due to the lack of superficial deposits within the site and thus there is little attenuation afforded of potential pollutants prior to entry to shallow groundwater.

Groundwater Levels and Flow

- 4.5.18 SEPA does not hold any specific groundwater level data within the study area. Groundwater recharge will be limited at the site due to low permeability of the bedrock deposits. It is anticipated that small amounts of groundwater may be present within the near surface weathered zone within the bedrock deposits and groundwater flow is likely to follow local surface gradients (e.g. be approximated by the surface water catchment).
- 4.5.19 It is understood that no significant groundwater control measures were required to establish the existing substation.

Groundwater Quality

- 4.5.20 All of Scotland's groundwater bodies have been designated as Drinking Water Protected Areas (DWPAs) under the Water Environment (Drinking Water Protected Area) (Scotland) Order 2013 and require protection for their current use or future potential as drinking water resources.
- 4.5.21 The current status of groundwater bodies in Scotland has been classified by SEPA in accordance with the requirements of the Water Framework Directive (WFD). The site is located within the Oban and Kintyre groundwater body (SEPA ID: 150698) which has been classified as having a Good overall groundwater quality in 2024 (the latest reporting cycle)²⁸. No pressures have been identified by SEPA for this groundwater body.

Groundwater Dependant Terrestrial Ecosystems (GWDTE)

4.5.22 A UKHab survey was undertaken across the site, as discussed in **Chapter 3: Terrestrial Ecology**. It has been confirmed that no habitats were recorded within the site that would be considered to comprise a potential GWDTE. No sources of groundwater emergence (e.g. springs) were recorded during the survey, and it was noted that some of the forestry within the project footprint had already been felled and cleared. Therefore, given the proven soils and geology at site, habitats are predominantly sustained by surface water runoff and waterlogging of soils, rather than emergent groundwater.

4.5.23 The potential loss of this habitat is discussed further in **Chapter 3: Terrestrial Ecology**.

Hydrological Setting

4.5.24 The local hydrology, and how this relates to the existing and proposed infrastructure, is shown on **Figure 4.1: Hydrological Features** and **Figure 4.2: Watercourses and Flooding**.

4.5.25 The Proposed Development is located within the Allt na Buaile Salaich surface water catchment. The Allt na Buaile Salaich watercourse flows south-eastwards approximately 150 m south-west of the site before discharging into the Kilbrannan Sound approximately 1.4 km south of the site.

4.5.26 Existing drainage features associated with drainage for the Crossaig North 275/132 kV substation are also noted within or near to the site, including two drainage ditches to the north of the site and three drainage pipes within the centre of the site which divert water to the existing SuDS pond and swale which are recorded within the south-eastern extent of the site.

4.5.27 No other mapped watercourses or water features, except for the existing drainage systems for the Crossaig North 275 / 132 kV substation are recorded within the site.

Surface Water Quality

4.5.28 The Kilbrannan Sound (SEPA ID: 200025) is monitored by SEPA as part of its responsibility under the WFD and was classified in the last reporting cycle (2024) as having an overall Good status with no pressures identified.

Flood Risk

4.5.29 SEPA has developed national flood maps²⁴ that present modelled flood extents for river, coastal, surface water and groundwater flooding. These maps have been developed using a consistent methodology to produce outputs for the whole of Scotland, supplemented with more detailed, local assessments where available and suitable for use. A summary of the potential sources of flooding and a review of the potential risks posed by each source is presented in **Table 4.1: Flood Risk Screening Assessment**.

4.5.30 SEPA also publish potential future flood extents (to the year 2080 for fluvial and 2070 for surface water and small watercourses flooding) which account for the potential uplifts in rainfall depths and intensities as a consequence of climate change. An extract of this mapping is shown on **Figure 4.2**, and this data is considered in the summary of potential sources of flooding presented in **Table 4.1: Flood Risk Screening Assessment**.

4.5.31 SEPA has also produced reservoir inundation maps²⁵ for those sites currently regulated under the Reservoirs Act 2011.

Table 4.1: Flood Risk Screening Assessment

Potential Source	Potential Flood Risk to Site	Justification
Coastal Flooding	No	The site is at an elevation of between approximately 85 m AOD (northern extent) and 70 m AOD (southern extent). SEPA flood mapping confirms that the site is not at risk from tidal or coastal flooding.
Fluvial Flooding	No	SEPA fluvial flooding indicates that the site is not shown to be at risk from fluvial flooding.
Surface Water, Overland Flow, and Small Watercourse Flooding	Yes	SEPA flood maps indicate that the majority of the site is not at risk of surface water flooding. A shallow (<0.3 m) overland flow path is shown on the SEPA future flooding maps within the centre of the site and flows southwards through the site towards the Allt na Buaile Salaich (as shown on Figure 4.2).
Groundwater Flooding	No	The SEPA groundwater flood map illustrates that the site is not considered at risk from potential groundwater flooding. This concurs with the desk-based assessment which has shown that there is little potential for significant groundwater storage or movement.
Flooding due to Dam Failure	No	SEPA reservoir inundation maps indicates that the site is not at risk from dam failure flooding.
Flooding from Artificial Drainage Systems	No	The site is serviced by existing drainage systems, including SuDS, which has been designed to accommodate the 200-year storm event, plus an allowance for climate change, in accordance with good practice.
Flooding due to Infrastructure Failure	No	The Proposed Development is remote from any flood defences.

Private Water Supplies

4.5.32 Private water supplies (PWS) were surveyed by Arcus Consulting in 2023 as part of the assessments for the Crossaig North 275 / 132 kV substation¹. A review of this data indicates that there are two PWS sources within the study area, which are discussed in **Table 4.2: Private Water Supply Risk Assessment**, and displayed on **Figure 4.1**. SSEN Transmission has also confirmed that the consented Crossaig North 275/132 kV substation will also be supplied by a PWS which is also discussed in **Table 4.2: Private Water Supply Risk Assessment**.

Table 4.2: Private Water Supply Risk Assessment

PWS ID (see Figure 3.2.1)	Property Name	Source Type	Location of PWS Source and Distance from the Proposed Development	Details	PWS Risk Assessment
PWS01	Crossaig Lodge and South Crossaig	Stream Abstraction	E 182852 / N 650655 Located approximately 480 m north-east of the site.	The property has been confirmed to be supplied by a stream abstraction source which is located outside of the study area. The surface water supply is no longer in use. In addition, no development is proposed within the surface water catchment of burn which the PWS source is abstracted from, should it be used.	The PWS source is not considered to be at risk from the Proposed Development and therefore no further assessment is required.
PWS02	Crossaig 132 kV substation	Rainwater fed	E 182771 / N 650236 Located approximately 200 m east of the site.	SSEN Transmission has confirmed that the substation is sustained by a rainwater fed supply.	The PWS source is not considered to be at risk from the Proposed Development and therefore no further assessment is required.
PWS03	Crossaig North 275/132 kV substation	Borehole	E 182609 / N 650339 Located approximately 135 m east of the site.	SSEN Transmission has confirmed that the substation will use a small borehole supply once construction is completed. The borehole will not be used as a drinking water supply but used to serve the development with toilet and wash facilities for maintenance staff.	The PWS source is managed by the Applicant and water will not be used as a drinking water supply. Therefore, no further assessment is required.

Licensed Sites / Abstractions / Discharges

4.5.33 The SEPA authorisation database²⁶ confirms that three Controlled Activities Regulations (CAR) authorisations are located within the study area (see **Figure 4.1**). The details for these authorisations include:

- one discharge for construction runoff for Crossaig North 275/132 kV substation; and
- one for green bank reinforcement; and
- one for a bridging culvert.

4.5.34 No licenced abstractions have been recorded within the study area.

4.6 Potential Impacts

4.6.1 Without appropriate design and controls, the following elements of the Proposed Development have the potential to impair soils, geology, local hydrology (surface water), and hydrogeology (groundwater):

- tracking and use of machinery has the potential to damage soils and peat by compaction or indirectly by draining water from the peat;
- soil compaction from vehicular movement may cause an increase to local flood risk;
- excavation of soils, peat and shallow geology has the potential to induce local ground instability;
- the use of machinery has the potential to introduce oils or hydrocarbons;
- new temporary access tracks and proposed platform may change surface drainage paths which might increase flood risk;
- inadequate hardstanding drainage could increase or exacerbate local surface water ponding and flooding; and
- the development has the potential to compact soils, increase the rate of runoff, introduce suspended soils and / or oils or other pollutants in runoff, or result in the discharge of welfare water.

4.7 Good Practice and Embedded Mitigation

Embedded Mitigation

4.7.1 The Proposed Development has been designed, as far as possible, to avoid and minimise impacts and effects to geology, peat, hydrology, and hydrogeology. This has included:

- In accordance with mitigation hierarchy set out in NPF4⁴, and detailed in SEPA's¹⁰ and NatureScot's guidance⁵, the Proposed Development has been limited to being located on areas of peat <1 m deep.
- The Proposed Development has sought to use existing access tracks where possible meaning that no new watercourse crossings are required to facilitate the Proposed Development.
- A 50 m buffer has been applied to watercourses and waterbodies as shown on the 1:10,000 scale mapping and in accordance with SEPA's guidance and it is confirmed that no development is proposed within the watercourse buffers.
- As detailed in Section 4.5, it has been confirmed that none of the PWS sources within the study area are deemed to be at risk from the Proposed Development. No PWS sources, except for the existing rainwater harvesting source and proposed borehole supply for the adjacent substations, which are owned and managed by the Applicant, are located within 250 m of the Proposed Development.

Good Practice Measures

4.7.2 The Proposed Development will be constructed with reference to industry good practice guidance together with the procedures set out within the Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) (see **Appendices 2.3** and **2.4** respectively). As a principal, preventing the release of any pollution or sediment is preferable to dealing with the consequence of any release.

Construction Environmental Management Plan (CEMP)

- 4.7.3 A contractual management requirement of the Principal Contractor would be the development and implementation of a Construction Environmental Management Plan (CEMP). This document would detail how the Principal Contractor would manage the site in accordance with all commitments and mitigation detailed in the EA, statutory consents and authorisations, and industry best practise and guidance. The CEMP would also reference the Applicant's GEMPs and SPPs (see **Appendices 2.3** and **2.4** respectively).
- 4.7.4 The CEMP will outline measures to ensure that the works minimise the risk to geology, peat, and the water environment. These include:
- during construction there would be heavy plant and machinery required on site and as a result it is appropriate to adopt best working practices and measures to protect the water environment, (including those set out in Guidance for Pollution Prevention (GPP) GPP01);
 - in accordance with GPP02 any above ground on-site fuel and chemical storage would be bunded;
 - emergency spill response kits would be provided and maintained during the construction works (GPP21);
 - a speed limit would be used to reduce the likelihood and significance of any collisions, as well as dust emissions;
 - drip traps would be placed under vehicles which could potentially leak fuel / oils;
 - stockpiling of soils and earthworks would only occur in demarcated areas which have drainage to intercept, control and manage runoff shed from stockpiles;
 - the use and deployment of silt fences and check dams, where required;
 - any water contaminated with silt or chemicals would not be discharged directly or indirectly to a watercourse or groundwater without prior treatment;
 - the use and placement of concrete would be carefully controlled so as not to cause a direct or indirect impact on the water environment; and
 - a wet weather protocol will be developed which would detail the procedures to be adopted by all staff during periods of heavy rainfall.

Environmental Clerk of Works (EnvCoW)

- 4.7.5 The implementation of the CEMP would be managed on site by a suitably qualified and experienced Environmental Clerk of Works (EnvCoW), with support from other environmental professionals as required.
- 4.7.6 The EnvCoW will be required to be present onsite during the construction phase and will conduct monitoring of works and briefings with regards to any hydrological sensitivities at the site to the relevant staff of the Principal Contractor and subcontractors.
- 4.7.7 With respect to the water environment, the EnvCoW will also have responsibility for advising on the maintenance of surface water flow paths and ensuring the quality of surface water and shallow groundwater is maintained.

Safeguarding of Peat and Carbon Rich Soils

- 4.7.8 The peat depth probing data has confirmed that the Proposed Development is underlain by mineral soils or peaty soils (where peat depths are <0.5 m) and the Proposed Development has avoided areas of deeper peat (>1 m deep).
- 4.7.9 A soils management plan, which will outline the required mitigation measures regarding the handling and safeguarding of soils would be prepared as part of the final CEMP.

Pollution Risk

4.7.10 Good practice measures in relation to pollution prevention would include the following:

- refuelling would take place at least 50 m from watercourses;
- foul water generated on-site would be managed in accordance with GPP4;
- areas would be designated for production of concrete or washout of vehicles which are a minimum distance of 50 m from a watercourse;
- washout water would also be stored in a washout area before being treated and disposed of, or re-used in concrete production;
- if any water is contaminated with silt or chemicals, runoff would not enter a watercourse directly or indirectly prior to treatment;
- water would be prevented as far as possible, from entering excavations such as trenches and foundations;
- procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the EASR, to minimise the potential for accidental spillage; and
- a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the effect as far as practicable. This would be included in the updated CEMP for the Proposed Development.

4.7.11 Site investigation (e.g., trial pitting and/or boreholes) will be undertaken where required at the detailed design stage, prior to any construction works, where excavation will be required to construct the Proposed Development.

Erosion and Sedimentation

4.7.12 Good practice measures for the management of erosion and sedimentation would include the following:

- all stockpiled materials would be located out with a 50 m buffer from watercourses;
- water would be prevented as far as possible, from entering excavations such as trenches and foundations through the use of appropriate cut-off drainage;
- where the above is not possible, water would pass through silt/sediment traps to remove silt prior to discharge into the surrounding drainage system;
- clean and dirty water on-site would be separated, and dirty water would be filtered before entering the water environment;
- silt fences would be deployed as required to reduce sediment transport;
- the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum;
- silt/sediment traps, single size aggregate, geotextiles, or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and
- the EnvCoW and the Principal Contractor would conduct regular visual inspections of watercourses to check for suspended solids in watercourses downstream of work areas.

Sustainable Drainage Systems (SuDS)

4.7.13 SuDS will be incorporated as part of the Proposed Development and included as part of the detailed drainage design for the Proposed Development.

4.7.14 The existing surface water drainage network within the site has been assessed by BAM Nuttall Limited (see **Appendix 4.1: Catchment Analysis**) to review if the drainage network has sufficient capacity for additional

runoff associated with the Proposed Development. The assessment confirmed that the existing SuDS pond has sufficient capacity for additional inflow runoff associated with the Proposed Development and no increase to greenfield runoff rates are expected.

Concrete Pouring

4.7.15 In relation to works involving concrete batching, transport and pouring, the following mitigation would be adopted:

- where concrete transfers are required, measures would be adopted at the point of concrete transfer to prevent accidental spillage of liquid concrete, and no transfers would be undertaken in proximity to watercourses or areas of standing water; and
- washout water would also be stored in a washout area before being treated and disposed of or re-used in concrete production.

4.7.16 As part of the proposed investigation works, the ground conditions would be assessed to inform the concrete design which will be used to establish the Proposed Development in accordance with industry good practice. This would ensure that the concrete specification used is appropriate for site specific ground conditions and minimise the potential for leaching of concrete to the surrounding soil and water environment. If necessary, the excavations would incorporate a barrier (such as shuttering) to prevent the movement of potential pollutants to adjacent soils, and the water environment. These methods will be specified in the CEMP and agreed with Argyll and Bute Council and SEPA prior to construction.

Forestry Felling

4.7.17 Forestry felling would be required to facilitate the Proposed Development. Details of forestry felling are presented in **Appendix 2.2: Woodland Report. Table 4.3: Forestry Felling and Water Catchment Areas** compares the proposed felling areas to the surface water catchment in which it occurs.

Table 4.3: Forestry Felling and Water Catchment Areas

Catchment	Total Water Catchment Area (Ha)	Total Proposed Felling Area (Ha)	Percentage of Catchment (%)
Allt na Buaile Salaich	134	0.41	0.3%

4.7.18 **Table 4.3: Forestry Felling and Water Catchment Areas** shows that the felling required to establish the Proposed Development is below the UK Forestry guidance thresholds (20% of total catchment area) and therefore no impact on water quality, including potential acidification effects, or increased flood risk is anticipated as a result of any required felling activities.

4.7.19 Forestry works will be undertaken in accordance with industry good practice which will be outlined in the final CEMP. All forestry felling outside of the red line boundary will be secured through a felling licence.

4.8 Appraisal of Potential Effects

Soils and Geology

4.8.1 It has been shown that the bedrock deposits within the site are common regionally and have no specific rarity value. The Proposed Development will avoid peat deposits >1 m deep.

4.8.2 The soil (topsoil and sub-soil) would be excavated during the construction phase, kept on site, and used to reinstate temporary construction areas. With appropriate mitigation, including a soils management plan that

would form part of the final CEMP, the disturbance of soils and shallow peat deposits can be minimised and these deposits safeguarded.

- 4.8.3 The Proposed Development would be subject to detailed design prior to construction which would be informed by further site investigation that would include geotechnical analysis to ensure the stability of all elements of the Proposed Development.

Surface Water and Groundwater Quality

Construction Phase

- 4.8.4 The construction of the Proposed Development would be undertaken in accordance with relevant technical guidance, GPPs and other codes of practice, to limit the potential for contamination for both ground and surface waters. In addition, a site-specific CEMP would be prepared by the Principal Contractor which will include appropriate soil management and pollution prevention measures.
- 4.8.5 The above measures would significantly reduce the likelihood of pollutants, including suspended solids, being discharged to nearby watercourses or groundwater.

Operational Phase

- 4.8.6 The risk of contamination from the Proposed Development is considered to be very low, as there would be no requirement for the storage of any potentially hazardous substances and runoff from the site would typically comprise of clean rainwater runoff from roofs and areas of hardstanding.
- 4.8.7 The existing surface water drainage system would be used to manage the quality and rate of surface water runoff from the Proposed Development.
- 4.8.8 As above, these measures would significantly reduce the likelihood of pollutants, including suspended solids, being discharged to nearby watercourses or groundwater.

Groundwater Level and Flow

- 4.8.9 As discussed in the baseline assessment, the Proposed Development would be constructed on bedrock deposits that contain little or no groundwater.
- 4.8.10 The detailed design of the Proposed Development would be informed by further site investigation. The site investigation would be used to ensure appropriate safeguards are included in the construction works and CEMP. No impact on groundwater levels and flow is therefore anticipated.

Surface Water Flow and Flood Risk

- 4.8.11 It has been shown that the site is not at risk from flooding, except for a shallow (<0.3 m) surface water overland flow path.
- 4.8.12 The proposed platform would increase impermeable surfacing and could, therefore, without appropriate control and mitigation, increase both the rate and volume of surface water shed from the site. The existing drainage system would be used to limit the rate of runoff to pre-development or 'greenfield' rates and it has been shown that the existing drainage system has sufficient capacity to accommodate increased runoff rates without increasing greenfield runoff discharge rates. It is therefore considered that surface water runoff from the Proposed Development can be managed without increasing flooding downstream.

- 4.8.13 With these safeguards, surface water flow and flood risk to the Proposed Development and downstream of the site can be mitigated.

Designated Sites, Private Water Supplies and Consented Abstractions

- 4.8.14 As discussed in the baseline assessment, no PWS sources within the study area have been identified as being at risk from the Proposed Development and no water dependent or geological designated sites or licenced abstractions are noted within 500 m of the Proposed Development.
- 4.8.15 The Proposed Development would not have any effect on designated sites, PWSs or third party consented abstraction sources.

Cumulative Effects

- 4.8.16 Like the existing substation, the Proposed Development has been designed and will be constructed and operated in accordance with current industry good practice. Consequently, potential effects on geology and the water environment are mitigated at source and no cumulative effects are anticipated.

4.9 Summary

- 4.9.1 Existing geological, hydrogeological, and hydrological conditions have been confirmed and used to assess the potential effects that the Proposed Development might have on geology and the water environment.
- 4.9.2 Many of the potential impacts associated with a development of this nature have been mitigated by its design. Further, good practice measures that would safeguard soils, geology and the water environment have been committed. Subject to the adoption of the good practice construction techniques and the committed further works at the detailed design stage of the project, no effects on soils, geology, hydrology, or hydrogeology have been identified.

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Appendices

There are no appendices associated with this Chapter

Figures

Figure 5.1: Landscape and Visual

5. LANDSCAPE AND VISUAL

5.1 Executive Summary

- 5.1.1 This Chapter presents the findings of the high-level Landscape and Visual Appraisal (LVA) for the Proposed Development. The purpose of the LVA is to identify and describe potential effects which may occur as a result of the Proposed Development to views obtained by those living, working and visiting in the area and to the wider landscape resource.
- 5.1.2 The site is not located within any nationally or regionally designated landscape. The nearest designation, the North Arran National Scenic Area (NSA), lies approximately 6 km to the east across the Kilbrannan Sound. The development sits within Landscape Character Type (LCT) 39: Plateau Moor and Forest – Argyll¹, an upland landscape of medium sensitivity characterised by moorland, forestry, and existing electricity infrastructure such as the existing Crossaig 132 kV substation and under construction Crossaig North 275/132 kV substation.
- 5.1.3 Visual receptors include small residential clusters at Crossaig and Cour, scattered rural dwellings, users of the B842, and users of local core paths and national cycling routes.
- 5.1.4 Overall, the presence of other electrical infrastructure in the foreground and commercial forestry limits the wider influence of the Proposed Development. The Proposed Development is unlikely to have any perceptible effect on the special qualities of the North Arran NSA and no notable long-term changes to landscape character are anticipated, with any construction-phase effects being localised and short-term. During construction, some temporary visual effects may arise due to increased activity; however, these are expected to be limited given existing construction and traffic in the area and reduce in the longer term.

5.2 Introduction

- 5.2.1 This Chapter presents the findings of the high-level Landscape and Visual Appraisal (LVA) for the Proposed Development. The purpose of the LVA is to identify and describe potential effects which may occur as a result of the Proposed Development to views obtained by those living, working and visiting in the area and to the wider landscape resource.
- 5.2.2 The LVA has been undertaken by Chartered Landscape Architects at ASH design + assessment Ltd (ASH), a registered practice with the Landscape Institute. The appraisal has been undertaken in accordance with best practice guidance, the Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (GLVIA3)².

5.3 Baseline Conditions

- 5.3.1 The Proposed Development is not located within any national or regional landscape designations. The nearest landscape designation to the Proposed Development is the North Arran NSA, located on the opposite side of the Kilbrannan Sound, approximately 6 km to the east of the Proposed Development (see **Figure 5.1: Landscape and Visual**).
- 5.3.2 The Proposed Development would be located within LCT 39: Plateau Moor and Forest - Argyll¹, which is considered to be of Medium sensitivity to development of this type (see **Figure 5.1**). Key characteristics of LCT 39 include upland plateau with rounded ridges, craggy outcrops and an irregular slope profile; an extensive, large-scale mosaic of open moorland and forestry; and small enclosed pastures and occasional farms and houses on lower hill slopes at the transition with adjacent LCTs. Within the immediate area surrounding the

¹ NatureScot: (2019): Scottish Landscape Character Types Map and Descriptions [ONLINE] <https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions> [Accessed March 2026].

² Landscape Institute and Institute of Environmental Management and Assessment. (2013). *Guidelines for Landscape and Visual Impact Assessment, Third Edition*

Proposed Development the landscape is characterised by commercial forestry and existing electricity infrastructure including the existing Crossaig 132 kV substation and the under construction Crossaig North 275/132 kV substation.

5.3.3 LCT 53: Rocky Coastland - Argyll¹ is located to the east of LCT 39 and extends along the coast of the Kilbrannan Sound (see **Figure 5.1**). It is considered to be of Medium sensitivity to development of this type. Key characteristics include uneven, hummocky landform with rocky outcrops and narrow glens; raised beaches, cliffs and distinctive rounded knolls; relatively small-scale landscape; and a complex transitional landscape.

5.3.4 Visual receptors in the surrounding area are generally concentrated in the residential areas of Crossaig (approximately 870 m to the north) and Cour (approximately 1.3 km to the south). Other receptors are limited to dispersed dwellings and farmsteads located over 2 km from the Proposed Development and users of the B842, which runs north-south along the Kintyre coastline, approximately 420 m to the east. Core paths are located within the area as well, including: C088 – Campbelltown to Cloanaig (420 m to the east) and C303 – Cloanaig to Clachan (approximately 4.7 km to the north). The Kintyre Way follows the same route as Core Path C303. Sustrans Cycle Route (Caledonian Way (National Cycle Route (NCN) 78)) extends along the B842.

5.4 Potential Effects and Mitigation

5.4.1 The Proposed Development would be located adjacent to existing electricity infrastructure which already characterises the surrounding landscape. There are limited opportunities to mitigate potential landscape and visual effects of the Proposed Development, however its location between the existing Crossaig 132 kV substation, under construction Crossaig North 275/132 kV substation and commercial forestry would limit views from the wider area. Where visible it would be seen as part of the existing electricity development which characterises the area.

5.4.2 Given the intervening distance and scale, the Proposed Development is unlikely to have any perceptible effect on the Special Qualities of the North Arran NSA.

5.4.3 There would be no notable change in landscape character overall as a result of the Proposed Development, which would feature in a landscape that already contains existing electrical infrastructure. Any potential effects during the construction period would be localised and short term largely focusing on the localised loss of commercial forestry, much of which already has areas of windthrow.

5.4.4 There may be some temporary effects experienced by visual receptors during construction due to increased activity in the area. However, this is unlikely to be noticeable in the context of other construction activities and traffic in the area. In the longer term, visual effects are anticipated to be very limited and localised with the Proposed Development seen within the context of and behind existing electrical infrastructure which would largely screen it from view.

5.5 Summary

5.5.1 The Proposed Development would result in very limited landscape or visual impacts during both construction and operation. Its siting among existing electricity infrastructure and forestry ensures it would not introduce notable new features or materially alter the landscape character.

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Appendices

There are no appendices associated with this Chapter

Figures

Figure 6.1 – Cultural Heritage

6. CULTURAL HERITAGE

6.1 Executive Summary

- 6.1.1 This Chapter presents the findings of a high-level appraisal of the potential effects of the Proposed Development on cultural heritage assets.
- 6.1.2 There would be no direct or indirect (setting) impacts to any designated heritage assets as a result of construction or operation of the Proposed Development.
- 6.1.3 There would be no direct effects on known cultural heritage assets as a result of the construction of the Proposed Development. While there remains the potential for unknown buried archaeology within the footprint of the Proposed Development, given the ground has previously been disturbed / developed, it is considered unlikely that groundbreaking activities during construction of the Proposed Development would disturb or destroy any as-yet unrecorded remains. Nevertheless, appropriate measures will be put in place, that would form part of the final site-specific Construction Environment Management Plan (CEMP), to safeguard any archaeological features exposed during intrusive groundbreaking activities.

6.2 Introduction

- 6.2.1 This Chapter addresses the potential effects the construction and operation of the Proposed Development may have on sites of cultural heritage interest, including scheduled and designated heritage sites and recorded archaeological features. The appraisal considers potential for both direct impacts, where the feature may be physically damaged or disturbed, and indirect impacts which may adversely affect the setting of heritage features by visibility of the Proposed Development.

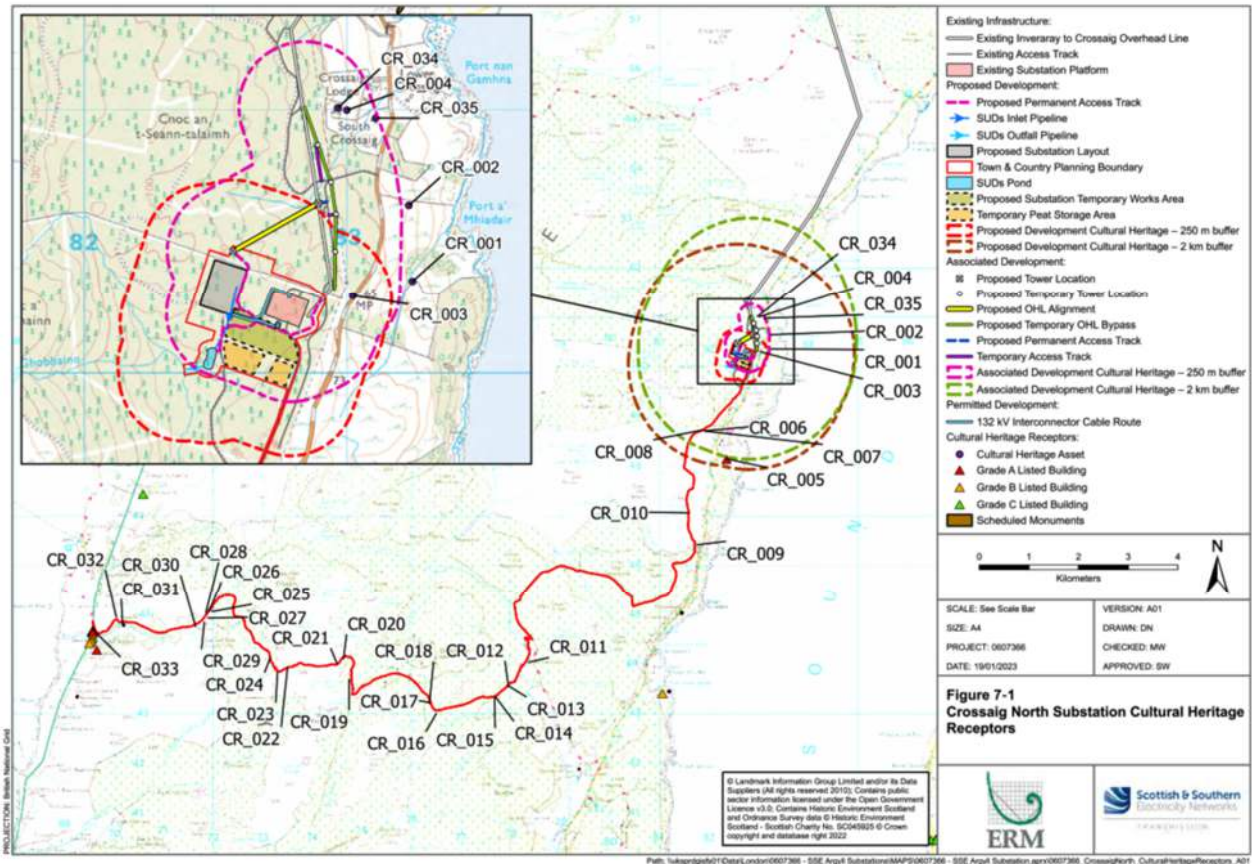
6.3 Baseline Conditions

- 6.3.1 There are no designated heritage assets (including Scheduled Monuments, Listed Buildings, World Heritage Sites, Inventoried Historic Battlefields, Inventoried Gardens and Designed Landscapes or Conservation Areas) within 2 km of the Proposed Development. The closest designated heritage asset is the Category A listed Cour House (LB18360), located approximately 2 km to the south of the Proposed Development, between the B842 and the coast (see **Figure 6.1: Cultural Heritage**).
- 6.3.2 An archaeological walkover survey was undertaken in 2022 for the adjacent Crossaig North 275/132 kV substation with the results reported in the 'North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal (EA) (2023)'¹, the study area for which incorporated the Proposed Development's red line boundary.
- 6.3.3 The 2022 walkover survey recorded no known non-designated heritage assets within the footprint of the Proposed Development with the closest recorded asset being the South Crossaig: Milestone (Period Unassigned) (WoSAS² 68167) (referred to in the 2023 EA as Site CR003). This asset would be located approximately 470 m to the east of the Proposed Development, recorded on the verge of the B842 (see **Plate 6.1** below).
- 6.3.4 It should be noted however, that the majority of the ground within the study area in 2022 was inaccessible at the time of the survey due to dense juvenile tree cover. Prior to construction works commencing for Crossaig North 275/132 kV substation, a follow up archaeological survey was undertaken in May 2024. Four previously unrecorded sites were identified; all field banks that are either bisected by, or located parallel, to the Cour

¹ SSEN Transmission (2023) North Argyll 275 kV Upgrade: Crossaig North Substation Environmental Appraisal. Available at: <https://www.ssen-transmission.co.uk/globalassets/projects/crossaig-north-town-and-country-planning-application/chapter-1-contents-introduction-and-scope.pdf>
² West of Scotland Archaeological Service (WoSAS)

Estate haul road. A watching brief was undertaken on groundbreaking works during construction of the Crossaig North 275/132 kV substation.

Plate 6.1: Cultural Heritage Assets (taken from Figure 7-1: Crossaig North Substation Cultural Heritage Receptors of the North Argyll 275 kV Upgrade: Crossaig North Substation EA 2023)



6.4 Potential Impacts and Mitigation

- 6.4.1 There would be no direct or indirect (setting) impacts to any designated assets as a result of the construction or operation of the Proposed Development.
- 6.4.2 As stated in the 2023 EA for the Crossaig North 275/132 kV substation, the general ground conditions of the area are considered to have low potential for the survival of buried archaeological remains. While there remains the potential for unknown buried archaeology, given the ground within the footprint of the Proposed Development has previously been disturbed / developed, it is considered unlikely that groundbreaking activities during construction of the Proposed Development would disturb or destroy any as-yet unrecorded remains. Nevertheless, appropriate measures will be put in place, that would form part of the final site-specific CEMP, to safeguard any archaeological features exposed during intrusive groundbreaking activities.

6.5 Summary

- 6.5.1 There would be no direct or indirect (setting) impact to any designated heritage sites, or direct impacts on known non-designated heritage assets, as a result of the construction or operation of the Proposed Development. The potential for unknown buried archaeology remains and appropriate measures will be put in place as part of the site-specific CEMP, to safeguard any archaeological features exposed during intrusive groundbreaking activities.

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Appendices

There are no appendices associated with this Chapter

Figures

There are no figures associated with this Chapter

7. SCHEDULE OF MITIGATION

7.1 Introduction

7.1.1 The purpose of this Chapter is to provide a summary of mitigation measures proposed throughout this Environmental Appraisal (EA), to minimise or offset the potential effects of the Proposed Development on the receiving environment.

7.2 Summary of Measures

7.2.1 **Table 7.1: Schedule of Mitigation Measures** provides a summary of those mitigation measures identified throughout the EA related to the Proposed Development. Mitigation measures specific to the permitted development elements (i.e. UGC and temporary construction compound) are outlined within **Annex A of Appendix 1.1: Permitted Development Works Appraisal**, where relevant.

Table 7.1: Schedule of Mitigation Measures

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
General	Construction Traffic Management Plan	G1	It is expected that a Construction Traffic Management Plan (CTMP) would be produced by the Principal Contractor to manage traffic during the construction period.	Chapter 2, paragraph 2.4.3	Contractor / SSEN Transmission
	Construction Traffic Estimator	G2	There will be a requirement for the Principal Contractor to provide a site-specific Construction Traffic Estimator on completion of detailed design, and prior to construction of the Proposed Development.	Chapter 2, paragraph 2.4.3	Contractor
	Compensatory Planting	G3	The Proposed Development would result in the direct permeant loss of 0.41 hectares (ha) of woodland). The Applicant is committed to making arrangement to plant off-site the equivalent area of woodland lost as compensatory planting, meeting the Scottish Government's Control of Woodland Removal (CoWRP) objective of no net loss of woodland. Compensatory planting to be undertaken will comply with UK Forestry Standard (UKFS) and associated guidelines which may apply.	Chapter 2, paragraph 2.6.1, Appendix 2.2: Woodland Report	Contractor / SSEN Transmission
	Timber Removal	G4	Any timber removed that is commercially viable would likely be sold and the remaining forest material would be dealt with in a way that delivers the best practicable environmental outcome and is compliant with waste regulations.	Chapter 2, paragraph 2.6.2, Appendix 2.2: Woodland Report	Contractor / SSEN Transmission
	Working Hours	G5	Construction activities would in general be undertaken during daytime periods only. Working hours are anticipated between approximately 07:00 to 19:00 on weekdays, 07:00 to 18:00 on Saturdays, and for short periods (for non-construction work) on Sundays 08:00 to 13:00. Working hours would be confirmed by the Principal Contractor and agreed with Argyll and Bute Council.	Chapter 2, paragraph 2.8.2	Contractor / SSEN Transmission

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
	Best Practice Construction Measures, GEMPs and SPPs	G6	All works would be carried out in accordance with industry best practice construction measures, guidance, and legislation, together with the procedures set out within the Applicant's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) that have been developed by the Applicant.	Chapter 2, paragraph 2.9.1 Chapter 3, paragraph 3.7.2 Chapter 4, paragraph 4.7.2 Appendix 2.3: SSEN Transmission's GEMPs Appendix 2.4: SSEN Transmission's SSPs	Contractor / SSEN Transmission
	Construction Environmental Management Plan (CEMP)	G7	A contractual management requirement of the Principal Contractor would be the development and implementation of a Construction Environmental Management Plan (CEMP). This document would detail how the Principal Contractor would manage the site in accordance with all commitments and mitigation detailed in the EA, statutory consents and authorisations, and industry best practise and guidance. The CEMP would also reference the Applicant's GEMPs and SPPs. The implementation of the CEMP would be managed on site by a suitably qualified and experienced Environmental Clerk of Works (EnvCoW), with support from other environmental professionals as required.	Chapter 2, paragraph 2.9.2 – 2.9.3 Chapter 3, paragraph 3.7.2 Chapter 4, paragraph 4.7.3 to 4.7.7	Contractor / EnvCoW
	General Reinstatement	G8	Reinstatement works are generally undertaken during construction (and immediate post-construction phase) and aim to address any areas of ground disturbance and changes to the landscape as part of the construction works. This would form part of the contract obligations for the Contractor.	Chapter 2, paragraph 2.10.1	Contractor

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
	Reinstatement of Temporary Access Track	G9	Reinstatement would involve replacement of subsoil, then topsoil, grading and installation of drainage as required with turves replaced vegetation side up. Where there are insufficient turves, the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise.	Chapter 2, paragraph 2.10.4	Contractor
	Reinstatement of Work Areas	G10	<p>Soil would be stored within the working area for each element during construction. Subsoils and topsoil removed to enable the construction of the foundations, or excavation of trenches, would be temporarily stockpiled in separate bunds within the working area or corridor, with stripped turves stored on top of the bunds.</p> <p>Reinstatement would involve replacement of subsoil, then topsoil with turves replaced vegetation side up. Where there are insufficient turves, the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise.</p> <p>A soils management plan would be prepared as part of the final CEMP, which will outline the required mitigation measures regarding the handling and safeguarding of soils (see GHH1 below).</p>	Chapter 2, paragraph 2.10.5 to 2.10.7 Chapter 4, paragraph 4.7.9	Contractor
	Reinstatement of Temporary Construction Compound	G11	At the end of construction of the Proposed Development all materials, buildings, and temporary compounds would be removed, and the temporary construction compound / laydown area would be reinstated and revegetated in accordance with the approved North Crossaig 275 / 132 kV Substation Landscape Mitigation Plan (ERM, 2024) (see Appendix 2.5).	Chapter 2, paragraph 2.10.8, Appendix 2.5: Crossaig North 275/132 kV Substation - Landscape	Contractor

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
				Mitigation Plan (ERM, 2024)	
	Landscape and Biodiversity Enhancement	G12	Landscape mitigation measures are proposed to provide the reinstatement of areas disturbed, provide landscape assimilation and to improve biodiversity (as shown on Figure 2.2: Landscape Mitigation Proposals).	Chapter 2, paragraph 2.11.1, Chapter 3, paragraph 3.9.3 Figure 2.2: Landscape Mitigation Proposals	Contractor
Terrestrial Ecology	Timing of Works and Micrositing of Infrastructure	E1	The timing of installation, and careful siting of permanent and temporary structures at detailed design stage, should be considered to avoid or minimise interaction with sensitive receptors.	Chapter 3, paragraph 3.7.2	Contractor
	Ecological Clerk of Works (ECoW)	E2	Employment of an ECoW to provide advice, guidance and monitoring during pre-construction and construction stages of work.	Chapter 3, paragraph 3.7.2	Contractor / ECoW
	Pre-construction Survey	E3	A pre-construction walkover survey undertaken by a suitably qualified ECoW to identify any changes in habitat use by protected species. Where protected species are identified, the relevant Species Protection Plans (SPPs), contained within the CEMP, will be implemented during construction (see G6 above).	Chapter 3, paragraph 3.8.1 Appendix 2.4: SSEN Transmission's SSPs	Contractor / ECoW
	Lighting	E4	Any newly installed lights, during the construction phase of the Proposed Development, should be designed to be 'wildlife friendly' following a sensitive lighting strategy following recommendations within the 'Bats and Artificial Lighting at Night'	Chapter 3, paragraph 3.8.2	Contractor

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
			UK guidance ¹ . Where lighting is required, mitigation options include: <ul style="list-style-type: none"> • Temporary lighting utilised during the construction phase should not illuminate bat commuting, foraging, and roosting habitats. • Only luminaires with an upward light ratio of 0% will be used, and low-level bollard lighting will be used where feasible to retain darkness above the luminaire. • All luminaires will lack UV elements and will be warm-white coloured (ideally <2700 Kelvin) to reduce blue-light components. • LED luminaires will be used due to sharp cut-off, lower intensity, good colour retention, and dimming capabilities. • Where security lighting is installed, it must be motion-activated to allow periods of darkness surrounding the development. If possible, motion sensors should be designed not to be easily set-off by nocturnal species. • Lights will not be directed at the project footprint boundary vegetation. • Lights should be fitted with hoods, baffles, or louvres to reduce back-spill. 		
	Ornithological Protection Measures	E5	If vegetation removal works are to be undertaken during the nesting bird season (March to August inclusive), then a pre-works nesting bird check should be undertaken by a qualified ecologist.	Chapter 3, paragraph 3.8.3	Contractor / Qualified Ecologist
		E6	If a nesting bird is found, then an exclusion buffer zone (the size of which is species-dependent) will be erected around the nest, and no works shall proceed within this zone until the fledgelings	Chapter 3, paragraph 3.8.4	Contractor / Qualified Ecologist

¹ Bat Conservation Trust (2023). Bats and Artificial Lighting at Night [Online] Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
			have left the nests and following a final inspection by a qualified ecologist.		
Geology, Hydrology and Hydrogeology	Soils Management Plan	GHH1	A soils management plan, which will outline the required mitigation measures regarding the handling and safeguarding of soils would be prepared as part of the final CEMP.	Chapter 4, paragraphs 4.7.8, 4.7.9	Contractor / EnvCoW
	Pollution Prevention	GHH2	<p>Good practice measures in relation to pollution prevention would include the following:</p> <ul style="list-style-type: none"> • refuelling would take place at least 50 m from watercourses; • foul water generated on-site would be managed in accordance with Guidance for Pollution Prevention (GPP) 04; • areas would be designated for production of concrete or washout of vehicles which are a minimum distance of 50 m from a watercourse; • washout water would also be stored in a washout area before being treated and disposed of, or re-used in concrete production; • if any water is contaminated with silt or chemicals, runoff would not enter a watercourse directly or indirectly prior to treatment; • water would be prevented as far as possible, from entering excavations such as trenches and foundations; • procedures would be adhered to for storage of fuels and other potentially contaminative materials in line with the EASR, to minimise the potential for accidental spillage; and • a plan for dealing with spillage incidents would be designed prior to construction, and this would be adhered to should any incident occur, reducing the 	Chapter 4, paragraph 4.7.10	Contractor / EnvCoW

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
			effect as far as practicable. This would be included in the updated CEMP for the Proposed Development.		
	Erosion and Sedimentation	GHH3	<p>Good practice measures for the management of erosion and sedimentation would include the following:</p> <ul style="list-style-type: none"> • all stockpiled materials would be located out with a 50 m buffer from watercourses; • water would be prevented as far as possible, from entering excavations such as trenches and foundations through the use of appropriate cut-off drainage; • where the above is not possible, water would pass through silt/sediment traps to remove silt prior to discharge into the surrounding drainage system; • clean and dirty water on-site would be separated, and dirty water would be filtered before entering the water environment; • silt fences would be deployed as required to reduce sediment transport; • the amount of ground exposed, and time period during which it is exposed, would be kept to a minimum; • silt/sediment traps, single size aggregate, geotextiles or straw bales would be used to filter any coarse material and prevent increased levels of sediment. Further to this, activities involving the movement or use of fine sediment would avoid periods of heavy rainfall where possible; and • the EnvCoW and the Principal Contractor would carry out regular visual inspections of watercourses to check for suspended solids in watercourses downstream of work areas. 	Chapter 4 paragraph 4.7.12	Contractor / EnvCoW

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
	Sustainable Drainage Systems (SuDS)	GHH4	SuDS will be incorporated as part of the Proposed Development and included as part of the detailed drainage design for the Proposed Development.	Chapter 4, paragraph 4.7.13 Appendix 4.1: Catchment Analysis	Contractor
	Concrete Pouring	GHH5	<p>In relation to works involving concrete batching, transport and pouring, the following mitigation would be adopted:</p> <ul style="list-style-type: none"> • where concrete transfers are required, measures would be adopted at the point of concrete transfer to prevent accidental spillage of liquid concrete, and no transfers would be undertaken in proximity to watercourses or areas of standing water; and • washout water would also be stored in a washout area before being treated and disposed of or re-used in concrete production. <p>As part of the proposed investigation works, the ground conditions would be assessed to inform the concrete design which will be used to establish the Proposed Development in accordance with industry good practice. This would ensure that the concrete specification used is appropriate for site specific ground conditions and minimise the potential for leaching of concrete to the surrounding soil and water environment. If necessary, the excavations would incorporate a barrier (such as shuttering) to prevent the movement of potential pollutants to adjacent soils, and the water environment. These methods will be specified in the CEMP and agreed with Argyll and Bute Council and SEPA prior to construction.</p>	Chapter 4, paragraph 4.7.15 to 4.7.16	Contractor / EnvCoW
	Forestry Felling	GHH6	Forestry felling works would be undertaken in accordance with industry good practice which will be outlined in the final CEMP.	Chapter 4, paragraph 4.7.19	Contractor

Topic	Issue	Mitigation Reference	Mitigation / Monitoring Measure	Location	Responsibility
Cultural Heritage	Good Practice Measures	CH1	Appropriate measures would be put in place, that would form part of the final site-specific CEMP, to safeguard any archaeological features exposed during intrusive groundbreaking activities.	Chapter 6, paragraph 6.4.2	Contractor