High Constellation Wind Farm 132 kV UGC Connection

Voluntary Environmental Appraisal Report

March 2026

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Scottish & Southern Electricity Networks
TRANSMISSION

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QUALITY MANAGEMENT

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CONTENTS

GLOSSARY

Term/Abbreviation	Expanded Term/Definition
ABC	Argyll and Bute Council
ACoW	Archaeological Clerk of Works
APQ	Area of Panoramic Quality
Attenuation	The reduction of the impact or effect of something. E.g, Noise attenuation comprises the reduction in level of a sound between the source and a receiver due to any combination of effects including distance, atmospheric absorption, acoustic screening, the presence of a building façade, etc.
Background Noise	The noise level rarely fallen below in any given location over any given time period, often classed according to day time, evening or night time periods. The LA90 indices is often used to represent the background noise level.
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
BOCC	Birds of Conservation Concern
CEMP	Construction Environmental Management Plan
CTMP	Construction Traffic Management Plan
Cumulative Effects	Effects arising from the additional or combination of developments which are in construction, have been consented or are reasonably foreseeable. May be experienced in combination, concurrently or sequentially.
dB	Decibel. A unit of level derived from the logarithm of the ratio between a value and a reference value typically used to describe acoustic quantities. The scale used is the decibel (dB) scale which extends from 0 to 140 decibels corresponding to the intensity of the sound level.
dB(A)	A-weighted decibel. A frequency weighting applied to noise levels to mimic the human ear's response to sound.
Designated Landscape	Areas of landscape identified as being of importance at international, national or local levels, either defined by statute or identified in development plans or other documents.
EA	Environmental Appraisal
ECoW	Ecological Clerk of Works
EIA	Environmental Impact Assessment
EIA Report	Environmental Impact Assessment Report
Electricity Work EIA Regulations	Electricity Work (Environmental Impact Assessment) (Scotland) Regulations 2017
GIS	Gas Insulated Switchgear
GIS mapping	Geographical Information System
GLVIA	Guidelines for Landscape and Visual Impact Assessment, Third Edition, published jointly by the Landscape Institute and Institute of Sustainability and Environmental Professionals.
GSP	Grid Supply Point
GWDTE	Groundwater Dependent Terrestrial Ecosystem
Ha	Hectare

Term/Abbreviation	Expanded Term/Definition
HER	Historic Environmental Record
Heritage Asset	Those parts of the historic environment that have significance and are worthy of consideration in planning matters are referred to as heritage assets. Heritage assets include standing, buried or submerged remains, buildings, parks and gardens and areas, sites and landscapes including designated sites and those identified by the local planning authority. World Heritage Sites, Scheduled Monuments, Listed Buildings, protected wreck sites, Inventory Gardens and Designed Landscapes, Inventory Battlefields and Conservation Areas are all heritage assets
HES	Historic Environment Scotland
HGV	Heavy Goods Vehicle
Hz	Hertz. Standard unit of measurement used for measuring frequency. Sound frequency refers to how quickly the air vibrates, or how close the sound waves are to each other (in cycles per second, or Hertz (Hz)).
IBA	Important Bird Area
ISEP	Institute of Sustainability and Environmental Professionals
km	Kilometre
kV	Kilovolt
Landscape	Human perception of the land conditioned by knowledge and identity with a place
Landscape Character Type	A landscape type will have broadly similar patterns of geology, landform, soils, vegetation land use, settlement and field pattern discernible in maps and field survey records
Landscape Sensitivity (to a specific type of change)	The extent to which a landscape can accept change of a particular type and scale.
LCA	Landscape Character Assessment
LCT	Landscape Character Type
LGV	Light Goods Vehicles
m	Metre
Magnitude (of change)	A term that combines judgements about the size and scale of the effect, the extent of the area over which occurs, whether it is reversible or irreversible and whether it is short or long term in duration.
Methodology	The specific approach and techniques used for a given study.
Mitigation Measures	Measures including any process, activity or design process to avoid, reduce, remedy or compensate for adverse impacts of a development.
Mph	Miles per hour
MW	Megawatt
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standard
NGR	National Grid Reference
NHZ	Natural Heritage Zone
NS	NatureScot
OC	Operational Corridor

Term/Abbreviation	Expanded Term/Definition
RAMSAR Site	Wetlands of International Importance designated under the Ramsar Convention.
Residual Effects	Effect of development after mitigation/embedded mitigation or design proposals are taken into account
SAC	Special Area of Conservation
SEPA	Scottish Environment Protection Agency
Significance	A measure of importance or gravity of the environmental effect defined by significance criteria specific to the environmental topic
SM	Scheduled Monument
SPA	Special Protection Area
SSEN Transmission	Scottish and Southern Electricity Networks Transmission plc
SSSI	Site of Special Scientific Interest
SUDS	Sustainable Urban Drainage System
Town and Country Planning EIA Regulations	Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017
UGC	Underground Cable
Visual Amenity	A particular composition of landscape elements that contribute to a view, or views.
Visualisation	A computer simulation, photomontage or other techniques illustrating the predicted appearance of a development from a known location
VP	View Point
WLA	Wild Land Area

EXECUTIVE SUMMARY

This report has been prepared for Scottish & Southern Electricity Networks (SSEN) Transmission and provides the environmental appraisal of the construction and operation of a 3.9 km proposed Underground Cable (UGC) (hereafter referred to as the Proposed Development). SSEN Transmission are preparing to install a new single circuit 132 kV UGC transmission link from the existing Crossaig Substation to the proposed High Constellation Wind Farm substation.

Installation and operation of the cable is considered to fall under SSEN Transmission's permitted development rights as statutory undertaker under the Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2014, and SSEN Transmission has a statutory duty under Schedule 9 of the Electricity Act 1989 to connect the proposed High Constellation development to the transmission network by the contracted connection date. However, in acknowledgement of the potential that the Proposed Development carries for affecting the environment, this report constitutes a Voluntary Environmental Appraisal (VEA) and has been prepared to identify potential effects on the environment and mitigation requirements. While this VEA is not a formal Environmental Impact Assessment (EIA) in accordance with EIA Regulations, it does follow a similar approach. It identifies the sensitivity of the receiving environment, assessing the magnitude of change or effect that the Proposed Development may have and the subsequent significance of the effect, or change, on the receiving environment.

Proposed mitigation comprises a mixture of embedded mitigation and construction stage interventions. This will primarily be achieved via implementation of SSEN's standard management plans, industry best practice and bespoke recommendations based on professional judgement. The recommendations in this report will be collated into a Construction Environmental Management Plan (CEMP) by the Principal Contractor. Full details of mitigation recommendations are present in each technical chapter, Chapters 4-7, and summarised in the Mitigation Proposals chapter, Chapter 8.

1. INTRODUCTION

1.1.1 This report has been prepared on behalf of Scottish and Southern Electricity Networks (SSEN) Transmission and describes the Voluntary Environmental Appraisal (VEA) of a proposed single circuit 132 kV underground cable (UGC) between the existing Crossaig Substation to the proposed High Constellation Wind Farm substation. This underground cable is hereafter referred to as the "Proposed Development".

1.1 Background to the Project

1.1.2 SSEN Transmission has a duty under Section 9 of the Electricity Act 1989 to '*develop and maintain an efficient, coordinated and economical system of electricity transmission and to facilitate competition in the generation and supply of electricity.*' SSEN Transmission also has obligations to offer non-discriminatory terms for connection to the transmission system, both for new generation and for new sources of electricity demand.

1.1.3 The volume of contracted generation in the Argyll and Kintyre area is driving the need for further reinforcement to the electricity transmission network in the area. High Constellation Wind Farm is a proposed 50 megawatts (MW) development comprising of 10 turbines and associated infrastructure on the Kintyre peninsula, approximately 20 kilometres (km) south of Tarbet and 30 km north of Campbeltown. SSEN Transmission proposes to construct a new single circuit 132 kV UGC transmission link from the proposed High Constellation substation to the existing Crossaig Substation.

1.1.4 The proposed UGC meets SSEN Transmission's commitment and licence obligation, to facilitate the connection of renewables generation to the grid through an economical, efficient, and coordinated approach to transmission reinforcement.

1.2 Consent Pathway

1.2.1 Installation and operation of the Proposed Development is considered to be Permitted Development (PD) under the Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2014 and therefore does not require planning permission.

1.2.2 The location of the Proposed Development is shown in **Appendix A, Figure 1.1**.

1.3 Structure of the Environmental Appraisal

1.3.1 The VEA is structured as follows:

- Section 1 – Introduction;
- Section 2 – Description of the Proposed Development;
- Section 3 – Environmental appraisal methodology;
- Sections 4 to 7 – Appraisal of environmental effects; and
- Section 8 – Mitigation proposals.

1.3.2 Supporting information is provided in the following appendices:

- Appendix A - Figure 1.1: Proposed Development Alignment;
- Appendix B - Figure 3.1: Environmental Constraints;
- Appendix C - Ecology and Ornithology: Figures 4.1 – 4.3;
- Appendix D - Geology and Soils: Figures 5.1 – 5.4;
- Appendix E - Hydrology and Hydrogeology: Figures 6.1 – 6.9;
- Appendix F - Cultural Heritage: Figures 7.1 – 7.3;

- Appendix G - Protected Species Survey Report;
- Appendix H - Habitat Survey Report;
- Appendix I - Aquatic Species Survey Report;
- Appendix J - Peatland Condition Assessment Report;
- Appendix K - BNG Report;
- Appendix L - UXO Desk Study and Risk Assessment;
- Appendix M - Peat Survey results; and
- Appendix N - Hydrology Survey Report.

1.4 Assessment of Environmental Effects

1.4.1 The environmental appraisal of the Proposed Development can be found in **Chapters 4 – 7,** and the methodology for this found in **Chapter 3**. Detailed reports and results of surveys undertaken are provided within the relevant appendices to this report.

2. DESCRIPTION OF THE PROPOSED DEVELOPMENT

2.1 Location and Description of the UGC Alignment

2.1.1 The alignment for the Proposed Development is illustrated in **Appendix A, Figure 1.1**. The UGC would provide a single circuit 3.9 km long 132 kV link in a broadly west- east direction between the existing Crossaig substation and the proposed High Constellation substation, both within Argyll. The Proposed Development is set within an upland rural setting comprising commercial forestry plantations, areas of felled plantation, and moorland. There are no settlements / properties within the Proposed Development area, with the closest residences being at Cour and Crossaig, approximately 1.1 km and 0.78 km from the Proposed Development at closest approach respectively.

2.1.2 The alignment of the Proposed Development starts at Crossaig Substation heading south for approximately 360 m before heading southwest and then west-southwest for approximately 850 m, passing through an area of commercial plantation before reaching an area of open ground. It then bears further southwest for another c.1.05 km before passing southwest, then northwest, for c.1.5 km through another area of commercial plantation before reaching the proposed wind farm substation. This last section of the alignment partially follows an existing hardstanding forestry track.

2.1.3 There are various minor watercourses, predominately minor surface water drains, present across the Site. These are connected with the Crossaig Burn, Allt na Buaile Salaich, Allt a' Bhealaich and Allt a' Ghobhainn watercourses which then discharge into the Kilbrannan Sound tidal waters to the east of the Site. The Proposed Development alignment crosses two of these; the Allt na Buaile Salaich and the Allt a' Bhealaich, at NGR NR 82371 49682 and NR 80625 49168 respectively.

2.1.4 Cable will be laid using cable trenching, where sections of trench are opened, cable laid inside PVC ducts and then backfilled in a rolling fashion, avoiding the need to open long lengths of trench at once. The proposed trench size would be approximately 0.55 m wide. Where the alignment crosses a watercourse, the cable trenching method will still be used, although the watercourse will first be temporarily halted using cofferdams and overpumping where necessary, then the flow resumed once the trenching is complete. This is a standard SSEN installation practice.

2.1.5 The working corridor for the cable installation will be 25 m wide where present within areas of forestry, and 40 m wide outside of forestry areas. For the purposes of this assessment, particularly habitat loss and Biodiversity Net Gain (BNG) assessment calculations, a precautionary, worst-case approach has been applied, and all habitats are assumed to be lost within this working corridor due to clearance works for enabling construction activities, including topsoil removal.

2.1.6 A construction compound will be required for the duration of the construction phase, and will likely be in the order of 100 m x 50 m, an approximate standard size; however, as the Principal Contractor has yet to be appointed, the location of this compound is yet to be determined. Therefore, this VEA does not account for the presence of the construction compound as part of the assessment but does provide high-level recommendations as to which areas / receptors should be avoided to best prevent impacts from arising.

2.2 Proposed Development Components

2.2.1 Key components of the Proposed Development are summarised as follows:

- Temporary access tracks;
- Permanent access tracks for maintenance;
- 132 kV cable;
- Joint Bays;
- Cable joints;

- Watercourse crossings;
- HDD pads;
- Coffer dams; and
- Ancillary supporting infrastructure, including construction compounds.

2.3 Construction Programme and Hours of Working

2.3.1 The indicative programme is to start construction in March 2026, with completion by September 2027.

2.3.2 Subject to agreement with Argyll and Bute Council, proposed construction working hours are seven days a week between 08:00 to 20:00 Monday – Friday, 08:00 to 18:00 Saturday (no loud noise before 09:00) and 09:00 to 18:00 Sunday (no loud noise before 10:00).

2.3.3 All deliveries will take place on weekdays during agreed working hours only. Detailed programming of the works will be the responsibility of the appointed contractor in agreement with SSEN Transmission and Argyll and Bute Council.

2.4 Construction Activities

Key tasks during construction of the Proposed Development involve:

- Enabling works, to be confirmed by the appointed contractor, including:
    - Tree felling within a 25 m wide corridor, with associated management felling where required to mitigate windblow risk, subject to landowner and statutory approvals;
    - Extension of the felling corridor up to 50 m in areas of mature woodland exhibiting existing windblow, where necessary to ensure operational safety, associated management felling where required to mitigate future windblow risk subject to landowner and statutory approvals;
    - Clearance of a 40 m wide corridor (25 m within areas of forestry), including topsoil removal;
    - Establishment of laydown areas and welfare facilities; and
    - Installation of track solutions and appropriate drainage.
- Delivery of materials and personnel to site;
- Excavation of trench in which to lay the cable;
- Excavation and construction of cable ducts, a coffer dam, joint bays and cable joints;
- Installation of electrical equipment;
- Inspections and commissioning; and
- Removal of temporary works and site reinstatement.

2.5 Site Traffic and Access

2.5.1 Construction of the Proposed Development will give rise to regular numbers of staff transport movements, with work crews travelling to work site areas. Detailed access proposals will be developed by the Principal Contractor once appointed.

2.5.2 Where possible, existing access tracks will be used and upgraded as required. New access tracks are required, see (**Appendix A, Figure 1.1**) and where there is a justified long-term requirement they will be left in place. New access tracks (permanent or temporary) would generally be constructed using a geotextile, with approximately 200 mm of crushed and compacted stone laid on top. Tracks may be floated over areas of peat, or may use cut and fill approaches, subject to ground conditions and gradients. Tracks will be 3.4 m wide as standard.

2.5.3 Post site establishment, site traffic will be limited to workers accessing the site and the occasional movement of materials to and from site. There will be some movement of heavy plant and machinery at the start and end of the

project, and ad hoc throughout the construction phase. Access will be taken using the B842 and existing access tracks where possible, though additional temporary access tracks may be required.

2.6 Clearance

2.6.1 The construction of the Proposed Development will require removal of a 25 m strip of commercial forestry at various locations along the Proposed Development's alignment. This would be undertaken in consultation with the appropriate stakeholders. Some areas of management felling may be required to prevent windblow, subject to landowner approval.

2.6.2 It is anticipated that, after felling, any timber removed that is commercially viable would 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.

2.6.3 An operational corridor would be required to enable the safe operation and maintenance of the UGC. This will vary depending on the type of woodland (based on species present) in proximity to the UGC.

2.7 Drainage

2.7.1 All drainage will be managed in-line with industry best practice with exact requirements dependent on the final design. The Principal Contractor will be responsible for the design and installation of the drainage for the Proposed Development. It should be noted that the management of site waste-water will be of particular importance in and around the watercourses identified on the site by the hydrological walkover survey (see **Appendix N**).

2.8 Temporary Construction Compound and Laydown Area

2.8.1 It is currently anticipated that a single main construction compound will be required, the location of which will be confirmed by the Principal Contractor. The compound is anticipated to be in the order of 100 m x 50 m an approximate standard size. As the location of the compound is not known at this stage it is not accounted for in this assessment, but recommendations are made as to where the compound should avoid being sited to minimize the risk of impacts arising.

2.9 Construction Environmental Management

2.9.1 A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the Principal Contractor for the works following their appointment. This document will detail how the Principal Contractor will manage the site in accordance with all commitments and mitigation detailed in this VEA, statutory consents and authorisations, industry best practice and SSEN's own guidance. The CEMP will contain an embedded Soil Management Plan which the contractor will be responsible for authoring. In addition, all relevant SSEN General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) will be adhered to. The contractor will also be responsible for the production of a Construction Traffic Management Plan which will be agreed with relevant stakeholders.

2.10 Reinstatement

2.10.1 Following commissioning of the Proposed Development, all construction areas will be made good with all temporary working areas and materials removed and soils appropriately reinstated. Reinstatement will form part of the contract obligations for the Principal Contractor. The reinstatement process will be informed by a Biodiversity Net Gain (BNG) assessment undertaken by ERM for SSEN Transmission, which will identify the appropriate locations and vegetation planting to achieve a net gain in biodiversity over the pre- works baseline. The BNG assessment is included in **Appendix K**.

2.10.2 Reinstatement principles will be in accordance with SSEN Transmission's GEMPs and best practice measures, as well as mitigation proposals recommended in this VEA.

2.11 Construction Employment

2.11.1 The Applicant takes community responsibilities seriously. The delivery of a major programme of capital investment provides the opportunity to maximise support of local communities.

2.11.2 Employment of construction staff will be the responsibility of the Principal Contractor, however, the Applicant encourages the Principal Contractor to make use of suitable labour and resources, where appropriate, from areas local to the Proposed Development.

2.12 Operational Maintenance

2.12.1 Once snagging is complete, in order to maintain the infrastructure there will be infrequent inspections on foot at approximate five year intervals after a snagging period and immediate post construction inspections. These inspections would involve a single vehicle accessing the area and would be non-intrusive.

2.13 Decommissioning

2.13.1 The Proposed Development has a designed lifespan of 40 years, after which it will be decommissioned. Decommissioning is anticipated to follow essentially the same processes as construction, albeit in reverse to remove the cable and reinstate the former location, and as such no separate assessment of decommissioning is presented.

3. ENVIRONMENTAL APPRAISAL METHODOLOGY

1.2 Environmental Appraisal Methodology

3.1.1 SSEN Transmission recognise that the Proposed Development has the potential for effects on the environment. Known environmental constraints are depicted in **Appendix B, Figure 3.1**. As such, a number of environmental studies have been carried out, the results of which are detailed in this VEA.

3.1.2 This VEA considers the potential for environmental effects associated with the construction and operation of the proposed UGC and is intended to form the basis of the Construction Environmental Management Plan.

3.1.3 Whilst not a formal Environmental Impact Assessment (EIA), in accordance with EIA Regulations the appraisal has followed a similar approach. It identifies the sensitivity of the receiving environment, assessing the magnitude of change or effect that the Proposed Development may have and the subsequent significance of the effect, or change, on the receiving environment. An illustration of the assessment matrix is shown in **Table 3.1**.

3.1.4 Sensitivity may be physical, biological, cultural or human and refers to the capacity for change. Where the resource is physical (for example, a water body) its quality, sensitivity to change and importance (on a local, national and international scale) are considered. Where the resource / receptor is biological or cultural (for example, a bird population), its importance (for example, its local, regional, national or international importance) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community or wider societal group is considered. A receptor's sensitivity may also be a reflection of the relative value or scarcity of that particular receptor type. For example, a unique cultural heritage asset is likely to be considered more sensitive to change than a relatively ubiquitous asset type. Receptor sensitivity is defined as:

- high;
- medium;
- low; and,
- negligible.

3.1.5 Magnitude of impact describes the degree of change that a given impact is likely to impart upon a receptor. For example, direct physical damage to a cultural heritage asset is likely to have a higher magnitude of impact than the proposed development being distantly visible in the same viewshed. The magnitude of an impact is considered to be a function of its extent, duration, scale and frequency.

3.1.6 Where a receptor is anticipated to be affected by the Proposed Development, the scope of the anticipated impact is considered and it is assigned a magnitude which are categorised as:

- high;
- medium;
- low; and
- negligible.

3.1.7 Significance of effect is determined through the consideration of the relative sensitivity of a receptor and the magnitude of a predicted impact upon that receptor. Whilst different technical disciplines may have different criteria for the sensitivity of receptor or the relative importance of magnitude criteria, which will be set out in the respective chapters where applicable, they will follow the assessment process set out in this section and comply with the matrix assessment methodology highlighted in **Table 3.1**.

Table 3.1: Environmental Appraisal Matrix

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

4. ECOLOGY AND ORNITHOLOGY

4.1 Introduction

4.1.1 This Section provides baseline ecological information and assesses the potential impacts and likely significant effects of the construction and operation of the Proposed Development on ecology and ornithology, including designated sites, terrestrial and freshwater habitats, and protected and notable species. The assessment is based on the best practice Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland developed by the Chartered Institute for Ecology and Environmental Management (CIEEM) (2018 rev 2024)[1].

4.1.2 The specific objectives of this chapter are to:

- Describe the scope of assessment and methodology used in completing the impact assessment;
- Summarise the ecological baseline identified through desk-based study and field surveys;
- Evaluate the importance and value of existing ecological features and determine those that need to be considered further within the impact assessment and those that can be scoped out, as following preliminary analysis it is clear there would be no significant effect;
- Identify and characterise potential impacts and their predicted effects on relevant ecological features;
- Assess the significance of predicted effects;
- Consider embedded mitigation measures and whether these remove all likely significant impacts on ecological features;
- Describe the further additional mitigation measures proposed to address any predicted significant effects;
- Assess the significance of residual effects remaining following the implementation of mitigation measures; and
- Consider compensation and / or enhancement to offset significant effects and / or deliver a net benefit.

4.1.3 The Proposed Development has been selected by an iterative design process. This process applied the mitigation hierarchy whereby impacts on sensitive receptors, including statutory designated sites, were avoided or minimised. Mitigation for the Proposed Development is split into categories: mitigation by design, embedded mitigation, and additional mitigation. Impacts are reported following the assumed implementation of the mitigation by design and embedded mitigation measures. Embedded mitigation measures are provided in SSEN Transmission's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs), which will inform a post-submission Construction Environmental Management Plan (CEMP). Additional mitigation is applied to reduce any residual significant impacts resulting from the Proposed Development.

4.1.4 To characterise the ecological baseline for this Section, a combination of desk-based study and field surveys have been used. Included within **Appendix G – K** are survey reports used to inform the baseline appraisal of ecological impacts. These reports are as follows:

Protected Species Survey Report (**Appendix G**);

Habitat Survey Report **(Appendix H**);

Aquatic Species Survey Report (**Appendix I**);

Preliminary Peat Condition Survey Report (**Appendix J**); and

Biodiversity Net Gain Assessment Report (**Appendix K**).

[1] CIEEM (2018) 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.

Study Area

4.1.5 The Proposed Development extends approximately 4 km southwest of the settlement of Crossaig, within the Argyll and Bute region of Scotland.

4.1.6 The Study Area encompasses the Proposed Development footprint plus a 2 km area within which to identify potential effects. The Study Area was extended to 10 km only when considering statutory designated sites with ornithological interests.

4.1.7 The extent of the ecological survey areas throughout the Proposed Development varies depending on survey and species-specific buffers as described in **Appendix H: Habitat Survey Report, Appendix I: Aquatic Species Survey Report** and **Appendix G: Protected Species Survey Report**.

Zone of Influence

4.1.8 The ZoI for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries. A ZoI has been identified over which impacts on sensitive ecological receptors have been considered. The ZoI varies based on the perceived impact pathways identified as detailed below:

- Hydrological connectivity (surface water) downstream is limited to 1 km, aligned with best practice measures outlined in **Chapter 6: Hydrology and Hydrogeology**;
- Groundwater connectivity is considered out to 250 m as this is the limit of extent to which Groundwater Dependent Terrestrial Ecosystems (GWDTEs) are considered to be impacted in line with SEPA guidance[2];
- Priority Peatland can be affected by changes in water levels adjacent to the direct effects of works, so the ZoI for Priority Petland is considered to be 10 m either side of the Proposed Development; and,
- Impacts associated with construction related emissions to air and noise will be controlled to avoid significant effects through standard measures, including SSEN's standard dust GEMP and the CEMP, and are therefore only considered within 30 m of work areas.

4.2 Methodology

Desk-Based Study

Designated Sites

4.2.1 NatureScot's SiteLink[3] was consulted to obtain information regarding the following:

- Statutory designated sites within 10 km of the Site (e.g., Ramsar sites, Special Protection Areas (SPA), Special Areas of Conservation (SAC), and Sites of Special Scientific Interest (SSSI);
- Non-statutory designated sites within 2 km of the Site such as Local Nature Conservation Sites (LNCS), and Scottish Wildlife Trust (SWT) Reserves.

Ancient Woodland and Priority Peatland

4.2.2 Scotland's Environment Map[4] was reviewed to identify any areas of woodland listed on the Ancient Woodland Inventory (AWI) (Scotland). Ancient woodland is defined as currently wooded land that has been continually wooded since at least 1750. It is not related to the age of the trees that are currently growing there – they do not have to be

[2] Due to the potential for excavation required for the Proposed Development to be greater than 1 m deep. SEPA (2014). *Land Use Planning System (LUPS) SEPA Guidance Note 31: Guidance on Assessing the Impacts of Windfarm Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*. SEPA, North Lanarkshire, Scotland. Available online [Accessed March 2025]: https://www.sepa.org.uk/media/143868/lupsgu31_planning_guidance_on_groundwater_abstractions.pdf

[3] NatureScot (2025) *SiteLink* [Online] Available at: SiteLink - Home (Accessed October 2025)

[4] Scotland's Environment Map (2025) [Online] Available at: Map | Scotland's environment web (Accessed October 2025)

ancient or elderly; it is the historical continuity of the woodland that makes the woodland ancient. The AWI (Scotland), holds information on the provisional location and extent of ancient woodland within Scotland, categorised as follows:

- **Ancient Woodland (1a and 2a)** – interpreted as semi-natural woodland from maps 1750 (1a) or 1860 (2a) and continuously wooded to the present day. If planted with non-native species during the 20th century they are referred to as Plantation on Ancient Woodland Sites (PAWS);
- **Long-established woodlands of plantation origin (LEPO) (1b and 2b)** – interpreted as plantation from maps of 1750 (1b) or 1860 (2b) and continuously wooded since. Many of these sites have developed semi-natural characteristics, especially the oldest stands, which may be as rich as ancient woodland; and
- **Other woodlands on Roy maps (3)** – Shown as unwooded on the 1st edition of the Ordnance Survey maps (produced circa 1850) but as woodland on the Roy maps (produced in circa 1750). Such sites have, at most, only a short break of continuity of woodland cover and may still retain features of ancient woodland.

4.2.3 The Carbon and Peatland 2016 Map[5] was consulted to identify areas of Class 1 and Class 2 nationally important carbon-rich soils, deep peat and priority peatland habitat within 2 km of the Site.

Protected Species (Terrestrial)

4.2.4 A data request was submitted to Argyll Biological Records Centre (ABERC) to obtain records of protected species (i.e., those afforded protection under Scottish, UK and / or European legislation) and priority species (i.e., those species considered as species of principal importance for biodiversity in Scotland as listed on the Scottish Biodiversity List (SBL) and Argyll and Bute Council Local Biodiversity Action Plan (LBAP)), within 2 km of the Site.

4.2.5 A search of the National Biodiversity Network (NBN) Atlas[6] for records available for commercial use (licence CC-BY-NC excluded[7]) was undertaken from a central point within the Site and extended to 2 km. The data search considered data from the last 20 years (i.e., from the year 2005 – 2025).

4.2.6 A search of the Saving Scotland's Red Squirrels website[8] sightings page was also completed. This identified any red squirrels recorded within the last calendar year (i.e., the year 2025) within approximately a 2 km radius.

4.2.7 A search of the Marten Map – National Pine Marten Monitoring Programme[9] was also completed. This identified any pine marten recorded within the last calendar year (i.e., the year 2025) within approximately a 2 km radius.

4.2.8 In addition to the above, Argyll and Bute Council's LBAP[10] was reviewed to understand the local priority species and habitats.

Protected Species (Aquatic)

4.2.9 The following data sources were reviewed to understand the freshwater ecological sensitivities within 2 km of the Proposed Development:

- Argyll and the Islands Strategic Fishery Management Plan – Phase 1 2009 -2015[11];
- Marine Scotland – National Marine Plan Interactive (NMPi)[12];

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[5] Carbon and peatland 2016 map [Online] Available at: Carbon and peatland 2016 map | Scotland's soils (Accessed October 2025)

[6] National Biodiversity Network Attas [Online] Available at: NBN Atlas - UK's largest collection of biodiversity information (Accessed October 2025)

[7] CC-BY-NC – is creative commons with attribution non-commercial, data under this licence cannot be used for commercial purposes, hence its exclusion in this sintance.

[8] Saving Scotland's Red Squirrels map [Online] Available at: Squirrel Sightings – Saving Scotland's Red Squirrels (Accessed October 2025)

[9] Marten Map – National Pine Marten Monitoring Programme [online] available at: Martens on the Move | National Pine Marten Monitoring…(Accessed November 2025

[10] Argyll and Bute Council (2024) *Biodiversity Action Plan 2010 – 2015* [Online] Available at: A&B BAP Draft (Accessed October 2025)

[11] Argyll and the Islands (2009) *Strategic Fishery Management Plan – Phase 1 2009 2015 Draft 1,1* [Online] Available at: Microsoft Word - Argyll Strategic Fishery Management Plan 2009-15 & Appendices - Final Draft (Accessed October 2025)

[12] Marine Scotland (2025) *National Marine Plan Interactive* [Online] Available at: Marine Scotland - National Marine Plan Interactive (Accessed October 2025)

- Salmon Rivers
- Obstacles to Fish Migration

- Review of Scottish Environment Protection Agency (SEPA) 'Obstacles to fish migration' map data[13];
- SEPA Classification Hub[14];
  - Water Framework Directive (WFD) Classification
- Joint Nature Conservation Committee (JNCC) Supporting documentation for the conservation status assessment for the species: S1029 – freshwater pearl mussel *Margaritifera margaritifera*[15]; and,
- JNCC freshwater pearl mussel *Margaritifera margaritifera* distribution[16].

Ornithology

4.2.10 The ornithology baseline and assessment were primarily informed by a desk-based review of existing information. A number of projects have been developed in the area of the Proposed Development over recent years, which provide information on the ornithological interests present. The habitats within the Proposed Development area are dominated by coniferous plantation woodland, which has limited ornithological value. NatureScot's survey guidance for power lines quotes the survey guidance for onshore windfarms, as both have a similar impact on forested areas from cables through the creation of a felled wayleave or operational corridor. This guidance states that surveys for woodland passerines in commercial conifer plantations are not required. Records of historically used breeding sites for raptors and divers, black grouse leks and habitually used winter goose roosts area available from EIAs of previous nearby developments or existing data sets (e.g. Argyl Raptor Study Group).

4.2.11 As part of the desk study, a review of the following documentation was undertaken:

- Crossaig North EIAR Chapter 4: Ecology and Ornithology;
- Crossaig North Substation Confidential Bird Annex;
- Environment Alignment Selection Study Report – LT266 Sheirdrim Wind Farm Connection Project: Bird Survey Methods Statement;
- High Constellation Wind Farm EIAR Chapter 8: Ornithology; and,
- High Constellation Wind Farm EIAR Technical Appendix 8.4: Confidential Ornithology Report.

4.2.12 Embedded mitigation measures, predominantly SSEN Transmission's Bird SPP, are designed to avoid impacts on breeding, and where appropriate, wintering birds and include surveys to confirm any changes in baseline conditions prior to the start of construction.

4.2.13 With the information available from the above sources, and with embedded and additional mitigation measures in place, the desk-based approach to assessment is considered to be sufficiently robust for this type of development.

Field Survey

Protected Species (Terrestrial)

4.2.14 The Ecology Survey Area (ESA) is the land within which protected species surveys were completed. Each species has a species-specific survey buffer, as detailed in **Appendix G: Protected Species Survey Report**, however, the ESA is defined by the largest survey buffer, which in this instance was the 200 m buffer employed for otter (*Lutra lutra*) and

[13] SEPA (2025) *Obstacles to fish migration – map*. [Online] Available at: Map | Scotland's environment web (Accessed October 2025)
[14] SEPA (2025) *Water Classification Hub*. [Online] Available at: Water Classification Hub (Accessed October 2025)
[15] JNCC (2025). *European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). Supporting documentation for the conservation status assessment for the species: S1029 - Freshwater pearl mussel (Margaritifera margaritifera)* [Online] Available at:
[16] JNCC (2025) *S1029 Freshwater pearl mussel (Margaritifera margaritifera)* [Online] Available at: Freshwater pearl mussel (Margaritifera margaritifera) - Special Areas of Conservation (Accessed October 2025)

water vole (*Arvicola amphibious*) surveys. Therefore, for the purposes of this assessment the ESA relates to the Proposed Development and a buffer of 200 m, as shown on **Figure 4.1: Ecology Survey Areas** in **Appendix C**.

4.2.15 Baseline surveys included the following:

- Bat Daytime Walkover (DBW) Survey[17];
- Badger (Meles meles) Survey[18],[19],[20];
- Red squirrel [21],[22];
- Pine marten [23],[24];
- Otter[25],[26],[27];
- Water vole[28],[29],[30];
- Wildcat [31],[32]; and,
- A walkover of the site to assess suitability for herpetofauna (reptiles and amphibians)[33],[34]

4.2.16 Information on specific survey methodologies applied as well as survey timings for each of the above surveys can be found in Appendix G: Protected Species Survey Report.

Habitats

4.2.17 A UK Habitat Classification (UK Hab) Survey was completed between 28 July 2025 and 31 July 2025. The survey involved walking the Site and a buffer of 250 m (The Habitat Survey Area (HSA)) and classifying habitats in accordance with the latest UK Hab guidelines[35]. Habitat condition was also captured to inform a Biodiversity Net Gain (BNG) metric assessment in accordance with SSEN Transmission's guidance[36].

[17] Collins, J. (ED.) (2023) *Bat Surveys for Professional Ecologists, Good Practice Guidelines (4th edition)*. The Bat Conservation trust, London.

[18] NatureScot (2024) *Standing advice for planning consultations – Badgers*. [Online] Available at: Standing advice for planning consultations - Badgers | NatureScot (Accessed October 2025)

[19] Scottish Badgers (2018) *Surveying for Badgers: Good Practice Guidelines (version 1)*. [Online] Available at: Surveying-for-Badgers-Good-Practice-Guidelines_V1-2020-2455979.pdf (Accessed October 2025).

[20] Harris, S, Cresswell P and Jefferies D (1989). *Surveying Badgers*. Mammal Society, Southampton.

[21] NatureScot (2022) *Standing advice for planning consultations – Red Squirrels* [Online] Available at: Standing advice for planning consultations - Red Squirrels | NatureScot (Accessed October 2025)

[22] Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trewhella, W.J., Wells, D. and Wray, S. (2012) *UK Bap Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton.

[23] NatureScot (2024) *Pine marten* [Online] Available at: Pine marten | NatureScot (Accessed October 2025)

[24] NatureScot (2020) *Protected Species Advice for Developers: Pine Marten* [Online] Available at: Standing advice for planning consultations - Pine Martens | NatureScot (Accessed October 2025)

[25] NatureScot (2020) *Protected Species Advice for developers: Otter*. [Online] Available at: Standing advice for planning consultations - Otters | NatureScot (Accessed October 2025)

[26] Chanin, P. (2003) *Monitoring the Otter (Lutra lutra). Conserving Natura 2000 Rivers Monitoring Series No.10.* English Nature, Peterborough.

[27] Harris,S., and Yalden, D.W. (2008). *Mammals of the British isles; Handbook (4th edn)*. The Mammal Society, Southampton.

[28] NatureScot (2020) *protected Species Advice for Developers: Water Vole/* [Online] Available at: https://www.nature.scot/species-planning-advice-water-vole (Accessed October 2025)

[29] Dean, M., Strachan, R., Gow, D. and Andrews R. (2016) *The Water Vole Mitigation Handbook* (*Mammal Society Mitigation Guidance Series*) *eds Fiona Mathews and Paul Chanin*. Mammal Society London.

[30] Dean. M. (2021) *Water vole Field Signs and Habitat Assessment*. Pelagic Publishing. Exeter, pp 18 – 19.

[31] NatureScot (2020) *Standing Advice for Planning Consultation – Wildcats* [Online] Available at: Standing advice for planning consultations - Wildcats | NatureScot (Accessed October 2025)

[32] NatureScot (2014) *Guidance – Wildcat Survey Methods* [Online] Available at: https://www.nature.scot/doc/guidance-wildcat-survey-methods (Accessed October 2025)

[33] Froglife (2018) *Reptile Survey and Mitigation Guidelines for Peatland Habitats*. [Online] Available at: : https://www.froglife.org/wp-content/uploads/2018/04/Compressed-Advice-note-10-Reptile-Survey-and-Mitigation-Guidance-for-Peatland-Habitats.pdf (Accessed october 2025)

[34] Sewell et al (2013) *Survey protocols for the British herpetofauna*. [Online] Available at: Download.ashx (Accessed October 2025).

[35] UK Hab Ltd (2023) *Uk Habitat Classification 2.0.* UK Hab Ltd, Stockport. [Online] Available at: ukhab – UK Habitat Classification (Accessed October 2025)

[36] SSEN (2024) *Biodiversity Net Gain Toolkit User Guide v2*. [Online] Available at: sserenewables.com/media/iz2jbehn/sser-bng-toolkit-user-guide_v2-2.pdf (Accessed November 2025).

4.2.18 A National Vegetation Classification (NVC) Survey of habitats with the potential to support GWDTE was completed on the 17 October 2023 and 18 October 2023. The survey was based on the latest NVC guidelines with communities identified by eye. The survey only covered parts of the Proposed Development and so has not been used to inform the baseline or impact assessment for habitats but has been used to inform the assessment of GWDTEs presented in **Chapter 6: Hydrology and Hydrogeology**.

4.2.19 Full details on survey methodologies and times can be found in the **Appendix H: Habitat Survey Report**.

Protected Species (Aquatic)

4.2.20 Fish Habitat Surveys (FHS) were conducted on 29 July 2025 and 30 July 2025 on the Allt na Buaile Salaich and Allt a 'Bhaelaich. FHS were based on a combination of Hendry and Cragg-Hine (1997)[37] and those developed for the river habitat surveying[38],[39] and were completed to record both Fish Habitat Quality (FHQ) and Fish Utilisation Potential (FUP).

4.2.21 The habitats within the Allt na Buaile Salaich and Allt a 'Bhaelaich watercourses were assessed, 100 m upstream and 500 m downstream of crossing points, where accessible, to determine their suitability for supporting freshwater pearl mussel (FWPM) (*Margaritifera margaritifera*). If suitable habitat was found to exist, then surveys for FWPM were conducted in accordance with the latest guidelines[40],[41].

4.2.22 Full details on survey methodologies can be found in the **Appendix I: Aquatic Ecology Survey Report**.

Ornithological Species

4.2.23 The results of habitat surveys were used to identify any significant changes in supporting habitats for birds in relation to the Proposed Development, to validate whether data gathered for previous projects in the area was likely to still be valid. During the Protected Species Surveys, anecdotal records of birds were recorded. No targeted surveys for birds were undertaken.

4.3 Assessment Methodology

4.3.1 The approach to the EcIA within this chapter is undertaken in cognisance of the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (revised in September 2024)[1] and refers to not significant, rather than negligible.

4.3.2 The approach to EcIA outlined in the CIEEM Guidance avoids and discourages the use of a matrix approach and categorisation, in an effort to avoid spurious quantification, in which numerical scores or significance rankings / categories are used without a clear definition of the criteria and thresholds that underpin them. Whilst a matrix approach is commonly used by other disciplines in EIA by disciplines other than ecology to assign significant residual effects to categories (e.g. major, moderate, minor), the approach taken for ecology is to identify effects that are either 'not significant' or 'significant' at a defined geographic level.

Method for the Assessment of Significant Effects

4.3.3 The process followed when assessing the impacts of the Proposed Development involved:

- Defining the likely potential impacts on ecological receptors resulting from the Proposed Development;

[37] Hendry, K. and Cragg-Hine, D. (1997) *Restoration of Riverine salmon habitats. Fisheries Technical Manual 4*. Environment Agency, Bristol.
[38] Environment Agency (2003) *River Habitat Survey in Britain and Ireland. Field Survey Guidance Manual*. Environment Agency, Bristol.
[39] Scottish Fisheries Coordination Centre (2007) *Fisheries Management SVQ -Habitat Surveys Training Course Manual*.
[40] NatureScot (2018) *Freshwater Pearl Mussel Survey Protocol for use in site specific projects*. [Online] Available at: Microsoft Word - B398246.doc (Accessed October 2025)
[41] NatureScot (2024) *Standing advice for planning consultations – freshwater Pearl Mussels* [Online] Available at: Standing advice for planning consultations - Freshwater Pearl Mussels | NatureScot (Accessed October 2025).

- Defining the value of ecological receptors;
- Determining the magnitude of impact on ecological receptors as a result of the Proposed Development;
- Determination of the significance of effects on ecological receptors;
- Identification of opportunities to further avoid, reduce, mitigate or compensate for significant impacts;
- Identification of opportunities for enhancement to meet the requirements of NPF4; and,
- Determination of any significant residual impacts.

Valuation of Ecological Features

4.3.4 Assignment of levels of importance for designated sites, habitats and species is based on professional judgement informed by a number of factors including;

- level of protection;
- rarity;
- conservation status;
- population trends; and,
- quality / extent of the feature(s) in relation to the Proposed Development.

4.3.5 Published evaluation criteria e.g. the Scottish Biodiversity List (SBL), Highland Nature BAP (HNBAP) and JNCC site on selection of biological SSSI were used where relevant.

Designated Sites

4.3.6 The approach taken to valuation of designated sites has been directly linked to its protected status, with European sites (Special Areas of Conservation (SAC)) and wetlands of international importance (Ramsar sites) being allocated a high importance. Nationally protected sites (Sites of Special Scientific Interest (SSSI) are allocated medium importance. No sites of local importance were identified within 1 km of the Proposed Development and have therefore not been included.

4.3.7 Assessment of The Flow country World Heritage Site (WHS) has been undertaken in line with The Highland Council assessment toolkit and the UNESCO Guidance and Toolkit for Impact Assessments in a World Heritage Context[42], the results of which are summarised within the impacts assessment section only.

Habitats

4.3.8 Annex 1 habitats have been assigned a high value on account of their listing on Annex 1 of The Habitats Directive, a cornerstone of EU biodiversity policy. In Scotland, the Habitats Directive is translated into specific legal obligations by the Conservation (Natural Habitats, &c.) Regulations 1994.

4.3.9 Scottish Biodiversity List and Highland Nature Biodiversity Action Plan (HNBAP) habitats have been assigned a medium value on account of their national / regional significance.

AWI

- Class 1a and 2a woodland has been assigned high value on account of it long standing tree cover, natural / semi-natural composition and likely high ground flora and soil biodiversity.
- Class 2b woodland has been assigned medium value on account of its long-standing tree cover through plantation woodland likely leading to a higher ground flora and soil biodiversity than might be found in a newly planted woodland.
- No class 1b or 3 woodlands are likely to be impacted by the Proposed Development.

[42] World Heritage Centre - Guidance and Toolkit for Impact Assessments in a World Heritage Context

Protected Species

4.3.10 The approach taken to valuation of protected species is linked to individual species legislative protection in the context of their abundance in Scotland or the UK (where population estimates exist). Consideration is also given to external pressures on populations (e.g. persecution), habitat availability for the species in the context of the Proposed Development and population trends (where available). These factors are weighed using professional judgement.

- **Example 1**: Eurasian otter (*Lutra lutra*) are a European protected species listed on the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), affording them international status (high value), the population in Scotland is approximately 8,000 individuals, likely at or approaching the carrying capacity for the country, as such, it has been identified as medium sensitivity overall.
- **Example 2**: water vole (*Arvicola amphibious*) is afforded protection under the Wildlife and Countryside Act (Schedule 5), as such conferring national status (medium sensitivity). However, the population of water vole in the UK (Scotland data not available) is thought to be between approximately 58,341 and 186,142 individuals and currently declining, following a period of significant declines, with estimates suggesting they are now absent from up to 90% of their historic habitats, mainly attributed to habitat loss and predation by American mink. As such water vole have been identified as high value overall.

Characterising Impacts

4.3.11 The magnitude of predicted impacts is identified through professional judgement informed by best practice guidance and where appropriate legislative context. Consideration has been given to the predicted degree of change to baseline conditions, how the ecological features are likely to respond, and the duration, frequency / timing and reversibility of an impact. Impacts are considered during construction and operation of the Proposed Development. Impacts associated with decommissioning are not considered on account of the need for the Proposed Development, based on existing technology, being in perpetuity.

4.3.12 Identification of impact pathway has been assessed as per the following;

- **Direct** - where the effect is a direct result (or primary effect) of the Proposed Development. An example of a direct impact would be the disturbance of a protected species shelter due to the construction of a temporary access track; and
- **Indirect** - a knock-on effect which occurs within or between environmental components and may include effects on the environment which are not a direct result of the Proposed Development, often occurring away from the proposals or as a result of a complex biological or chemical pathway. An example of an indirect impact would be the excessive drying (or wetting) of a habitat as a result of installation of a steel lattice tower foundation leading to a change in that habitat / loss of that habitat type.

4.3.13 Temporal impacts have been assessed as per the following;

- **Permanent** – where the effect represents a long-lasting change for a defined receptor. An example of a permanent impact is the loss of a blanket bog habitat within the footprint of a permanent access track, or the loss of a water vole burrow to a permanent watercourse crossing; and
- **Temporary** – where the effect occurs for a limited period of time and the change for a defined receptor can be reversed. An example of a temporary impact is the loss of scrub habitat to a temporary access track or disturbance of a protected species shelter through construction of a steel lattice tower.

Determination of Significance

4.3.14 The significance of effects has been determined using standard impact assessment methods and criteria (see below):

- the magnitude of both positive and negative effects, as determined by intensity, frequency and by the extent of the effect in space and time;
- the vulnerability of the habitat or species to the changes likely to arise from the Proposed Development;

- the ability of the habitat, species, or ecosystem to recover, considering both fragility and resilience;
- the viability of component ecological elements and the integrity of ecosystem function, processes, and favourable condition;
- value within a defined geographic frame of reference (e.g., UK, national, regional, local);
- the biodiversity value of affected species, populations, communities, habitats, and ecosystems, considering aspects such as rarity, distinct subpopulations of a species, habitat diversity and connectivity, species-rich assemblages and species distribution and extent;
- designated sites, and where a site has multiple designations the effects on the features of each designation; and
- protected species status.

4.3.15 Value and magnitude of effect are weighed using professional judgement and impacts are reported as either 'significant' at a particular geographical level (e.g. internationally, nationally, locally), or 'not significant'. A 'significant effect' is an effect "…*that either supports or undermines biodiversity conservation objectives for important ecological features, or for biodiversity in general*."[1]

4.3.16 Where significant effects are predicted, additional mitigation or compensation is applied to reduce or eliminate effects (where possible). Following application of mitigation, effects are reappraised and residual effects reported. This approach strives to make the EcIA more transparent and demonstrate the adequacy / necessity of proposed additional mitigation.

4.4 Limitations and assumptions

Limitations

4.4.1 A desk-based Peatland Condition Assessment has been undertaken. Peat depth data greater than 0.5 m has been overlaid with available artificial drainage and hydrology assessment data, and the UK Hab Survey results to understand the distribution of peatland habitats and whether these are likely to be actively peat forming. The information gathered for the UK Hab survey is less detailed than that of an NVC survey, however where Habitat Condition Assessment for SSEN's Biodiversity Metric Toolkit has been recorded, this can be used to infer additional information about peatland condition. Combining this information does not constitute a detailed PCA but has allowed an approximation of the condition of peatlands on site and identified areas of potential Priority Peatland.

4.4.2 Some parts of the ESA were inaccessible for health and safety reasons due to dense plantation cover with low lying branches, which surveyors could not walk through. This may have led to under recording of pine marten and red squirrel field / denning signs. Where it was not possible to go through woodlands, surveyors looked for fire breaks or forestry rides and openings which could be surveyed and visually scanned the perimeter of tree-lines from vantage points with binoculars.

4.4.3 Water clarity is considered a limitation, as the watercourses were peaty. This made it difficult to see the riverbed in deeper locations of water. However, an assessment of substrate suitability for fish and FWPM could still be made.

4.4.4 On the Allt na Buaile Salaich an area of approximately 2 m by 8 m of a mixture of watercourse and bankside was blocked by a fallen tree and therefore surveyors could not get close to the bankside to survey. However, surveys could be completed with the use of binoculars and it was noted that the flow type was predominantly run, and the riverbed consisted of boulder and cobble, with limited pebble and gravel, and so an assessment of habitat type could be made.

4.4.5 On the Allt na Buaile Salaich access was limited to approximately 362 m downstream of the proposed crossing point, this was due to the gradient of the riverbanks and bankside vegetation from the point; however, habitat assessments of the surveyed areas were generally sub-optimal for FWPM.

4.4.6 On the tributary of Allt a'Bhaelaich the survey was limited by land access issues downstream, and so only 261.3 m of the downstream crossing point was surveyed; however, the habitat was dominated by soft substrates, and bedrock, in the surveyed areas and so the watercourse was generally unsuitable for FWPM.

Assumptions

4.4.7 To complete the ecology and ornithology assessment, the following assumptions have been made:

- A 40 m working corridor around the cable alignment, except for the area where it is reduced to 25 m through areas of forestry. A worst-case approach has been applied and all habitats are assumed to be lost within this corridor;
- An 18-month construction period;
- It is assumed habitats will not return to their original habitat and condition within 2-years;
- Post-development, habitats will be restored to their previous habitat and condition apart from woodlands. Woodlands are unsuitable for reinstatement within the working corridor due to the technical specifications of their maintenance, it is assumed such areas will be seeded as other neutral grassland habitat;
- Joint bay dimensions are indicative and will be refined at detailed design stage.
- Habitat beneath joint bays is considered permanently lost and assumed to become developed sealed surface post development;
- Existing access tracks are assumed to be fit for purpose and require no modification or upgrade;
- Access tracks are assumed to consist of cut and fill design generally be constructed using a geotextile, with approximately 200 mm of crushed and compacted stone laid on top in the absence of confirmed areas of floating access track;
- For the purposes of this assessment, it has been assumed all access tracks and ancillary supporting infrastructure, including construction compounds will have excavation depths of less than 1 m. The cable, joint bays, and cable joints are assumed to have excavation depths of greater than 1 m; and
- The methodology for installing the underground cable (UGC) across watercourses on site will be open-trenching. This will involve setting up coffer dams to temporarily block and divert the flow of water in rivers during construction.

4.5 Baseline Conditions

4.5.1 This section sets out the baseline conditions for the Proposed Development, describing statutory and non-statutory designated sites, protected and invasive species, and terrestrial and aquatic habitats, including woodlands listed on the AWI (Scotland) and Priority Peatlands.

Desk Study

Designated Sites

4.5.2 No sites designated for their nature conservation importance lie within the footprint of the Proposed Development.

4.5.3 Seven statutory designated sites were identified within 10 km of the Site, and two non-statutory designated sites were identified within 2 km of the Site (**Table 4.1: Statutory and Non-Statutory Designated Sites for Nature Conservation Relevant to the Proposed Development Listed by Proximity to Site** and **Figure 4.2: Designated Sites** in **Appendix C**). It should be noted that details of reason for designation of the two non-statutory designated sites are not available from published information on the Argyll and Bute Council website[43].

[43] Argyll and Bute Council (2025) *Biodiversity* [Online] Available at: Biodiversity | Argyll and Bute Council (Accessed October 2025)

Table 4.1: Statutory and Non-Statutory Designated Sites for Nature Conservation relevant to the Proposed Development Listed by Proximity to Site

Site Name and Designation	Qualifying Interests / Notified Natural Features	Proximity to the Proposed Development
Cour LNCS	N / A	1.58 km south
Crossaig Glen LNCS	N / A	1.59 km south
Kintyre Goose Roosts SPA / Ramsar	The site is designated as it supports an internationally important wintering population of Greenland white-fronted goose (*Anser albifrons*)	2.7 km west
Kintyre Goose Lochs SSSI	The site is notified for Greenland white-fronted goose.	2.7 km west
Claonig Wood SSSI	The site is notified for upland oak woodland.	5.43 km north
Arran Northern Mountains SSSI	The SSSI is notified for the following biological features: • Upland habitats: Upland assemblage • Woodlands: Upland birch woodland • Vascular plants: Vascular plant assemblage • Birds: Breeding bird assemblage • Dragonflies: Dragonfly assemblage • Invertebrates: Beetle assemblage	6.9 km east
Sound of Gigha SPA	The Sound of Gigha SPA qualifies as it supports the following features: • wintering population of European importance of great northern diver (*Gavia immer*) and Slavonian grebe (*Podiceps auritus*). • regularly supports populations of European importance of the following migratory species: common eider (*Somateria mollissima*) and red breasted merganser (*Mergus serrator*).	8.2 km west
Rhunahaorine Point SSSI	Rhunahaorine Point SSSI has been notified for the following biological features • Coastlands: Shingle • Birds: Greenland white-fronted goose, non-breeding • Birds: Little tern (*Sternula albifrons*).	8.9 km west
Note: Designations are listed by distance from the Proposed Development (closest first), by site.		

Ancient Woodland and Priority Peatland

4.5.4 Five areas of woodland listed on the AWI (Scotland) were identified within 2 km of the Proposed Development. Of these, three were classed as Ancient Woodland (1a and 2a) and one as other woodlands on Roy maps (3) All of the areas of ancient woodland are greater than 500 m from the Proposed Development. The location of these woodlands relative to the Site are shown in **Figure 2: Ancient Woodland and Class 1 and Class 2 Peatland of Appendix H: Habitat Survey Report**.

4.5.5 As per **Section 4.1.8**, the ZoI for Priority Peatland is the Proposed Development and a buffer of 10 m. The Carbon and Peatland 2016 Map identified two areas of Class 1 and two areas of Class 2 peatland within the ZoI. These areas of Class 1 and Class 2 peatland are intersected by the Proposed Development, as displayed in **Figure 2: Ancient Woodland and Class 1 and Class 2 Peatland of Appendix H: Habitat Survey Report**.

Protected Species (Terrestrial)

4.5.6 **Table 4.2: Species Records from NBN Atlas within 5 km of the Site Centre Point** summarises the data received from NBN Atlas. In the case of multiple records of a species, the date of the most recent record is displayed. For ornithology the birds included within the table are those listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) or amber or red list species on the Birds of Conservation Concern (BoCC)[44]. Predominantly marine species which will not use habitats affected by the Proposed Development have been excluded.

[44] Includes BoCC Red / Bocc Amber: Birds of Conservation Concern 5 (Stanbury *et al,* 2024) Red list and amber list species, Sch 1 WCA: Species lised on Schedule 1 of the Wildlife and countryside Act 1981 (as amended)

Table 4.2: Species Records from NBN Atlas within 5 km of the Site Centre Point

Common Name	Scientific Name	Relevant Legal Protection and UK Conservation Status	Date Recorded
Birds			
Barn owl	*Tyto alba*	• WCA Schedule 1 • BoCC	2006
Curlew	*Numenius arquata*	• BoCC Red	2006
Grasshopper Warbler	*Locustella naevia*	• BoCC Red	2006
Great Black-backed Gull	*Larus marinus*	• BoCC Red	2015
Lesser Redpoll	*Acanthis cabaret*	• BoCC Red	2006
Reed Bunting	*Emberiza schoeniclus*	• BoCC Amber	2006
Song Thrush	*Turdus philomelos*	• BoCC Amber	2022
Spotted Flycatcher	*Muscicapa striata*	• BoCC Red	2021
Tree Pipit	*Anthus trivialis*	• BoCC Red	2006
Mammals			
Otter	*Lutra lutra*	• WCA Schedule 5[45] Sections 9.4b[46] and 9.4c[47] • BAP 2007[48] • Scottish Biodiversity List[49] • Habitats Regulations A2 • Habitats Directive A4[50]	2012

[45] Wildlife and countryside Act Schedule 5 [Online] Available at: The Wildlife and Countryside Act 1981 (Variation of Schedule 5) (England) Order 2008 (Accessed October 2025)

[46] Section 9.4b. Animals which are protected from intentional disturbance whilst occupying a structure or place used for shelter or protection

[47] Section 9.4c Animals which are protected from their access to any structure or place which they use for shelter or protection being obstructed.

[48] UK Biodiversity Action Plan priority species. The list of UK Priority Species and Habitats contains 1150 species and 65 habitats that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP).

[49] Scottish Biodiversity List of species of principal importance for biodiversity conservation in Scotland. The Scottish Biodiversity List is a list of flora, fauna and habitats considered by the Scottish Ministers to be of principal importance for biodiversity conservation. The Scottish

[50] Habitats Directive Annex 4. Animal species of Community interest (i.e. endangered, vulnerable, rare or endemic in the European Community) in need of strict protection. They are protected from killing, disturbance or the destruction of them or their habitat.

Common Name	Scientific Name	Relevant Legal Protection and UK Conservation Status	Date Recorded
		• Habitats Regulations Schedule 2[51]	
Red Squirrel	*Sciurus vulgaris*	• WCA Schedule 5[42] Sections 9a[52], 9b44 and 9c[44].	2025
Soprano Pipistrelle	*Pipistrellus pygmaeus*	• WCA Schedule 5[42] Sections 9.4b[43] and 9.4c[44] • BAP 2007[45] • Scottish Biodiversity List [45] • Habitats Directive A4[47] • Habitats Regulations Schedule 2[48]	2013

4.5.7 **Table 4.3** summarises the data received from ABERC from the last 20 years (from the year 2005 to 2025).

Table 4.3: Species Records from ABERC within 2 km of the Proposed Development

Common Name	Scientific Name	Relevant Legal Protection and UK Conservation Status	Proximity to the Proposed Development	Distance and Direction Accuracy
Birds				
Lesser Redpoll	*Acanthis cabaret*	• Scottish Biodiversity List[47]	N / A	Two Figure Grid Reference (NR85): Nearest record can't be determined as record could be anywhere within 10 km grid square
Tree Pipit	*Anthus trivialis*	• Scottish Biodiversity List[47] • BoCC Amber	N / A	Two Figure Grid Reference (NR85): Nearest record can't be determined as record could be anywhere within 10 km grid square
Reed Bunting	*Emberiza schoeniclus*	• Argyll and Bute Local Biodiversity Action Plan • Scottish Biodiversity List[47] • BoCC Amber	N / A	Two Figure Grid Reference (NR85): Nearest record can't be determined as record could be anywhere within 10 km grid square

[51] The Conservation (Natural Habitats, &c.) Regulations 2010 (Schedule 2). Schedule 2- European protected species of animals.

[52] Intentionally or recklessly disturbs any wild animal included in Schedule 5

Common Name	Scientific Name	Relevant Legal Protection and UK Conservation Status	Proximity to the Proposed Development	Distance and Direction Accuracy
Grasshopper Warbler	*Locustella naevia*	• Argyll and Bute Local Biodiversity Action Plan • Scottish Biodiversity List[48] • BoCC Red	N / A	Two Figure Grid Reference (NR85): Nearest record can't be determined as record could be anywhere within 10 km grid square
Curlew	*Numenius arquata*	• Argyll and Bute Local Biodiversity Action Plan • Scottish Biodiversity List[47] • BoCC Red	N / A	Two Figure Grid Reference (NR84): Nearest record can't be determined as record could be anywhere within 10 km grid square
Mammals				
Soprano pipistrelle	*Pipistrellus pygmaeus*	• WCA Schedule 5[42] Sections 9.4b[43] and 9.4c[44] • BAP 2007[45] • Scottish Biodiversity List[45] • Habitats Directive A4[47] • Habitats Regulations Schedule 2[48]	N / A	Two Figure Grid Reference (NR84): Nearest record can't be determined as record could be anywhere within 10 km grid square
Plants				
Chicory	*Cichorium intybus*	• Scottish Biodiversity List[47]	1.6 km southeast of the Site	Eight Figure Grid Reference (NR 82054808): Accurate to 0.01km
Bluebell	*Hyacinthoides non-scripta*	• WCA Schedule 8[53]	2 km southeast of the Site	Four Figure Grid Reference (NR8247): Accurate to 1 km
Yellowish fork moss	*Dichodontium flavescens*	• Scottish Biodiversity List	1.6 km southeast of the Site	Four Figure Grid Reference (NR8148): Accurate to 1 km

[53] Wildlife and Countryside Act 1981 (as amended) Schedule 8 [Online] Available at: Wildlife and Countryside Act 1981 (Accessed November 2025)

4.5.8 Saving Scotland's Red Squirrels website[6] shows five records of red squirrels within 2 km of Crossaig (the nearest settlement to the Proposed Development) in the calendar year 2025.

4.5.9 The Marten Map – National Pine Marten Monitoring Programme[8], shows that north Kintyre has 2 – 5 sightings per 10 km grid square, but in the area of the Proposed Development this drops to 0 – 1 sightings per 10 km grid square.

Invasive Non-Native Species

4.5.10 The data search from ABERC also returned four invasive non-native species within 2 km of the Site, these were as follows:

- Montbretia (*Crocosmia aurea x pottsii = C. x crocosmiiflora*) – 2 km southeast of the Site;
- Himalayan honeysuckle (*Leycesteria Formosa*) – 1.6 km southeast of the Site;
- Japanese knotweed (*Reynoutria japonica*) – 1.6 km southeast of the Site; and,
- Rhododendron (*Rhododendron ponticum*) – 1.6 km southeast of the Site.

Protected Species (Aquatic)

4.5.11 A desk-based review was completed using Scotland's NMPi[8] to understand the likelihood of salmonid fish (Atlantic salmon (*Salmo salar*) and sea / brown trout (*Salmo trutta*)) being present, or likely present within the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. A review of the Salmon and Sea Trout – Scottish Salmon Rivers layer advises that the salmonid fish are not present within the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. The 2008 digital salmon rivers data used on the Salmon and Sea Trout – Scottish Salmon Rivers layer was produced from the earlier salmon distribution map (Egglishaw 1986[54]), along with additional information from fisheries trusts and other sources. Therefore, it provides a good indication of salmonid presence, but does not guarantee that salmonid fish are absent, and so it should be used alongside other data sources to confidently advise whether salmonid fish are present or absent. In this instance both watercourses are hydrologically connected to Kilbrannan Sound, a designated Wild Salmonid Protection Zone covering 204 km². Furthermore, the Obstacles to Fish Passage layer of the NMPi shows no barriers to fish passage between the Allt na Buaile Salaich, the tributary of the Allt a'Bhaelaich and Kilbrannan Sound; Therefore, there is potential for Atlantic salmon and sea trout to be present within watercourses affected by the Proposed Development. In addition, both lamprey (river lamprey (*Lampetra fluvialitilis*), brook lamprey (*Lampetra planeri*) and sea lamprey (*Petromyzon marinus*) and European eel (*Anguilla anguilla*) are migratory fish, and with no obstacles to fish passage recorded, there is potential for both species to be present within watercourses affected by the Proposed Development.

Surface Water Quality

4.5.12 The SEPA Water Classification Hub details WFD classification of waterbodies. In general, the classification of waterbodies describes by how much their condition differs from near natural conditions (i.e., those at near natural condition are at High status, while those whose quality has been severely damaged are at Bad status). Surface water bodies are classified using a status of one of the following classes:

- High;
- Good;
- Moderate;
- Poor; and
- Bad.

[54] Gardiner, R and Egglishaw, H. (1986). *A Map of the Distribution in Scottish Rivers of the Atlantic salmon, Salmo salar.* Department of Agriculture and Fisheries for Scotland, Freshwater Fisheries Laboratory, Pitlochry. 55pp + folded map. Scottish Fisheries Publication.

4.5.13 The SEPA Water Classification Hub shows that the Allt na Buaile Salacih and the Allt a'Bhaeliach and their tributaries do not have a formal WFD classification. Kilbrannan Sound has no WFD Classification for Fish, but it is classified as 'Good' under biological elements due to its 'Good' classification for macroinvertebrates, and 'Good' for water quality.

Ornithology

4.5.14 Ornithological surveys undertaken for the High Constellation Wind Farm were conducted in 2017 and 2018, with follow up surveys for red-throated diver in 2022 which covered the whole length of the Proposed Development. Surveys identified black throated divers (*Gavia arctica*) breeding on Loch a'Mhuilinn and Loch Laoighscan, which are 1.14 km south and 1.6 km north of the Proposed Development respectively, with red-throated divers (*Gavia stellata*) recorded attempting to breed on Loch Laoighscan, Loch a'Chaorainn and Lochan Tarnalabh. The nearest of these lochs is Loch a'Chaorainn, which lies approximately 800m north of the Proposed Development. Surveys in 2022 noted that breeding had been unsuccessful at this location. Surveys also identified Greenland white-fronted geese using Loch a'Chaorainn, Lochan Tamalabh, Loch na Beiste and Loch Ciaran as occasional roost sites. The nearest of these roost sites is at Loch a'Chaorainn, which is 1.64 km north of the Proposed Development. Surveys in 2018 identified a pair of golden eagle (*Aquila chrysaetos*) with a single chick on a nest, located approximately 2.1 km north of the Proposed Development[55], and another known nesting site is located 1.2 km north of the Proposed Development. Surveys identified 11 black grouse (*Tetrao tetrix*) leks, and three of these (Lek ID 9, Lek ID 10 and Lek ID 11) lie within 200 m of the Proposed Development. The position of these leks relative to the Proposed Development is detailed on Figure 4.3: High Black Grouse Survey Lek Locations 2017 in Appendix C. Hen harrier (*Circus cyaneus*) male and females were recorded in 2017 and 2018, hunting across open habitats, within the High Constellation Wind Farm survey area including a female with three juveniles. No breeding was confirmed during the surveys, but data studies did return a known hen harrier nesting site located 2.25 km from the Proposed Development. No breeding activity for other raptors was noted during the surveys, though osprey (*Pandion haliaetus*), merlin (*Falco columbarius*), white-tailed eagle (*Haliaeetus albicilla*), peregrine (*Falco peregrinus*), barn owl and short-eared owl (*Asio flammeus*) were recorded occasionally during the surveys.

4.5.15 Surveys undertaken to inform the Crossaig Substation EIAR, and the Sheiridrim Wind Farm Connection show similar baseline conditions to the High Constellation Wind Farm EIAR. Red-throated diver are recorded as breeding between 2014 – 2019 on 10 waterbodies, with the nearest approximately 3.98 km north of the Proposed Development. Surveys undertaken for the Sheirdrim Wind Farm Connection in 2022 recorded one unsuccessful red-throated diver breeding attempt approximately 1.8 km north of the Proposed Development. In addition, Greenland white-fronted geese were recorded roosting on Loch Tamalabh, which is 3.81 km north of the Proposed Development. In 2022, a Golden eagle was recorded successfully breeding approximately 2.1 km north of the Proposed Development.

Field Survey

Habitats

4.5.16 Habitats within the HSA comprise coniferous plantation woodland, wet woodland and mixed (mainly broadleaved) woodland, wetland and grassland habitats, with urban and built environment features also present. Habitat mapping is shown in **Figure 3: UKHab Survey Area** of **Appendix H: Habitat Survey Report**.

4.5.17 The UK Hab Survey recorded the following 15 UK Habitat Communities:

- g16b – other upland grassland, acid grassland;
- w1d – wet woodland;
- w1h5 – other woodland; mixed; mainly broadleaved;
- w1h6 – other woodland; mixed; mainly conifer;
- w2c – other coniferous woodland;

[55] MacArthur Green (2019) High Constellation Wind Farm: Ornithology Surveys and Collision Risk Modelling – Appendix A8.1. MacArthur Green, Glasgow, UK.

- h1b5 – dry heaths; upland;
- h1b6 – wet heathland with cross-leaved heath; upland;
- f1a – blanket bog;
- f1a6 – degraded blanket bog;
- f2c – upland flushes, fens and swamps;
- u1b – developed land; sealed surface;
- u1c – artificial unvegetated, unsealed surface;
- u1e – built linear features;
- s1d – other inland rock; and,
- r2b – other rivers and streams.

4.5.18 Of the above habitats, four are considered to conform to one of the following Annex I habitats:

- H4010 – Wet heathland with cross-leaved heath (h1b6 – wet heathland with cross leaved heath);
- H4030 – Dry heaths (h1b5 – dry heaths; upland); and
- H7130 – Blanket bog (f1a – blanket bog, and f1a6 – degraded blanket bog).

4.5.19 In addition, six of the UK Habitat Communities are considered to conform to habitats listed on the SBL and the Argyll and Bute Local Biodiversity Action Plan (LBAP):

- blanket bog (f1a – blanket bog, and f1a6 – degraded blanket bog);
- upland flushes, fens and swamps (f2c – upland flushes, fens and swamps);
- upland heather (h1b5 dry heaths; upland, h1b6 (wet heathland with cross-leaved heath; upland); and,
- wet woodland (w1d – wet woodland).

4.5.20 Two areas of nationally important Class 1 peatland and two areas of nationally important Class 2 peatland are intersected by the Proposed Development, as displayed in **Figure 3: UKHab Survey area of Appendix H: Habitat Survey Report**. Priority Peatland is noted within the Argyll and Bute LBAP. The UK Habitat Communities which were recorded in these areas, and which may be peat forming habitats are detailed below:

- f1a – blanket bog;
- f1a6 – degraded blanket bog;
- h1b6 – wet heathland with cross-leaved heath; and,
- g1b6 – other upland acid grassland.

Notable Plant Species

4.5.21 The invasive non-native species rhododendron was recorded throughout the HSA. The position of rhododendron within the Site is shown on **Figure 5: Rhododendron Locations, Appendix H: Habitat Survey Report**.

Protected Species (Terrestrial)

Bats

4.5.22 Two trees were identified as being of Further Assessment Required (FAR) for bats indicating that they have some suitability for bats. Beyond this the ESA offered negligible suitability for roosting bats, as the coniferous plantation woodland, generally contains immature trees with an absence of roosting features.

4.5.23 The upland moor habitat such as blanket bog, acid grassland, and heathland, are open and exposed and lack commuting and foraging features for bats, consequently the habitats within the ESA are of low suitability for foraging and commuting bats.

Badger

4.5.24 No evidence of badger was recorded during the surveys. Habitats were generally unsuitable for badger, as the coniferous plantation lies on top of waterlogged peaty soils, which would not provide permanent dry conditions for sett creation. Similarly, blanket bog offers only limited foraging opportunities.

Red Squirrel

4.5.25 The woodland within the ESA is largely immature coniferous plantation woodland, which is sub-optimal for red squirrel drey building, although there is a small area of mature trees in the west of the ESA, which could better support drey building. No signs of red squirrel were recorded during the surveys.

Pine Marten

4.5.26 The plantations within the ESA are closed-canopy woodland, which offer protection against aerial predators which plays a significant role in pine marten habitat selection[55]. In addition, in the absence of traditional denning features, pine marten will utilise denning features such as under tree roots, under rocks at ground-level, and in owl boxes, which were all recorded within the ESA[56]. Pine marten scat (faeces) was recorded on forestry access tracks in both the north and south of the ESA. Potential feeding remains were also recorded in the south of the ESA, close to a potential pine marten box.

Otter

4.5.27 The Allt na Buaile Salaich and the tributary of the Allt a'Bhealaich, provide suitable foraging and commuting habitat for otter, with the coniferous woodland holding suitability for otters to form their holts. Surveys recorded six features which could be used by otter to form their holts, three close to the Allt na Buaile Salaich and three near the tributary of the Allt a'Bhaelaich. Five of these were in exposed tree roots, one was a gap in some stonework. However, there were no signs indicating these were in use, and no evidence of presence or field signs of otter were recorded within the ESA.

Water Vole

4.5.28 The Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich are assessed as holding negligible suitability for water vole, the tree lined character of both watercourses limits the availability of suitable herbaceous vegetation for foraging. In addition, the banks are predominantly stony, providing poor substrate for burrow construction. Sections of both channels are narrow, making them prone to fluctuating water levels during the water vole breeding season, which would further constrain the establishment of a population. No signs of water vole were recorded during the survey.

Wildcat

4.5.29 The mosaic of woodland, rough grassland, and moorland provide sheltered cover for commuting and hunting wildcat, with wind-blown trees and brash piles providing suitable denning habitat for wildcat. No signs of wildcat were recorded during the survey.

Reptiles

4.5.30 The heathland, acid grassland, tussocky rush pasture, woodland rides, and sunny track margins provide suitable basking and foraging opportunities for common lizard (*Zootoca vivipara*), Adder (*Vipera berus*) and slow-worm (*Anguis fragilis*). Four common lizards were recorded within the ESA. Three of these were recorded in the east of the HSA, with a single lizard recorded in the southwest of the ESA.

[56] Birks et al (2005). *Diversity of den sites used by pine martens Martes martes; a response to the scarcity of arboreal cavities.* Mammal Rev. Vol 35, No. £&4, pp. 313-320, Diversity of den sites used by pine martens Martes martes: a response to the scarcity of arboreal cavities? - BIRKS - 2005 - Mammal Review - Wiley Online Library

Amphibians

4.5.31 Wetland habitats such as rush pasture, and blanket bog pools provide suitable habitat for breeding for amphibians such as common frog (*Rana temporaria*) and common toad (*Bufo bufo*). Three common frogs were sighted in the ESA; two on tall grassland next to woodland habitats in the centre of the ESA, and one in tall grassland close to woodland in the north of the ESA close to the substation. No common toads were recorded.

Invasive non-native species

4.5.32 Sitka deer (*Cervus nippon*), which is an invasive non-native species (INNS) was recorded throughout the ESA, within forestry margins and open ground.

Protected Species (Aquatic)

4.5.33 The FHS recorded suitable habitat for juvenile salmonids, lamprey and European eel, within the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich, though this is limited in its distribution and extent within the tributary of the Allt a' Bhaelaich, with the upstream end lacking suitability for salmonids and European eel.

4.5.34 The Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich are generally unsuitable for FWPM and no evidence of FWPM was identified during the survey.

Ornithological Species

4.5.35 The results of habitat surveys confirmed that the habitats through which the Proposed Development will be constructed have not substantially changed since surveys for previous projects in the area were completed. The areas subject to survey (ESA and HSA) contain coniferous plantation woodland; as well as open habitat such as blanket bog, both of which have suitability for a variety of breeding and foraging birds. During the surveys records of common and widespread woodland and upland bird species were made including blue tit (*Cyanistes caeruleus*), crow (*Corvus corone*), raven (*Corvus corax*), siskin (*Spinus spinus*) and song thrush.

4.6 Determining Important Ecological and Ornithological Features

4.6.1 The assessment considers the potential impacts on designated sites, habitats and protected species (including freshwater), from the Proposed Development during construction and operation. For example:

- direct habitat loss due to permanent infrastructure, temporary facilities and habitat planting / restoration;
- effects on habitats in the surrounds (e.g., from incursion by workforce, lighting, pollution / spillages, dust, effects on surface / groundwater);
- direct effects on fauna, including their killing and injury and the destruction of their places of shelter or disturbance whilst using such places of shelter; and,
- indirect effects on fauna species including disturbance, displacement and restriction of movement from construction related operations.

Embedded Mitigation

4.6.2 Embedded mitigation comprises both design features and construction good practice considered as part of the Proposed Development and are assumed to be in place prior to the appraisal of effects. These measures include implementation of the Applicant's standard Species Protection Plans (SPPs) and General Environment Management Plans (GEMPs), the timing of installation, and careful siting of temporary structures to avoid or minimise interaction with sensitive ecological receptors.

4.6.3 It is assumed that during operation and maintenance activities pertinent SPPs and GEMPs will be adhered to as best practice and hence the measures detailed within them will be implemented as necessary.

4.6.4 All permanent loss of habitat attributed to the Proposed Development operational corridor and access track locations shall be replaced through compensatory planting, and as such, this is considered to form part of the embedded mitigation.

4.6.5 SSEN Transmission's GEMPs and SPPs are applied as a standard requirement to all construction sites and practices. Applicable GEMPs and SPPs are referenced below.

- GEMP 10 Oil Storage and Refuelling;
- GEMP 11 Soil Management;
- GEMP 12 Working In or Near Water;
- GEMP 13 Working in Sensitive Habitats;
- GEMP 14 Working with Concrete;
- GEMP 16 Waste Management;
- GEMP 19 Forestry;
- GEMP 20 Dust Management;
- GEMP 21 Biosecurity (On Land);
- GEMP 22 Restoration;
- Bat SPP 02;
- Otter SPP 03;
- Red Squirrel SPP 04;
- Bird SPP 05; and,
- Pine Marten SPP 08.

4.6.6 Best available measures for avoidance of erosion and sedimentation, pollution incidents, run-off and flood risk management, and the SSEN GEMPs that will need to be followed to reduce the risk of harm to the aquatic environment are detailed in **Chapter 6: Hydrology and Hydrogeology**.

4.6.7 Where permanent access tracks are needed, suitable track drainage will be in place such that runoff rates are not increased from the Proposed Development.

4.6.8 An operational site management plan will be in pace which will detail any pollution prevention, water management and erosion control measures needed during routine maintenance works.

Environmental Clerk of Works (EnvCow)

4.6.9 Embedded measures to protect biodiversity will include a pre-construction site survey of the Proposed Development boundary by a suitably qualified EnvCoW focussing on habitats and species to be directly and indirectly impacted by the Proposed Development. The purpose of the survey will be to confirm any changes to, and update of the baseline, to confirm the data on which this Impact Assessment is based are still accurate. Should a new species be identified, the appropriate SPPs (included within the CEMP) will be followed during construction of the Proposed Development, and an assessment will be undertaken to understand the impacts the Proposed Development may have on that species, as well as identifying any further measures that should be put in place, for example, protected species licensing.

Management Plans

4.6.10 Compliance with project wide and site-specific environmental management procedures, with reference to the Proposed Development's Construction Environment Management Plan (CEMP), will be implemented. This will describe the proposed approach to construction methods and environmental protection during construction of the Proposed Development, including (but not limited to) details of ecological constraints and measures (e.g., site working

hours, control of light spill, noise emissions, dust management, avoiding incursion into habitats to be retained), procedures for surface water management and pollution guidelines.

4.6.11 A Construction Traffic Management Plan (CTMP) for the Proposed Development will be completed by the principal contractor prior to the start of construction. Whilst it is not an ecology or ornithology focused plan, it will help to avoid / manage effects on ecological and ornithological features in the surrounds of the areas to be directly affected. For example, to prevent spillages, discharges and unnecessary incursion into habitats, as well as implementing speed limits etc., which may avoid / reduce the risk of direct mortality of species associated with vehicle collisions.

Mitigation by Design

4.6.12 The Proposed Development was selected and developed via an iterative design process, as described in **Chapter 2: Description of the Proposed Development**. This applied the mitigation hierarchy. Impacts to sensitive receptors were avoided, where feasible and in balance with other competing interests such as constructability, operational safety and sensitive features related to other environmental disciplines.

4.6.13 Design mitigation measures will be further implemented as both the detailed design continues and the construction phase commences.

4.7 Important Ecological and Ornithological Features

4.7.1 Important ecological and ornithological features, identified as being sensitive to the Proposed Development and taken forward for assessment, are presented below:

- Designated Sites
    - Kintyre Goose Roosts SPA / Ramsar
    - Kintyre Goose Lochs SSSI
    - Priority Peatland
- Protected Species (Terrestrial)
    - Bats
    - Pine marten
    - Reptiles
- Protected Species (Aquatic)
    - Salmonid fish (Atlantic salmon and sea / brown trout)
    - Lamprey (Sea, River and Brook Lamprey); and,
    - European eel
    - Ornithology Species
    - Golden eagle
    - Hen harrier
    - Black grouse
    - Greenland white-fronted goose
    - Divers (black-throated diver and red-throated diver)
- Habitats
    - Annex I Habitats (Blanket bog (f1a – blanket bog, and f1a6 – degraded blanket bog))
    - SBL and LBAP Habitats (Upland Flushes and Bog (f2c – Upland, flushes and bog), and Wet Woodland (w1d – wet woodland)

4.8 Assessment of Effects

4.8.1 This section assesses the predicted impacts of the Proposed Development taking into account the implementation of mitigation by design and embedded mitigation. The assessment recognises each Important Ecological Feature (IEF) and Important Ornithological Features (IOF) as listed in **Section 4.6** and assesses identified potential construction and operational impacts.

4.8.2 Impacts on habitat from the Proposed Development have been calculated based on the current design. Impacts to habitat relate to:

- Direct habitat loss from permanent joint bays;
- Direct habitat loss under temporary UGC open trenching;
- Direct habitat loss from watercourse crossings;
- Direct habitat loss under temporary access tracks;
- Direct habitat loss under permanent access tracks; and
- Indirect habitat impacts relating to de-watering of peat along permanent access tracks and cable trenches and in respect to temporary infrastructure.

4.8.3 Direct habitat loss has been calculated under the footprint of proposed infrastructure.

4.8.4 Indirect habitat impacts have been calculated for wetland and peatland habitats, based on a 30 m buffer around access tracks, assuming that associated drainage may disrupt hydrological connectivity, resulting in a lowering of the water table within this ZoI. Indirect impacts to other habitat types are not predicted.

4.8.5 Following a description of the specific impacts on that IEF, a statement on the significance of the effect is made in the context of the value of the IEF and the impact magnitude.

4.8.6 The assessment considers the potential impacts on designated sites, habitats, and protected species that could occur from the Proposed Development activities during construction and operation for both ecological and ornithological receptors.

4.8.7 The potential impacts on protected species (terrestrial, aquatic and ornithological species) are as follows:

- direct effects on fauna, including their killing and injury and the destruction of their places of shelter during construction;
- indirect effects on fauna species including disturbance / displacement during construction; and
- indirect effects of electromagnetic fields (EMF) upon fish and affects upon ability of fish to move upstream to spawning grounds during operation.

4.8.8 As predicted effects on all receptors other than fish species will be limited to construction, the assessment of effects for all receptors other than fish just considers construction impacts. The assessment of effects on fish species considers effects from both construction and operation.

Designated Sites

Kintyre Goose Roost SPA / Ramsar and Kintyre Goose Lochs SSSI

4.8.9 Kintyre Goose Roosts SPA and Ramsar share the same boundary and the same qualifying feature, with both sites being designated for the population of Greenland white-fronted goose that is supported. Kintyre Goose Lochs SSSI covers a smaller area, but all the lochs and lochans within the Kintyre Goose Lochs SSSI lie within the boundary of the Kintyre Goose Roosts SPA and Ramsar site, and it is notified for the same feature, Greenland white-fronted goose. Therefore, as the sites all share a boundary and the same qualifying feature the assessment considers the sites together.

4.8.10 Kintrye Goose Roosts SPA / Ramsar is protected by international legislation and the Kintyre Goose Lochs SSSI is protected by national legislation. The sites contain populations of European importance of Greenland white-fronted goose; therefore, Kintyre Goose Roosts SPA / Ramsar / SSSI is of high value, and high sensitivity and is of international importance.

4.8.11 No open waterbodies suitable for roosting Greenland white-fronted goose are present within 200 m of the Proposed Development, and the Proposed Development is considered to have negligible potential to support this qualifying species of the Kintyre Goose Lochs SPA / Ramsar and the Kintyre Goose Lochs SSSI.

4.8.12 The nearest known roosting site of Greenland white-fronted goose which lies within the Kintyre Goose Roosts SPA / Ramsar and Kintyre Goose Lochs SSSI is Loch Garasdale, which lies approximately 2.7 km northwest of the Proposed Development. Though Loch Garasdale is outside the disturbance buffer for Greenland white-fronted geese there is a track which links the Proposed Development to the A83. This access track is approximately 309 m north of Loch Garasdale at its nearest point, which is within the disturbance buffer for Greenland white-fronted goose. At this stage it is not known whether this track will be used to access the Proposed Development during construction; however, to avoid effects to Greenland white-fronted goose, if the access track between the Site and A83 is used during construction, the following measures will be undertaken:

- SSE Transmission will undertake the proposed construction works and / or de-commissioning works outside of the wintering period (October to March), when SPA birds are not present in Scotland. If construction works and / or de-commissioning works cannot be undertaken outwith the wintering period (October to March), the existing access track in the vicinity of the Loch na Naich will not be used within one hour after sunrise and one hour prior to sunset to minimise disturbance to Greenland white-fronted geese.

4.8.13 With the above measures in place no impacts upon Greenland white-fronted goose are expected and effects to the Kintyre Roost SPA / Ramsar and Kintyre Goose Lochs SSSI are considered to be of **negligible** magnitude and **not significant**.

Priority Peatland

4.8.14 Priority Peatland is nationally important in Scotland, are **high** value and **high** sensitivity, and of National importance.

4.8.15 As per **Appendix J: Preliminary Peat Condition Assessment Report**, as NVC surveys and a peatland condition assessment have not been undertaken within the survey area, a NatureScot framework template assessment[57] has not been completed. However, there are two areas of Class 1 peatland, and two areas of Class 2 peatland that lie within the survey area, identified by the Carbon and Pearland 2016 Map[5]. Both are intersected by the Proposed Development. As the NatureScot framework template for assessment[56] has not been completed, for the purposes of this assessment it has been assumed that these areas are priority peatland. As per **Appendix K: Biodiversity Net Gain Assessment Report**, there is a predicted loss or deterioration of 4.41 ha of blanket bog, and it is assumed that this is priority peatland. The loss or deterioration of peatland is a permanent, non-reversible adverse impact, but as per **Appendix K: Biodiversity Net Gain Assessment** (**Appendix A: Irreplaceable Habitat Supplement**) the Applicant is committed to ensure that a greater extent of blanket bog is restored than the extent of blanket bog that is lost or deteriorated. Due to this commitment for peatland restoration, the effect of the loss and deterioration of 4.41 ha of blanket bog is considered temporary, reversible, of **negligible** magnitude and **not significant**.

[57] NatureScot (2023) *Advising on peatland, carbon-rich soils and priority peatland habitats in development management* [Online] Available at: Advising on peatland, carbon-rich soils and priority peatland habitats in development management | NatureScot (Accessed March 2026)

Protected Species (Terrestrial)

Bats

4.8.16 The potential impacts on bats as an internationally protected species (**High** value), from the Proposed Development are limited to temporary construction disturbance of bats at their place of shelter, permanent loss of bat places of shelter and severance of commuting / foraging habitat.

4.8.17 Ten bat species occur in Scotland, five of which are common or widespread (common pipistrelle, soprano pipistrelle, Daubenton's bat, brown long-eared bat, and Natterer's bat). In Scotland the number of bat species living in an area generally decreases the further north and west travelled. According to the Bat Mitigation Guidelines[58], in northern Scotland, where the Proposed Development is situated, common and soprano pipistrelle are considered widespread in all geographies, with Daubenton's, Natterer's and brown long-eared bats considered widespread in many geographies, but not abundant in all, and Nathusius's pipistrelle considered to have a rare or restricted distribution. As no bat surveys have been undertaken, it is assumed that Nathusius pipistrelle are present within the ESA and thus the bat population within the ESA is of medium sensitivity and of Regional importance.

4.8.18 The upland moor habitat such as blanket bog, acid grassland and heathland is open, exposed and lack commuting and foraging features for bats, consequently habitats in the ESA are of low suitability for foraging and commuting bats. Total permanent habitat loss to facilitate the Proposed Development is 0.233 ha, which equates to 0.09 % of the HSA, therefore although this habitat loss will result in a minor reduction of foraging and commuting habitat for bats, and may displace foraging and commuting bats, as there is ample habitat being unaffected within the HSA and further afield, the magnitude of any displacement effects on the local bat population is considered short term, reversible and likely to only impact small numbers of bats within the HSA.

4.8.19 The overall effects of habitat loss and disturbance on the conservation status of common and soprano pipistrelle bats is of **low** magnitude and **not significant**.

4.8.20 Two trees identified as FAR have been identified, though these will not be removed to facilitate the Proposed Development. However, 0.097 ha of coniferous woodland will be lost to facilitate the Proposed Development, and 5.51 ha of woodland habitat will be temporarily lost, of which 5.43 ha is coniferous woodland. Coniferous woodland offers limited roosting opportunities for bats, and whilst felling may remove a small number of unrecorded features with bat roost potential, the risk is very low. Accounting for embedded mitigation by design, effects of the loss of roosting habitat on bats at their places of shelter are therefore predicted to be of **negligible** magnitude and **not significant**.

Pine Marten

4.8.21 The potential impacts on pine marten, a nationally protected species which is common and widespread in northern Scotland (**medium** value), from the Proposed Development are limited to temporary construction related disturbance at their place of shelter, and potential harm and fatality to individual pine marten, associated with construction of the Proposed Development.

4.8.22 The Scottish pine marten population is estimated to be 2,700 animals and the species is listed as least concern on the International Union for Conservation of Nature (IUCN) red list[59]. A national pine marten survey undertaken in 2012 demonstrated that pine marten range expansion had continued into the 21st century and confirmed that the species had re-colonised parts of its former range, including vice counties Sutherland and Caithness, Moray, Banff, parts of Aberdeenshire and Kincardineshire, West Perth, Mid Perth, East Perth, a limited western area of Angus and Fife,

[58] Reason, P.F. and Wray, S. (2025) Uk Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for development affecting bats. Version 1.2. Chartered Institute of Ecology and Environmental Management, Ampfield.
[59] Mammal Society (2020) *Red List for Britain's Mammals*. [Online] Available at: Red List for Britain's Mammals — Mammal Society (accessed November 2025).

Stirlingshire, parts of Dunbartonshire, Main Argyll and into Kintyre. The UK population is increasing in both population and range[60]; therefore, the pine marten population within the ESA is of medium sensitivity and of Local importance.

4.8.23 Pine marten scat was observed during the survey, and a potential pine marten box was recorded. In the absence of monitoring, as a precaution, the pine marten box is considered a den for this assessment. This den is outside the construction zone of the Proposed Development and is outside the non-breeding zone of 30 m, and the breeding (March – June inclusive) disturbance zone of 100 m. SSEN Transmission will utilise embedded mitigation measures including the Pine Marten SPP and GEMPs (e.g., Forestry) to minimise impacts on pine marten using the surrounding area. Considering embedded mitigation, effects on pine marten are predicted to be of **negligible** magnitude and **not significant**.

Reptiles

4.8.24 The potential impacts on reptile species (adder, common lizard and slow worm), all nationally protected and species found widespread and in low numbers in the north of Scotland (**Medium** value) are limited to direct mortality through construction related operations.

4.8.25 All reptiles that are native to Scotland are afforded protection from intentional and reckless killing under the Wildlife and Countryside act 1981 (as amended). The adder, Scotland's only native snake, is reported to have suffered a 36 % decrease in its distribution between 1994 and 2024, with the overall range remaining the same[61]. Slow worms and common lizard populations are anecdotally considered to be declining due to habitat loss and both species are included on the SBL, and both species are therefore conservation priorities for Scotland. All three species are common and widespread in Britain, consequently the reptile population within the ESA is of medium sensitivity and is of Local importance.

4.8.26 Common lizard were recorded during the survey, with habitats within the ESA being suitable to support other common reptile species such as adder and slow-worm. In the absence of a reptile SPP, reptiles will be at risk of direct mortality through construction related operations, which would constitute an offence under the Wildlife and Countryside Act 1981 (as amended). Effects on reptiles are of **medium** magnitude due to the risk of direct mortality, potentially individuals across all three species are likely to be killed through construction related activities, including (but not limited to) vegetation clearance, soil stripping, and access track construction. Effects to reptiles are therefore considered permanent, adverse, of **medium** magnitude and **significant** at the Local level.

Protected Species (Aquatic)

Salmonid fish (Atlantic salmon and sea trout / brown trout)

Construction

4.8.27 The potential impacts on Atlantic salmon, an internationally protected species which is common and widespread in Scotland (**High** value), from the Proposed Development are limited to destruction of habitat, from in-stream construction works, disturbance and mortality of spawning fish, and direct mortality of fish through pollution events and habitat loss. Furthermore, during operation of the Proposed Development, there is potential for Atlantic salmon migrating to and from their spawning grounds to be affected by EMF from the active UGC. This could deter Atlantic salmon from reaching their spawning grounds and / or migrating back out to sea to complete their life cycle.

[60] European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) Fourth Report by the United Kingdom under Article 17. Conservation status assessment for the species. S1357 – Pine marten iMartes martes) United kingdom [Online] Available at: UK conservation status assessment for S1357 - Pine marten (Martes martes) as part of the Fourth Report by the United Kingdom under Article 17 of the EU Habitats Directive (Accessed November 2025)

[61] Ward, R.J., Gray, F.G., Foster, J., Cooper-Bohannon, R., Julian, A.M., Whatley, C., Raynor, R., and McKinnell, J. 2025. *Status of the adder in Scotland (2022-24) - re-survey and comparison with the 1994 study*. NatureScot Research Report 1376.

4.8.28 Scotland is a stronghold of Atlantic salmon, and the species uses most streams and rivers, other than where streams are too steep or too small for salmon to ascend, or blocked by waterfalls or dams, or the water quality or habitat is unsuitable[62]. Therefore, any population of salmon within the ESA is of high sensitivity and of Local importance.

4.8.29 Field surveys identified suitable habitat for salmonid fish (Atlantic salmon and brown / sea trout), though no spawning habitat was recorded; therefore, there is potential for salmonid fish to be present within both the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. The Proposed Development will cross both these watercourses, with crossings being undertaken by way of open cut trenching. SSEN Transmission do not have a SPP plan for fish species, and due to works occurring within the watercourse there is potential for salmonid fish to be harmed during the works, both at the area of the watercourse where works are being undertaken, and a significant distance downstream. Effects on Atlantic salmon are considered permanent, adverse of **medium** magnitude and **significant** at the Local level.

Operation

Migratory fish such as salmonids have responded to EMF in laboratory settings[63] and so there is potential for salmonids to be affected by the UGC, buried underneath the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. Current research upon the effects of EMF is sparse, and it is currently unknown whether EMF affect spawning migrations44 within the riverine environment. FHS identified no spawning habitat within proximity of the crossing points, and so it seems unlikely that salmonid fish are spawning within the watercourse at the location of the Proposed Development; however, should suitable spawning habitat occur upstream of the surveyed areas, salmonids may be deterred from moving upstream to these spawning locations and again downstream as juveniles migrating as smolts out to sea. As a precaution, effects are considered adverse, permanent and of **low** magnitude and **significant** at the Local level.

Lamprey (Brook, River, and Sea Lamprey)

Construction

4.8.30 The potential impacts on lamprey (brook, sea and river lamprey), which are internationally protected species (**High** value), from the Proposed Development are limited to loss of habitat, disturbance and mortality of spawning fish, and direct mortality of fish through pollution events and habitat loss. In addition, during operation of the Proposed Development, there is potential for lamprey to be affected by EMF from the active UGC, deterring lamprey from reaching their spawning grounds, or heading out to see to complete their lifecycle.

4.8.31 Lampreys are broadly distributed across Scotland, except for Orkney, Shetland and the northwest mainland[64]. Therefore, any population present within the ESA is of medium sensitivity and of Local importance.

4.8.32 Field surveys identified suitable habitat for lamprey, including habitat suitable for ammocoetes (larval lamprey); however, no spawning habitat for lamprey was recorded. Therefore, there is potential for lamprey to be present within both the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. The Proposed Development will cross both these watercourses, with crossings being undertaken by way of open cut trenching. SSEN Transmission do not have a SPP plan for fish species and due to works occurring within the watercourse there is potential for lamprey to be harmed during the works, both at the area of the watercourse where works are being undertaken, and a significant distance downstream. Effects on lamprey are considered permanent, adverse of **medium** magnitude and **significant** at the Local level.

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[62] Marine.gov,scot *Atlantic salmon distribution in Scotland* [Online] Available at: Atlantic salmon distribution in Scotland | marine.gov.scot (Accessed November 2025).

[63] Verhelst. P., Pauwels Ine., Pohl, L., Reubens, J., Schilt, B & Hermans, A. (2025) *Electromagnetic fields and diadromous fish spawning migration*: *An urgent call for knowledge*. Marine Environmental Research Volume 204.

[64] Hume J.B. (2017) *A review of geographic distribution, status and conservation of Scotland's lampreys*. [Online] Available at: Hume_lampreys_Scotland (Accessed November 2025).

Operation

4.8.33 Migratory fish such as lamprey have responded to EMF in laboratory settings[65] and so there is potential for lamprey be affected by the UGC, buried underneath the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. Current research upon the effects of EMF is sparse, and it is currently unknown whether EMF affect spawning migrations44 within the riverine environment. FHS identified no spawning habitat within proximity of the crossing points, and so it seems unlikely that lamprey is spawning within the areas of the watercourses surveyed; however, should suitable habitat exist upstream in unsurveyed areas, then lamprey may be deterred from moving upstream to these spawning grounds and again downstream and out to sea to complete their lifecycle in the case of river and sea lamprey. Therefore, as a precaution effects are considered adverse, permanent and of **minor** magnitude and **significant** at the Local level.

European Eel

Construction

4.8.34 European eel, which although not protected by legislation in Scotland, is subject to an eel recovery plan, which has been incorporated in Scotland since 2008, and is therefore of **Medium** value. Significant impacts to European eel from the Proposed Development are limited to loss of habitat and direct mortality of fish through pollution events and habitat loss. During operation of the Proposed Development, there is potential for migrating eel being affected by EMF within the active UGC, deterring eel from reaching their spawning grounds in the Sargasso Sea.

4.8.35 The European eel has not been heavily exploited in Scotland, however, eel numbers in Scotland are thought to have fallen by more than 90 % since the 1990s[66]. The IUCN now regards the species as 'Critically Endangered'. However, the species is widely distributed within European freshwaters and can be found in a variety of freshwater and estuarine habitats. Therefore, the European eel population within the ESA is of medium sensitivity and of Local importance.

4.8.36 Field surveys identified suitable habitat for European eel. Therefore, there is potential for eel to be present within both the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. The Proposed Development will cross both these watercourses, with crossings being undertaken by way of open cut trenching. SSEN Transmission do not have a SPP plan for fish species and due to works occurring within the watercourse there is potential for eel to be harmed during the works, both at the area of the watercourse works and a significant distance downstream. Effects on European eel are considered permanent, adverse of **medium** magnitude and **significant** at the Local level.

Operation

4.8.37 Migratory fish such as European eel have responded to EMF in laboratory settings[67] and so there is potential for European eel to be affected by the UGC, buried underneath the Allt na Buaile Salaich and the tributary of the Allt a'Bhaelaich. Current research upon the effects of EMF is sparse, and it is currently unknown whether EMF affect spawning migrations44 within the riverine environment. European eel, if present may be deterred from moving through the watercourse on their way to sea during their migration; therefore, as a precaution effects are considered adverse, permanent and of **minor** magnitude and **significant** at the Local level.

[65] Verhelst. P., Pauwels Ine., Pohl, L., Reubens, J., Schilt, B & Hermans, A. (2025) *Electromagnetic fields and diadromous fish spawning migration*: *An urgent call for knowledge*. Marine Environmental Research Volume 204.
[66] NatureScot: *European eel* [Online] Available at: European eel | NatureScot (Accessed December 2025)
[67] Verhelst. P., Pauwels Ine., Pohl, L., Reubens, J., Schilt, B & Hermans, A. (2025) *Electromagnetic fields and diadromous fish spawning migration*: *An urgent call for knowledge*. Marine Environmental Research Volume 204.

Ornithology Species

Black Grouse

4.8.38 The potential impacts on black grouse, a scarce and declining breeder in Scotland[68] (**Medium** value) from the Proposed Development are limited to disturbance, displacement and abandonment of leks.

4.8.39 In Scotland, the population is assessed by the number of lekking males, for which the most recent figure indicated a total of 3,344 males[76]. Therefore, any population of black grouse is of medium sensitivity and of Local importance.

4.8.40 Information gathered from the desk study from surveys undertaken for the High Constellation EIAR identified up to 12 black grouse leks in their survey area, and three of these (Lek ID9, Lek ID10, and Lek ID11) lie within 200 m of the Proposed Development. Therefore, the leks lie within the NatureScot disturbance distance of 500 – 750 m, as detailed in the SSEN Transmission SPP. Surveys undertaken for the High Constellation Wind Farm EIAR suggest that the lek locations across their survey area can be fluid; therefore, relocation of leks away from sources of disturbance is a possibility. Studies by Ruddock and Whitfield (2007)[69] found that leks may be actively disturbed at 300 m to 500 m from disturbance source, therefore black grouse may be displaced from lekking, breeding or foraging during construction of the Proposed Development.

4.8.41 Based on the surveys undertaken for the High Constellation Wind Farm EIAR, assuming a worst-case loss of Lek ID9, lek ID10 and Lek ID11 due to disturbance over the course of one reeding season, the effects of three lost lek sites for one breeding season is predicted to be temporary, reversible, of **moderate** magnitude and **significant** at the Local level.

Golden Eagle

4.8.42 The potential impact on golden eagle, which is protected by national legislation (Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)) (**Medium** value) is limited to disturbance to nesting golden eagles, and thus abandonment and loss of nesting sites and a loss of foraging habitat.

4.8.43 There is an estimated 508 breeding pairs of golden eagle breeding across Scotland[68]; as the number of breeding pairs now exceeds the 500 pair threshold at a national scale, golden eagle has exceeded the national target for favourable conservation status[70]; therefore, any golden eagle population is of **medium** sensitivity and of **Local** importance.

4.8.44 Surveys for the High Constellation Wind Farm EIAR found a pair of golden eagles with a chick on a nest site in 2018. The nest site lies approximately 2.1 km north of the Proposed Development. Furthermore, there is another known nest site, which lies approximately 1.2 km north of the Proposed Development.

4.8.45 These nest sites are therefore beyond published NatureScot disturbance buffers for golden eagle of between 750 m and 1 km, as referenced in SSEN Transmission's Bird SPP. Therefore, no disturbance to nesting golden eagle is anticipated from the Proposed Development and effects are considered to be **negligible** and **not significant**.

4.8.46 Most of the habitats within the HSA are a mixture of woodland and forest (59 % of habitats within the HSA), with a further 30 % of habitats within the HSA being heathland and scrub, however, permanent and temporary habitat loss equates to 12.293 ha, which is 5.93 % of the total area of the HSA (236.77 ha). Given that the area of habitat directly impacted (both temporarily and permanently) represents a very small area of total habitat available to golden eagle, effects are considered temporary, reversible of **negligible** magnitude and **not significant**.

[68] Wilson, M.W., Austin, G.E>, Gillings, S. and Wernham, C.V. (2015) Natural Heritage Zone Bird Population Estimates. SWBSG Commissioned Report Number SWBSG_1504. pp.72

[69] Ruddock, Marc & Whitfield, D. (2017) *A review of disturbance distances in selected bird species*.

[70] NatureScot *Golden Eagle* [Online] Available at: Golden eagle | NatureScot (Accessed December 2025)

Hen harrier

4.8.47 The potential impact to hen harrier, which is protected by national legislation (Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)) (**Medium** value) is limited to disturbance to nesting hen harrier, and thus abandonment and loss of nesting sites and a loss of foraging habitat.

4.8.48 Hen harrier is a resident breeder, with 460 pairs estimated to breed across Scotland[71]. Hen harrier has a widespread but thin distribution[72], consequently, the hen harrier population present is of medium sensitivity and of Local importance.

4.8.49 The High Constellation EIAR reports that Argyll Raptor Study Group (ARSG) recorded an occupied hen harrier nest with successfully fledged young in 2020. This nest site is approximately 2.25 km from the Proposed Development.

4.8.50 This nest site is beyond the NatureScot disturbance distance for hen harriers of between 500 m to 750 m, as referenced in SSEN Transmission's Bird SPP. Therefore, no disturbance to nesting hen harrier is anticipated from the Proposed Development and effects are considered of **negligible** magnitude and **not significant**.

4.8.51 Most of the habitats within the HSA are a mixture of woodland and forest (59 % of habitats within the HSA), with further 30 % of habitats within the HSA being heathland and scrub, however, permanent and temporary habitat loss equates to 12.293 ha, which is 5.93 % of the total area of the HSA (236.77 ha). Given that the area of habitat directly impacted (both temporarily and permanently) represents a very small area of total habitat available to hen harrier, effects are considered temporary, reversible of **negligible** magnitude and **not significant**.

Divers (black-throated diver and red-throated diver)

4.8.52 The potential impact to black-throated diver and red-throated diver, both of which are protected by national legislation (Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)) (**Medium** value) is limited to disturbance to nesting divers, and abandonment and loss of nesting sites.

4.8.53 Red-throated diver is a scarce breeder in Scotland, with the population estimated to comprise 1,268 pairs with most breeding pairs located on Orkney, and Shetland, the Hebrides and northwest Scotland[73]. Black-throated diver is resident in western Scotland with a total of 200 breeding pairs[74]. Therefore, any divers present within the Site are of medium sensitivity and of Local importance.

4.8.54 The ornithological desk study confirmed the nearest known black-throated diver breeding site is at Loch a'Mhuilinn which is 1.14 km south of the Proposed Development, with the nearest known red-throated diver breeding site being recorded at Loch Laoighscan, which is 1.6 km north of the Proposed Development. These breeding sites are beyond the NatureScot disturbance distances for black-throated diver, as referenced in SSEN Transmission's Bird SPP (500 – 750 m during breeding season and 1 km during the non-breeding season), and this coupled with the fact that there are no suitable breeding lochans within 750 m of the Proposed Development, means that red-throated and black-throated divers are not predicted to be disturbed or impacted by the Proposed Development. Therefore, effects are of **negligible** magnitude and **not significant**.

Greenland White-Fronted Goose

4.8.55 The potential impact to Greenland white fronted goose, a Qualifying Feature of the Kintyre Roosts SPA / Ramsar site and the Kintyre Goose Lochs SSSI (**Medium** value) is disturbance of roosting geese and abandonment of roosting sites.

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[71] Eaton, M. A & the Rare Breeding Birds Panel (2023) *Rare Breeding Birds in the United Kingdom in 2021*. British Birds 116: 615 – 676.

[72] Scottish Raptor Study Group. *Hen Harrier* [Online] Available at: Scottish Raptor Study Group | | Hen Harrier (Accessed December 2025.

[73] Musgrave, A., Aebishcer, N., Eaton M., Hearn, R., Newton, S., Noble., Parsons., Risely., K., and Stroud, D. (2013) *Population estimates of birds in Great Britain and the United Kingdom*. British Birds 106, pp 64-100.

[74] RSPN Black-throated diver. [Online] Available at: Black Throated Diver Facts | Gavia Arctica (Accessed December 2025)

4.8.56 Greenland white-fronted goose is entirely restricted to Great Britain and Ireland during the winter. The global population has declined rapidly, and by 2015, stood at 19,000 individuals[75]. The population resident within the Kintyre Goose Roosts SPA / Ramsar accounts for 8 % of the total world population and 16 % of GB population, therefore Greenland white-fronted goose is of high sensitivity and of International importance.

4.8.57 The nearest known roosting site of Greenland white-fronted goose is at Loch a'Choarainn, which lies approximately 1.64 km north of the Site, which is outside of direct construction disturbance (based on the NatureScot disturbance buffers for Greenland white-fronted goose) of between 200 – 600 m, as referenced in SSEN Transmission's Bird SPP). Loch Garasdale is 2.77 km northwest of the Site at its nearest point and forms part of the Kintyre Goose Roosts SPA. Though Loch Garasdale is outside of direct construction disturbance from the Site, there is a track which links the Proposed Development to the A83. This access track is approximately 309 m north of Loch Garasdale at its nearest point, which is within the disturbance buffer for Greenland white-fronted goose. At this stage it is not known whether this track will be used to access the Site during construction of the Proposed Development; however, to avoid effects to Greenland white-fronted goose, if the access track between the Site and A83 is used during construction, the following measures will be undertaken:

- SSE Transmission will undertake the proposed construction works and / or de-commissioning works outside of the wintering period (October to March), when SPA birds are not present in Scotland. If construction works and / or de-commissioning works cannot be undertaken outwith the wintering period (October to March), the existing access track in the vicinity of the Loch na Naich will not be used within one hour after sunrise and one hour prior to sunset to minimise disturbance to Greenland white-fronted geese.

4.8.58 With the above measures in place no impacts upon Greenland white-fronted goose is expected and effects to Greenland white-fronted goose are considered to be of **negligible** magnitude and **not significant**.

Habitats

Annex I Habitats

4.8.59 The significance of impact to Annex I Habitat (f1a- blanket bog and f1a6 – degraded blanket bog) (**High** value), because of the Proposed Development is limited to direct habitat loss, and indirect habitat loss through effects to water tables.

4.8.60 Blanket bog is one of Scotland's most common semi-natural habitats, covering some 1.8 million hectares or 23 % of Scotland's land area[76]. Therefore, any blanket bog within the HSA is of medium sensitivity and of Local importance.

4.8.61 To facilitate the Proposed Development 0.128 ha of Blanket bog will be permanently lost (0.12 ha of fa1 – blanket bog and f1a6 – degraded blanket bog), see **Table 4.4**. This equates to 0.18 % of total blanket bog habitat recorded within the HSA (69.29 ha). In addition, as per **Appendix K Biodiversity Net Gain Assessment Report**, a further 4.29 ha of blanket bog will be deteriorated by the construction of temporary access tracks and operational corridor. Therefore, a total of 4.41 ha of blanket bog will be lost or deteriorated to facilitate the Proposed Development. The loss of blanket bog is a permanent non-reversible adverse impact; however, with embedded mitigation in place, including the commitment of SSEN Transmission to ensure that a greater extent of blanket bog is restored than the extent of blanket bog that is lost or deteriorated, the effect of the loss and deterioration of 4.41 ha of blanket bog is considered temporary, reversible, of **negligible** magnitude and **not significant**.

[75] Griffin, L.R., Burrell, E.M., Harrison, A.L., Mitchell, C. & Hilton, G.M. 2020. *Conservation management of Greenland white-fronted geese anser albifrons flavirostris* on Islay, Scotland. Scottish Natural Heritage Research Report no 912.
[76] NatureScot. *Mountain's heaths and bogs.* [Online] Available at: Mountains, heaths and bogs | NatureScot (Accessed December 2025.

Table 4.4: Indicative Areas of Habitat Loss from The Proposed Development

Habitat Type	UK Habitat Classification	Area of Permanent Habitat Loss (ha)	% of UK Habitat Classification within HSA	% relative to the total area of HSA	Area of Temporary Habitat Loss (ha)	% of UK Habitat Classification within HAS	% relative to the total area of HSA.
Wetland	f1a – blanket bog	0.12	0.21	0.05	4.30	7.40	1.82
	f1a6 degraded blanket bog	0.008	0.07	0.003	0.32	2.86	0.14
	f2c – upland flushes, fens and swamps	0.002	0.07	0.0008	0.20	0.71	0.08
Woodland and Forest	w2c – other coniferous woodland	0.097	0.07	0.04	5.43	3.99	2.29
	w1d – wet woodland	-	-	-	0.04	5.63	0.02
	w1h6 – other woodland; mixed; mainly conifer	-	-	-	0.04	6.06	0.02
Urban	u1b – developed land; sealed surface	-	-	-	0.52	24.41	0.22
	u1c – artificial unvegetated, unsealed surface	-	-	-	0.44	4.94	0.19
	u1e – built linear features	0.004	0.09	0.002	0.77	16.49	0.33
Sparsely vegetated land	s1d – other inland rock	0.002	3.33	0.0008	-	-	-
Total		0.233	-	0.09	12.06	-	5.09

SBL and LBAP Habitats

4.8.62 The significance of impact to SBL and LBAP habitats (Wet Woodland (w2b – wet woodland) and Upland Flushes, Fens and Swamps (f2c – upland flushes, fens and swamps), (**Medium** value), because of the Proposed Development is limited to direct and indirect habitat loss, both temporary and permanent

4.8.63 Wet woodland and Upland Flushes, Fens and Swamps are both listed on the SBL and the Argyll Bute LBAP and are therefore conservation priorities in Scotland and Argyll and Bute. Wet woodland is widespread across Scotland[77]. Upland Flushes, Fens and Swamps are widespread in Scotland, with an estimated area of 238,000 ha in Scotland as of 2008[78]. Considering this information, SBL and LBAP habitats are of low sensitivity and of Local importance.

4.8.64 There will be temporary loss of 5.43 ha of w2b wet woodland, which is listed on both the SBL and the Argyll and Bute LBAP. As this is a temporary habitat loss, this habitat will be restored following completion of construction, and the effect is considered temporary, reversible of **negligible** magnitude and **not significant**.

4.8.65 0.002 ha of f2c - upland flushes, fens and swamps, will be permanently lost to facilitate the Proposed Development. This habitat conforms to Upland, Fens and Swamps, which is listed on the SBL and Argyll and Bute LBAP. The loss of 0.002 ha of f2c – upland flushes, fens and swamps, equates to 0.07 % of the total of f2c – upland fens and swamps within the HSA; therefore due to the relatively small footprint of habitat lost, the effect of the habitat loss is considered permanent, adverse effect of **low** magnitude and **not significant**.

Biodiversity Net Gain

4.8.66 A Biodiversity Net Gain (BNG) assessment has been undertaken for the Proposed Development, with the aim of securing a positive effect for biodiversity through improvements to the condition and quality of baseline habitats present, see **Appendix K: Biodiversity Net Gain Assessment Report**.

4.8.67 The baseline biodiversity value of the area-based habitats has been assessed to be 18.82 Biodiversity Units (BU), while the post development value of area-based habitats is predicted to be 35.47 BU. Overall the Proposed Development is predicted to achieve an 88 % BNG.

4.8.68 Any loss or deterioration of an irreplaceable habitat has been recorded by its area in ha, outwith the toolkit to allow for bespoke compensation. This assessment predicted loss or deterioration of 4.41 ha of irreplaceable blanket bog. SSEN Transmission is committed to ensure that a greater extent of blanket bog is restored than the extent of irreplaceable blanket bog that is permanently lost or deteriorated.

4.9 Additional Mitigation

Protected Species (Terrestrial)

Reptiles

4.9.1 The CEMP should include a Precautionary Method of Works (PMoW) for reptiles, which should include, but not be limited to, the following measures. This is required to reduce the risk of harm or fatality to reptiles during the works:

- Site clearance works will be supervised by the appointed EnvCoW and preceded by a throughout hand search, check and removal of surface debris to ensure reptiles are not killed or injured. If a reptile is found works will cease and consultation will be required with NatureScot; and,
- Site clearance works will only be carried out when animals are active, which is weather and temperature dependent. This is usually March to October, if there is not a prolonged cold period and / or the temperature does not fall below 5ºC.

[77] NatureScot. *Wet woods* [Online] Available at: Wet woods | NatureScot (Accessed December 2025)
[78] Scotland's environment. *Mountains and uplands* [Online] Available at: wildlife-mountains-and-uplands.pdf (Accessed December 2025)

Protected Species (Aquatic)

4.9.2 The following measures, as a minimum, will be included within the CEMP, to avoid harm to salmonid fish, lamprey and European eel. These measures will be required ahead of any watercourse crossing, including those of the UGC and access tracks:

- Any new watercourse crossings required for the UGC, and access tracks will be designed in accordance with:
    - SEPA Engineering Guidance – SEPA Supporting guidance and good practice guides[79], including WAT-SG25: River Crossings.
    - CIRIA 92019) Culvert, screen and outfall manual (C786F) 2019[80];
    - SEPA WAT-PS-06-03: Culverting of Watercourses – Position Statement and Supporting Guidance 2015[81]; and,
    - SSEN GEMP TG-NET-ENV-515: Watercourse Crossings,
- Fish Habitat Surveys will be undertaken prior to construction to advise on micrositing of crossing points, as required, to minimise the risk to fish populations and avoid high value habitats such as spawning habitats for salmonids and lamprey;
- All watercourse crossing works will be undertaken during the period of 15th June and 30th September to avoid the fish spawning season;
- Prior to dewatering of any bunded area, and prior to watercourse crossing works, an appropriately qualified electrofishing specialist will conduct a fish rescue from the bunded area. Every time the bunded is breached, the rescue will be repeated;
- When dewatering the bunded area, pump inlets will be fitted with a mesh screen to prevent an uptake of fish or other aquatic species;
- Water pumped from a bunded area, if needed, will be discharged onto an open area of the riverbank through a sedimat, and allowed to filter into the ground to prevent sedimentation into the channel;
- Any in-river works will be phased and undertaken with care so that disturbance to channel material is minimised;
- In vicinity of the works, water quality monitoring will be undertaken to ensure pollution and sedimentation of the watercourse is minimised, and corrective actions can be completed. This will include monitoring for dissolved oxygen both % saturation and miligrams per litre (mg/l), pH, temperature and turbidity; and,
- At no time will the watercourse be obstructed in such a way that fish and other aquatic species cannot pass.

Ornithology

Black Grouse

4.9.3 To avoid effects on black grouse, the following additional mitigation measures are required:

- The ECoW should undertake preconstruction walkover survey in the area of Lek ID9, Lek ID10 and Lek ID11 and their surrounds and up to 2 km[82] from the Proposed Development to identify if any leks are present;
- Should any leks be identified within the Black Grouse Protection Zone as stipulated within the SSEN Transmission Bird SPP, a 300 m to 500 m disturbance buffer will be established. No activity will occur within these buffer areas two hours after sunrise and two hours before sunset within the main black grouse lekking season (April to May);

[79] SEPA supporting guidance: *Good Practice Guides (various)* [Online[Available at: Engineering guidance | Scottish Environment Protection Agency (SEPA) (Accessed October 2025)
[80] CIRIA (2019) *Culvert, screen and outfall manual (C786F)* [Online] Available at: Item Detail (Accessed October 2025)
[81] SEPA (2015) *WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance* [Online] Available at: WAT-PS-06-02 (Accessed October 2025
[82] Scottish Natural Heritage (2016): *Assessing Connectivity with Special Protection Areas (SPAs) Guidance Version 1*. NatureScot

- Any maintenance activity, such as tree limbing, should take place outside of the black grouse breeding season (April to July), where possible, if not, at least 300 m from lek sites and / or outside of the daily lekking period as stipulated within the SSEN Transmission Bird SPP; and
- Where possible, any gates within 300 m of any lek sites will remain open after first arrival, avoiding the need for subsequent entry to open and close the gate and the associated potential disturbance to the lek due to pedestrian activity.

4.10 Summary

4.10.1 A summary of the assessment is provided in **Table 4.5**.

Table 4.5: Appraisal of Ecology and Ornithology Effects

Environmental Feature	Project Interaction	Receptor Value	Receptor Sensitivity	Pre-mitigation significance	Additional Mitigation Measures	Residual Effect
Designated						
Kintyre Goose Roosts SPA / Ramsar and Kintyre Goose Lochs SSSI	Potential disturbance of goose roost at Loch Garasdale if access track is used	High	High	Not Significant	None required	Not Significant
Priority Peatland (Annex I)	Habitat loss following the construction of permanent access tracks. Deterioration of blanket bog habitat due to construction of temporary access tracks and operational corridor	High	High	Not significant	None required	Not Significant
Protected Species (Terrestrial)						
Bats	Potential loss / damage to roosting sites Potential harm or disturbance to roosting bats Potential loss of foraging and commuting habitat	High	Medium	Negligible	None required	Not Significant
Pine Marten	Potential disturbance of individuals moving through the landscape Killing or injury Damage / destruction of dens	Medium	Medium	Negligible	None Required	Not significant

Environmental Feature	Project Interaction	Receptor Value	Receptor Sensitivity	Pre-mitigation significance	Additional Mitigation Measures	Residual Effect
Reptiles	Killing or injury	Medium	Medium	Significant at the Local level	Preconstruction surveys PMoW incorporated within CEMP	Not significant
Protected Species (Aquatic)						
Salmonid fish	Loss of habitat Killing or injury Disturbance during migration from EMF	High	High	Significant at the Local level	Preconstruction surveys and fish rescue ahead of watercourse crossings GEMPs 510 – 516, 520, 522 + 523. Best available techniques for avoidance of pollution to waterbodies within CEMP	Not significant (construction) Minor adverse (operation)
Lamprey	Loss of habitat Killing or injury Disturbance during migration from EMF	High	Medium	Significant at the Local level	Preconstruction surveys and fish rescue ahead of watercourse crossings GEMPs 510 – 516, 520, 522 + 523. Best available techniques for avoidance of pollution to waterbodies within CEMP	Not significant (construction) Minor adverse (operation)
European eel	Loss of habitat Killing or injury Disturbance during migration from EMF	High	Medium	Significant at the Local level	Preconstruction surveys and fish rescue ahead of watercourse crossings GEMPs 510 – 516, 520, 522 + 523. Best available techniques for avoidance of pollution	Not significant (construction) Minor adverse (operation)

Environmental Feature	Project Interaction	Receptor Value	Receptor Sensitivity	Pre-mitigation significance	Additional Mitigation Measures	Residual Effect
					to waterbodies within CEMP	
Ornithology						
Black grouse	Potential disturbance to nesting black grouse and lekking males	Medium	Medium	Significant at the Local level	Preconstruction surveys Application of disturbance buffer to any identified leks Maintenance activities to be timed outside of black grouse breeding season (April to July) Any gates within 300 m of any lek sites will remain open after first arrival, avoiding the need for subsequent entry to open and close the gate and the associated potential disturbance to the lek due to pedestrian activity Bird SPP	Not significant
Golden Eagle	Potential disturbance of nesting sites Disturbance and displacement of foraging golden eagles	Medium	Medium	Not Significant	None required	Not significant
Hen harrier	Potential disturbance of nesting sites	Medium	Medium	Not Significant	None Required	Not significant

Environmental Feature	Project Interaction	Receptor Value	Receptor Sensitivity	Pre-mitigation significance	Additional Mitigation Measures	Residual Effect
	Disturbance and displacement of foraging golden eagle					
Divers (black-throated diver and red-throated diver)	Potential disturbance and / or abandonment of nesting sites.	Medium	Medium	Not Significant	None Required	Not Significant
Greenland White fronted goose	Disturbance to roosting geese on Loch Garasdale	Medium	High	Not Significant	None Required	Not significant

5. GEOLOGY AND SOILS

5.1 Introduction

5.1.1 This chapter evaluates the potential effects on the geological environment (geology and soils) of the construction and operational phases of the Proposed Development (as defined in **Chapter 2: Project Description**). Where potential significant effects are predicted, appropriate mitigation measures are proposed, and the significance of predicted residual effects is assessed.

5.1.2 This assessment identifies areas of geological interest and features of note. The information and data collated from the previously undertaken studies and assessments have informed the Proposed Development route and alignment selection to minimise the potential impacts on the geological environment that may result from the Proposed Development.

5.2 Legislation

5.2.1 The National Planning Framework 4 (NPF4)[83], adopted by the Scottish Government on 13th February 2023, provides planning guidance and policies regarding sustainable development. The NPF4 outlines how nationally important land use planning matters should be addressed.

5.2.2 The following Guidance was also adhered to:

- The Scottish Government (2017) *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments*[84];
- The Scottish Government (2009) *The Scottish Soil Framework*[85];
- The Scottish Government, NatureScot (formally Scottish Natural Heritage (SNH)), Scottish Environment Protection Agency (SEPA) (2017) *Peatland Guidance on Development on Peatland*[86];
- The Scottish Office (1996) Planning Advice Note (PAN) 50 – *Controlling the Environmental Effects of Surface Mineral Working*[87];
- NatureScot (2023) *Advising on peatland, carbon-rich soils and priority peatland habitats in development management*[88];
- SEPA (2017) *Developments on Peat and Off-Site Uses of Waste Peat*[89];
- Scottish Renewables & SEPA (2012) *Developments on Peatland - Guidance on the assessment of peat volumes, re-use of excavated peat and the minimisation of waste*[90];

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[83] Scottish Government National Planning Framework 4, February 2023 Link: https://www.gov.scot/publications/national-planning-framework-4/ (link accessed December 2025)

[84] The Scottish Government (2017) *Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments, https://www.gov.scot/publications/peat-landslide-hazard-risk-assessments-best-practice-guide-proposed-electricity/ (Link accessed December 2025)*

[85] The Scottish Government (2009) The Scottish Soil Framework; https://www.gov.scot/publications/scottish-soil-framework/ (*Link accessed December 2025)*

[86] The Scottish Government, NatureScot (formally Scottish Natural Heritage (SNH)), Scottish Environment Protection Agency (SEPA) (2017) *Guidance on Development on Peatland; https://www.gov.scot/publications/peatland-survey-guidance/* (link accessed December 2025)

[87] The Scottish Office (1996) *Planning Advice Note (PAN) 50 – Controlling the Environmental Effects of Surface Mineral Working*; https://www.gov.scot/publications/planning-advice-note-pan-50-controlling-environmental-effects-surface-mineral/pages/1/ (link accessed December 2025)

[88] NatureScot (2023) *Advising on peatland, carbon-rich soils and priority peatland habitats in development management; https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management* (link accessed December 2025).

[89] SEPA (2017) *Developments on Peat and Off-Site Uses of Waste Peat*; was-g-52-developments-on-peat.docx (link accessed December 2025)

[90] Scottish Renewables & SEPA (2012) *Developments on Peatland - Guidance on the assessment of peat volumes, re-use of excavated peat and the minimisation of waste; https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2014/07/assessment-of-peat-volumes-reuse-of-excavated-peat-and-minimisation-of-waste-guidance/documents/guidance-on-the-assessment-of-peat-volumes-reuse-of-excavated-peat-and-the-minimisation-of-waste/guidance-on-the-assessment-of-peat-volumes-reuse-of-excavated-peat-and-the-minimisation-of-waste/govscot%3Adocument/Guidance%2Bon%2Bthe%2Bassessment%2Bof%2Bpeat%2Bvolumes%252C%2Breuse%2Bof%2Bexcavated%2Bpeat%252C%2Band%2Bthe%2Bminimisation%2Bof%2Bwaste.pdf (link accessed December 2025)*

- Forestry Commission Scotland (FCS) & SNH (2010) *Floating Roads on Peat - Report into Good Practice in Design, Construction and Use of Floating Roads*[91];
- Scottish Renewables, SNH, SEPA, FCS, Historic Environment Scotland, Marine Scotland Science and AEECoW (2014) *Good Practice during wind farm Construction, July 2024 Edition**[92]; and
- Construction Industry Research and Information Association (CIRIA) (2023) *C741 Environmental Good Practice on Site*[93].

*Although the Proposed Development is not a wind farm, this guidance provides useful good practice principles such as handling and re-use of soils that can be applied during construction of the Proposed Development.

5.3 Desk Study

5.3.1 A review of baseline data was undertaken using publicly available information and open-source data from a range of sources to evaluate potential short and long-term impacts that the Proposed Development may have on the geological environment.

5.3.2 The data review included the following sources:

- OS 1:50,000 and 1:25,000 scale mapping;
- Aerial and satellite imagery via OS mapping, Google Earth[94] and Bing Maps[95];
- NatureScot (formerly Scottish National Heritage (SNH)) SiteLink[96];
- British Geological Survey (BGS) Onshore GeoIndex[97] 1:50,000 scale mapping for bedrock and superficial geology;
- NatureScot (formerly SNH) Carbon and Peatland 2016 Map[98];
- James Hutton Institute, The National Soils Map of Scotland (1:250,000);
- Mining Remediation Authority Map[99]; and
- Unexploded Ordnance (UXO) Desk Study and Risk Assessment (see **Appendix L**).

5.3.3 Peat depth surveys were carried out for the Underground Cable (UGC) in December 2023 by ERM and October 2025 by SSE contractors to determine the extent and depth of peat across the Proposed Development. Phase 1 peat probing data in the western UGC area, associated with the High Constellation Wind Farm carried out between 2017 and 2019, has been utilised within the assessment.

5.3.4 The full results from these surveys are summarised in this VEA and will also be detailed in **Appendix M: Peat Survey Results**. These will provide Site-specific peat depth information which informed the design of the Proposed Development layout and the subsequent assessment of effects.

5.3.5 The information collected during the desk-based review was supported and validated by a series of detailed site walkovers and peat depth assessments. The information and observations were reviewed in the context of the Proposed Development to evaluate potential short and long-term impacts on the geological environment.

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[91] Forestry Commission Scotland (FCS) & SNH (2010) *Floating Roads on Peat - Report into Good Practice in Design, Construction and Use of Floating Roads* https://www.roadex.org/wp-content/uploads/2014/01/FCE-SNH-Floating-Roads-on-Peat-report.pdf (link accessed December 2025)

[92] Scottish Renewables, SNH, SEPA, FCS, Historic Environment Scotland, Marine Scotland Science and AEECoW (2014) *Good Practice during wind farm Construction, July 2024 Edition*; https://www.nature.scot/sites/default/files/2018-08/Guidance%20-%20Good%20Practice%20during%20wind%20farm%20construction.pdf (link accessed December 2025)

[93] Construction Industry Research and Information Association (CIRIA) (2023) *C741 Environmental Good Practice on Site*

[94] www.googleearth.com (link accessed December 2025)

[95] www.bingmaps.com (link accessed December 2025)

[96] www.nature.scot/map (link accessed December 2025)

[97] BGS Geoindex (onshore); https://mapapps2.bgs.ac.uk/geoindex/home.html (link accessed December 2025)

[98] Carbon and Peatland Map (2026); https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ (link accessed December 2025).

[99] Mining Remediation Authority Map; https://datamine-cauk.hub.arcgis.com/ (link accessed December 2025)

5.3.6 The fieldwork has been undertaken to:

- verify the information collected during the desk and baseline study;
- undertake a visual assessment of the Proposed Development and main geological features;
- determine the depth of peat across the Proposed Development and the associated stability;
- assess the geomorphology and ground conditions across the Proposed Development;
- confirm the underlying substrate across the Proposed Development based on the type of refusal encountered during peat probing and from any exposure substrate; and
- assess the relative location of all the components of the Proposed Development and access routes.

5.3.7 All peat depth assessments were undertaken using best practice guidance for development on peatlands, including the Scottish Government guidance 'Guidance on Developments on Peatland'1 and the Scottish Renewables and SEPA guidance 'Developments on Peatland Guidance on the Assessment of Peat Volumes, Reuse of Excavated Peat and the Minimisation of Waste'7.

Peat Probing Methodology

5.3.8 During the peat probing surveys, the thickness of the peat was assessed using a fibreglass peat probe, approximately 6 mm in diameter. The probe was pushed vertically into the peat or peaty soils until refusal and the depth was recorded at each point, together with a unique location number and the easting and northings coordinates determined by the handheld Global Positioning System instrument (GPS).

5.3.9 When the peat probe meets refusal at the geology underlying the peat, the general 'feel' of the refusal provides insight into the nature of the substrate, in addition to any surrounding substrate exposures such as exposed gravel or bedrock. The following criteria were used to assess underlying material:

- Solid and abrupt refusal – bedrock;
- Solid but less abrupt refusal with grinding or crunching sound – sand, gravel or weathered bedrock; or
- Gradual refusal – dense fibrous peat or soft clay.

Phase 1 Peat Probing

5.3.10 Phase 1 peat probing was undertaken between 2017 and 2019 in the western area of the proposed UGC as part of the assessment for High Constellation Wind Farm. The survey comprised peat probes on a 100 m x 100 m grid across the Proposed Development to determine peat depths on a wider scale.

Phase 2 Peat Probing

5.3.11 Phase 2 peat probing was undertaken across the Proposed Development which comprised data collection at targeted infrastructure locations:

- Proposed tracks were probed at 25 m intervals with offsets at 25 m on either side of the proposed track. This included proposed tracks in cut or fill, temporary tracks and upgrades to existing tracks, although centreline probes were not undertaken along existing tracks since these had already been constructed;
- In addition, peat probing data was also collected along the UGC route at 25 m intervals with 25 m offsets on either side of the alignment to allow for micro-siting; and
- Throughout the design evolution and prior to the final design freeze, additional data was collected out with the Proposed UGC route due to changes to the Proposed Development alignment during the alignment options appraisal stage.

5.4 Limitations and Assumptions

5.4.1 A variety of sources and information have been consulted to provide an understanding of the Proposed Development, including survey data and publicly available data sources.

5.4.2 Desk-based assessments use high level data and large-scale mapping which does not necessarily account for the localised environment and minor variations in ground conditions. As a result, field surveys were completed to inform the occurrence and condition of soils and geology across the Proposed Development.

5.4.3 In addition, although detailed peat probing was undertaken across all Proposed Development infrastructure locations and access tracks, it is possible that there is localised depth variation between each probing point.

5.5 Baseline

Introduction

5.5.1 This Section of the Chapter outlines the present conditions which form the existing baseline for the geological environment within the Study Area. For the full description of the Proposed Development refer to **Chapter 2: Project Description**.

Designated Sites

5.5.2 Using information from the NatureScot SiteLink14 mapping shows that there are no designated sites across the Proposed Development relating to geology and peat.

Land Use, Topography and Slope

5.5.3 The Proposed Development is located between Crossaig Substation to the east and an unnamed road to the west. The Proposed Development is located across woodland and peatland, with unnamed tracks and roads associated with forestry operations.

5.5.4 The Proposed Development is generally characterised by undulating topography with moderate to steep slopes and localised flatter expanses. OS mapping indicates that the elevation across the Proposed Development is at the peak of Cnoc na Buaile Salaich situated at 214 m AOD. The lowest elevation across the Proposed Development is at approximately 70 m AOD at the eastern extent of the Proposed Development at the Crossaig Substation. The nearby peak of Cnoc an t-Samhlaidh is located within close proximity to the south of the proposed development, with an elevation of 264 m AOD.

5.5.5 In areas with significant slopes, the composition and extent of the overlying soils may affect the stability of the slopes. The steepest slopes are located in the central eastern area of the Proposed Development, sloping to the east towards an unclassified waterbody. The other slopes are recorded to be gentler, with areas of flatter land across the Proposed Development (generally in the eastern area towards the existing Crossaig Substation).

Soils

5.5.6 The 1:250,000 National Soil Map of Scotland14 indicates that there two main soil types recorded across the Proposed Development:

- Peaty gleys with dystrophic semi-confined peat; and
- Dystrophic blanket peat.

5.5.7 **Figure 5.3 in Appendix D** is an extract from the ‘National Soils Map of Scotland' for the Proposed Development.

5.5.8 When evaluating a soil profile, the soil is divided into different horizons. There are six major horizons that define the different layers of the soil, which are defined as follows:

- O Horizon: This layer is made up of organic matter;
- A Horizon: This layer is the topsoil, made up of a combination of organic matter and mineral material;
- E Horizon: This layer consists mostly of mineral particles that cannot be leached away. This horizon is often found in older, undisturbed soils;
- B Horizon: This layer is the subsoil layer, formed of leached materials, minerals and salts;
- C Horizon: This layer is the parent material layer, this layer would have been formed from the earth's surface deposits; and
- R Horizon: This layer is the bedrock.

5.5.9 In addition to the layers above, letters can be added to these horizons to indicate any special features that the horizon may show. These suffixes are detailed in **Table 5.1**.

Table 5.1: Suffixes of Soil Horizons

Suffix	Definition	Suffix	Definition
a	Highly decomposed organic matter	o	Accumulation of oxides of iron and aluminium
b	Buried horizon	p	Ploughing or other anthropogenic disturbance
c	Concretions or hard nodules (iron, aluminium, manganese, or titanium)	q	Accumulation of silica
e	Organic matter of intermediate decomposition	r	Weathered or soft bedrock
f	Frozen soil	s	Accumulation of metal oxides and organic matter
g	Grey colour with strong mottling and poor drainage	t	Accumulation of clay
h	Accumulation of organic matter	v	Plinthite (hard, iron-enriched subsoil material)
j	Slightly decomposed organic matter	w	Development of colour or structure
k	Accumulation of carbonate	x	Fragipan character (high-density, brittle)
m	Cementation or induration	y	Accumulation of gypsum
n	Accumulation of sodium	z	Accumulation of salts

5.5.10 A brief description of the characteristics and formation of component soil groupings is detailed below. This is described by National Soils Map of Scotland[16] but does not include information on depths or engineering properties:

Peaty Gleys: "*which have no free calcium carbonate in the upper horizons of the profile. There is often a gleyed pale grey Eg horizon below an organic O horizon (which is less than 50 cm thick). Below the Eg there are gleyed subsoil horizons (Bg and Cg). Where the gleying is more intense in the Bg horizon than the Cg, then the soils are generally more affected by poor drainage of surface water but in those soils where the Cg is more intensely gleyed (grey and bluish grey colours can be present), then the soils are more likely to be affected by fluctuating groundwater*".

Carbon-rich Soils, Deep Peat and Priority Peatland Habitats

5.5.11 Peat is defined as the partially decomposed carbon-rich remains of plant and soil organisms which have accumulated at the surface of the soil profile when the rate of accumulation of organic material exceeds the rate of decomposition. Peat is typically dark brown or black in colour and typically forms in anaerobic, waterlogged conditions which prevent plant material from fully decomposing. Peat is classed when it is greater than 0.5 m deep, any peat deposits less than 0.5 m deep are considered too thin to be classified as true peat deposits and instead would be referred to as peaty or organic soils. Deep peat is defined as a surface layer of peat soil greater than 1.0 m deep by the Scottish Government

(Peat Landslide Hazard and Risk Assessments: Best Practice Guide for Proposed Electricity Generation Developments).

5.5.12 There are two distinct layers within a peat profile:

- Acrotelm is the upper fibrous surface layer which contains plant roots and is relatively dry. Acrotelmic peat is typically less than 0.5 m thick, generally situated above the groundwater table and has some tensile strength; and
- Catotelm is the lower layer of peat which typically has a very high water content. Catotelm generally lies below the ground water table and has a very low tensile strength.

5.5.13 The Carbon and Peatland 2016 Map18 was consulted to identify peatland classes present across the Proposed Development and the results are presented in **Appendix D, Figure 5.4**. The Carbon and Peatland Map has been developed as a high-level planning tool to promote consistency and clarity in the preparation of spatial frameworks by planning authorities.

5.5.14 The majority of the Proposed Development is mapped as Class 5 (peat soils with no peatland vegetation present). There are also areas in the central (a proposed track) and western Proposed Development of Class 1 (Nationally important carbon-rich soils, deep peat and priority peatland habitat, areas likely to be of high conservation value), and Class 2 (Nationally important carbon-rich soils, deep peat and priority peatland habitat, areas of potentially high conservation value and restoration potential).

Superficial Geology

5.5.15 According to the British Geological Society (BGS) GeoIndex[97], there are no records of superficial soils across the Proposed Development, this could be due to rockhead being at or near the surface.

5.5.16 **Figure 5.1 in Appendix D** details the superficial geology throughout the Proposed Development.

Bedrock Geology

5.5.17 According to the BGS GeoIndex15, the Proposed Development is underlain entirely by the Beinn Bheula Schist Formation comprising metamorphic gritty psammite and pelite bedrock.

5.5.18 **Figure 5.2 in Appendix D** details the bedrock geology throughout the Proposed Development.

Linear Features

5.5.19 According to the BGS GeoIndex[97], there are no mapped faults or displacements recorded across the Proposed Development.

Mineral Resources

5.5.20 The Mining Remediation Authority Interactive Map Viewer[99] indicates that the Proposed Development is not situated within a coal authority reporting area.

5.5.21 According to the BGS GeoIndex[97], there are no mapped mines or quarries within the Proposed Development.

Unexploded Ordnance (UXO) and Contaminated Land

5.5.22 Prior to the peat depth surveys, an Unexploded Ordnance (UXO) Desk Study and Risk Assessment (**Appendix L**) was undertaken across the Proposed Development. The assessment concluded that there is a moderate to high risk of UXO being present within the Proposed Development, therefore Zetica was present during peat probing surveys to clear proposed probing locations. No evidence of UXO was encountered during the surveys. Whilst UXO has not been encountered to date, the risk still remains and UXO could still be present.

5.5.23 In addition, from review of historic mapping, aerial photography and walkovers, it was determined that no sources of contaminated land were identified across the Proposed Development, however due to the risk of UXO being present a source of contamination from UXO remains.

Field Survey Results

5.5.24 A total of 373 peat probing points were taken across the Proposed Development during the Phase 1 which was undertaken between 2017 and 2019 in the western area during the development of the High Constellation Wind Farm Proposed Development) and Phase 2, (undertaken across the Proposed Development by ERM and SSE contractors in December 2023 and October 2025 respectively). 158 of the 373 probing points recorded peat depths of 0.5 m or less, with areas of deeper peat generally recorded across central areas of the Proposed Development. The average peat depth across the Proposed Development is recorded as 0.95 m. One isolated point in the central western sector of the Study Area recorded peat in excess of 5.0 m in depth. The peat surveys are discussed further in **Appendix M** with data showing peat depth and substrate.

5.6 Assessment of Effects

Construction Effects

5.6.1 Construction activities such as the excavation of tracks can lead to the disturbance of peat. Beyond the main construction activities, there are other considerations including the temporary storage of soils and peat across the Proposed Development.

5.6.2 As detailed in **Section 5.5**, the majority of the Proposed Development is underlain by Class 5 mineral soils with a localised area of Class 1 and 2 peat in the central and western areas of the Proposed Development, where peat in excess of 5.0 m in depth was recorded.

5.6.3 Class 1 and 2 soils are considered High sensitivity receptors. A majority of the Proposed Development infrastructure is located across Class 5 soils, however >20% of the proposed developable area comprises Class 1 and 2 peat, therefore the Disturbance and Excavation of Deep Peat soils across the Proposed Development is considered to be of High sensitivity.

5.6.4 Taking account of the embedded design measures, the magnitude of impact is classed as Low during the construction phase, however this can be reduced to Negligible through the implementation of mitigation. Furthermore, given the nature of the Proposed Development, a UGC with primarily temporary tracks, soils will be disturbed but their value not impacted after mitigation measures are implemented and the vast majority of soils being reinstated at their source of origin.

5.6.5 Therefore, with a High receptor sensitivity and a Negligible magnitude of impact (with mitigation), the significance of effect for the disturbance of peat would be classed as **Low**, and therefore **not significant** in accordance with the EIA Regulations.

Operation and Maintenance Effects

5.6.6 During the operation of the Proposed Development, it is anticipated that routine maintenance of infrastructure would be required. It is not anticipated that there would be any excavation or need to stockpile large volumes of soils, reducing the potential effects on soils or ground stability. Should any excavation be required, this is likely to be limited. Any excavation, handling and placement of material would be subject to the same safeguards that would be used during the construction phase of the Proposed Development.

5.6.7 There are no anticipated impacts on the geological environment during the operational phase, therefore, effects will be Not Significant.

5.7 Mitigation by design

5.7.1 Mitigation comprises best practice methods and works as outlined in the publication 'Good Practice During Wind Farm Construction'[92]. These are established and effective measures to which the Applicant will be committed through the duration of the construction and operation of the Proposed Development.

5.7.2 Mitigation has been developed as the Proposed Development design has progressed. Standard SSEN mitigation measures, as outlined in SSEN General Environmental Management Plans (GEMPs), relating to the geological environment during the construction and operational phases, are embedded through the design and adoption of best practice measures during construction to ensure that disturbance of the geological environment is avoided or minimised. These mitigation measures have been considered throughout the summary of effects in **Section 5.8**.

Geology and Soils

5.7.3 It is expected that the following good construction practice and methodologies will be included within the CEMP to minimise geological impact:

- Measures to ensure well-maintained drainage systems, including the identification of any areas of sensitive drainage or hydrology in construction areas;
- Developing methodologies to prevent degradation and erosion of exposed soil deposits to minimise effects on morphology and associated hydrology. This includes limiting vehicle movements on untracked ground to reduce the impact on areas of soil, reducing surface cover loss, soil compaction and impacts on areas with softer drift deposits/soils and steeper slopes;
- The removal and off-site disposal of soils would be avoided where possible and particularly where soils hold environmental or ecological value and agricultural productivity. Soils are to be used for re-use and restoration following construction; and
- The implementation of best practice methods for soil handling and storage. This will be required in order to preserve soil structure and texture, and to avoid compaction within sensitive locations.

Geotechnical Stability

- Earth cutting along steep slopes will be avoided where possible to reduce any impact on slope stability and the potential for peat slides. Suitable engineering works will be undertaken, where required, to ensure the stability of the slope is maintained in areas prone to slides.

Contaminated Land

5.7.4 Contaminated land is considered unlikely to be present based on current and historic land uses. However, mitigation is included below, in case any contaminated land is encountered on site.

- Prior to commencing construction works, an onsite assessment will be made by the Principal Contractor on the potential for contamination to be present based on site-specific information regarding potentially contaminated sites;
- Where such investigations identify potentially contaminated land, strategies for mitigation or remediation of the land would be developed and agreed with the regulatory authorities (SEPA) and implemented prior to construction in these locations; and
- Where evidence of previously unidentified contamination is encountered during construction, appropriate investigation and remedial measures will be developed and implemented by the Principal Contractor in accordance with relevant legislation and regulatory requirements to prevent pollution of environmental receptors and / or risk to human health.

Access Tracks

- Where possible, proposed construction site access will be taken via the existing public road network and would make use of existing tracks as far as practicable, upgraded as required, to minimise the disturbance to soils from

the construction of new tracks where possible. To enable the construction and future operation of the Proposed Development, sections of new permanent track will be required, however the majority of tracks to be constructed will be temporary access tracks which will be reinstated following completion of the construction phase. More details on how the Proposed Development will utilise existing infrastructure is detailed in, **Chapter 2: Project Description**. All new tracks would be constructed in accordance with SSEN best practice construction methods, and with reference to NatureScot's good practice guide: Constructed tracks in Scottish Uplands[91].

- It is assumed that the access across the Proposed Development will be via a short temporary access track that will be reinstated following completion of the construction phase, and some permanent proposed tracks that will be installed for use during construction, but retained permanently for maintenance use, suitably constructed to account for the low volume of maintenance traffic. Minimal traffic is anticipated during the operational phase of the Proposed Development, and it is assumed that all vehicles will only drive on the permanent access tracks. It is not anticipated that vehicles will require off-road access which could potentially impact soils.

5.8 Summary of Effects

Table 5.2 provides a summary of the effects on the geological environment, and the associated embedded and additional mitigation measures detailed within this chapter.

Table 5.2: Summary of Potential Construction Effects

Potential Effect	Embedded Mitigation	Significance of Effect	Additional Mitigation Proposed	Residual Effect
Disturbance of Peat	Mitigation has been embedded into the design of the Proposed Development and through implementation of mitigation based on guidance and good practice measures outlined in **Section 5.2.2** of this VEA and outlined in SSEN Transmission's Generic Environmental Management Plans (GEMPs).	Moderate	Good practice mitigation measures should be followed. Floating tracks should be considered, especially for the permanent track proposed in the central section of the Proposed Development where peat >1.0 m is recorded in areas of Class 1 and 2 peat. Micro-siting may also need to be taken into consideration for areas of deep peat along the UGC route. Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses. Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing) All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.	Low
Peat Stability	Mitigation has been embedded into the design of the Proposed Development and through implementation of mitigation based on guidance and good practice measures outlined in **Section 5.2.2** of this VEA and outlined in SSEN Transmission's Generic Environmental Management Plans (GEMPs).	Moderate	Identification of suitable areas for stockpiling material during construction prior to commencement of works. Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses. Limitations should be put into place when stockpiling peat (i.e. max height 2 m) to avoid peat slides. Good practice measures should be used, these will be outlined in the oPMP. Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing).	Low

Potential Effect	Embedded Mitigation	Significance of Effect	Additional Mitigation Proposed	Residual Effect
			All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.	
Loss and Compaction of Peat and Soils	Limiting vehicle movements on untracked ground to reduce the impact on areas of peat, reducing surface cover loss, soil compaction and impacts across areas of softer drift deposits / soils and steeper slope Removal and off-site disposal of soils would be avoided where possible. Soils are to be used for reinstatement and restoration following construction	Moderate	Good practice mitigation measures should be followed. Micro-siting of Proposed Development infrastructure based on the findings of further detailed ground investigations. Reuse of excavated soils within the Proposed Development. Floating tracks should be considered in areas of proposed permanent track where peat depths exceed 1 m.	Low

5.9 Additional Mitigation

5.9.1 Embedded mitigation was taken into consideration in the assessment of effects. Following the assessment of effects, additional mitigation measures are put in place to further mitigate the significance of effects. Additional mitigation specific to each potential effect are listed below:

Disturbance and Excavation of Deep Peat

- Floating tracks should be considered, especially for the permanent track proposed in the central section of the Proposed Development where peat >1 m is recorded in areas of Class 1 and 2 peat;
- Micro-siting may also need to be taken into consideration for areas of deep peat along the UGC route;
- Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses;
- Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing); and
- All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.

Peat Stability

- Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses;
- Limitations should be put into place when stockpiling peat (i.e. max height 2 m) to avoid peat slides
- Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing); and
- All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.

Loss and Compaction of Peat

- Re-use of excavated peat within the Proposed Development; and
- Floating tracks should be considered in areas of proposed permanent track where peat depths exceed 1 m.

Loss and Compaction of Soils

- Micro-siting of Proposed Development infrastructure based on the findings of further detailed ground investigations; and
- Reuse of surplus soils that are removed from in situ conditions to other areas within the Proposed Development.

5.10 Summary

5.10.1 This chapter describes the assessment of the construction and operation of the Proposed Development on geology, peat and soils (the 'geological environment').

5.10.2 Information for the Proposed Development was compiled through a baseline desk study, which was verified by an extensive programme of fieldwork. The assessment undertaken has considered the sensitivity of key receptors identified during the baseline study and any potential future changes to baseline conditions have been considered and accounts for mitigation measures that have been incorporated into the Proposed Development design.

5.10.3 The design of the Proposed Development has been informed by a detailed programme of peat depth probing, consistent with NPF4, Policy 5[83]. The assessment of peat and carbon rich soils has considered all proposed infrastructure and the potential associated effects.

5.10.4 During the later stages of design, alternative options were evaluated with a focus on UGC alignment and the placement of ancillary infrastructure, such as access tracks. Details of peat avoidance methods through design are included in this Chapter.

6. HYDROLOGY AND HYDROGEOLOGY

6.1 Introduction

6.1.1 This chapter describes the baseline hydrology and hydrogeology. It presents an appraisal of the potential effects relating to hydrology and hydrogeology in relation to the construction and operational phases of the Proposed Development.

6.1.2 The following study areas are considered as part of the hydrology and hydrogeology assessment:

- The environmental assessment (EA) study area is a 1 km buffer around the Proposed Development (the 'EA Study Area'); and
- A 2 km buffer of the Proposed Development has been used to assess private water supplies (PWS) (the 'Private Water Supply Study Area').

6.1.3 These are shown in **Appendix E, Figure 6.1: Hydrology and Hydrogeology Study Areas**.

6.2 Desk Study and Consultation

6.2.1 Sources of information which have been used to define the baseline conditions include:

- Ordnance Survey (OS) 1:25,000 scale mapping;
- OS Open Rivers Vector data[100];
- Aerial imagery;
- Scottish Environment Protection Agency (SEPA) Water Classification Hub[101];
- SEPA Flood Maps[102];
- SEPA Environmental Data[103];
- Scotland's Environment web-based maps[104];
- NatureScot Designated Sites[105];
- PWS data from Argyll and Bute Council[106];
- British Geological Survey (BGS) Superficial, Bedrock and Hydrogeological maps[107]; and
- Scottish Government Drinking Water Protected Areas (DWPA) - Scotland river basin district: Maps[108].

6.3 Field Survey Approach

6.3.1 A hydrological site walkover was carried out by ERM hydrologists in August 2025. Conditions on the day of the survey were dry and sunny.

6.3.2 The hydrological survey was focused on the areas of the Proposed Development where there are OS mapped watercourses which interact with the Proposed Development, and areas of new access track. The scope of the walkover survey was to:

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100 OS Open Rivers. Available at: OS Data Hub [Accessed October 2025]
101 SEPA (2024) Water Classification Hub. Available online at: https://informatics.sepa.org.uk/WaterClassificationHub/ [Accessed October 2025]
102 SEPA (2024) SEPA Flood Maps. Available online at: https://map.sepa.org.uk/floodmaps [Accessed October 2025]
103 SEPA. SEPA Data Publication. Various datasets. Available online at: https://www.sepa.org.uk/environment/environmental-data/ [Accessed October 2025]
104 Scotland's Environment (various) Scotland's Environment Map. Available online at: https://www.environment.gov.scot/maps/scotlands-environment-map/ [Accessed October 2025]
105 NatureScot (n.d) SiteLink - Map. Available online at: https://sitelink.nature.scot/map [Accessed October 2025]
106 Argyll and Bute Council (2025) Data received via email consultation on 11/09/2025
107 BGS (2024) GeoIndex Onshore. Available online at: https://mapapps2.bgs.ac.uk/geoindex/home.html [Accessed October 2025]
108 Scottish Government. Drinking Water Protected Areas (DWPA) - Scotland rover basin district: Maps. Available online at: Drinking water protected areas - Scotland river basin district: maps - gov.scot [Accessed October 2025]

- Ground-truth the OS-mapped watercourses that intersect the Proposed Development;
- Identify any other surface water features the Proposed Development crosses;
- Obtain details of watercourse conditions where watercourse crossings are proposed; and
- Obtain details of existing crossings that the Proposed Development will utilise.

6.4 Limitations and Assumptions

6.4.1 The baseline conditions have been collated from various publicly available sources which are assumed to be accurate and up to date.

6.4.2 The final detailed engineering design of all new watercourse crossings will be the responsibility of the Applicant and / or their appointed contractor. They will be responsible for ensuring all watercourse crossings are designed in accordance with industry standards and best practice guidance set out in this document and obtaining permits where relevant.

6.4.3 For the purposes of this assessment, it is assumed that all access tracks and ancillary supporting infrastructure, including construction compounds will have excavation depths of <1 m. The cable, joint bays, and cable joints are assumed to have excavation depths of >1 m.

6.5 Baseline

Surface Water Hydrology

6.5.1 The Study Area is situated entirely within the SEPA defined Kintyre Coastal "main river and coastal catchment"[104]. These main catchments are sub-divided into "nested" catchments of which the western tip of the Proposed Development, at Cnoc an t-Samhlaidh, falls into the Crossaig Water catchment.

6.5.2 The Proposed Development crosses two named OS watercourses: the Allt na Buaile Salaich in the east of the Study Area, the catchment area of which covers the majority of the eastern half of the Study Area; and the Allt a' Bhealaich in the west[100]. These watercourses are not classified under the Water Framework Directive (WFD). Both watercourses flow in a south easterly direction towards the coast. The coastal waters form the Kilbrannan Sound marine waterbody which has a WFD overall classification of "Good"[101].

6.5.3 In addition, there are several other named and unnamed watercourses within the Study Area which either flow east toward the Kilbrannan Sound, north towards the Crossaig Burn (2 km from the Proposed Development), or southwest towards the Narachan Burn (2.7 km from the Proposed Development). The Allt Garbhachaidh originates from Loch a' Chaorainn approximately 800 m north of the Proposed Development in the west, and the catchment area for this burn encompasses the western extent of the Proposed Development. Loch nam Breac lies on the southwest boundary of the Study Area.

6.5.4 Surface water hydrology (watercourses and waterbodies) are shown in **Appendix E, Figure 6.2: Surface Water Hydrology**.

6.5.5 It was noted during the Site survey that there are several existing access tracks within the Study Area. Many of these had corresponding trackside drainage in place which was conveying water at the time of the site visit. These are not formal watercourses but are hydrological features.

6.5.6 Surface water hydrology of the site is considered to be of **medium** sensitivity.

Flood Risk

Coastal Flooding

6.5.7 The eastern extent of the Study Area extends out into the coastal waters of the Argyll Peninsula. As such, the eastern extent of the Study Area is at risk of coastal flooding. The SEPA Flood Maps[102] show there is at High likelihood (10% annual probability) of flooding along the coast. However, the flood extents are limited to the shoreline area and are approximately 250 m east of the B842 road.

6.5.8 SEPA have also produced a 'Future Flood Map' which is the 0.5% annual exceedance probability (AEP) event up to 2080. The mapping accounts for increases in sea levels under the IPCC High emissions scenario as a result of climate change[109]. The 0.5% AEP plus climate change event is considered the critical design event for planning purposes. The indicative future coastal flood extents show an increase in flood extent at the coast, but the flooding still remains more than 200 m from the B842 at its closest point.

6.5.9 The coastal flood extents are shown in **Appendix E Figure 6.3: SEPA Coastal Flood Map**.

Fluvial Flooding

6.5.10 The SEPA River Flood Map indicates there is no fluvial flood risk within the Study Area from rivers. Loch a' Chaorainn and Loch nam Breac are shown to have a high likelihood of flooding, as would be expected as they will accumulate water during periods of heavy rainfall.

6.5.11 The Future Flood Map which is the 0.5% AEP event up to 2080 accounts for increases in rivers flows and rainfall intensities under the IPCC High emissions scenario as a result of climate change. The indicative future fluvial flood extents do not show an increase in flood extent at the lochs.

6.5.12 The fluvial flood map is shown in **Appendix E Figure 6.4: River Flood Map**.

Surface Water Flooding

6.5.13 The SEPA Surface Water and Small Watercourses Flood Map indicates that there is a high likelihood of flooding from small watercourses and surface water runoff within the Study Area. The mapping shows that flood risk is linked to the Allt na Buaile Salaich and Allt a' Bhealaich and their associated tributaries, as well as the Allt Garbhachaidh and the lochs within the Study Area.

6.5.14 The Future Flood Map indicates more extensive flood extents across the Study Area as a result of surface water runoff and from small watercourses.

6.5.15 The surface water and small watercourses flood map is shown in **Appendix E, Figure 6.5: SEPA Surface Water and Small Watercourses Flood Map**.

6.5.16 Flood risk is assessed as being of **high** sensitivity because of the extent of surface water and small watercourses flooding throughout the Study Area.

Water Resources

Private Water Supplies

6.5.17 A list of private water supplies (PWS) within 2 km of the Proposed Development were requested from Argyll and Bute Council. The council confirmed there are eight PWS within the PWS Study Area.

[109] SEPA. About the future flood maps. Available online at: https://map.sepa.org.uk/floodmaps/FloodRisk/FutureFloodMaps (Accessed October 2025).

6.5.18 Data that was received from the council marked Crossaig Substation as a surface water fed supply. However, following consultation with SSEN, the owner of the PWS, it was confirmed that Crossaig Substation is supplied by a rainwater (surface water) fed PWS but there is a second PWS at North Crossaig Substation which is supplied by a groundwater borehole. Both have been included in **Table 6.1** below.

6.5.19 For rainwater fed PWS it is assumed these are rainwater harvesting systems associated with the property / substation, and do not derive water from any form of overland flow, thus meaning they do not have an associated hydrological catchment.

6.5.20 The PWS in the Study Area are shown in **Appendix E, Figure 6.6: Private Water Supplies** and are summarised in **Table 6.1** below.

Table 6.1: PWS within the PWS Study Area

PWS No.	Name	Type and Source of Water
1	Crossaig Lodge	Groundwater, Borehole
2	North Cottage	Surface, Rainwater
3	Crossaig Substation	Surface, Rainwater
4	North Crossaig Substation	Groundwater, Borehole
5	Ravensbay	Surface, Watercourse
6	Crossaig House and Cncocan Biorrach	Groundwater, Spring
7	South Crossaig	Surface, Rainwater
8	Spearasaig	Groundwater, Spring
9	Cour Estate	Surface Water, Loch

Drinking Water Protected Areas (DWPA)

6.5.21 The SEPA DWPA dataset[103] shows that the western extent of the Study Area falls within the Carradale Water Surface Water DWPA. The surface water DWPA is shown in **Appendix E, Figure 6.7: Drinking Water Protected Areas**.

6.5.22 ERM undertook flowpath and catchment analysis of the Study Area. The stream network and catchment analysis indicates runoff from the southern slopes of Cnoc an t-Samhlaidh drain south into the DPWA, while the northern slopes of Cnoc an t-Samhlaidh drain north and are within a different hydrological catchment. Thus, there is a drainage divide across the Cnoc an t-Samhlaidh. The catchments derived for this assessment are considered more accurate than the high level DWPA dataset (which can be seen to overlap in **Appendix E, Figure 6.7: Drinking Water Protected Areas**) and therefore due to the drainage divide along the Cnoc an t-Samhlaidh the DWPA is not considered hydrologically connected to the Proposed Development. As such surface water DWPA have been scoped out of further assessment.

6.5.23 The SEPA DWPA dataset shows that the entirety of Study Area is underlain by the Oban and Kintyre Groundwater DWPA. It is noted the whole of Scotland is designated a groundwater DWPA.

Public Water Supplies

6.5.24 There are believed to be Scottish Water assets within the Study Area. The exact location is unknown at this stage and it will be the responsibility of SSEN to consult with Scottish Water to confirm the location of all assets prior to construction.

6.5.25 It is understood the DWPA shown in the SEPA datasets may also be a Scottish Water Drinking Water Catchment Area but it will be the responsibility of SSEN to consult with Scottish Water to confirm this prior to construction.

6.5.26 Water resources are considered to be of **high** sensitivity because the Study Area is within a surface water DWPA and contains PWS's.

Designated Sites

6.5.27 There are no designated sites within the Study Area[105]. Therefore, impacts to designated sites are not discussed further in this assessment.

Hydrogeology and Groundwater Dependent Terrestrial Ecosystems (GWDTE)

6.5.28 The BGS hydrogeology[107] mapping indicates that the Study Area is underlain entirely by bedrock of the Southern Highland Group which is classified as a 'low productivity aquifer' as shown in **Appendix E, Figure 6.8: Hydrogeology**, with 'small amounts of groundwater in near surface weathered zone and secondary fractures'. No superficial aquifer is present underlying the Study Area.

6.5.29 The overall WFD status of the Oban and Kintyre groundwater body which underlies the Study Area is 'Good' (2023 classification)[104].

6.5.30 Depth to groundwater is unknown. However, based on the nature of the land and presence of numerous surface water features, drainage ditches etc. in the Study Area, groundwater is anticipated to be present at shallow depth (within the maximum proposed depth of ground disturbance of the Proposed Development).

6.5.31 NVC surveying carried out in October 2023 identified several extensive areas of potential GWDTE habitats along the entire route of the Proposed Development[110].

6.5.32 Based on the overall WFD status of good and the presence of potential GWDTE and groundwater fed PWS (see above) in the Study Area, the sensitivity of hydrogeology is assessed as **high**.

6.6 Assessment of Effects

6.6.1 The following construction activities are considered to have the potential to give rise to effects on hydrology and hydrogeology receptors:

- Clearance of a working corridor for construction activities, including topsoil removal, which will be 25 m wide where present within areas of forestry, and 40 m wide outside of forestry areas;
- Excavation of trenches in which to lay the cable;
- Excavation and construction of joint bays and cable joints;
- Construction of temporary and permanent access tracks;
- Construction of watercourse crossings;
- Establishment of suitable laydown areas for materials and construction compounds;
- Construction of a SSEN standard- sized 100 m by 50 m Site compound (the location of the Site compound is not yet known, however, the worst-case scenario has been assumed throughout the assessment of effects);
- Cofferdams to facilitate the crossing of the UGC through watercourses; and
- Remedial works to reinstate soils and vegetation etc.

6.6.2 The specific ways in which these activities can impact hydrology and hydrogeology are expanded upon in the below sections. The potential magnitude of impact is assessed in the absence of mitigation. Impacts during decommissioning

[110] ERM (2024). High Constellation Underground Cable Habitat Protected Species Report. Reference 0705728.

are considered to be very similar to those during construction. The impacts associated with the operation of the Proposed Development, although less significant than during construction (and decommissioning) are also discussed.

6.6.3 Impacts to aquatic ecology and the associated mitigation needed are discussed in **Section 4, Ecology and Ornithology of this EA report**.

Construction Effects

Changes to Runoff and Flood Risk from and to the Proposed Development

6.6.4 The introduction of hard standing areas (site compound), access tracks and laydown areas, excavations, soil compaction, removal of vegetation, implementation of joint bays, construction of a Site compound, and trenching for cables has the potential to increase runoff volumes and rates through the alteration of drainage patterns and reduced infiltration during construction. This in turn can increase the potential for flood risk issues downstream of the Proposed Development.

6.6.5 The methodology for installing the UGC across watercourses on site will be open-trenching. This will involve setting up cofferdams to temporarily block the flow of water in rivers during construction. The method entails creating a dam upstream and downstream of the crossing point where water is pumped out of the river to create a dry area where the cable will be installed. Water is diverted from where is has been impounded upstream and discharged downstream of the crossing area via pumps. The cofferdam is removed and the watercourse re-instated to normal flow following construction. This method of excavation will impact in-stream hydrology through the temporary cessation of flow within the river at the crossing point and may disrupt downstream flows if water is not pumped sufficiently from upstream to downstream of the cofferdam.

6.6.6 It is not yet known where the Site compound will be placed. If it is within the SEPA Flood Map extents, there is the potential for high magnitude of impact in the absence of mitigation on surface water hydrology of medium sensitivity and flood risk of high sensitivity. This would result in a major and significant effect.

6.6.7 The Proposed Development is at a **high** likelihood (10% AEP) of flooding during construction from the Allt na Buaile Salaich and Allt a' Bhealaich. This presents a flood risk to the works during construction e.g. inundation of trenches and risk of materials being washed into the watercourse and polluting them during construction.

6.6.8 Changes to runoff and flood risk from and to the Proposed Development will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity and flood risk of **high** sensitivity. This is a **major** and **significant effect**.

Erosion and Sedimentation

6.6.9 Sediment loading occurs as a result of erosion from excavations, ground disturbance, removal of vegetation, and the mobilisation of stockpiled materials. It has the potential to negatively impact water quality, fluvial morphology, and water resources. In addition, the use of open-trenching to cross watercourses to lay the UGC will result in direct mobilisation of sediment within the river channel, as well as bank disturbance and erosion.

6.6.10 Erosion and sedimentation will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity, and water resources and flood risk of **high** sensitivity. This is a **major** and therefore **significant effect**.

Pollution Incidents

6.6.11 There is potential for pollution of watercourses from accidental spillage of chemicals and materials such as fuels, oils and lubricants, during their use and storage on-Site during the construction period. Polluting materials can enter and contaminate watercourses and groundwater, and in turn impact GWDTEs and water resources.

6.6.12 In addition, the use of open-trenching to lay the UGC across watercourses will mean the potential for direct introduction of chemicals into the river channel through machinery needed to set up the cofferdam and excavate the cable trench.

6.6.13 Pollution incidents will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity and water resources **high** sensitivity. This is a **major** and therefore **significant effect**.

Proposed Temporary Watercourse Crossings

6.6.14 Improperly designed watercourse crossings have the potential to alter the morphology of watercourses, increase scour (erosion), increase flood risk, and can prevent the safe passage of mammals and aquatic species during the operation of the Proposed Development. A total of two temporary watercourse crossings are needed as part of the Proposed Development for the temporary access tracks that run parallel to the UGC. These will cross the Allt na Buaile Salaich and Allt a Bhealaich. These are shown in **Table 6.2** and **Appendix E, Figure 6.9: Watercourse Crossings**.

Table 6.2: Temporary Watercourse Crossings

Watercourse Crossing Number	Watercourse Name and / or Type of Watercourse	EASR Authorisation Required (watercourse is visible on OS 50k Mapping) (Yes / No)	Watercourse Width (m)	Watercourse Depth (m)	Bed Substrate	Bank Vegetation	Photos	
WC1	Allt na Buaile Salaich	Yes	1.5	1.0	Gravel / Pebble	Grassland	Upstream Channel 	Downstream Channel 

Watercourse Crossing Number	Watercourse Name and / or Type of Watercourse	EASR Authorisation Required (watercourse is visible on OS 50k Mapping) (Yes / No)	Watercourse Width (m)	Watercourse Depth (m)	Bed Substrate	Bank Vegetation	Photos	
WC2	Allt a Bhealaich	Yes	0.5	0.4	Earth	Grassland	Upstream Channel 	Downstream Channel 

6.6.15 The construction of improperly designed watercourse crossings will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity and flood risk of **high** sensitivity. This is a **major** and **significant effect**.

Hydrogeology and GWDTE

6.6.16 Temporary changes in groundwater flow regimes and / or quality may occur as a result of construction activities, either:

- Directly, from excavation and dewatering of excavations for laying of cables and introduction of joint bays; or
- Indirectly, from changes to infiltration rates as a result of soil compaction.

6.6.17 Changes in groundwater flow regimes and / or quality also have the potential to impact groundwater fed PWS, groundwater DWPA, and potential GWDTE in the Study Area.

6.6.18 Given the temporary, localised nature of ground disturbance, the magnitude of impact on hydrogeology and GWDTE, including groundwater DWPA, in the absence of mitigation is considered to be medium, on a receptor of high sensitivity. This is a major and significant effect.

Water Resources

Private Water Supplies

6.6.19 An assessment of the hydrological connectivity of the nine PWS within the PWS Study Area to the Proposed Development has been carried out.

6.6.20 For groundwater supplies SEPA only considers a risk to source water where it is within 250 m of excavations deeper than 1 m, or within 100 m of infrastructure with excavations are less than 1 m[111]. These buffers were applied to the PWS dataset and only one, PWS 3: Crossaig Substation, is within 250 m of the Proposed Development as shown in **Appendix E, Figure 6.6: Private Water Supplies**.

6.6.21 For surface water PWS the stream network of the PWS Study Area was defined using OS Terrain 5 (5 m resolution) digital terrain model (DTM), to delineate the probable routes of surface water runoff based on topography. From this the surface water catchments within the PWS Study Area were defined. These catchments are shown in **Appendix E, Figure 6.6: Private Water Supplies**. It indicated no surface water PWS are at risk from the Proposed Development.

6.6.22 The rainwater fed PWS are assumed to be rainwater harvesting systems associated directly with the property / substation, and do not derive water from any form of overland flow. Therefore, there are assumed to be no direct impacts to these water supplies.

6.6.23 PWS 3: Crossaig Substation could be impacted during construction through the reduction in groundwater quantity or quality (pollution) which are assessed under the appropriate sections above. Alternatively, the supply could be impacted by for example a direct supply line strike.

6.6.24 The magnitude of impact on PWS in the absence of mitigation as a result of changes to groundwater quality or quantity is **medium**, however the risk of supply line strikes is considered to be high at the Crossaig Substation in the absence of mitigation. Therefore, overall the conservative assessment is that there is the potential for **high** magnitude impacts on a receptor of **high** sensitivity. This is a **major** and therefore **significant effect**.

Public Water Supplies

6.6.25 The location of Scottish Water assets and DWPAs are unknown, but there are believed to be mains pipelines within the Study Area. These supplies could be impacted by the Proposed Development through direct supply line strikes during construction, or impacts to water quality within the source region of the mains water or DWPA.

[111] SEPA (2024) Guidance on assessing the impacts of developments on groundwater abstractions. Available online at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fmfzpnjwb%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-abstractions.docx&wdOrigin=BROWSELINK (Accessed October 2025)

6.6.26 The magnitude of impact on public water supplies in the absence of mitigation as a result of changes to water quality or quantity, or supply line strikes, is considered to be **high** in the absence of mitigation. Therefore, there is the potential for **high** magnitude impacts on a receptor of **high** sensitivity. This is a **major** and therefore **significant effect**.

Operation and Maintenance Effects

Changes to Runoff and Flood Risk from and to the Proposed Development

6.6.27 The temporary access tracks, construction compounds, and any laydown areas will be reinstated following construction thus not contributing to an increase in runoff. Therefore, operational impacts in terms of runoff are of **negligible** magnitude of impact on surface water hydrology of **medium** sensitivity and flood risk of high sensitivity. This is a **negligible** and therefore **not significant** effect.

6.6.28 Increases in runoff as a result of new areas of permanent hardstanding (access tracks and joint bays) have the potential to increase runoff and flood risk downstream of the Site. However, these elements are not located within the floodplain of watercourses thus not impacting the functionality of the floodplain and only approximately 640 m of new permanent access track will be constructed. Therefore, in the absence of mitigation, the magnitude of impact during operation is considered **low** on surface water hydrology of medium sensitivity, which is a **minor** and **not significant** effect. The magnitude of impact in the absence of mitigation during operation is considered **low** on flood risk of **high** sensitivity, which is a **moderate** and **significant** effect.

6.6.29 During operation of the Proposed Development the UGC will be located beneath the ground and is not considered to be at risk of flooding or contribute to an increase in runoff. However, should excavation of the cable be required for maintenance purposes, the potential impacts to runoff will be similar to those during construction, particularly if the cable needs excavated within the watercourse and use of cofferdams are required. Therefore, in the absence of mitigation, the magnitude of impact during operation is **high** on surface water hydrology of **medium** sensitivity and flood risk of **high** sensitivity. This is a **major** and **significant** effect.

Erosion and Sedimentation

6.6.30 During operation ground disturbance will be minimal, however if the cable needs maintenance this will involve ground excavations to access the cable.

6.6.31 Erosion and sedimentation will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity, and water resources and flood risk of **high** sensitivity. This is a **major** and **significant** effect.

Pollution Incidents

6.6.32 During operation no chemicals will be stored on site and will only be required during routine maintenance activities where relevant. Where the cable needs excavated for maintenance purposes there is the potential for machinery to result in pollution of watercourses.

6.6.33 Pollution incidents will have a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity and water resources of **high** sensitivity. This is a **major** and **significant** effect.

Watercourse Crossings

6.6.34 Improperly designed watercourse crossings have the potential to alter the morphology of watercourses, increase scour (erosion), increase flood risk, and can prevent the safe passage of mammals and aquatic species during the operation of the Proposed Development.

6.6.35 All watercourse crossings are temporary and will be removed following construction thus having a negligible long-term impact on surface water hydrology. However, where the cable needs to be excavated for maintenance purposes, there may be a need for the construction of temporary access tracks and thus watercourse crossings. The impacts will therefore be the same as during construction: a **high** magnitude of impact in the absence of mitigation on surface water hydrology of **medium** sensitivity and flood risk of **high** sensitivity. This is a **major** and **significant** effect.

Hydrogeology and GWDTE

6.6.36 During operation, ongoing disturbance of groundwater will be minimal and limited to occasional below-ground maintenance of the UGC only. However, there is still the potential for temporary impacts to groundwater quality and quantity during maintenance activities, the same as during construction.

6.6.37 Given the temporary, localised nature of ground disturbance, the magnitude of impact on hydrogeology and GWDTE, including groundwater DWPA and groundwater fed PWS, in the absence of mitigation is considered to be **medium**, on receptors of **high** sensitivity. This is a **major** and **significant** effect.

Water Resources

Private and Public Water Supplies

6.6.38 During the operation of the Proposed Development, potential impacts on PWS 3: Crossaig Substation, and any public water assets, could occur as a result of a reduction in groundwater quantity or quality, surface water quality and / or quantity, which are assessed above.

6.6.39 The risk of direct impacts to infrastructure e.g. supply pipe strikes, will be minimal as this will only occur if intrusive ground works are needed during any maintenance activities. The magnitude of impact to PWS and public water supplies during operation is therefore considered **medium** in the absence of mitigation on a receptor of **high** sensitivity. This is a **major** and **significant** effect.

6.7 Mitigation

Construction

CEMP

6.7.1 A CEMP will be developed by the appointed contractor prior to the commencement of construction. The CEMP will detail how the appointed contractor will manage works in accordance with the mitigation in this report, statutory consents and authorisations, and industry best practice and guidance including the Guidance for Pollution Prevention (GPP) documents[112]. Examples of the types of measures to prevent impacts to hydrology and hydrogeology that the CEMP will cover are provided in the following sections.

6.7.2 Implementation of the CEMP during construction will mitigate adverse effects to sensitive hydrological receptors.

GEMPs

6.7.3 SSEN has a set of General Environmental Management Plans (GEMPs) which will also be followed during construction and will be incorporated into the final CEMP. Those relevant to hydrology and hydrogeology include:

- 510: Oil Storage and Refuelling;
- 511: Soil Management;
- 512: Working in or Near Water;
- 514: Working with Concrete;

[112] NetRegs. Guidance for Pollution Prevention. Available online at: https://www.netregs.org.uk/environmental-topics/guidance-for-pollution-prevention-gpp-documents/ (Accessed September 2025).

- 515: Watercourse Crossings;
- 516: Waste Management;
- 520: Dust Management
- 522: Restoration; and
- 523: Bad Weather.

Environmental Authorisations (Scotland) Regulations 2018

6.7.4 From 1st November 2025, water, waste management, and industrial activities are regulated under Environmental Authorisation (Scotland) Regulations 2018 (EASR)[113]. The construction activities proposed are anticipated to be permissible under the EASR[114] and thus the Proposed Development will be subject to the appropriate EASR authorisations. Compliance with the regulations and obtaining the appropriate authorisations will be the responsibility of the Principal Contractor, as will any necessary consultation with the relevant statutory consultees.

Runoff and Flood Risk Management

6.7.5 Measures to prevent increases in runoff as a result of the Proposed Development and to mitigate against flood risk to the Proposed Development during construction include:

- Site specific drainage measures will be developed to control runoff rates from access tracks and excavations during construction. They will be in line with Sustainable Drainage System (SuDS) principals and the types of measures set out in the CIRIA SuDS Manual[115]. Measures are likely to include trackside drainage, check dams, and attenuation ponds to slow runoff rates and prevent preferential flowpaths developing. Drainage features will be checked regularly to ensure they are performing as intended.
- Where vegetation has been removed, it will be re-instated or re-seeded as soon as practicable to slow runoff rates and encourage infiltration.
- The movement of construction traffic will be controlled to minimise soil compaction and disturbance. Vehicle movements (to include HGVs and plant machinery) outside the defined access tracks and hardstanding areas will be avoided where possible.
- A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high. Temporary bunding will be provided as required to reduce the risk of inundation of the Proposed Development. The site manager will sign off alerts via the SEPA Floodline service and the local forecast will be monitored.
- Trenches will only be excavated to such lengths that can be quickly backfilled in the event of severe rainfall being forecast i.e. a yellow weather warning for rain being issued.
- For areas where open trenching is being used across watercourses:
    - Cofferdams will be designed to accommodate periods of high flow.
    - The pumps transferring water from upstream to downstream will be regularly checked to ensure maintenance to river flows during construction.
    - A water monitoring programme will be needed to ensure maintenance of flow downstream of the cofferdam.
    - All in-stream works will be overseen by the Ecological Clerk of Works (ECoW).

[113] Scottish Government (2018) The Environmental Authorisations (Scotland) Regulations 2018 Availale online at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents (Accessed November 2025)
[114] SEPA (2025) Environmental Authorisations (Scotland) Regulations - Authorisations and Compliance. Available online at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/ (Accessed November 2025)
[115] CIRIA (2015) The SuDS Manual.

- The site compound (whose location is yet to be determined) will not be located within the areas shown in the SEPA Future Flood Maps. A suitable SuDS will be developed during detailed design for the site compound so that runoff and flood risk are not increased.

Erosion and Sedimentation

- Sediment control measures for example silt fences, check dams, settlement / attenuation ponds etc., appropriate to the Site will be developed through the detailed design phase. These measures will ensure that sediment laden runoff from disturbed or excavated ground is directed to the appropriate treatment train.
- All sediment control measures will be regularly checked and maintained during construction so they operate as intended.
- A vegetation strip will be maintained along all watercourses, where practical, to act as a natural sediment capture during construction. Where vegetation has been removed, it will be re-instated or re-seeded as soon as practicable.
- Watercourses will be monitored throughout the construction period by the ECoW.
- The extent of all excavations will be minimised as far as practicable. During construction works, surface water flows will be captured through a series of cut-off drains to prevent water entering excavations, eroding exposed surfaces, and capture runoff downstream of excavations.
- A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high, and temporary bunding will be provided as required to reduce the risk of sediment transport to watercourses.
- For areas where open trenching is being used across watercourses:
    - Bank erosion protection measures will be in place to minimise sediment input and protect the morphology of the watercourse.
    - Water pumped from a bunded area, if needed, will be discharged onto an open area of the riverbank through a silt mat, and allowed to filter into the ground to prevent sedimentation into the channel;
    - Any in-river works will be undertaken with care so that disturbance to channel material is minimised;
    - A water monitoring programme will be needed to ensure maintenance of downstream water quality.
    - All in-stream works will be overseen by the ECoW.

Pollution Incidents

- No refuelling or storage of equipment, materials, or chemicals will occur within 30 m of a watercourse, surface drainage system, or GWDTE.
- Equipment to contain and clean up any spills will be readily available at all times in the respective areas of the Site to minimise the risk of pollutants entering watercourses.
- Refuelling of vehicles and plant machinery, and cleaning of machinery will be confined to the designated fuelling / cleaning areas and will be carefully controlled. Drip trays will be placed under standing machinery.
- All fuel and chemicals will be stored within appropriately specified containers and within specifically designed stores / storage areas and shall include appropriate measures to avoid spillages.
- There will be no discharge of foul or contaminated water from the Site to groundwater or surface waters.
- A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high, and temporary bunding will be provided as required to reduce the risk of pollutants entering watercourses.
- For areas where open trenching is being used across watercourses:
    - All machinery will be checked and cleaned prior to any in-stream works to avoid leaks of oils or hydraulic fluids etc into watercourses.
    - Water pumped from a bunded area, if needed, will be passed through the appropriate treatment train to prevent downstream water quality impacts;

- A water monitoring programme will be needed to ensure maintenance of downstream water quality; and
- All in-stream works will be overseen by the ECoW.

Hydrogeology and GWDTE

- Prior to excavation works, ground investigations will be conducted by the appointed contractor, which will include identifying groundwater levels within the areas of excavation.
- The results of the groundwater investigation will inform the Site-specific groundwater mitigation measures needed. Construction, including the handling and discharge of groundwater from dewatering of excavations, will take place in accordance with best practice guidance (e.g., CIRIA Groundwater Control[116]) and measures relating to the identification and protection of groundwater will be detailed and secured within the CEMP.
- If construction works are within 250 m of a GWDTE, as identified in the NVC survey, a hydrogeological assessment of the GWDTE habitats will be carried out to determine if the habitats are groundwater dependent or surface water fed. The assessment will be undertaken in line with SEPA guidance[117] and utilise the Botanaeco toolkit[118] for determining groundwater dependency. Should the assessment conclude the habitats are groundwater dependent, appropriate specific mitigation will be put in place to protect them.

Water Resources

6.7.6 Prior to construction a detailed survey and risk assessment of the Crossaig Substation PWS (PWS 3) will be undertaken to confirm:

- The type of supply source (e.g., borehole, spring);
- The abstraction location of the PWS;
- The existing condition of the PWS source and water quality;
- Identify all associated infrastructure e.g. pipes or holding tanks; and
- Confirm the depth and extent of any proposed excavations within the vicinity of the supply and the potential for impacts.

6.7.7 Site specific mitigation will be developed and incorporated into a Site specific PWS Protection Plan (or similar). This may include the following:

- Fencing off the PWS source and intake (to avoid accidental damage) and identify relevant buffer distances;
- Pegging out the route of distribution pipes and appropriate buffer zones in the vicinity of the construction works and avoiding activity in these areas;
- Regular, recorded checks on any pipework (visible signs of cracking or other damage);
- Checks on PWS infrastructure to assess for damage;
- Use low impact access methodologies when working within the vicinity of the PWS source or infrastructure;
- Water quality monitoring;
- Ensure all Site operatives working in the area are made aware of the location of the PWS, catchment areas, and mitigation measures. Signage should be considered to remind workers when work takes place in these areas; and
- A contingency plan to provide an alternative water supply (on either a temporary or permanent basis) in the event of unforeseen impacts on the existing supply.

[116] Construction Industry Research and Information Association (CIRIA), 2016. Groundwater control: design and practice (second edition) (C750). Available at: Item Detail (Accessed September 2025).
[117] SEPA (2024). Guidance on Assessing the Impacts of Developments on Groundwater Dependent Terrestrial Ecosystems. Available online at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sepa.org.uk%2Fmedia%2Fa1yh0blq%2Fguidance-on-assessing-the-impacts-of-developments-on-groundwater-dependent-terrestrial-ecosystems.docx&wdOrigin=BROWSELINK (Accessed October 2025).
[118] Botanaeco (2018). GWDTE Decision Tool. Available online at: https://drive.google.com/file/d/1_q0Tjh9TfzLFUdDoczt7SP-dZLMv8w1L/view (Accessed October 2025).

6.7.8 Scottish Water will be consulted prior to construction to confirm the presence of any assets (freshwater or wastewater mains pipes) and if the Proposed Development is within one of their DWPA. Based on the outcomes of this, the appropriate mitigation to prevent impacts to Scottish Water resources will be developed in consultation with Scottish Water and in line with their guidance.

Watercourse Crossings

6.7.9 The new watercourse crossings required for the access tracks will be designed in accordance with the following guidance:

- SEPA Engineering guidance - SEPA supporting guidance and good practice guides[119], including WAT-SG-25: River Crossings;
- CIRIA Culvert, screen and outfall manual (C786F) 2019[120];
- SEPA WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance 2015[121]; and
- SSEN GEMP TG-NET-ENV-515: Watercourse Crossings[122].

6.7.10 Each crossing will be designed to convey the 0.5% annual exceedance probability (AEP) plus climate change event including an allowance for partial blockage. The crossings will be to designed to ensure hydraulic conveyance is maintained, as well as allowing the free passage of mammals and aquatic ecology. Watercourse crossings will be subject to the appropriate authorisation under the EASR[123],[124]. As both the crossings needed for the Proposed Development are temporary, and any crossings needed for maintenance are also assumed to be temporary, they will likely fall under General Binding Rules subject to the conditions set by SEPA[125].

Operation

6.7.11 An operational management plan and site maintenance programme will be in place for the lifetime of the Proposed Development outlining the mitigation measures needed during operation. This will include measures to prevent impacts to water quality as a result of sedimentation and chemical pollution, and what measures need to be in place if any ground intrusive works are needed during routine maintenance activities or repairs to the UGC. The mitigation required for cable maintenance activities which involve ground disturbance will be very similar to those needed during the construction phase, and therefore should incorporate the mitigation set out in **Section 6.7** of this report. A PWS Protection Plan will be applicable in the event of maintenance activities being needed in the vicinity of the Crossaig Substation PWS. Any mitigation developed to protect Scottish Water assets will also be applicable.

6.7.12 Where permanent access tracks are needed, suitable track drainage will be developed and put in place such that runoff rates are not increased.

6.8 Residual Effects

6.8.1 The sensitive hydrology and hydrogeology receptors include:

- Surface water hydrology considered to be of **medium** sensitivity;

[119] SEPA (n.d.) Engineering Guidance. Available online at: https://www.sepa.org.uk/regulations/water/engineering/engineering-guidance/ (Accessed October 2025)
[120] CIRIA (2019) Culvert, screen and outfall manual (C786F)
[121] SEPA (2015) WAT-PS-06-02: Culverting of Watercourses - Position Statement and Supporting Guidance. Available online at: https://www.sepa.org.uk/media/150919/wat_ps_06_02.pdf (Accessed October 2025)
[122] SSEN (2024) SSEN GEMP TG-NET-ENV-515: Watercourse Crossings. Available online at: https://www.ssen-transmission.co.uk/globalassets/projects/bingally-section-37-documents/appendix-m--gemps-and-spps/tg-net-env-515-watercourse-crossings.pdf (Accessed October 2025)
[123] SEPA. EASR authorisations – water activities – engineering. Crossings. Available online at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/crossings/ (Accessed November 2025)
[124] SEPA. EASR authorisations – water activities – engineering. Available online at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/temporary-crossings-structures-or-works/ (Accessed November 2025)
[125] SEPA. EASR authorisations – water activities – engineering. Available online at: https://beta.sepa.scot/regulation/authorisations-and-compliance/easr-authorisations/water-activities/engineering/temporary-crossings-structures-or-works/ (Accessed November 2025)

- Flood risk of **high** sensitivity;
- Water resources of **high** sensitivity; and
- Hydrogeology, including GWDTE and groundwater DWPA, of **high** sensitivity.

6.8.2 During construction these receptors are at risk from the Proposed Development through changes in runoff, flood risk to and from the Proposed Development, sedimentation, chemical pollution, introduction of watercourse crossings, potential direct impacts to private and public water supply infrastructure, and changes to local groundwater flow regimes and/or groundwater quality.

6.8.3 With implementation of the mitigation set out in **Section 6.7** of this report, which will be defined in the CEMP, PWS Protection Plan, and be in accordance with all SSEN GEMPs and other relevant guidance and legislation, the potential impacts on sensitive receptors during construction are reduced to **negligible** and thus **not significant**.

6.8.4 During operation the impacts to receptors are anticipated to be much smaller than during construction due to the lack of ground disturbance works. The key risk will be if the cable needs to be excavated for maintenance purposes which has the potential to have similar impacts as during construction, and be of **high** magnitude to **medium** to **high** sensitivity receptors. However, with an operational management plan in place, which will include all mitigation needed in the event of cable excavations being required, the magnitude of impact is reduced to **negligible** and thus **not significant**.

6.8.5 Through the implementation of a suitable drainage system for the permanent access tracks and site compound which will limit runoff to greenfield rates, and placing this infrastructure outwith the SEPA Future Flood Map extent, the magnitude of impact to flood risk of **high** sensitivity is negligible which is of **negligible** and **not significant** effect.

6.8.6 The findings of the appraisal of hydrology and hydrogeology effects are summarised in **Table 6.3**, below.

6.9 Summary

Table 6.3: Summary of Assessment of Effects

Environmental Feature	Project Interaction	Receptor Sensitivity	Magnitude of impact following mitigation	Mitigation Measures	Significance of effect
Construction					
Surface water hydrology and flood risk	Direct and temporary during construction. Impacts to water quantity. Flood risk to and from the Proposed Development. Impacts to water quality as a result of sedimentation and erosion, and chemical pollution. Impacts from watercourse crossings.	Surface water hydrology – Medium Flood risk - High	Negligible	Implementation of a CEMP which will detail the site-specific measures to control runoff rates and prevent water quality deterioration. Activities to be undertaken in line with industry best practice and SSEN's GEMPs. A flood risk protocol will be in place. Watercourse crossings will be designed in line with best practice guidance and will convey the 0.5% AEP event plus climate change event. Water quality monitoring where open trenching is across watercourses.	Negligible (Not Significant)
Water Resources	Direct and temporary during construction. Impacts to water quality and quantity. Direct impacts to supply lines / PWS / public water supply infrastructure.	High	Negligible	Pre-construction survey of the Crossaig Substation PWS (PWS 3) to identify the source point and associated infrastructure (pipelines). Pre-construction consultation with Scottish Water and then ground truthing of any pipelines and / or other appropriate mitigation to be developed in consultation with Scottish Water. A groundwater investigation will be undertaken which will inform the Site-specific groundwater mitigation measures needed. Construction, including the handling and discharge of groundwater from dewatering of excavations, will take place in accordance with best practice guidance and measures relating to the identification and protection of groundwater will be detailed and secured within the CEMP.	Negligible (Not Significant)

Environmental Feature	Project Interaction	Receptor Sensitivity	Magnitude of impact following mitigation	Mitigation Measures	Significance of effect
				Identify the ground disturbance activities within 250 m of the PWS following detailed design. PWS Protection Plan. Activities to be undertaken in line with industry best practice and SSEN's GEMPs.	
Hydrogeology including GWDTE and groundwater DWPA	Direct and indirect temporary impacts on groundwater flow regimes and quality during construction. Resulting impacts on GWDTE from changes to groundwater.	High	Negligible	Further site investigation and a hydrogeological assessment will be carried out prior to construction. Based on the outcomes, Site specific mitigation measures will be developed and included in the CEMP. Activities will be undertaken in line with industry best practice and SSEN's GEMPs. If construction works are within 250 m of a GWDTE as identified in the NVC survey, a hydrogeological assessment of the GWDTE habitats will be carried out to determine if the habitats are groundwater dependent or surface water fed.	Negligible (Not Significant)
Operation					
Surface water hydrology and flood risk	Direct and temporary during maintenance activities e.g. if the cable needs excavated for repairs. Impacts to water quantity. Impacts to water quality as a result of sedimentation and erosion, and chemical pollution.	Surface water hydrology – Medium Flood risk - High	Negligible	Operational site management plan Suitable drainage systems for the access tracks and site compound	Negligible (Not Significant)
Water Resources	Direct and temporary during maintenance activities. Impacts to water quality and quantity. Direct impacts to supply lines / PWS / public water supply infrastructure.	High	Negligible	Operational site management plan PWS Protection Plan	Negligible (Not Significant)

Environmental Feature	Project Interaction	Receptor Sensitivity	Magnitude of impact following mitigation	Mitigation Measures	Significance of effect
Hydrogeology including GWDTE and groundwater DWPA	Direct and indirect temporary impacts on groundwater flow regimes and quality during maintenance activities involving ground disturbance. Resulting impacts on GWDTE from changes to groundwater.	High	Negligible	Operational site management plan	Negligible (Not Significant)

7. CULTURAL HERITAGE

7.1 Introduction

7.1.1 This section provides an appropriate baseline and presents an appraisal of the potential effects introduced by the Proposed Development on archaeology and cultural heritage receptors. The baseline is supported by desk-based research and a walkover survey as presented in **Section 7.3**.

7.1.2 The assessment considers the potential to impact designated and non-designated sites. Designated sites include world heritage sites, registered battlefields, registered gardens and designed landscapes, scheduled monuments, listed buildings and conservation areas. Non-designated sites will consist of those listed in the Canmore database and Historic Environment Record (HER).

7.1.3 This Chapter is supported by the following figures (see **Appendix F**):

- **Figure 8.1** – Site Layout and Study Areas;
- **Figure 8.2** – Non-designated Assets within 200 m; and
- **Figure 8.2** – Designated Assets within 2 km.

7.1.4 The extent of the cultural heritage Study Area is:

- A 2 km Study Area from the Proposed Development boundary for identifying designated cultural heritage assets (see **Figure 8.1**); and
- A 200 m Study Area from the Proposed Development boundary for identifying non-designated cultural heritage assets.

7.1.5 Potential effects of the Proposed Development on Cultural Heritage resources comprise:

- direct physical damage to the fabric of Cultural Heritage resources (i.e. damage or removal of asset);
- indirect effects to Cultural Heritage resources (i.e. through dust and vibration); and
- adverse impacts on the setting of Cultural Heritage resources, largely as the result of visual impacts adverse impacts upon the historic landscape.

7.2 Desk Study and Consultation

Topography and Geology

7.2.1 The Proposed Development sits between 85 m and 236 m above ordnance datum (AOD). The bedrock geology consists of the Beinn Bheula Schist Formation. The Proposed Development is set within an upland rural setting comprising commercial forestry plantations, areas of felled plantation, and moorland.

Historical Background

Mesolithic – Neolithic (4000BC - 2450 BC)

7.2.2 The Proposed Development is located on the Kintyre peninsula of Argyll and Bute, Scotland. This part of Scotland shows evidence of human inhabitation from the Mesolithic period. At the end of the last Ice Age, approximately 11,500 years ago, animals and vegetation colonised the area, followed by hunter-gatherer groups which inhabited the area to hunt, fish and forage. These early inhabitants were likely seasonal, however evidence suggests a resident, but mobile, population was settled in the area during the Mesolithic period.[126] Early inhabitants of Scotland favoured coastal areas, exploiting the resources of both the land and the sea and as such Argyll was a favourable location. During this

[126] ScARF, 5. The Early Prehistory of Argyll. Available at: 5. The Early Prehistory of Argyll: The archaeological record, research themes and future priorities for the Palaeolithic, Mesolithic and Earliest Neolithic periods (12000BP – 6000BP) (10,050BC – 4050BC) | The Scottish Archaeological Research Framework [Accessed 17/10/2025]

period, early inhabitants used boats to travel between coastal areas and islands, sharing resources and tools. Evidence of Mesolithic inhabitation in the area comprises predominantly stone tools and lithic scatters.

7.2.3 The subsequent Neolithic period introduced a new way of life for those living in Scotland and there was a shift from a predominantly hunter-gatherer lifestyle to resident populations with associated settlements and funerary monuments. Evidence from the Neolithic period suggests that farming and animal domestication began in the area between 4300 and 3900 BC. People also started making pottery and building large stone tombs, which were different from the traditions of earlier hunter-gatherers. As farming began, and trade networks expanded, people exchanged items like stone axes, pottery, and food across regions including Argyll, the Inner Hebrides, and parts of Ireland.[127] Although the origins of these early settlers is debated, it is likely to have been open to outside influences and practices at the time, possibly from small groups migrating from France.[126] There is extensive evidence for early prehistoric inhabitation in the wider Argyll area, for example Kilmartin glen, a connected ritual landscape, and one of the Scotland's richest prehistoric landscapes containing dense rock-art concentrations, is located approximately 15 km north of the study areas.

7.2.4 Evidence for the Neolithic period can be seen within the wider vicinity of the Proposed Development, situated almost exclusively on the western side of the Kintyre peninsula. An example of this is Loch Ciaran standing stone (SM212), located approximately 4.5 km to the northwest of the Proposed Development. Further early prehistoric evidence includes cairns, standing stones and cists, all located along the coast to the west of the Proposed Development. There are no assets dating to the early prehistoric period within the Study Areas and as such, there is a low potential to encounter remains relating to the Mesolithic or Neolithic within the Proposed Development.

Chalcolithic - Bronze Age (c 2450– c 800 BC)

7.2.5 During the Bronze Age, the influence of migrating groups to the area brought innovation to Argyll in the form of metalworking and Beaker pottery. This resulted in a period of prosperity for its inhabitants. Due to its location on the coast, Argyll was able to influence metal trade routes, including partially controlling the trade of bronze from Ireland to other parts of Scotland and northern England via the Great Glen.[128] This allowed the inhabitants of the area to amass wealth which is reflected in the archaeological record through funerary monuments and personal possessions. For example, the construction of round cairns for significant members of society, the conspicuous consumption of Irish and Yorkshire-style pottery, and lavish grave goods. This trade network existed until around 800 BC.[129]

7.2.6 There is evidence of Bronze Age inhabitation in the wider Kintyre area predominantly in the form of funerary monuments such as cairns that may date to this period. These are located almost exclusively along the western coast of the Kintyre Peninsula. However, there is no evidence of Bronze Age remains within the Study Areas and as such, there is a low potential to encounter remains relating to the Chalcolithic - Bronze Age within the Proposed Development.

Iron Age (800 BC to AD400)

7.2.7 During the Iron Age settlements, instead of ritual sites, become the focus of community activity, and provide the most prominent evidence for the period.[130] The evident introduction of defended sites such as forts and duns are built on hilltops in prominent places, exerting power, control and observance into the landscape. There currently appears in the archaeological record to be less Roman influence in Argyll than is present in other parts of Scotland. It has been theorised that this is due to the inaccessibility of Argyll, its rugged terrain and remote location. As such, the Romans focused their efforts on more accessible areas of Scotland such as the Central Belt and the southeast. Additionally,

[127] Wickham-Jones, C.R. & Hardy, K. (eds). Scotland's First Settlers Project (1998–2004). Archaeology Data Service.
[128] Scarf. Highland Archaeological Research Framework. 6. Neolithic, Chalcolithic and Bronze Age c 4000BC – 800BC. Available at: Highland Archaeological Research Framework – The Scottish Archaeological Research Framework (scarf.scot).
[129] Scarf. Highland Archaeological Research Framework. 6. Neolithic, Chalcolithic and Bronze Age c 4000BC – 800BC. Available at: Highland Archaeological Research Framework – The Scottish Archaeological Research (scarf.scot).
[130] Scarf. Highland Archaeological Research Framework. 7. The Iron Age. Available at: Highland Archaeological Research Framework – The Scottish Archaeological Research Framework (scarf.scot).

the Roman empire's presence in Scotland was short-lived and even though campaigns reached as far north as the Moray Firth, they did not result in long-term occupation. The early inhabitants of Argyll may have resisted attempts at Roman influence, however there is little evidence of this, and Argyll overall remained outside the sphere of Roman control.[131]

7.2.8 There is evidence of Iron Age habitation in the wider Kintyre area including two Duns, located within 10 km to the west of the Proposed Development (SM3184 and SM3673). These would have served as defensive structures overlooking the coast on the west side of the Kintyre peninsula. However, there is no evidence of Iron Age remains within the Study Areas and as such, there is a low potential to encounter remains relating to the Iron Age within the Proposed Development.

7.2.9 Although there are no assets located within the Study Areas that date to the early or later prehistoric periods, it should be noted that Argyll as a whole possesses some of the most significant Prehistoric remains in Scotland. As such, the potential to uncover prehistoric remains within the Proposed Development, although low, should not be discounted.

Medieval (AD400 to AD1600)

7.2.10 The Early Medieval Period in Argyll (AD400 to AD1100) has traditionally been interpreted as being settled from northeast Antrim by Gaeli peoples, the Dál Riata, who replaced the Brittonic speaking 'Pictish' peoples. Argyll during this period had links to Norse-Gaelic groups called the Gall-Gaedhil, though their exact location is uncertain. The political history of Dál Riata is complex involving rival dynasties and interactions with neighbouring Pictish and British groups and from around 800 to 1100 AD, the area became known as Airer Gaedel, meaning "shore of the Gaels." It is during the early Medieval period that the Vikings first arrived in Argyll although evidence of their occupation is mostly focused on the islands. During this period, Christianity spread through Argyll as part of the broader movement across the British Isles. One of the most influential centres was Iona, founded by St Columba which acted as a hub for religious activity in the west of Scotland.

7.2.11 During the later Medieval period (AD1100-AD1600) Argyll changed from being a hybrid of Gaelic and Norse speakers to primarily Gaelic speaking, under the influence of the Kingdom of Scotland. This period was characterised by frequent political changes and growing ties between the church and the government. The local economy in the area became based on fishing, cattle rearing and textiles. The early Christian church is fundamental to Argyll's identity during this period according to historical records.[132] This is evident in the landscape with a spread of small rectangular unicameral chapels, often with an enclosure or graveyard. Over time, the church moved from Celtic traditions to a more European Latin style, and Protestant ideas began to emerge.

7.2.12 Compared with earlier and later periods, there is a scarcity of material evidence of the Medieval period in Scotland and as such, little is known archaeologically in Argyll about this period. This is partially due to a lack of identified sites which may have been built over or removed during subsequent periods and partially due to the fact that everyday items were often made from organic materials which rarely survive in the archaeological record.

7.2.13 There is limited evidence for the Medieval period in the wider Kintyre area with only one monument, Clachan Churchyard, Cross, Cross Slabs & Tombstones (SM3676) located within 10 km. As such, there is a low potential to encounter remains relating to the Medieval period within the Proposed Development.

Post-Medieval – Modern (AD1600 - Present)

7.2.14 Since the 17th century, there has been significant changes to Argyll's landscape and society. This is predominantly due to the shift from rural, clan-based communities practicing subsistence farming to more structured farms and villages influenced by commercialism and capitalism. During this period, the economy grew through fishing, textiles

[131] Tolan-Smith, C. (2001). The Caves of Mid Argyll: An Archaeology of Human Use. Society of Antiquaries of Scotland Monograph Series, Volume 20.
[132] Scarf. Highland Archaeological Research Framework. Available at: Highland Archaeological Research Framework – The Scottish Archaeological Research Framework (scarf.scot).

and agriculture and the church became a more prominent symbol in people's lives. Improved transport and communication helped connect communities and boost trade and allowed industrialisation in the area. Rapid industrialisation during the 18th century resulted in the construction of a wide variety of structures found within the wider Kintyre area including the Crinan canal, bridges, kilns, boat houses, harbours, slipways, aircraft, watercraft, houses, and farmsteads. Little archaeological investigation has been focused on the early modern periods in Argyll.[133] What has been excavated was often only conducted to find earlier deposits. Despite this general lack of excavation, there is a massive increase in material culture from the 17th to 20th centuries that survives compared to previous periods.

7.2.15 As such, there is much more evidence for the Post-Medieval-Modern periods within the Study Area than there are for earlier periods. Evidence consists of predominantly agricultural related structures such as sheepfolds and crofts as well as buildings associated with settlements and later aircraft and steamer crash sites. As such, there is a moderate potential to encounter remains relating to the post-medieval-Modern period within the Proposed Development.

7.3 Field Survey Approach

7.3.1 An archaeological walkover survey was conducted by AOC Archaeology Ltd. alongside ERM in May 2021. This covered an area extending approximately 50 m either side of the alignment (as of May 2021). No previously unknown archaeological features were identified as a result of the archaeological site visit.

7.3.2 No updated walkover survey has been completed following alterations in the alignment. This poses a potential risk to the project as no updated ground investigation information is available. An updated desk-based assessment is provided, which details the likely archaeological potential for the Proposed Development.

7.4 Baseline

Key Sensitivities

Designated Assets

7.4.1 There are no designated assets located within the Proposed Development.

7.4.2 There is one designated asset located within 2 km of the Proposed Development:

- Category A Listed, Cour House (LB18360), located 1.5 km to the south.

Non-designated Assets

7.4.3 There are no non-designated assets located within the Proposed Development.

7.4.4 One event record indicating potential remains has been identified within the Proposed Development:

- Inveraray To Crossaig 275kv Ohl Reinforcement, Phase 1 – Inveraray To Lochgilphead (CanID 376154).

7.4.5 A further (single) non-designated asset is located within 200 m of the Proposed Development:

- Milestone, South Crossaig (WoSAS 68167), dating to the post-medieval period.

Table 7.1: Cultural Heritage Gazetteer

ID Number	Asset Name	Description	Designation	Location
LB18360	Cour House	Oliver Hill, architect. Large, outstanding Arts and Crafts house in an English Medieval style. Two storeyed. Whinstone rubble walls and chimneys.	Listed Building Category A	Within 2 km

[133] Scarf. Highland Archaeological Research Framework. 10. Early Modern Period (AD 1600 – AD 1900) and Modern in Argyll (AD 1900 – Present). Available at: Highland Archaeological Research Framework – The Scottish Archaeological Research Framework (scarf.scot).

ID Number	Asset Name	Description	Designation	Location
CanID 376154	Inveraray To Crossaig 275kv Ohl Reinforcement, Phase 1 – Inveraray To Lochgilphead	A programme of archaeological mitigation works was carried out in relation to Phase 1 of the Inveraray to Crossaig overhead line upgrade. Work identified several areas of archaeological interest. Canmore point is recorded as within the substation but is representative of a corridor of works extending beyond the Proposed Development to the north.	Non-designated asset	Within Proposed Development
WoSAS 68167	South Crossaig, Milestone	A milestone recorded on the verge just west of the A842 public road. No further information was provided.	Non-designated asset	Within 200 m

7.5 Assessment of Effects

7.5.1 To investigate sensitivity of receptors, magnitude of change or effect and significance, the assessment used the methodology as outlined in **Chapter 3- Environmental Appraisal Methodology**.

Issues Scoped out

7.5.2 Temporary and permanent effects to setting as a result of the UGC aspect of the Proposed Development have been scoped out of the assessment. The nature of the Proposed Development as a UGC necessitates that beyond the negligible temporary visual intrusion during the construction phase, there is no permanent material impact to setting. It is recommended that to minimise/nullify potential temporary impacts arising from the presence of the construction compound, the construction compound not be situated in close proximity to or within the wider setting of Category A listed Cour House (LB18360), although given the temporary nature of the impact, it is unlikely to result in more than a negligible effect.

Direct Impact

Construction Effects

7.5.3 No direct effects to known cultural heritage assets are predicted as a result of the construction phase of the Proposed Development.

7.5.4 There is one event which has been identified within Proposed Development, the Inveraray to Crossaig 275kv OHL Reinforcement, Phase 1 – Inveraray to Lochgilphead project (CanID 376154), this extends from the Crossiag substation beyond the limits of the Proposed Development. This investigation identified several areas of archaeological interest which were located outside of the Proposed Development. This project included excavation of archaeological remains following appropriate mitigation, as a result, any assets it identified within the Proposed Development area are unlikely to remain in situ.

7.5.5 There is one non-designated asset located within 200 m of the Proposed Development: South Crossaig, Milestone (WoSAS 68167). There is no anticipated interaction with project infrastructure, and as such, no direct impact is anticipated as a result of the construction phase of the Proposed Development.

7.5.6 National planning policies and planning guidance, SPP (Scottish Government 2014) and PAN2 / 2011 (Scottish Government 2011) apply. These require a mitigation response that takes account of the potential for archaeological remains within the Project area to be impacted upon, enabling the preservation or recording of any significant remains which may be present.

7.5.7 Although the potential for buried archaeological remains to be present is considered to be low due to the disturbance from forestry plantation land use and existing substations, it cannot be discounted and consequently a programme to mitigate the effects of any direct impacts is recommended in accordance with national and local planning policies on heritage.

Operation and Maintenance Effects

No direct effects to known cultural heritage assets are predicted as a result of the operational phase of the Proposed Development.

Indirect Effects

Construction Effects

7.5.8 No indirect effects to known cultural heritage assets are predicted as a result of the construction phase of the Proposed Development.

Operation and Maintenance Effects

7.5.9 No indirect effects to known cultural heritage assets are predicted as a result of the operation phase of the Proposed Development.

Effect to Setting

Construction Effects

7.5.10 Effects to setting as a result of the UGC portion of the Proposed Development are scoped out.

7.5.11 There may be some effect to setting as a result of the upstanding portion of the Proposed Development, i.e. The construction compound.

Operation and Maintenance Effects

7.5.12 No additional effects to setting are predicted as a result of the operation phase of the Proposed Development.

Table 7.2: Appraisal of Effects

Environmental Feature	Project Interaction	Mitigation Measures	Receptor Sensitivity	Magnitude of effect following mitigation	Significance of effect
LB18360	Within 2 km	None required	High	No Impact	No Effect
CanID 376154	Within Proposed Development	None required	Low	No Impact	No Effect
WoSAS 68167	Within 200 m	None required	Low	No Impact	No Effect
Buried archaeological remains	Direct during construction	A watching brief is required for all ground-breaking works.	Unknown	Unknown	Unknown

7.6 Mitigation by Design

7.6.1 Ground disturbance due to earthworks are the most likely source of direct, physical impacts to known and unknown cultural heritage resources, with the potential to partially or wholly remove these resources. Direct impacts have the potential to be one off, non-reversible and permanent. Unless the principle of avoidance is adopted in the first

instance, mitigation measures will not significantly reduce the predicted residual effect of this impact on the cultural heritage.

7.6.2 No designated or non-designated assets are anticipated to experience direct or indirect impact as a result of the Proposed Development and as such no specific mitigation is required. However, there is still the potential for unknown buried archaeology within the Proposed Development footprint. As such, a watching brief should be undertaken during all ground disturbance works in previously undeveloped areas, wherein the identified archaeology can be suitable assessed and mitigated. Machine movements within the working corridor should be monitored by a suitably qualified archaeologist during the watching brief. All mitigation should be approved by the Local Authority before work commences.

7.6.3 The location of the construction compound has yet to be decided, and a works contractor has yet to be appointed. As such, both direct and indirect effects arising from the construction of the compound have yet to be assessed. It is recommended that the construction compound be situated in an area that has already been disturbed so to reduce the potential impact to unknown buried archaeology. Construction of the compound should be monitored by the above detailed watching brief if it is to be located in a previously undisturbed area. It is also recommended that to minimise/nullify potential temporary impacts arising from the presence of the construction compound, the construction compound not be situated in close proximity to or within the wider setting of Category A listed Cour House (LB18360).

7.7 Summary of Effects

7.7.1 There are no anticipated adverse effects to known heritage assets. However, there remains the potential to encounter previously unknown buried remains, even though it is considered low.

7.8 Additional Mitigation

7.8.1 A pre-commencement walkover of the alignment, as revised since 2021, should be undertaken to understand the above-ground remains and generate additional knowledge of the buried archaeological potential.

7.9 Summary

7.9.1 As a result of the construction and operation phases of the Proposed Development, there are no anticipated adverse effects to known cultural heritage assets.

7.9.2 Given the potential for unknown buried archaeology within the Proposed Development footprint, a watching brief should be undertaken during all ground disturbance works in previously undeveloped areas, wherein the identified archaeology can be suitable assessed and mitigated. This includes the construction of the compound, if located within a previously undeveloped area.

7.9.3 Machine movements within the working corridor should be initially monitored by a suitably qualified archaeologist during the watching brief to clear the work zone and ensure avoidance of assets.

7.9.4 It is recommended that the construction compound should be located within an area that has already been disturbed to reduce any potential impact to unknown buried archaeology.

7.9.5 Consideration for the location of the construction compound should account for the proximity and visibility from Category A listed Cour House (LB18360) to reduce the introduction of a potential temporary impact to setting.

7.9.6 All mitigation should be approved by the Local Authority before work commences.

8. MITIGATION PROPOSALS

8.1 Summary

8.1.1 A summary of the key mitigation measures identified to reduce the potential effects of the Proposed Development are described in **Table 8.1**, which should be read in conjunction with the relevant technical chapters. These will be implemented by the Construction Environmental Management Plan (CEMP) prepared specifically for the Proposed Development.

Table 8.1: Schedule of Mitigation

Mitigation reference	Issue	Mitigation measure	VEA report reference
General mitigation (see chapter 2: Description of the Proposed Development)			
G1	Construction hours	Subject to agreement with Argyll and Bute Council, proposed construction working hours are seven days a week between 08:00 to 20:00 Monday – Friday, 08:00 to 18:00 Saturday (no loud noise before 09:00) and 09:00 to 18:00 Sunday (no loud noise before 10:00).	2.3.2
G2	Deliveries management	All deliveries will take place on weekdays during agreed working hours only. Detailed programming of the works will be the responsibility of the appointed contractor in agreement with SSEN Transmission and Argyll and Bute Council.	2.3.3
G3	Transport management	Construction of the Proposed Development will give rise to regular numbers of staff transport movements, with work crews travelling to work site areas. Detailed access proposals will be developed by the Principal Contractor once appointed.	2.5.1
G4	Access tracks	New access tracks (permanent or temporary) would generally be constructed using a geotextile, with approximately 200 mm of crushed and compacted stone laid on top. Tracks may be floated over areas of peat, or may use cut and fill approaches, subject to ground conditions and gradients. Tracks will be 3.4 m wide as standard.	2.5.2
G5	Forestry removal	The construction of the Proposed Development will require removal of a 25 m strip of commercial forestry at various locations along the Proposed Development's alignment. This would be undertaken in consultation with the appropriate stakeholders. Some areas of management felling may be required to prevent windblow, subject to landowner approval.	2.6.1
G6	Drainage management	All drainage will be managed in-line with industry best practice with exact requirements dependent on the final design. The Principal Contractor will be responsible for the design and installation of the drainage for the Proposed Development. It should be noted that the management of site waste-water will be of particular importance in and around the watercourses identified on the site by the hydrological walkover survey (see **Appendix N**).	2.7.1 & Appendix N.
G7	General environmental management	A Construction Environmental Management Plan (CEMP) will be prepared and implemented by the Principal Contractor for the works following their appointment. This document will detail how the Principal Contractor will manage the site in accordance with all commitments and mitigation detailed in this VEA, statutory consents and authorisations, industry best practice and SSEN's own guidance. The CEMP will contain an embedded Soil	2.9.1

Mitigation reference	Issue	Mitigation measure	VEA report reference
		Management Plan which the contractor will be responsible for authoring. In addition, all relevant SSEN General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) will be adhered to. The contractor will also be responsible for the production of a Construction Traffic Management Plan which will be agreed with relevant stakeholders.	
G8	Post construction reinstatement	Following commissioning of the Proposed Development, all construction areas will be made good with all temporary working areas and materials removed and soils appropriately reinstated. Reinstatement will form part of the contract obligations for the Principal Contractor. The reinstatement process will be informed by a Biodiversity Net Gain (BNG) assessment undertaken by ERM for SSEN Transmission, which will identify the appropriate locations and vegetation planting to achieve a net gain in biodiversity over the pre- works baseline. The BNG assessment is included in Appendix K.	2.10.1 & Appendix K
G9		Reinstatement principles will be in accordance with SSEN Transmission's GEMPs and best practice measures, as well as mitigation proposals recommended in this VEA.	2.10.2
Mitigation for Ecology and Ornithology (see chapter 4)			
EO1	Implementation of standard GEMPs and SPPs in the CEMP	Embedded ecology and ornithology mitigation measures are provided in SSEN Transmission's General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs), which will inform a post-submission Construction Environmental Management Plan (CEMP).	4.1.3
EO2	Compensatory habitat creation	All permanent loss of habitat attributed to the Proposed Development operational corridor and access track locations shall be replaced through compensatory planting, and as such, this is considered to form part of the embedded mitigation. As per Appendix K: Biodiversity Net Gain Assessment (Appendix A: Irreplaceable Habitat Supplement) SSEN is committed to ensure that a greater extent of blanket bog is restored than the extent of blanket bog that is lost or deteriorated.	4.6.4, 4.8.15 & 4.9.53
E04	Reptiles	The CEMP should include a Precautionary Method of Works (PMoW) for reptiles, which should include, but not be limited to, the following measures. This is required to reduce the risk of harm or fatality to reptiles during the works: • Site clearance works will be supervised by the appointed EnvCoW and preceded by a throughout hand search, check and removal of surface debris to ensure reptiles are not killed or injured. If a reptile is found works will cease and consultation will be required with NatureScot; and, • Site clearance works will only be carried out when animals are active, which is weather and temperature dependent. This is usually March to October, if there is not a prolonged cold period and / or the temperature does not fall below 5ºC.	4.9.1
EO5	Aquatic protected species	The following measures, as a minimum, will be included within the CEMP, to avoid harm to salmonid fish, lamprey and European eel. These measures will be required ahead of any watercourse crossing, including those of the UGC and access tracks:	4.9.2

Mitigation reference	Issue	Mitigation measure	VEA report reference

		• Any new watercourse crossings required for the UGC, and access tracks will be designed in accordance with:
		  ○ SEPA Engineering Guidance – SEPA Supporting guidance and good practice guides[134], including WAT-SG25: River Crossings.
		  ○ CIRIA 92019) Culvert, screen and outfall manual (C786F) 2019[135];
		  ○ SEPA WAT-PS-06-03: Culverting of Watercourses – Position Statement and Supporting Guidance 2015[136]; and,
		  ○ SSEN GEMP TG-NET-ENV-515: Watercourse Crossings,
		• Fish Habitat Surveys will be undertaken prior to construction to advise on micrositing of crossing points, as required, to minimise the risk to fish populations and avoid high value habitats such as spawning habitats for salmonids and lamprey;
		• All watercourse crossing works will be undertaken during the period of 15th June and 30th September to avoid the fish spawning season;
		• Prior to dewatering of any bunded area, and prior to watercourse crossing works, an appropriately qualified electrofishing specialist will conduct a fish rescue from the bunded area. Every time the bunded is breached, the rescue will be repeated;
		• When dewatering the bunded area, pump inlets will be fitted with a mesh screen to prevent an uptake of fish or other aquatic species;
		• Water pumped from a bunded area, if needed, will be discharged onto an open area of the riverbank through a sedimat, and allowed to filter into the ground to prevent sedimentation into the channel;
		• Any in-river works will be phased and undertaken with care so that disturbance to channel material is minimised;
		• In vicinity of the works, water quality monitoring will be undertaken to ensure pollution and sedimentation of the watercourse is minimised, and corrective actions can be completed. This will include monitoring for dissolved oxygen both % saturation and milligrams per litre (mg/l), pH, temperature and turbidity; and,
		• At no time will the watercourse be obstructed in such a way that fish and other aquatic species cannot pass.	

EO6	Black Grouse	To avoid effects on black grouse, the following additional mitigation measures are required: • The ECoW should undertake preconstruction walkover survey in the area of Lek ID9, Lek ID10 and Lek ID11 and their	4.9.3

[134] SEPA supporting guidance: *Good Practice Guides (various)* [Online[Available at: Engineering guidance | Scottish Environment Protection Agency (SEPA) (Accessed October 2025)

[135] CIRIA (2019) *Culvert, screen and outfall manual (C786F)* [Online] Available at: Item Detail (Accessed October 2025)

[136] SEPA (2015) *WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance* [Online] Available at: WAT-PS-06-02 (Accessed October 2025

Mitigation reference	Issue	Mitigation measure	VEA report reference
		surrounds and up to 2 km[137] from the Proposed Development to identify if any leks are present; • Should any leks be identified within the Black Grouse Protection Zone as stipulated within the SSEN Transmission Bird SPP, a 300 m to 500 m disturbance buffer will be established. No activity will occur within these buffer areas two hours after sunrise and two hours before sunset within the main black grouse lekking season (April to May); • Any maintenance activity, such as tree limbing, should take place outside of the black grouse breeding season (April to July), where possible, if not, at least 300 m from lek sites and / or outside of the daily lekking period as stipulated within the SSEN Transmission Bird SPP; and • Where possible, any gates within 300 m of any lek sites will remain open after first arrival, avoiding the need for subsequent entry to open and close the gate and the associated potential disturbance to the lek due to pedestrian activity.	
Mitigation for Geology and Soils (see chapter 5)			
GS1	Impacts to geology	The following will be implemented within the CEMP: • Measures to ensure well-maintained drainage systems, including the identification of any areas of sensitive drainage or hydrology in construction areas; • Developing methodologies to prevent degradation and erosion of exposed soil deposits to minimise effects on morphology and associated hydrology. This includes limiting vehicle movements on untracked ground to reduce the impact on areas of soil, reducing surface cover loss, soil compaction and impacts on areas with softer drift deposits/soils and steeper slopes; • The removal and off-site disposal of soils would be avoided where possible and particularly where soils hold environmental or ecological value and agricultural productivity. Soils are to be used for re-use and restoration following construction; and • The implementation of best practice methods for soil handling and storage. This will be required in order to preserve soil structure and texture, and to avoid compaction within sensitive locations.	5.7.3
GS2	Geotechnical stability	Earth cutting along steep slopes will be avoided where possible to reduce any impact on slope stability and the potential for peat slides. Suitable engineering works will be undertaken, where required, to ensure the stability of the slope is maintained in areas prone to slides.	5.7.3
GS3	Contaminated land	Contaminated land is considered unlikely to be present based on current and historic land uses. However, mitigation is included below, in case any contaminated land is encountered on site: • Prior to commencing construction works, an onsite assessment will be made by the Principal Contractor on the	5.7.4

[137] Scottish Natural Heritage (2016): *Assessing Connectivity with Special Protection Areas (SPAs) Guidance Version 1*. NatureScot

Mitigation reference	Issue	Mitigation measure	VEA report reference
		potential for contamination to be present based on site-specific information regarding potentially contaminated sites; • Where such investigations identify potentially contaminated land, strategies for mitigation or remediation of the land would be developed and agreed with the regulatory authorities (SEPA) and implemented prior to construction in these locations; and • Where evidence of previously unidentified contamination is encountered during construction, appropriate investigation and remedial measures will be developed and implemented by the Principal Contractor in accordance with relevant legislation and regulatory requirements to prevent pollution of environmental receptors and / or risk to human health.	
GS4	Access tracks	Where possible, proposed construction site access will be taken via the existing public road network and would make use of existing tracks as far as practicable, upgraded as required, to minimise the disturbance to soils from the construction of new tracks where possible. All new tracks would be constructed in accordance with SSEN best practice construction methods, and with reference to NatureScot's good practice guide: Constructed tracks in Scottish Uplands.	5.7.4
GS5	Disturbance and excavation of deep peat	• Floating tracks should be considered, especially for the permanent track proposed in the central section of the Proposed Development where peat >1 m is recorded in areas of Class 1 and 2 peat; • Micro-siting may also need to be taken into consideration for areas of deep peat along the UGC route; • Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses; • Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing); and • All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be accurately controlled, and to minimise the risk of contamination through spillages.	5.9.1
GS6	Peat stability	• Temporary peat storage areas should be sited in locations with lower ecological value, low stability risk and at a suitable distance from watercourses; • Limitations should be put into place when stockpiling peat (i.e. max height 2 m) to avoid peat slides • Plant and machinery should only work when ground or soil surface conditions enable their maximum operating efficiency (i.e. when machinery is not at risk of being bogged down or skidding causing compaction or smearing); and • All plant and machinery must always be maintained in good working condition to ensure that the soil is stripped correctly, for example to ensure that the depth of the strip can be	5.9.1

Mitigation reference	Issue	Mitigation measure	VEA report reference
		accurately controlled, and to minimise the risk of contamination through spillages.	
GS7	Loss and compaction of peat	• Re-use excavated peat within the Proposed Development; and • Floating tracks should be considered in areas of proposed permanent track where peat depths exceed 1 m.	5.9.1
GS8	Loss and compaction of soils	• Micro-siting of Proposed Development infrastructure based on the findings of further detailed ground investigations; and • Reuse of surplus soils that are removed from in situ conditions to other areas within the Proposed Development.	5.9.1
Mitigation for Hydrology and Hydrogeology (see chapter 6)			
HH1	General environmental management	A CEMP will be developed by the appointed contractor prior to the commencement of construction. The CEMP will detail how the appointed contractor will manage works in accordance with the mitigation in this report, statutory consents and authorisations, and industry best practice and guidance including the Guidance for Pollution Prevention (GPP) documents.	6.7.1
HH2		The following standard SSEN General Environmental Management Plans (GEMPs) as relevant to Hydrology and Hydrogeology, will be followed during construction and incorporated into the final CEMP: • 510: Oil Storage and Refuelling; • 511: Soil Management; • 512: Working in or Near Water; • 514: Working with Concrete; • 515: Watercourse Crossings; • 516: Waste Management; • 520: Dust Management • 522: Restoration; and • 523: Bad Weather.	6.7.3
HH3	Environmental authorisation for working in water	From 1st November 2025, water, waste management, and industrial activities are regulated under Environmental Authorisation (Scotland) Regulations 2018 (EASR). The construction activities proposed are anticipated to be permissible under the EASR and thus the Proposed Development will be subject to the appropriate EASR authorisations. Compliance with the regulations and obtaining the appropriate authorisations will be the responsibility of the Principal Contractor, as will any necessary consultation with the relevant statutory consultees.	6.7.4
HH4	Runoff and flood risk management	Measures to prevent increases in runoff as a result of the Proposed Development and to mitigate against flood risk to the Proposed Development during construction include: • Site specific drainage measures will be developed to control runoff rates from access tracks and excavations during construction. They will be in line with Sustainable Drainage System (SuDS) principals and the types of measures set out in the CIRIA SuDS Manual. Measures are likely to include trackside drainage, check dams, and attenuation ponds to slow runoff rates and prevent preferential flowpaths	6.7.5

Mitigation reference	Issue	Mitigation measure	VEA report reference
		developing. Drainage features will be checked regularly to ensure they are performing as intended. • Where vegetation has been removed, it will be re-instated or re-seeded as soon as practicable to slow runoff rates and encourage infiltration. • The movement of construction traffic will be controlled to minimise soil compaction and disturbance. Vehicle movements (to include HGVs and plant machinery) outside the defined access tracks and hardstanding areas will be avoided where possible. • A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high. Temporary bunding will be provided as required to reduce the risk of inundation of the Proposed Development. The site manager will sign off alerts via the SEPA Floodline service and the local forecast will be monitored. • Trenches will only be excavated to such lengths that can be quickly backfilled in the event of severe rainfall being forecast i.e. a yellow weather warning for rain being issued. • For areas where open trenching is being used across watercourses: o Cofferdams will be designed to accommodate periods of high flow. o The pumps transferring water from upstream to downstream will be regularly checked to ensure maintenance to river flows during construction. o A water monitoring programme will be needed to ensure maintenance of flow downstream of the cofferdam. o All in-stream works will be overseen by the Ecological Clerk of Works (ECoW). • The site compound (whose location is yet to be determined) will not be located within the areas shown in the SEPA Future Flood Maps. A suitable SuDS will be developed during detailed design for the site compound so that runoff and flood risk are not increased.	
HH5	Erosion and sedimentation	• Sediment control measures for example silt fences, check dams, settlement / attenuation ponds etc., appropriate to the Site will be developed through the detailed design phase. These measures will ensure that sediment laden runoff from disturbed or excavated ground is directed to the appropriate treatment train. • All sediment control measures will be regularly checked and maintained during construction so they operate as intended. • A vegetation strip will be maintained along all watercourses, where practical, to act as a natural sediment capture during construction. Where vegetation has been removed, it will be re-instated or re-seeded as soon as practicable. • Watercourses will be monitored throughout the construction period by the ECoW. • The extent of all excavations will be minimised as far as practicable. During construction works, surface water flows will be captured through a series of cut-off drains to prevent water	6.7.5

Mitigation reference	Issue	Mitigation measure	VEA report reference
		entering excavations, eroding exposed surfaces, and capture runoff downstream of excavations. • A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high, and temporary bunding will be provided as required to reduce the risk of sediment transport to watercourses. • For areas where open trenching is being used across watercourses: o Bank erosion protection measures will be in place to minimise sediment input and protect the morphology of the watercourse. o Water pumped from a bunded area, if needed, will be discharged onto an open area of the riverbank through a silt mat, and allowed to filter into the ground to prevent sedimentation into the channel; o Any in-river works will be undertaken with care so that disturbance to channel material is minimised; o A water monitoring programme will be needed to ensure maintenance of downstream water quality. o All in-stream works will be overseen by the ECoW.	
HH6	Pollution incidents	• No refuelling or storage of equipment, materials, or chemicals will occur within 30 m of a watercourse, surface drainage system, or GWDTE. • Equipment to contain and clean up any spills will be readily available at all times in the respective areas of the Site to minimise the risk of pollutants entering watercourses. • Refuelling of vehicles and plant machinery, and cleaning of machinery will be confined to the designated fuelling / cleaning areas and will be carefully controlled. Drip trays will be placed under standing machinery. • All fuel and chemicals will be stored within appropriately specified containers and within specifically designed stores / storage areas and shall include appropriate measures to avoid spillages. • There will be no discharge of foul or contaminated water from the Site to groundwater or surface waters. • A wet weather / flood risk protocol will be in place with works to cease during prolonged rainfall or where flood risk is high, and temporary bunding will be provided as required to reduce the risk of pollutants entering watercourses. • For areas where open trenching is being used across watercourses: o All machinery will be checked and cleaned prior to any in-stream works to avoid leaks of oils or hydraulic fluids etc into watercourses. o Water pumped from a bunded area, if needed, will be passed through the appropriate treatment train to prevent downstream water quality impacts; o A water monitoring programme will be needed to ensure maintenance of downstream water quality; and o All in-stream works will be overseen by the ECoW.	6.7.5

Mitigation reference	Issue	Mitigation measure	VEA report reference
HH7	Hydrogeology and GWDTE	• Prior to excavation works, ground investigations will be conducted by the appointed contractor, which will include identifying groundwater levels within the areas of excavation. • The results of the groundwater investigation will inform the Site-specific groundwater mitigation measures needed. Construction, including the handling and discharge of groundwater from dewatering of excavations, will take place in accordance with best practice guidance (e.g., CIRIA Groundwater Control) and measures relating to the identification and protection of groundwater will be detailed and secured within the CEMP. • If construction works are within 250 m of a GWDTE, as identified in the NVC survey, a hydrogeological assessment of the GWDTE habitats will be carried out to determine if the habitats are groundwater dependent or surface water fed. The assessment will be undertaken in line with SEPA guidance and utilise the Botanaeco toolkit for determining groundwater dependency. Should the assessment conclude the habitats are groundwater dependent, appropriate specific mitigation will be put in place to protect them.	6.7.5
HH8	Water resources	Prior to construction a detailed survey and risk assessment of the Crossaig Substation Private Water Supply (PWS 3) will be undertaken to confirm: • The type of supply source (e.g., borehole, spring); • The abstraction location of the PWS; • The existing condition of the PWS source and water quality; • Identify all associated infrastructure e.g. pipes or holding tanks; and • Confirm the depth and extent of any proposed excavations within the vicinity of the supply and the potential for impacts.	6.7.6
HH9		Site specific mitigation will be developed and incorporated into a Site specific PWS Protection Plan (or similar). This may include the following: • Fencing off the PWS source and intake (to avoid accidental damage) and identify relevant buffer distances; • Pegging out the route of distribution pipes and appropriate buffer zones in the vicinity of the construction works and avoiding activity in these areas; • Regular, recorded checks on any pipework (visible signs of cracking or other damage); • Checks on PWS infrastructure to assess for damage; • Use low impact access methodologies when working within the vicinity of the PWS source or infrastructure; • Water quality monitoring; • Ensure all Site operatives working in the area are made aware of the location of the PWS, catchment areas, and mitigation measures. Signage should be considered to remind workers when work takes place in these areas; and	6.7.7

Mitigation reference	Issue	Mitigation measure	VEA report reference
		• A contingency plan to provide an alternative water supply (on either a temporary or permanent basis) in the event of unforeseen impacts on the existing supply.	
HH10		Scottish Water will be consulted prior to construction to confirm the presence of any assets (freshwater or wastewater mains pipes) and if the Proposed Development is within one of their DWPA. Based on the outcomes of this, the appropriate mitigation to prevent impacts to Scottish Water resources will be developed in consultation with Scottish Water and in line with their guidance.	6.7.8
HH11	Watercourse crossings	The new watercourse crossings required for the access tracks will be designed in accordance with the following guidance: • SEPA Engineering guidance - SEPA supporting guidance and good practice guides, including WAT-SG-25: River Crossings; • CIRIA Culvert, screen and outfall manual (C786F) 2019; • SEPA WAT-PS-06-02: Culverting of Watercourses – Position Statement and Supporting Guidance 2015; and • SSEN GEMP TG-NET-ENV-515: Watercourse Crossings.	6.7.9
HH12		Each crossing will be designed to convey the 0.5% annual exceedance probability (AEP) plus climate change event including an allowance for partial blockage. The crossings will be to designed to ensure hydraulic conveyance is maintained, as well as allowing the free passage of mammals and aquatic ecology. Watercourse crossings will be subject to the appropriate authorisation under the EASR. As both the crossings needed for the Proposed Development are temporary, and any crossings needed for maintenance are also assumed to be temporary, they will likely fall under General Binding Rules subject to the conditions set by SEPA.	6.7.10
HH13	Operational phase management	An operational management plan and site maintenance programme will be in place for the lifetime of the Proposed Development outlining the mitigation measures needed during operation. This will include measures to prevent impacts to water quality as a result of sedimentation and chemical pollution, and what measures need to be in place if any ground intrusive works are needed during routine maintenance activities or repairs to the UGC. The mitigation required for cable maintenance activities which involve ground disturbance will be very similar to those needed during the construction phase, and therefore should incorporate the mitigation set out in **Section 6.7** of this report. A PWS Protection Plan will be applicable in the event of maintenance activities being needed in the vicinity of the Crossaig Substation PWS. Any mitigation developed to protect Scottish Water assets will also be applicable.	6.7.11
HH14		Where permanent access tracks are needed, suitable track drainage will be developed and put in place such that runoff rates are not increased.	6.7.12
Mitigation for Cultural Heritage (see chapter 7)			
CH1	Buried archaeological remain	A watching brief should be undertaken during all ground disturbance works in previously undeveloped areas, wherein the identified archaeology can be suitably assessed and mitigated. Machine movements within the working corridor should be monitored by a suitably qualified archaeologist during the watching	7.6.2

Mitigation reference	Issue	Mitigation measure	VEA report reference
		brief. All mitigation should be approved by the Local Authority before work commences.	
CH2		It is recommended that the construction compound be situated in an area that has already been disturbed so to reduce the potential impact to unknown buried archaeology. Construction of the compound should be monitored by the above detailed watching brief if it is to be located in a previously undisturbed area. It is also recommended that to minimise/nullify potential temporary impacts arising from the presence of the construction compound, the construction compound not be situated in close proximity to or within the wider setting of Category A listed Cour House (LB18360).	7.6.3
CH3		A pre-commencement walkover of the alignment, as revised since 2021, should be undertaken to understand the above-ground remains and generate additional knowledge of the buried archaeological potential.	7.8.1

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APPENDIX A – FIGURE 1.1: PROPOSED DEVELOPMENT ALIGNMENT

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APPENDIX B – FIGURE 3.1: ENVIRONMENTAL CONSTRAINTS

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APPENDIX C – ECOLOGY AND ORNITHOLOGY: FIGURES 4.1 – 4.3

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APPENDIX D – GEOLOGY AND SOILS: FIGURES 5.1 – 5.4

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APPENDIX E – HYDROLOGY AND HYDROGEOLOGY: FIGURES 6.1 – 6.9

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APPENDIX F – CULTURAL HERITAGE: FIGURES 8.1 – 8.3

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APPENDIX G – PROTECTED SPECIES SURVEY REPORT

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APPENDIX H – HABITAT SURVEY REPORT

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APPENDIX I – AQUATIC SPECIES SURVEY REPORT

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APPENDIX J – PEATLAND CONDITION ASSESSMENT REPORT

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APPENDIX K – BNG REPORT

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APPENDIX L – UXO DESK STUDY AND RISK ASSESSMENT

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APPENDIX M – PEAT SURVEY RESULTS

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APPENDIX N – HYDROLOGY SURVEY REPORT