VOLUME 1: CHAPTER 3: THE PROPOSED DEVELOPMENT

Figures (Volume 2 of this EIA Report)

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3. THE PROPOSED DEVELOPMENT

3.1 Introduction

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

3.2 Overview of the Proposed Development

3.2.1 The Proposed Development is driven by the need to connect the consented Strathy Wood Wind Farm (and subsequently the consented Strathy South Wind Farm) to the National Grid.

3.2.2 The Proposed Development would commence from a new cable sealing end (CSE) compound near to Strathy Wood Wind Farm on-site substation. From the CSE compound, approximately 4.5 km of 132 kV double circuit overhead line (OHL) supported by steel lattice towers would head north to connect to the existing network via a 'T' onto the existing Strathy North 132 kV trident 'H' wood pole OHL, which would transport the electricity generated from Strathy Wood Wind Farm to the existing Connagill 275/132 kV substation for onward transmission. Two new trident 'H' wood poles would be constructed to complete the 'T-in' connection with the existing Strathy North 132 kV trident 'H' wood pole OHL.

3.3 Development for which Section 37 Consent and Deemed Planning Permission is sought

3.3.1 The Proposed Development would include the following works, for which section 37 consent under the 1989 Act, including deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997, is sought:

- The installation and operation of approximately 4.5 km of new double circuit 132 kV OHL supported by steel lattice towers; and
- The installation and operation of 2 No. trident wood poles (H Poles) and downlead spans of up to 18 m from each pole, for connection onto the existing 132 kV trident 'H' wood pole OHL.

3.4 Ancillary Development for which Deemed Planning Permission is sought

3.4.1 Deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 is sought for the following works which would be required as part of the Proposed Development, or to facilitate its construction and operation:

- The construction of a CSE compound to facilitate the transition between OHL and UGC[1] to be situated at approximate Ordnance Survey (OS) grid reference NC 82363 56167 which is positioned in the vicinity of the consented Strathy Wood Wind Farm on-site substation;
- The formation of access tracks (permanent and temporary) and the installation of culverts to facilitate access and ongoing maintenance where required;
- Working areas around infrastructure (i.e. around individual tower and pole foundations) to facilitate construction;

[1] UGC elements are associated with the Strathy South Wind Farm 'Southern Section' Grid Connection, as defined in Table 1.1 of Chapter 1 of this EIA Report, and anticipated to be classed as permitted development under Class 40 1(a) of The Town and Country Planning (General Permitted Development) (Scotland) Order 1992.

- Tree felling and vegetation clearance to facilitate construction and operation of the proposed OHL and access tracks, to comply with the Electricity Safety, Quality and Continuity Regulations (ESQCR) 2002[2]; and
- Temporary measures to protect water crossings (e.g. scaffolding and temporary bridges).

3.4.2 These different forms of ancillary development are described in further detail in this Chapter.

3.5 Associated Works

3.5.1 Other associated works are required to facilitate construction of the Proposed Development or would occur as a consequence of its construction and operation. These works, listed below, do not form part of the description of the Proposed Development and are therefore not included in the application for statutory consents. On that basis they are not, therefore, assessed in detail in this EIA Report. The associated works are:

- Borrow pits and quarries which would be required to source stone for the construction of access tracks. Separate planning applications for these works would be sought by the Principal Contractor;
- Temporary construction compounds which would be required to facilitate construction of the Proposed Development. The final location and design of temporary site compounds would be confirmed by the Principal Contractor and separate planning permissions would be sought as required;
- Modification of the existing distribution network in some areas to accommodate the new OHL. These works are likely to comprise the diversion of short sections of underground cables within the vicinity of the Proposed Development, and would be undertaken by Scottish Hydro Electric Power Distribution (SHEPD). Consent would be sought by SHEPD as required; and
- Wider elements associated with the Connagill Cluster Grid Connections and Strathy switching station. Separate consents would be sought by the Applicant for these developments, as set out in Table 1.1 of **Chapter 1 – Introduction and Background**. These developments are considered where relevant in the EIA Report within the cumulative assessments.

3.6 Limits of Deviation

3.6.1 In general terms, a Limit of Deviation (LoD) defines the maximum extent within which a development can be built. In the case of the Proposed Development, an LoD is required for each of the key components of the project i.e. each of the new H poles and steel lattice towers being installed, CSE compound and access track routes.

3.6.2 It should be noted that the design of the Proposed Development described within this EIA Report has been established following the identification of detailed environmental and technical considerations. The design process has included the appointment by SSEN Transmission of an OHL Contractor to inform the design process and the constructability of the Proposed Development, covering overhead elements of the project and access tracks. This has involved carrying out ground investigation works along much of the route to determine ground conditions as well as peat probing along the full extent. There is, therefore, a high degree of certainty with respect to the location of infrastructure, as presented within this EIA Report. Nevertheless, it is possible that further micro-siting may be required during the construction process to reflect localised land, engineering and environmental constraints, and therefore the LoD provides some flexibility in this regard.

3.6.3 The horizontal LoD, for which consent is sought would be as follows:

- OHL (wood pole and steel lattice tower) – 100 m LoD (50 m either side of the centre line);
- CSE Compound – 50 m LoD from the edge of the CSE compound; and
- Access Tracks (new permanent and new temporary) – 50 m LoD (25 m either side of the centre line). There are instances however, where the LoD for the access track would need to be extended to the

[2] The Electricity Safety, Quality and Continuity Regulations (2002), available at https://www.legislation.gov.uk/uksi/2002/2665/contents/made

edge of the boundary of the OHL LoD. This is to account for the possible movement of the OHL within their respective LoDs that the access would still need to serve.

3.6.4 In some areas, the LoD is increased or decreased to account for local constraints such as to avoid watercourses or existing tracks. This includes a shift of the track LoD for the section of new permanent track between the existing Strathy North Wind farm access track leading to Towers 2, 3 and 4, to avoid the standing timber crop to the north, which is comprised of Sitka spruce and Lodgepole pine, instead encroaching into the mainly windblown and decaying Lodgepole pine to the south, which has been blown for a number of years. This can be seen on **Figure 3.1**.

3.6.5 An operational corridor (OC) is required through areas of woodland and commercial forestry to ensure the safe operation of the OHL and access tracks. The width of the OC would be variable depending on the nature of the woodland or forestry but would typically be 36 m either side of the OHL in areas of productive conifers. Therefore, an extension of 36 m to the OHL LoD would be required for felling operations in areas of conifer plantation. Similarly, for new tracks (temporary and permanent) a 12.5 m wayleave corridor is required either side of the track. As such, a 12.5 m extension would be required around the new access track LoD in areas of conifer plantation for felling operations.

3.6.6 A vertical LoD, i.e. the maximum height of a tower / pole above ground level, is also sought to allow a height increase or decrease of 3.2 m on the proposed pole or tower height presented within **Appendix 3.1: Indicative Pole and Tower Schedule**.

3.6.7 Where there is a requirement to vary the location (or height) of infrastructure within the LoDs, the relevant environmental information within the EIA Report would be reviewed to establish any potential constraints or adverse change in effect. Further advice on LoD changes would be sought from environmental specialists, and where relevant, consultation would be sought from The Highland Council (THC) (as local planning authority) and any relevant statutory consultees as required.

3.7 Description of Overhead Line Infrastructure

Steel Lattice Towers

3.7.1 An indicative tower schedule is included in **Appendix 3.1**. The tower numbers shown on **Figure 3.1** correspond to the tower numbers in the indicative schedule.

3.7.2 The 19 No. steel lattice towers that form part of the Proposed Development would be constructed from fabricated galvanised steel and would be grey in colour. The towers would likely comprise a ‘L7c’ series of steel lattice tower (an example schematic and photograph of which is shown in **Plate 3.1** overleaf). Three types of tower are proposed to be used, as described below:

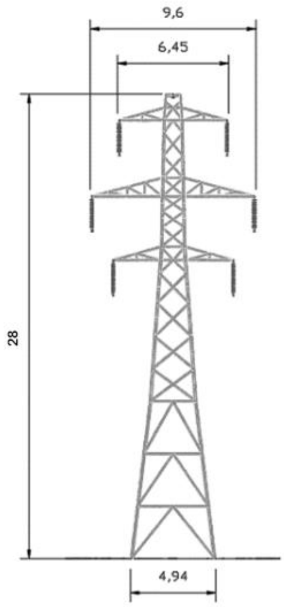
- Suspension towers: these are used for straight sections of OHL where there is no need to terminate the conductor. There are 15 No. suspension towers proposed;
- Angle / tension towers: these are typically used where there is a need to change the orientation of the OHL. There are 3 No. angle / tension towers proposed; and
- Terminal towers; where the OHL transitions to UGC, via a CSE. There is 1 No. terminal tower proposed.

3.7.3 The towers would carry two circuits, each with three conductors supported from either glass, porcelain, or composite insulators attached to the horizontal cross arms on both sides of each steel lattice tower. An Optical Ground Wire (OPGW)[3] would be suspended between tower peaks, above the conductors.

[3] Optical Ground Wire is a dual functioning cable, providing a ‘shield’ to conductors from lightning, whilst also comprising optical cables for telecommunication purposes.

3.7.4 The span length (distance between towers) would vary slightly depending on topography and land usage. Typically, the span lengths for the Proposed Development would be between approximately 200 - 280 m. Tower heights would also vary, depending on local topography, but would typically be in the region of approximately 26 m to 36 m in height. The average OHL structure height would be approximately 30 m.

Plate 3.1: Example Schematic and Photograph of Steel Lattice Tower Double Circuit (L7c series)



Trident H Wood Poles

3.7.5 The proposed double circuit 132 kV OHL supported by steel lattice towers would connect onto the existing single circuit Strathy North 132 kV trident 'H' wood pole OHL via the construction of two new trident 'H' wood poles.

3.7.6 The proposed new trident 'H' wood poles would be installed on the alignment of the existing single circuit 132 kV OHL between existing Pole 128 and Pole 129 (and would be referred to as Pole 128A and Pole 129A), as illustrated on **Figure 3.1**. The spacing between the individual poles would be approximately 30 m, but this would be confirmed after a detailed line study.

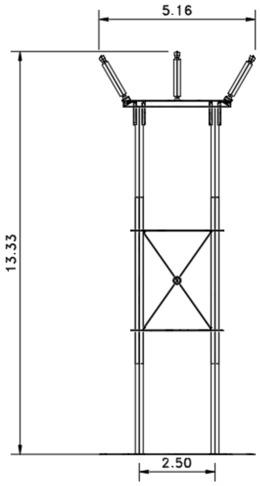
3.7.7 Downleads of up to 18 m in length would connect the junction tower of the proposed double circuit 132 kV OHL (Tower 19) to each new trident 'H' wood pole.

3.7.8 **Figure 3.2: Schematic of Tower 19 arrangement with new trident 'H' wood poles** illustrates the arrangement for connecting the steel lattice tower (Tower 19) to the two new trident 'H' wood poles.

3.7.9 Each proposed new trident 'H' wood pole would have a nominal height of between approximately 13.5 - 15 m (including insulators and support), depending on ground conditions. Three conductors in horizontal formation and made from aluminium alloy would be strung between each 'H' pole forming a single circuit.

3.7.10 An indicative tower and pole schedule is included in **Appendix 3.1** and an example schematic and photograph of a trident 'H' wood pole (suspension pole) is shown in **Plate 3.2**.

Plate 3.2 Example Schematic and Photograph of 'H' Wood Pole



3.7.11 The need for the two new trident 'H' wood poles to 'T' onto the existing Strathy North 132 kV OHL would allow electricity generated by Strathy Wood Wind Farm to be transported to the existing Connagill 275/132 kV Substation for onward transmission, however this would be a temporary arrangement. Following construction of a separate new 132 kV double circuit OHL from within the vicinity of the 'T' point to Connagill 275/132 kV Substation (known as the Strathy South Wind Farm 'Northern Section' Grid Connection and subject to a separate section 37 application), the Proposed Development would join that new double circuit steel lattice OHL at the 'T' point.

3.7.12 Electricity generated by the operational Strathy North Wind Farm and consented Strathy Wood and Strathy South wind farms would then be transported to Connagill 275 / 132 kV Substation via the proposed double circuit 132 kV OHL. At this point, one of the new trident 'H' wood poles (Pole 128A) proposed as part of the Proposed Development, plus approximately 8 km of the existing Strathy North 132 kV trident 'H' wood pole OHL (north of Pole 128A), would be dismantled and removed. The dismantling works would form ancillary works of the Strathy South Wind Farm 'Northern Section' Grid Connection section 37 application, for which deemed planning permission under section 57(2) of the Town and Country Planning (Scotland) Act 1997 would be sought. The second new trident 'H' wood pole (Pole 129A), plus the existing Strathy North 132 kV trident 'H' wood pole OHL up to this point, would remain in-situ to allow Strathy North Wind Farm to join the (separately proposed) double circuit 132 kV OHL.

3.8 Typical Construction Activities for Overhead Line Infrastructure

3.8.1 High voltage OHL construction typically follows a standard sequence of events as follows:

- Phase 1 – Enabling Works;
- Phase 2 – OHL Construction Works;
- Phase 3 –Commissioning; and
- Phase 4 – Re-instatement.

Phase 1 – Enabling Works

Forestry / Vegetation Clearance

3.8.2 Whilst the design of the Proposed Development has sought to minimise impacts on woodland and forestry where possible, some felling would be required during construction, to create a wayleave corridor for the OHL and access track through Strathy Wood Forest. Further details on the proposed felling requirements are set out within **Chapter 12 - Forestry**. Overall, the project would require 5.24 hectares (ha) of forestry to be felled to create an OC.

3.8.3 The Applicant is committed to making arrangements to plant the equivalent area of woodland as Compensatory Planting, meeting the Scottish Government's Control of Woodland Removal Policy objective of no net loss of woodland. On this basis the Applicant will replant the equivalent loss of woodland removed for the Proposed Development (5.24 ha) and this will be achieved within the regional land boundary of The Highland Council, of where the Proposed Development is geographically located.

Distribution Infrastructure

3.8.4 Works would be required to the existing distribution network infrastructure within some areas to facilitate safe working and operating conditions given the proximity of the distribution network to the existing (and proposed) 132 kV network. There is potential that these underground distribution network assets would need to be realigned to make way for the Proposed Development. These are associated works and do not form part of the consent application (see Section 3.5 of this Chapter).

Site Compounds / Borrow Pits and Quarries

3.8.5 As stated in Section 3.5, temporary construction compounds, laydown areas, borrow pits and quarries would be required to facilitate construction of the Proposed Development. The final location and design of these would be confirmed by the Principal Contractor and separate planning permissions / applications would be sought as required.

Access during Construction

3.8.6 Delivery of all construction materials and components for use at the Proposed Development would be delivered from the east, via the A9 and A836 public road network and would make use of an existing junction (located approximately 1 km east of Strathy) onto an existing track leading to Strathy South Wind Farm (see **Figure 3.1**). This track was upgraded for use during the construction of the operational Strathy North Wind Farm (as far the Strathy North substation). The upgrade is currently being extended, for use during the construction of the consented Strathy Wood and Strathy South wind farms, as far as Strathy South Wind Farm.

3.8.7 For steel lattice tower construction, it is anticipated that access would mainly be achieved through installation of new stone 'spur' tracks (permanent and temporary), to access each steel tower from the existing track. Floating stone road or trackway panel construction (typically a short term solution) may be installed in sensitive areas such as over deeper areas of peat. All new tracks would be constructed in accordance with best practice construction methods, and with reference to NatureScot's good practice guide on constructing tracks in Scottish uplands[4].

3.8.8 Vehicle access would be required to each tower location for the creation of foundations and to facilitate tower installation. **Figure 3.1** shows the proposed indicative access arrangements, which comprise existing and a combination of new temporary and permanent access tracks. Access arrangements would comprise:

- Use of the existing access track which was upgraded for use during the construction of the operational Strathy North Wind Farm. The upgrade of the track is currently being extended for use during the construction of the consented Strathy Wood and Strathy South wind farms. No further works would be required to the existing track to enable access for the Proposed Development.

[4] Constructed tracks in the Scottish Uplands (Updated September 2015), NatureScot.

- Use of the existing Strathy North Wind Farm access tracks (in addition to a new section of permanent track) to access towers positioned on the western side of the River Strathy. No upgrade works would be required to the existing wind farm tracks to enable access for the Proposed Development.
- New permanent and new temporary access routes required where there are no existing tracks. These are shown on **Figure 3.1** and an access track schematic is included in **Appendix 3.2: Access Track Schematic**. Where the existing ground provides the appropriate bearing capacities, the new tracks would be constructed on-formation. Where the existing ground does not provide the appropriate bearing capacities and / or where peat is located, the new accesses would likely be floated on top of the soft ground, circumnavigating the requirement for deep excavations and disturbance to the peat. However, for the purposes of this EIA, it has been assumed for worst case, that all new access tracks would be constructed on formation.
    - Permanent access tracks during construction are expected to have a working corridor of approximately 6.5 m (this includes 1.5 m for drainage and pollution measures). However, to minimise longer term impacts, the width of the permanent track width would be reduced to approximately 5 m (this includes 1.5 m for drainage and pollution measures) for the operational period, with track-side habitat reinstated.
    - Temporary access tracks would be 5 m wide (this includes 1.5 m for drainage and pollution measures).
- Other access by low ground pressure vehicles may be required between poles and towers. Such access would not require formal access tracks as access would either be via tracked vehicles, or temporary trackway systems and would be utilised in boggy / soft ground areas where required.

3.8.9 For wood pole construction, vehicle access is required to each pole location during construction to allow excavation and creation of foundations and pole installation. Preference would be given to lower impact access solutions including the use of low pressure tracked personnel vehicles and trackway in boggy / soft ground areas to reduce any damage to, and compaction of, the ground. These journeys would be kept to a minimum to minimise disruption to habitats along the route.

3.8.10 **Table 3.1** sets out the approximate length of access track requirements across the Proposed Development.

Table 3.1: Access Track Requirements

Access Track Type	Approximate length required across the project
Existing access tracks	15.9 km
New permanent access tracks	2.46 km
New temporary access tracks	2.73 km

Phase 2 – OHL Construction Works

<u>Foundations – Steel Lattice Towers</u>

3.8.11 Foundation types and designs for each tower would be confirmed by the Principal Contractor following detailed geotechnical investigation and analysis of geotechnical data at each tower position.

3.8.12 Dimensions of each foundation would be confirmed following micrositing. For the purposes of this assessment however it has been assumed that each foundation would be buried to depths estimated up to 2.5 m below ground level (BGL) although extending up to 4 m depth where ground conditions require. They would extend over an area suitable to deliver the loading characteristics required (which would be a function of the underlying ground conditions and the weight of the structures to be supported). Piled type foundations may be required where low strength ground conditions exist, particularly where peat is encountered at over 1 m depth.

3.8.13 For the purposes of this EIA, it has been assumed that a working area of approximately 2,500 m^2 (50 m x 50 m) would be required around individual tower foundations of suspension and small deviation angle towers and associated construction activities, and approximately 4,900m^2 (70 m x 70 m) around larger angle towers (as indicated in **Appendix 3.1**). The exact dimensions of the working area around each tower would be confirmed following micrositing.

3.8.14 Where encountered, top soil (including peat) would be stripped from the tower working area to allow installation of tower erection pad(s) as necessary in order to accommodate construction plant. Concrete is likely to be brought to site ready-mixed with no requirement for concrete batching at individual tower locations. Once the concrete has been cast and set, the excavation would be backfilled, using the original excavated material where possible.

3.8.15 It is anticipated that formation of each tower foundation would take approximately 4 weeks. **Plate 3.3** provides and illustrative image of tower foundation construction.

Plate 3.3: Illustrative Image of Tower Foundation Construction

Construction – Steel Lattice Tower

3.8.16 Tower construction can typically commence two weeks after the foundations have been cast, subject to weather conditions and concrete curing rates. Tower steelwork would be delivered to each tower construction site either as individual steel members or as prefabricated panels, depending on the method of installation and the available access, and placed within dedicated laydown areas ready for assembly. Sections are then assembled on the ground in preparation for sequential lifting operations. The tower sections are lifted into position with a 360 Roto telehandler. For sections of the tower that a 360 Roto telehandler cannot erect, an all-terrain mobile crane is deployed to complete the tower erection. A telehandler would be utilised for moving tower sections in to place for the crane and assisting in tandem lifts. A 360 Roto telehandler and typically an 80 tonne all-terrain mobile crane would then be required to erect the tower. **Plate 3.4** provides an example of tower construction.

3.8.17 Major items of plant required for erection would also include a flatbed wagon to transport the steelwork to location.

Plate 3.*4*: Illustrative Image of Steel Lattice Tower Construction

Conductor Stringing – Steel Lattice Towers

3.8.18 Prior to stringing the conductors, temporary protection measures (normally netted scaffolds) would be required across public roads and existing access tracks.

3.8.19 Conductor stringing equipment (i.e. winches, tensioners and ancillary equipment) are set out at either end of pre-selected sections of the OHL.

3.8.20 Prior to wiring operations, Equi-Potential Zones (EPZ)[5] pulling positions need to be established. The typical size of a working area required for an EPZ pulling location is approximately 18 m x 36 m. This would likely be set up on trackway panels. As conductors are required to be pulled in opposite directions, two EPZ 8 m x 12 m trackway panelled pulling locations are required at each respective pulling tower (one on the upside and one on the downside of the tower).

3.8.21 Pilot wires would be pulled through the section to be strung. These would be hung on blocks (wheels) at each suspension tower and connected to a winch and tensioner at the respective end of the section. The winch, in

[5] EPZs are areas where the electrical potential (voltage) is uniform, meaning there is no difference in voltage between any two points within that zone. In such zones, there is no risk of electric shock because current cannot flow between points of the same potential. EPZs are critical in electrical safety, particularly in environments where high-voltage equipment is present.

conjunction with the tensioner is used to pull the pilot wires between the structures. The conductor is pulled via the pilot wires through the section under tension to avoid contact with the ground and any underrunning obstacles. Once the conductor has been strung between the ends of the section it is then tensioned and permanently clamped at each tower.

Foundations – Wood Pole

3.8.22 For wood poles, a hole would be excavated to allow the pole brace block and / or steel foundation braces to be positioned in place. Each pole hole excavation would typically be 3 m long and 3 m wide ($3m^2$), and at a depth of approximately 2.5 m. Excavated turf and sub soils would be stacked separately according to type so that they can be replaced in reverse order, with the turf being replaced on top.

3.8.23 In areas of soft ground and / or very deep peat where firm ground cannot be found, 'bog shoes' may be added to the pole foundations to maximise stability of the structure by floating the structure with wider foundations.

3.8.24 Foundation types and designs for each pole would be confirmed following detailed geotechnical investigation and analysis of geotechnical data at each pole position.

3.8.25 For the purposes of the EIA, it has been assumed that a working area of approximately 400 m^2 (20 m x 20 m) would be required around individual pole foundations, but the exact dimensions of the working area would be confirmed following micrositing.

Construction – Wood Pole

3.8.26 Pole erection teams would consist of 5 - 6 operatives per team, each team equipped with tracked excavators, specialist tracked vehicles, rock breaking equipment and excavation formwork.

3.8.27 The 'H' poles are erected using normal agricultural machinery such as a digger with a lifting arm. The excavator would then hoist the assembled structure into position and, once the structure has been braced into position, the excavation would be backfilled. The hole would be backfilled with soil replaced in reverse order to the order of excavation and would be progressed in layers of approximately 300 – 400 mm deep, with stone hardcore added as required around foundation blocks to ensure adequate compaction and suitable geotechnical conditions are maintained between each layer.

3.8.28 When replacing the topsoil / turf around the pole it would be left slightly proud of ground level (approximately 150 / 300 mm) to allow for the excavation to naturally settle further over time.

Conductor Stringing – Wood Pole

3.8.29 Once all the poles are erected the conductor would be strung between the poles in sections and brought up to full tension.

3.8.30 A typical stringing team would consist of approximately 12 operatives. Temporary backstays would be installed as required and pilot ropes pulled out through the section to be strung. The conductor drums would be mounted on stands at one end of the section to be strung and the conductor fed around a tensioning machine. At the opposite end, the pilot rope would be fed around the puller winch bullwheels.

3.8.31 The conductor would be terminated at the puller end and tensioned by the tensioner. This process would be repeated until the complete section has been sagged and made off to specified design tensions.

Phase 3 – Commissioning

3.8.32 The OHL and support towers / poles would then be subject to an inspection and snagging process. This allows the Principal Contractor and SSEN Transmission to check that the works have been built to specification and are fit to energise. The Proposed Development would also go through a commissioning procedure for the switchgear, communications and protection controls through connecting substations. The circuits would then be energised from the substations.

Phase 4 – Reinstatement

3.8.33 Following commissioning of the Proposed Development, it is anticipated that all areas disturbed during construction would be reinstated. Reinstatement will form part of the contract obligations for the Principal Contractor and will include the removal of all temporary access tracks, all work sites around the pole / tower locations and the re-vegetation of laydown areas to recreate the former habitat as far as possible. Reinstatement is described further in Section 3.12 of this Chapter.

3.9 Description of Cable Sealing End Compounds

3.9.1 One CSE compound would be required to facilitate the transition from UGC (required as part of the Strathy South Wind Farm 'Southern Section' Grid Connection that will eventually share this proposed grid connection with Strathy Wood Wind Farm) to OHL. This would be located in the vicinity of Strathy Wood Wind Farm on-site substation at approximate OS grid reference NC 82363 56167 (see **Figure 3.1**). While the location of the compound relates to the location of the consented Strathy Wood Wind Farm on-site substation, during the detailed design stage, the Applicant and Principal Contractor would seek opportunities within the CSE Compound LoD limits, to move the compound outwith areas of deep peat, where practicable.

3.9.2 The compound would require a level area of approximately 40 m x 30 m. Ground works, including a cut-fill exercise, would be required at the proposed site to achieve a level area of this size (see **Appendix 3.3: Cable Sealing End Compound - Footprint of Proposed Earthworks**). Due to the hazards associated with live electricity, the compound would be secured by installing fencing and gates around its perimeter, usually of 2.4 m in height. Within the CSE compound there would be a terminal tower, and associated gantry infrastructure. A permanent access track would also be required.

3.9.3 The plant required to facilitate the transition between UGC and OHL is shown in **Plate 3.5**, and an example photo of a CSE compound is shown in **Plate 3.6**.

Plate 3.5: Overhead Line to Cable Transition

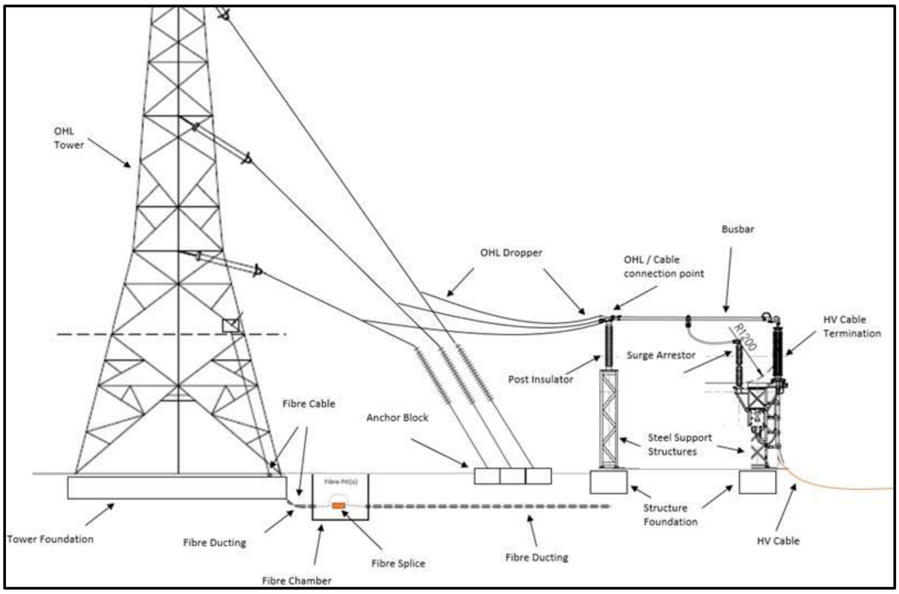


Plate 3.6: Example of a Cable Sealing End Compound

3.10 Land Take for Construction and Operation of the Proposed Development

3.10.1 Areas of agricultural land are classified by The Macaulay System (now Hutton Institute) of Land Capability for Agriculture[6]. Based on this data most of the land within the vicinity of the Proposed Development is Class 5.3: land capable of supporting improved grassland. Other common land uses within the vicinity of the Proposed Development include shooting estate land, and electrical infrastructure including the operational Strathy North Wind Farm and the existing Strathy North 132 kV trident 'H' wood pole OHL.

3.10.2 **Table 3.2** summarises the indicative land take associated with the Proposed Development.

Table 3.2: Indicative Land Take for Construction and Operation of the Proposed Development

Activity	Quantum	Construction (Temporary)	Operation (Permanent)
Access Track (Temporary)	2.75 km	1.37 ha	None – all temporary land take would be reinstated post-construction
Access Track (Permanent)	2.46 km	1.60 ha	1.23 ha
Temporary Construction Working Area at towers / poles	15 No. steel lattice suspension towers 3 No. steel lattice angle / tension towers	5.55 ha	None – all temporary land take would be reinstated post-construction

[6] The James Hutton Institute. (2020). *Land Capability for Agriculture in Scotland*. [online] Available at: https://www.hutton.ac.uk/learning/exploringscotland/land-capability-agriculture-scotland [Accessed January 2024].

Activity	Quantum	Construction (Temporary)	Operation (Permanent)
	1 No. steel lattice terminal tower 2 No. 'H' wood poles		
Cable Sealing End (CSE) Compound (plus earthworks)	1	0.15 ha	0.15 ha
Permanent Land Take for 132 kV steel lattice towers (excluding terminal tower which is within CSE Compound)	18	0.014 ha (relates just to tower feet)	0.014 ha (relates just to tower feet)
Permanent Land Take for 'H' wood poles	2	0.003 ha (relates just to pole feet)	0.003 ha (relates just to pole feet)

3.10.3 Land use impacts associated with the Proposed Development are anticipated to be minimal. The construction works may result in some temporary loss of land or access restriction; however, it is considered that this can be adequately managed through wayleave agreements with the relevant landowners. Dialogue would be maintained by the Applicant and the Principal Contractor with landowners throughout the construction period to ensure any potential disruption as a result of the proposed works is kept to a minimum. The permanent loss of land to tower / pole locations and CSE compound would be negligible and it would remain possible for grazing to continue around and under towers during their operational lifetime.

3.11 Construction Programme, Employment and Hours of Work

3.11.1 It is anticipated that construction of the project would take place over a 12 month period, following the granting of consents, although detailed programming of the works would be the responsibility of the Principal Contractor in agreement with SSEN Transmission.

3.11.2 Construction activities would in general be undertaken during daytime periods. Weekend working would also be proposed with timings to be confirmed by the Principal Contractor in due course. Working hours are anticipated 7 days a week between approximately 07.00 to 19.00 March to September and 07.30 to 17.00 (or within daylight hours) October to February. Working hours would be confirmed by the Principal Contractor and agreed with THC as planning authority. As working hours would be during daytime periods only, any external lighting requirements during construction are anticipated to be minimal.

3.11.3 SSEN Transmission considers it important to act as a responsible developer with regards to the communities which host the construction works. The delivery of a major programme of capital investment provides the opportunity to maximise support of local communities. Employment of construction staff would be the responsibility of the Principal Contractor; however, the Applicant would encourage the Principal Contractor to make use of suitable labour and resources from areas local to the Proposed Development where possible.

3.12 Environmental Management During Construction

3.12.1 Best practice construction measures would be implemented during the construction work. All works will be carried out in accordance with the following (as well as industry best practice construction measures, guidance and legislation, all as detailed in the following):

GEMPs

3.12.2 General Environmental Management Plans (GEMPs) have been developed by the Applicant. The GEMPs considered relevant for this project are identified in **Appendix 3.5**.

SPPs

3.12.3 Species Protection Plans (SPPs) have been developed by the Applicant and have been agreed with NatureScot. These can be found in **Appendix 3.6**.

CEMP

3.12.4 A contractual requirement of the Principal Contractor would be the development and implementation of a Construction Environmental Management Plan (CEMP). It is anticipated that the implementation of a CEMP would be a condition within any grant of consent. The CEMP would be developed for the project and adopted by the successful contractor during the construction phase. The principal objective of this document is to provide information on the proposed infrastructure and to aid in avoiding, minimising and controlling adverse environmental impacts associated with the Proposed Development. An Outline CEMP is included as **Appendix 3.7**.

3.12.5 Furthermore, this document would aim to define good practice as well as specific actions required to implement mitigation identified in the EIA, the planning process and / or other licencing or consenting processes. **Chapter 14 – Schedule of Mitigation** of this EIA Report provides a summary of all mitigation measures identified within this EIA, and this will be updated as required following further consultation and consent conditions. The CEMP would be updated during the pre-construction phase and would form part of the contractor documents between the Applicant and the appointed Principal Contractor.

3.12.6 The CEMP would also reference the aforementioned GEMPs and SPPs. The implementation of the CEMP would be managed on site by a suitably qualified and experienced Environmental Clerk of Works (EnvCoW), with support from other environmental professionals as required. SSEN Transmission would undertake monthly inspections and quarterly audits to ensure compliance with the CEMP.

Reinstatement

3.12.7 Reinstatement works are generally undertaken during construction (and immediate post-construction phase) and aim to address any areas of ground disturbance and changes to the landscape as part of the construction works. Such works would involve the reinstatement of areas disturbed during the construction phase.

3.12.8 An outline site restoration plan has been prepared to describe the principles and best practice guidance and measures that would be followed in the reinstatement and restoration of disturbed ground. This is included in **Appendix 3.4: Outline Site Restoration Plan**, and would be developed by the Applicant, the Principal Contractor and consenting authorities as required prior to construction commencing. In more sensitive areas, further site-specific measures are required to ensure successful reinstatement, including site specific soil and peat management measures, and the employment of specialist advisers (i.e. Ecological Clerk of Works (ECoW)).

3.12.9 The following paragraphs provide a summary of the working areas that would be reinstated, and typically how this would be achieved in line with the aims of the site restoration plan.

<u>Reinstatement of Access Tracks</u>

3.12.10 As shown in **Figure 3.1**, new permanent and new temporary tracks are required to facilitate construction and operation of the Proposed Development. Tracks to be retained would be partially reinstated on commissioning of the OHL to reduce their width to approximately 3.5 m (plus 1.5 m for drainage and pollution prevention measures) for use by SSEN Transmission for maintenance access. Other tracks noted as temporary would be removed and the land reinstated.

3.12.11 Reinstatement would involve replacement of subsoil, then topsoil, grading and installation of drainage as required with turves replaced vegetation side up. Where there are insufficient turves the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Methods for the reinstatement of peat would be set out in the Peat Management Plan (see **Appendix 9.2: Outline Peat Management Plan**).

Reinstatement of Work Areas (Towers and Poles)

3.12.12 Soil would be stored within the working area for each element of the work during construction. Subsoils and topsoil removed to enable the construction of the foundations would be temporarily stockpiled in separate bunds within the working area or corridor, with stripped turves stored on top of the bunds.

3.12.13 Reinstatement would involve replacement of subsoil, then topsoil with turves replaced vegetation side up. Where there are insufficient turves the ground would be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Methods for the reinstatement of peat would be set out in the Peat Management Plan (see **Appendix 9.2**).

SSEN Transmission's Biodiversity Ambition

3.12.14 Biodiversity Net Gain (BNG) is a process which leaves nature in a better state than before development work started. SSEN Transmission has developed a BNG toolkit based upon Natural England Biodiversity Metric[7, 8] (in the absence of an agreed Scottish metric) which aims to quantify biodiversity based upon the value of habitats for nature. It is an efficient and effective method for demonstrating whether development projects have been able to maintain or increase the biodiversity value of a development site after construction works.

3.12.15 The scope of the BNG assessment is to quantify the overall potential biodiversity impacts for the Proposed Development; this includes a biodiversity baseline assessment, quantification of habitat losses due to temporary works and permanent structures, and analysis of biodiversity gains following reinstatement of habitats in areas of temporary construction work and additional habitat enhancement and creation (whether onsite and / or offsite).

3.12.16 SSEN Transmission is committed to protecting and enhancing the environment by minimising the potential impacts from their construction and operational activities. As part of this approach, SSEN Transmission has made commitments to ultimately ensure a 10% net gain for biodiversity in line with the Applicant's biodiversity ambition and environmental legacy commitments[9], Sustainability Strategy[10] and Sustainability Plan[11]. New infrastructure projects must:

- Ensure natural environment considerations are included in decision making at each stage of a project's development;
- Utilise the mitigation hierarchy to avoid impacts by consideration of biodiversity in project design;

7 Natural England (2019) The Biodiversity Metric 2.0: auditing and accounting for biodiversity value. User Guide (Beta Version, July 2019). http://publications.naturalengland.org.uk/file/5366205450027008

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

9 SSEN Transmission (2023). Delivering a positive environmental legacy. https://www.ssen-transmission.co.uk/globalassets/documents/sustainability-and-environment/environmental-legacy-booklet

10 Delivering a smart, sustainable energy future: The Scottish Hydro Electric Transmission Sustainability Strategy (2018) https://www.ssen-transmission.co.uk/media/2701/sustainability-strategy.pdf

11 Our Sustainability Plan: Turning Ambition into Action. (2019) SHE Transmission. https://www.ssen-transmission.co.uk/media/3215/our-sustainability-plan-consultation-report.pdf

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

3.12.17 The design and evolution of this project has been carried out in line with these commitments, and the Applicant is committed to delivering a 10% net gain for biodiversity following implementation of the Connagill Cluster Outline Habitat Management Plan (see **Appendix 7.8**).

3.13 Operation and Maintenance

3.13.1 In general, OHLs require very little maintenance. Regular inspections are undertaken to identify any unacceptable deterioration of components, so that they can be replaced. From time to time, inclement weather, storms or lightning can cause damage to either the insulators or the conductors on OHLs. If conductors are damaged, short sections may have to be replaced.

3.13.2 During the operation of the Proposed Development, it may be necessary to manage vegetation to maintain required safety clearance distances from infrastructure.

3.14 Decommissioning the Proposed Development

3.14.1 If the Proposed Development were to be decommissioned all components of the OHL, inclusive of steel from the towers, conductors and fittings, would be removed from site and either recycled or disposed of appropriately.

3.14.2 A method statement would be agreed with The Highland Council setting out the detail of the decommissioning process for the OHL.

3.14.3 Efforts would be made to repurpose the Proposed Development for future connections prior to any decommissioning. Consent to be applied for is therefore in perpetuity.

3.14.4 The effects associated with the construction phase can be considered to be representative of worst-case decommissioning effects, and therefore no separate assessment on decommissioning has been undertaken as part of this EIA Report.