Scottish & Southern Electricity Networks

TRANSMISSION

Scottish and Southern Electricity Networks

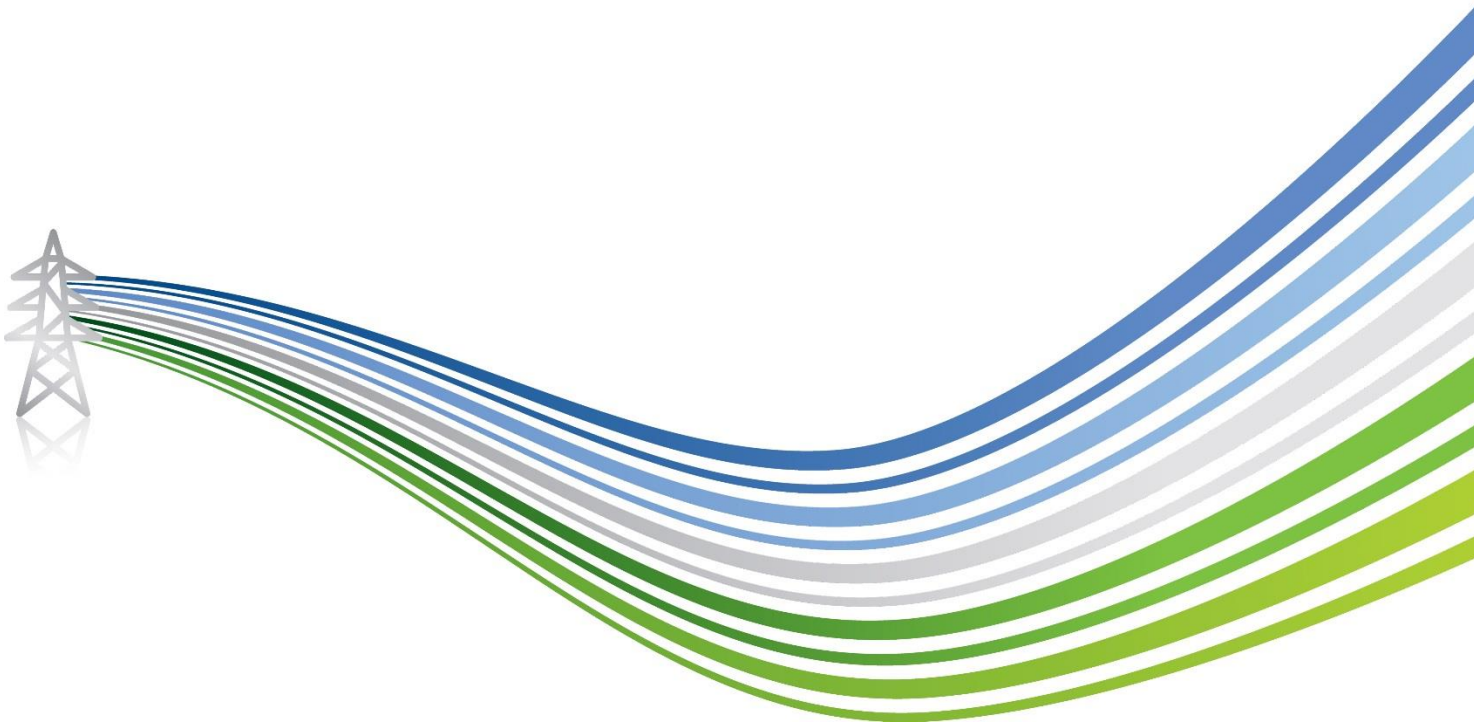
Transmission

Lairg II Wind Farm Connection -

Underground Communications Fibre Cable

Environmental Appraisal

November 2023



QUALITY MANAGEMENT

Issue/Revision	1	2	3	4
Date				
Remarks	First Issue	First Issue		
Prepared by	Numerous	Numerous		
Signature				
Checked by	James Foster	James Foster		
Signature				
Authorised by	Mike Roberts	Mike Roberts		
Signature				
Project number	70091396	70091396		
Report number	P01	P02		

Scottish and Southern Electricity Networks Transmission
Inveralmond House
200 Dunkeld Road
Perth PH1 3AQ
Tel: +44 (0)1738 456 000
www.ssen.co.uk

Scottish & Southern Electricity Networks
TRANSMISSION

CONTENTS

APPENDICES

FIGURES

1. INTRODUCTION

1.1 Background

1.1.1 Scottish and Southern Electricity Networks Transmission (hereafter referred to as 'SSEN Transmission'), operating under licence held by Scottish Hydro Electric Transmission plc., owns and maintains the electricity transmission network across the north of Scotland and holds a license under Section 9 of the Electricity Act 1989 to '*develop and maintain an efficient, co-ordinated and economical electricity transmission system in its licensed area*'. SSEN Transmission is a wholly owned subsidiary of the SSE PLC group of companies.

1.1.2 SSEN Transmission are proposing to install an underground communications fibre cable which will be routed between the consented Lairg 132 kV Wind Farm Substation and a joint box on the existing Dalchork-Loch Buidhe 132 kV overhead line (OHL) (Tower 19) (hereafter referred to as the 'Proposed Development'), the location is shown on **Appendix A, Figure 1.1 Site Location Plan**.

1.1.3 As per Schedule 1, Part 13, Paragraph 40 (2) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992 (as amended)[1], given that the Proposed Development is comprises a telecommunications line which exceeds 1000 m in length, it is not considered to benefit from permitted development rights. As such, planning permission will be sought under the Town and Country Planning (Scotland) Act 1997 (as amended).

1.1.4 Lairg II Wind Farm is being developed by Energyfarm UK Lairg II LLP and was consented by the Scottish Government Energy Consents Unit (ECU) in October 2021. There is a need to connect the consented Lairg II Wind Farm to the transmission grid by October 2026 and SSEN Transmission is obliged to provide a connection as the wind farm lies within the area covered by its license. The Proposed Development requires fibre communications for the purpose of the protection and control. This will tie into the existing Dalchork to Loch Buidhe 132kV overhead line from the proposed substation, as shown on **Appendix A, Figure 1.2 Proposed Development**.

1.1.5 SSEN Transmission is voluntarily submitting this Environmental Appraisal (EA) which is considered to reflect a proportionate appraisal based on the nature and extent of the development and evaluates whether any specific environmental risks are likely to occur resulting from the Proposed Development. The EA and any mitigation recommended to avoid or minimise any associated environmental risks will inform the Contractor's Construction Environmental Management Plan (CEMP).

1.1.6 While consent is sought for the entirety of the communication fibre cable alignment, the EA will only consider the section of the Proposed Development which routes adjacent to the existing access track that runs parallel with the Dalchork-Loch Buidhe 132 kV OHL, stretching from Tower 19 in the south, to where it meets a junction box at the proposed Cable Sealing End Compound (CSEC) at Tower 31 for the Lairg II Wind Farm Connection Project. The section of the communications fibre cable which has been assessed within this EA is illustrated by the red line on **Appendix A, Figure 1.2 Proposed Development**.

1.1.7 The remainder of the communications fibre cable, i.e., that which trends east to west, respectively, is shown in green on **Appendix A, Figure 1.2 Proposed Development**. This section of the communications fibre cable will be installed within the underground cable trench for the Lairg II Wind Farm Connection Project which has already been subject to assessment within a full environmental appraisal[2] for main Lairg II Wind Farm Connection Project (The Highland Council application reference number is 23/04550/FUL and, and the Scottish Government Energy Consent Unit application reference is S37 ECU00004820. The location of the Lairg II Wind Farm Connection Project is shown on **Appendix A**, **Figure 1.2 Proposed Development.** Installation of the Lairg II Wind Farm UGC and this section of the communications fibre cable will occur in unison, within the same cable trench. As such, it is not considered that the installation of this section of the communications fibre cable will result in impacts above and beyond those already identified and appraised for the Lairg II Wind Farm Connection UGC[2]. Furthermore, the mitigation proposed for the Lairg II Wind Farm Connection UGC is also applicable to the communications fibre cable. As such, the focus of this EA is on the north-south section of the communications fibre cable only, between a junction box the Lairg II Wind Farm Connection CSEC at Tower 31 and Tower 19.

1.1.8 The Proposed Development is necessary to fulfil the statutory and licence obligations on SSEN Transmission as the onshore transmission licence holder. These obligations relate to developing the electricity transmission network

[1] The Town and Country Planning (General Permitted Development) (Scotland) Order 1992. Available at: https://www.legislation.gov.uk/uksi/1992/223/schedule/1/paragraph/40/made

[2] Lairg II Wind Farm Connection, Environmental Appraisal. WSP, SSEN Transmission (September 2023).

to provide adequate transmission capacity and to provide connections to customers who wish to connect to and use the transmission system to participate in the national wholesale electricity market.

1.1.9 SSEN Transmission also has obligations to offer non-discriminatory terms for connection to the electricity transmission system and, as such, has a legal duty to provide connections for new electricity generators wishing to connect to the transmission network in its licence area under the terms of its statutory and licence obligations.

1.1.10 The Proposed Development is also supported by the National Planning Framework 4 (NPF4)[3] as it recognises that the: "*The electricity transmission grid will need substantial reinforcement including the addition of new infrastructure to connect and transmit the output from new on and offshore capacity to consumers in Scotland, the rest of the UK and beyond*".

1.1.11 The intent behind Policy 11 of NPF4 is to, *"encourage, promote and facilitate all forms of renewable energy development onshore and offshore. This includes energy generation, storage, new and replacement transmission and distribution infrastructure."*

1.1.12 "Development proposals for all forms of renewable, low-carbon and zero emissions technologies will be supported. These include: ii. enabling works, such as grid transmission and distribution infrastructure".

1.2 Site Location

1.2.1 The Proposed Development is located approximately 2 km to the south-east of the village of Lairg, to the west of Lairg Wind Farm and it routes through the consented Lairg II Wind Farm, as shown on **Appendix A, Figure 1.2 Proposed Development**.

1.2.2 The Proposed Development routes generally in a west to east direction between the consented Lairg II Wind Farm substation and the CSEC at Tower 31 on the existing Dalchork-Loch Buidhe 132 kV OHL (i.e., parallel with the Lairg II Wind Farm Connection project as shown on **Appendix A, Figure 1.2 Proposed Development**), before diverting south to a joint box at Tower 19, on the existing Dalchork-Loch Buidhe 132 kV OHL. It routes adjacent to the existing access track that runs parallel with the Dalchork-Loch Buidhe 132 kV OHL.

1.2.3 The Proposed Development is located in a rural area and lies between 170 m to 220 m above Ordnance Datum (AOD) with the surrounding land sloping to the north and west towards Lairg and rising to the east. The wider area is predominantly rural moorland with isolated residential and commercial properties. Larger settlements in the wider area include Torroble, located approximately 1 km north-west of the Proposed Development and Lairg, located approximately 2 km north-west. Torroboll Burn runs to the north-west of the Proposed Development, beyond the existing Lairg Wind Farm access track.

[3] National Planning Framework 4 [2021]. Available at https://www.gov.scot/publications/national-planning-framework-4/pages/1/

2. PROPOSED DEVELOPMENT

2.1 Design Elements

2.1.1 The Proposed Development comprises the installation of an underground communications fibre cable to facilitate the connection of the consented Lairg II Wind Farm to the transmission grid. The communications fibre cable will measure approximately 3.5 km in length between a junction box at the proposed CSEC for the adjacent Lairg II Wind Farm Connection Project and Tower 19 on the existing Dalchork-Loch Buidhe 132 kV OHL, (shown by the red line on **Appendix A, Figure 1.2 Proposed Development**).

2.2 Temporary Infrastructure

2.2.1 No new temporary infrastructure is anticipated to be required. If required, the works will utilise the temporary infrastructure for the Lairg II Wind Farm Connection project. The impact of the construction of this temporary infrastructure has been assessed within a separate full environmental appraisal for the Lairg II Wind Farm Connection project and as such, it is not included within this report.

2.3 Construction Methodology

2.3.1 The fibre communications cable will be installed using a 'Mole Plough' with the depth of the cable ducts assumed to be approx. 1 m.

2.3.2 Inspection chambers would be located at various points along the alignment. These are composite material chambers that would house the fibre optic joint boxes ("Fibre Optic Chambers") or would be used to assist the cable installation process ("Draw Pits").

2.3.3 The fibre optic cable will be brought to site on a cable trailer and would be towed by either a van or a tractor (depending on weight) and the cable trailer would be used to hold the cable drum during the pulling process. The fibre optic cable would be pulled into the duct using a towable winch. The size of the winch is to be finalised but is likely to be approximately five tonnes.

2.3.4 Where the alignment crosses watercourses, the duct installation would take place once the watercourse had been dammed and over pumped.

2.3.5 The Proposed Development, including the 30m construction working area, is hereafter referred to as 'the Site'. The Site covers approximately 10 hectares (ha).

2.4 Reinstatement

The plough creates a slit in the surface of the ground and pushes the spoils removed by the plough back into the hole as the machine feeds the cable duct into the hole. There is no excavation trench or the need for backfill. Where the connections ("Fibre Optic Chambers" & "Draw Pits") are made to apparatus installed by ploughing, small scale, localised excavations will be carried out and reinstated to their original profile unless otherwise agreed.

Access and Transport

2.4.1 The Proposed Development will be permanently accessed during operation via the A836 and the existing access track for the Lairg Wind Farm.

2.4.2 Given the nature of the construction methodology i.e., installation using a 'Mole Plough', there is no requirement for excavation and / or creation of a cable trench; as such, it is not anticipated that any new temporary access tracks will be required to facilitate the installation of the communications fibre cable. Where necessary, the existing Lairg Wind Farm access track and the existing access track that runs parallel with the Dalchork-Loch Buidhe 132 kV OHL will be utilised during the construction stage.

2.5 Construction Programme and Working Hours

2.5.1 It is anticipated that construction of the Proposed Development would be installed over a period of three weeks during the wider period of construction (approximately 19 months) for the construction of the Lairg II Wind Farm Connection, following the granting of consents, although a detailed programming of works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

2.5.2 Construction of the Lairg II Wind Farm Connection is estimated to start in February 2025 with completion in August 2026. Construction working hours will typically be between 07:00 to 17:00 Monday to Friday and 08:00 to 13:00 on Saturday. The working hours will be confirmed by the Principal Contractor prior to commencement.

2.6 Mitigation Measures

2.6.1 Following the initial appraisal, mitigation measures have been recommended to prevent, reduce or remedy any potential environmental effects identified. Such measures will be implemented during detailed design, construction and/or operation of the Proposed Development. Each technical discipline details the measures recommended to mitigate any identified impacts, and a summary of the recommended mitigation measures is provided in **Table 3-1: Environmental Appraisal.**

2.6.2 A 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 the EA, statutory consents and authorisations, and industry best practise and guidance.

2.6.3 The CEMP would also reference SSEN Transmission's GEMPs (**Appendix B**) and Species Protection Plans (SPPs) (**Appendix C**). The implementation of the CEMP will be managed on-site by a suitably qualified and experienced EnvCoW, with support from other environmental professionals as required.

3. ENVIRONMENTAL APPRAISAL

3.1 Scope of Appraisal

3.1.1 An initial review of baseline conditions and sensitive receptors has been undertaken; **Appendix A, Figure 3.1 Environmental Sensitivities and Designations** provides an overview of some of the key identified environmental considerations for this Site.

3.1.2 For each topic, the potential for environmental effects on these receptors has been considered and is documented in **Table 3-1**, in addition to committed mitigation.

Table 3-1: Environmental Appraisal

Topic	Baseline	Potential Effects	Mitigation / Commitments
Landscape & Visual Impact	The local landscape context is typical of the Rounded Hills – Caithness & Sutherland LCT (135), within which the Site lies, as illustrated in **Appendix A, Figure 3.2 Landscape Character Areas**. The Proposed Development is located on rolling hills that slope gently to the west, towards the Farmed and Forested Slopes with Crofting LCT (the River Shin Valley). This characteristic hillside landform is showcased by an extensive, almost uninterrupted landcover of heather and moorland grasses. In this open landscape, the existing Lairg Wind Farm, the Dalchorck to Loch Buidhe 132 kV OHL and access tracks are prominent features in the proximity of the Proposed Development, providing a context which is influenced by energy infrastructure. The susceptibility of the Site and its surroundings is considered Low with regard to the type of development proposed. There are no national or local designations within, or in proximity of, the Site. Reay – Cassley Wild Land	The Proposed Development would only be attributable to construction effects and this would be of very short duration and over a limited area / extent. Therefore, Magnitude of change is expected to be Medium-low, resulting in Medium-low and in balance not significant effects.	Embedded mitigation has been introduced through the method of installation using a 'Mole Plough', which enables apparatus to be installed by ploughing, and the ground reinstated to the original profile and restoration of the heather moorland.

Topic	Baseline	Potential Effects	Mitigation / Commitments
	Area is the closest designation, lying approximately 7 km to the north-west of the Site. The value of the landscape is therefore considered Medium-low to the type of development proposed. Medium-low value combined with low susceptibility results in Medium-low sensitivity to change. There are no visual receptors identified, which could potentially have visibility of the Proposed Development. Sensitive visual receptors such as users of Core Path 9237 Station - Gruids Road, Core path 2095 Gunn's Wood, National Cycle Network Route 75 and residential properties, are located at a distance of beyond 1 km, from where this type of development construction would not be perceivable.		
Cultural Heritage	Within a study area of 100 m from the cable route, there are three known heritage assets. All are located within the 30 m construction corridor, as illustrated in **Appendix A, Figure 3.3 Historic Environment Features Map**. These consist of a possible clearance cairn (HA01) discovered during the walkover survey, an enclosure (Canmore ID 5507) (HA02) of unknown date, and the western part of a farmstead and field system (Canmore ID 91270) (HA03). Further details of the heritage assets within the study area are presented within **Appendix D - Cultural Heritage Gazetteer**. The baseline evidence and the conclusions from the Lairg II Wind Farm Connection Environmental	Construction activities that will require the breaking of ground have the potential to result in direct physical impacts on any known or potential heritage assets within the Proposed Development boundary. The following works are anticipated to involve ground breaking and/or disturbance and/or may cause direct impacts to known or potential heritage assets: • Installation of the cable using a 'Mole Plough'; • Construction of inspection chamber foundations along the cable route; and	The following recommended approach was discussed and agreed upon after consultation with the Highland Council Historic Environment Team (HCHET) in November 2023. **CH1 - Demarcation and avoidance** Heritage assets with visible remains within the 30 m construction corridor of the Proposed Development will be demarcated prior to commencement of the cable installation to ensure visibility of the heritage asset location to all members of the construction crew, and avoidance during this phase. Demarcation would be achieved using high visibility marker posts set 5 m from the edge of

Topic	Baseline	Potential Effects	Mitigation / Commitments
	Appraisal[2] highlight that there is high potential for prehistoric and post-medieval sub-surface archaeological remains to survive within the Proposed Development boundary. The surrounding landscape contains numerous prehistoric earthworks and post-medieval stone structures and features, suggesting the potential for the discovery of previously unknown sub-surface archaeological remains is high. Any heritage assets discovered would most likely be of low value given their local importance and poor preservation, and are likely to relate to agricultural remains.	• Vehicle traffic and movement within the 30 m wide construction corridor. **Construction Phase** It is assessed that there is potential for construction works to result in direct physical impacts on all three heritage assets. Prior to mitigation, the impacts are anticipated to be permanent, moderate adverse. As the Ramascaig enclosure (Canmore ID 5507) (HA02) is of potential medium value given the possible prehistoric origins, this would result in a permanent Moderate Adverse significance of effect. The possible clearance cairn (HA01) and the Allt Ramascaig Beag farmstead (Canmore ID 91270) (HA03) are of low value, therefore, the impacts would result in a permanent Slight Adverse significance of effect. **Operation Phase** There would be no impacts during operation of the Proposed Development on any heritage assets within the study area or further afield, as the Proposed Development would be underground once installed, with no visible elements, with the exception of a junction box which will be seen in the context of the proposed Lairg II Wind Farm Connection Project CSEC.	the heritage assets, with the markers retained throughout the construction phase. Demarcation of the assets would be the responsibility of the Principal Contractor, with identification of the heritage assets made on the ground by a qualified archaeologist using the baseline information provided in the Gazetteer (**Appendix D - Cultural Heritage Gazetteer**). The heritage assets that fall within the construction area and the limit of deviation, to be demarcated are: • Possible clearance cairn (HA01) • Enclosure – Ramascaig (Canmore ID 5507) (HA02) • Allt Ramascaig Beag farmstead and field systems (Canmore ID 91270) (HA03) **CH2 - Archaeological monitoring** Given the high potential for encountering sub-surface archaeological remains, it is recommended that the inspection chamber construction be monitored through an archaeological watching brief. This will allow for a permanent record of any previously unrecorded archaeological remains that may exist within the inspection chamber footprints, and provide an archaeological evaluation of the Proposed Development. These works would be conducted in accordance with a Written

Topic	Baseline	Potential Effects	Mitigation / Commitments
			Scheme of Investigation, approved by the Highland Council Historic Environment Team (HCHET). It is not recommended to conduct a watching brief on the 'Mole Plough' installation, as this type of installation process does not allow visibility below the topsoil. **CH3 – LIDAR Survey** As compensation for the potential disturbance to unknown archaeological remains during construction, and to further enhance our knowledge of the archaeological activity within the area, a LIDAR survey is recommended which may help to identify further archaeological remains in the area and the wider landscape, with ground truth surveys to be conducted to accurately locate any potential remains identified. It would also highlight any potential heritage assets within the current construction footprint that were not visible during the walkover survey, so they may be avoided where possible. **CH4 – Preservation by record** Where avoidance of the heritage assets along the Proposed Development is not possible, preservation by record will be undertaken in advance of construction to mitigate the impact upon the heritage assets. This would be required for Ramascaig (Canmore ID 5507)

Topic	Baseline	Potential Effects	Mitigation / Commitments
			(HA02) and the Allt Ramascaig Beag farmstead and field systems (Canmore ID 91270) (HA03). This would take the form of an earthwork and landscape survey, followed by archaeological excavation. These works would be conducted in accordance with a Written Scheme of Investigation, approved by HCHET.
Biodiversity	A detailed ecological baseline and associated methods are provided in **Appendix E – Ecology Survey Report**. To identify and evaluate the baseline conditions within the ecological study area (i.e., the Proposed Development and a 250 m buffer (Survey Area)), both a desk based assessment and field surveys were undertaken (refer to Appendix E – Ecology Survey Report for further details regarding the methodologies employed). UKHab surveys following UKHab Classification 2.1 Guidance, Habitat Condition Assessments following Natural England Biodiversity Metric V3.1, and relevant specific species surveys were performed in May 2023. The desk based assessment was undertaken in October 2023. The Survey Area comprised large areas of peat-based habitats and heathland, as shown in Figure 3.6, Appendix A. These included a number of Annex I habitat under the EU Habitats Directive; and Scottish Biodiversity List (SBL) habitats including upland flushes, fens and swamps, upland heathland, purple moor grass and rush pastures, and blanket bog in poor condition as well as irreplaceable habitats	The majority of habitats on Site are either SBL or Annex I habitats. Particularly sensitive to the Proposed Development is blanket bog. Although the present bog is considered irreplaceable blanket bog, the low impact non-intrusive method of installation (mole plough) of the Proposed Development should result in the recovery of the existing habitat types and condition within two years of removal. As there will only be surface level disturbance associated with the Proposed Development, no adverse residual effects unto the habitats is expected and at this stage, it is considered that a Biodiversity Net Gain (BNG) Assessment will not be required. The Proposed Development has the potential to disturb the identified species during construction and without mitigation there is, therefore, the potential for significant adverse impacts on otter, water vole, fish/ FWPM, badger, pine marten, amphibians/reptiles and brown hare/mountain hare. A full breakdown of the potential impacts,	A detailed outline of the required mitigation is provided in **Appendix E – Ecology Survey Report**. To summarise, measures will include: **BD1 – General Environmental Management Plans** SSEN Transmission GEMPs, namely the 'Working in Sensitive Habitats' GEMP and the CEMP produced by the principal contractor are adhered to with site-specific advice on how this is applied and auditing by an EnvCoW. A precautionary method of working should be adopted during the reptile active season (March to mid-October inclusive) and breeding bird season (March to August, inclusive). The measures should include the following: • Pre-construction survey by an Environmental Clerk of Works (EnvCoW) in order to identify particular sensitivities; • EnvCoW walk over immediately prior to construction in order to disperse reptiles

Topic	Baseline	Potential Effects	Mitigation / Commitments
	(blanket bog in moderate and good condition), as laid out in the National Planning Framework 4, see **Appendix E – Ecology Survey Report**. The closest designated sites; Strath Carnaig and Strath Fleet Moors SPA, Strath Carnaig and Strath Fleet Moors SSSI, and Strath Fleet and Strath Carnaig Moor IBA are located 1 km to the north east of the Proposed Development. Designated sites are shows within **Figure 3.4** and **Figure 3.5, Appendix A**. Various field signs for otter and water vole were recorded within the Survey Area during walkover surveys along the various water courses crossing the Proposed Development. Active water vole burrows were found within the Proposed Development footprint and a potential otter non-breeding resting site was recorded approximately 20 m to the east of the Proposed Development. High quality habitat was also identified for the following; fish and fresh Water Pearl Mussel (FWPM), amphibians/reptiles, breeding birds, invertebrates, and brown hare/mountain hare. Furthermore, there is suitable habitat for foraging/commuting badger and pine marten. Field signs for otter, water vole, fish, and amphibians were recorded. A detailed account of survey findings is present in **Appendix E – Ecology Survey Report**.	and the potential subsequent effects is provided in **Appendix E – Ecology Survey Report**.	beyond the Site (if less than 10 reptiles are present). EnvCoW to translocate reptiles to suitable habitat beyond the works area on an ad-hoc basis; • Where more than 10 reptiles are found, works will cease in that area until a revised strategy has been devised by the EnvCoW; and **BD2 - Species Protection Plans** Adherence to SSEN Transmissions Bird Species Protection Plan (SPP) Given the suitable habitat present, works will follow all mitigation measures outlined in the SSEN Transmissions SPP's for the following species: badger, pine marten as well as those detailed in the CEMP, enforced by the EnvCoW. As evidence of otter and fish were recorded along the watercourses intersecting the Survey Area, general mitigation for otter as described in SSEN Transmission's Otter SPP, will be sufficient to protect the species during the Proposed Development in line with legislation, which are further outlined in Appendix E – Ecology Survey Report. To prevent impact to fish, construction activities will be supervised by the EnvCoW and follow all pollution prevention measures outlined in the GEMP and CEMP which will seek to minimise the potential for the release of sediment into watercourses.

Topic	Baseline	Potential Effects	Mitigation / Commitments
			Due to the presence of active water vole burrows within the Proposed Development footprint, the Water Vole SPP must be adhered to and a water vole licence will likely be required. The baseline results indicate that no further licences for other species, beside water vole, are required. The responsibility of obtaining the relevant licences from NatureScot will be that of the contractor.
Noise	Noise sensitive receptors (NSR) within the vicinity of the Proposed Development are comprised of residential and commercial properties. The nearest residential property is located approximately 1 km north-west of the Site. Lairg Glamping Pods are approximately 1.8 km west from the Proposed Development. The Site is located in a rural area. The baseline dominant sources of noise comprise the existing Lairg and Lairg II Wind Farms and agricultural noise with road traffic. No sources of vibration have been identified in the vicinity.	Construction noise and vibration effects would be short term and intermittent, limited to the construction phase only. Due to its location, scale and nature, the Proposed Development is not anticipated to have any significant effects on residential properties or businesses, or recreational activities in the area during the construction phase. It is anticipated that noise generating activities from the installation of the Proposed Development, will take approximately u10 working days to complete per 500 m. Due to the implementation of a CEMP, and the absence of sensitive noise receptors within 500 m of the Site, there is not considered to be potential for significant effects during construction. Operational noise effects are not anticipated.	**NV1 – Construction Environmental Management Plan** Construction noise and vibration can be managed through the CEMP which will include mitigation measures to minimise impacts in line with Best Practicable Means as outlined in British Standard 5228:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites, Part 1: Noise and Part 2: Vibration

Topic	Baseline	Potential Effects	Mitigation / Commitments
Hydrology, Hydrogeology and Soils	The Site is aligned across upland slopes parallel east of the River Shin, approximately 2.3 km at the closest point in the north, and is predominantly drained by its tributaries to the west, with the southern extent draining south to Loch Laro, within 200 m of the Site. The Scottish Environment Protection Agency (SEPA) Water Classification Hub indicates that the Site crosses Allt na Fearna Mor, a tributary of the River Shin. Both watercourses have been classified by the SEPA under the Water Framework Directive (WFD) as having Good overall status in 2020[4] (20097: Allt na Fearna Mor & 20093: River Shin - Dornoch Firth to Loch Shin). Loch Laro (20079: River Evelix) has also been classified as having a Good overall status in 2020. British Geological Survey (BGS) Bedrock and Superficial Deposits 1:50,000 scale mapping[5] indicates that the Site is underlain by till and morainic deposits (diamicton, sand and gravel) and peat, with underlying bedrock of the Altnaharra Psammite Formation (Morar Group parent material). NatureScot Carbon and Peatland mapping[6] indicates the Site is underlain by nationally important carbon-rich soils, deep peat and priority peatland habitat; predominantly by Carbon and Peatland Class 2	Potential effects relate to the installation of the underground communications fibre cable and inspection chambers, especially where watercourses are being crossed. Potential effects could include sedimentation and pollution of watercourses, groundwater and soils, and disturbance of peat deposits. Considering the scale and nature of the Proposed Development, and the construction methodology and reinstatement outlined in **Chapter 2 Proposed Development,** it is considered that implementing good practice in accordance with SSEN Transmissions GEMPs (**Appendix B)** will be sufficient to manage potential effects on the water and soils environment.	**HYD1 – General Environmental Management Plans** Water and peat protection measures will be detailed in the Site-specific CEMP. The CEMP will include reference to SSEN Transmissions GEMPs, those of relevance to hydrology, hydrogeology and soils (as detailed within **Appendix B**) include: • Oil storage and refuelling • Soil Management • Working in or near water • Working in Sensitive habitats • Watercourse crossings

[4] SEPA Water Classification Hub (2023). [online] Available at: https://www.sepa.org.uk/data-visualisation/water-classification-hub/ (Accessed October 2023)

[5] BGS GeoIndex Onshore (2023). [online] Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.214383955.519299777.1698760637-1329375161.1698760637 (Accessed October 2023)

[6] NatureScot (2023) Carbon and Peatland map 2016. [online] Available at: https://soils.environment.gov.scot/maps/thematic-maps/carbon-and-peatland-2016-map/ (Accessed October 2023)

Topic	Baseline	Potential Effects	Mitigation / Commitments
	(areas of potentially high conservation value and restoration potential) with an area of Class 1 (areas likely to be of high conservation value) present in the northern extent. BGS Hydrogeology 1:625,000 scale mapping indicates that Morar Group is characterised as a low productivity aquifer, with small amounts of groundwater in the near surface weathered zone and in secondary fractures. UKHab Surveys undertaken between 16th and 19th May 2023 by WSP's Ecology Team have identified habitats potentially indicative of GWDTE within 250 m of the Proposed Development, in accordance with SEPA guidance[7]. With consideration to the underlying geology, low productivity aquifer, extent of peat present across the Site, surface water bodies, and the upland location of the Site, it is not anticipated that the identified habitats are groundwater dependent, with rainfall and runoff likely to have the predominant influence on soil-water conditions. Data provided by The Highland Council and SEPA indicates that there are no private water supplies or authorised abstractions within 1 km of the Site. Data obtained from the Scottish Water asset database in July 2023 indicates there are no public supplies within 1 km of the Site.		

[7] SEPA Land Use Planning System. SEPA Guidance Note 31 (2017). [online] Available at: https://www.sepa.org.uk/media/144266/lups-gu31-guidance-on-assessing-the-impacts-of-development-proposals-on-groundwater-abstractions.pdf (Accessed October 2023)

Topic	Baseline	Potential Effects	Mitigation / Commitments
	SEPA Flood Maps[8] indicate that risk of flooding (which is based on a 0.1 - 10% probability of flooding) within 1 km of the Site is limited to the immediate environs of watercourses and standing water bodies, including the Allt na Fearna Mor and its tributaries, and Loch Laro, with few isolated instances of surface water flooding present within 1 km of the Site. Due to the nature of the Proposed Development, it is not anticipated to impact on downstream flooding.		
Key Recreation Uses	The A836 and the existing wind farm access track will be utilised to access the Proposed Development during construction and for maintenance. The Proposed Development would not cross any Core Paths, with the closest over 1km away, within the village of Lairg. The nearest large settlement to the Site is Lairg, approximately 3 km to the north-west. The smaller settlement of Torroble is located approximately 1.3 km to the north-west of the Site. There are no recreation routes or tourism features within, or adjacent to the Site; however, Core Path 9237 Station - Gruids Road, Core path 2095 Gunn's Wood, National Cycle Network Route 75 are all located over 1 km from the Site.	Due to its location, scale and nature, the Proposed Development is not anticipated to have any significant effects on residential properties or businesses, or recreational activities in the area during either the construction or operational phases.	Not applicable as no adverse impacts on recreational receptors are anticipated.

[8] SEPA Flood Maps (2023). [online] Available at https://scottishepa.maps.arcgis.com/apps/webappviewer/index.html?id=b3cfd390efa44e3b8a72a07cf5767663&showLayers=FloodMapsBasic_5265;FloodMapsBasic_5265_0;FloodMapsBasic_5265_1;FloodMapsBasic_5265_2;FloodMapsBasic_5265_3;FloodMapsBasic_5265_4;FloodMapsBasic_5265_5;FloodMapsBasic_5265_6;FloodMapsBasic_5265_7;FloodMapsBasic_5265_8;FloodMapsBasic_5265_9;FloodMapsBasic_5265_10;FloodMapsBasic_5265_11 (Accessed October 2023)

Topic	Baseline	Potential Effects	Mitigation / Commitments
	Within the wider area, there are several accommodation businesses, inclusive of bed and breakfasts, hotels and lodges, with the closest being Lairg Glamping Pods situated approximately 1.8 km north-west of the Proposed Development.		
Land Use	Land within the Site is Class 5.3, classified by The Macaulay System of Land Capability for Agriculture. Class 5.3 is capable of use as improved grassland. There is no loss of forestry area anticipated from the Proposed Development. Directly adjacent to the proposed communications fibre cable alignment is an existing access track that runs parallel with the Dalchork-Loch Buidhe 132 kV OHL. This existing access will be utilised during the construction stage.	Land use may be temporarily disrupted during construction; however, any effects on land use would be localised, and given the method of installation (utilising a 'Mole Plough'), it is not anticipated that there will be any loss to agricultural land. There would be no impacts to land use during operation of the Proposed Development.	Embedded mitigation has been introduced through the method of installation using a ''Mole Plough', which enables apparatus to be installed by ploughing, and the grounds reinstated to their original profile, and restoration of the heather moorland.
Traffic and Transport	The location of the Proposed Development is in an area that is sparsely populated with no sensitive receptors in the immediate vicinity. Access to the Site is from the A836. Vehicle numbers for the works will be low volume.	It is considered that the Proposed Development will have no significant effects on any sensitive receptors that would require mitigation. Any potential effects will be primarily during the construction phase (i.e., temporary), with any operational traffic expected to be limited to service vehicles carrying out routine maintenance.	**TT1 – Construction Environmental Management Plan** Construction traffic management measures will be included in the CEMP.
Air Quality	The Site is not located within an Air Quality Management Area, and the nearest sensitive receptors are residential properties located approximately 1 km north-west of the Site.	The Proposed Development has limited potential to impact local air quality. There is a potential to give rise to some localised and temporary construction related releases associated with	**AQ1 – Construction Environmental Management Plan** Construction impacts managed through the implementation of a CEMP, which will include

Topic	Baseline	Potential Effects	Mitigation / Commitments
		dust and construction plant and traffic exhaust emissions. However, the nature of the construction activities is that these would be localised, short term and intermittent. No operational impacts are anticipated.	reference to SSEN Transmissions GEMPS (**Appendix B),** most notably the Dust Management GEMP.

4. SUMMARY

4.1.1 An appraisal has been undertaken on the potential effects of the Proposed Development on the environment. The appraisal has concluded that with the application of the applicable GEMPS, SPPs and management measures into the CEMP, all potential effects can be managed to an acceptable level.

4.1.2 A summary of the identified management measures are as follows, with full details provided in **Table 3-1, Appendix A and Appendix B**:

- CH1 – Demarcation and avoidance
- CH2 – Archaeological monitoring
- CH3 – LIDAR Survey
- CH4 – Preservation by record
- HYD1 - Implementation and adherence to SSEN Transmissions GEMP's, including:
  - Oil storage and refuelling
  - Soil Management
  - Working in or near water
  - Working in Sensitive habitats
  - Watercourse crossings
  - Soil removal, storage and reinstatement
  - Dust Management
- BD1 & BD2 - Implementation and adherence to SSEN Transmissions GEMP's and SPP'S, including:
  - Bird;
  - Badger;
  - Otter;
  - Water vole; and
  - Pine marten.
- NV1 / TT1 / AQ1 - A CEMP will be produced by the Contractor and implemented during construction of the Proposed Development. The CEMP will detail best practice construction management measures, including those to manage risks associated with construction of the Proposed Development to the environment and human health. The CEMP will include (but not limited to) the following:
  - SSEN Transmissions GEMP's and SPP's
  - Noise management - in line with Best Practicable Means as outlined in British Standard 5228:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites, Part 1: Noise and Part 2: Vibration.
  - Traffic management