Scottish & Southern Electricity Networks

TRANSMISSION

Netherton Hub 400 kV OHL Connection to New Deer and Peterhead: Tie-In

Environmental Appraisal Report Volume 1 Chapter 2: Description of Proposed Development

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2. DESCRIPTION OF PROPOSED DEVELOPMENT

2.1 Introduction

2.1.1 This chapter provides an overview of the design evolution and design components associated with the Proposed Development in addition to the construction methodology and an outline of good practice construction measures proposed to be implemented during the construction phase. The chapter is structured as follows:

- Design Evolution
- Design Components
- Construction Methodology
- Construction Programme and Working Hours
- Construction Environmental Management
- Operation and Decommissioning

2.2 Design Evolution

2.2.1 Prior to selecting the design for the Proposed Development, the project was subject to SSEN Transmission's Routing Guidance 'Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above'[1] (hereafter referred to as 'SSEN Transmission's Routeing Guidance'). The guidance splits a project into the following key stages:

- Stage 0: Routeing Strategy Development;
- Stage 1: Corridor Selection;
- Stage 2: Route Selection;
- Stage 3: Alignment Selection; and
- Stage 4: Environmental Impact Assessment (EIA) and consenting.

2.2.2 The stages that are carried out can vary depending on the type, nature of and size of a project and consultation is usually carried out at each applicable stage of the process. The Proposed Development has been assessed from Stage 3: Alignment Selection due to the relatively short lengths of the diversions and number of nearby planned, approved and constructed OHLs, which meant there would be little to no difference between route options, which are typically 1 km in width. Instead, the Proposed Development took a hybrid approach between the higher-level Red-Amber-Green constraints appraisal normally conducted for route options and a more detailed comparative alignment options appraisal, both of which are presented in the Consultation Document[2] prepared for the Proposed Development.

2.2.3 SSEN Transmission's Routeing Guidance broadens the basis for routeing decisions as defined by the 'Holford Rules'[3], which are a set of guidelines developed with the purpose of minimising the environmental impacts of high-voltage overhead lines, by reflecting contemporary practice, and showing how environmental, land, technical and economic considerations are identified and appraised at each stage of the routeing process.

[1] SSEN Transmission (September 2020). Procedures for Routeing Overhead Lines and Underground Cables of 132 kV and above. Revision 2.
[2] Scottish and Southern Electricity Networks Transmission (February 2025). Netherton Hub 400kV OHL Connection to New Deer and Peterhead: Tie-In. *Consultation Document – Alignment Selection*
[3] Holford Rules: Guidelines for the Routeing of New High Voltage Overhead Transmission Lines with NGC 1992 and SHETL 2003 Notes.

Alternatives

2.2.4 Three options for the 'In' leg of the Tie-in and two options for the 'Out' leg (presented in **Figure 2.1: Alignment Options** were appraised in accordance with SSEN Transmission's Routeing Guidance and the Holford Rules. Environmental, engineering and economic factors were all considered to arrive at a 'Preferred Alignment'. Option 'T1A' was selected as the preferred 'In' leg option on the basis of its better alignment with the Holford Rules and lower potential for cumulative visual impacts. Option 'T2A' was selected as the preferred 'Out' leg option due to a mixture of environmental, engineering and economic benefits, particularly in relation to landscape and visual constraints. Both these options have been taken forward and form the Proposed Development appraised in this Environmental Appraisal Report (EAR).

2.3 Design Components

2.3.1 The purpose of the Proposed Development is to construct and install a permanent diversion (the 'Tie-In') of the existing New Deer to Peterhead 400 kV Overhead Line (OHL) into a new 400 kV Alternating Current (AC) substation, proposed separately as part of the consented Netherton Hub, which is currently being constructed.

2.3.2 The Proposed Development comprises the following elements which are described in more detail in the following sub-sections:

- **Overhead Line Connection** - One section of 400 kV overhead line and associated downleads stemming from the existing New Deer to Peterhead OHL to the Netherton Hub substation (the 'In' leg) and one section of 400 kV OHL and associated downleads connecting the substation back to the existing New Deer to Peterhead OHL (the 'Out' leg), and the erection of 18 new towers.
- **Temporary Diversions** - Temporary diversions of the OHL to facilitate the diversion of the existing OHL to the new length of OHL during the construction phase.
- **Existing OHL and Towers** - Dismantlement of the existing OHL between the points of diversion and 12 redundant towers.
- **Construction Methodology** - Creation of approximately 10 km of proposed access tracks and upgrade of approximately 1 km of existing access tracks to provide an access route for construction vehicles between the public road network and the site during the construction phase. These are discussed further in **Section 2.3**.

2.3.3 **Figure 1.1: Site Location Plan (Volume 2)** and **Figure 1.2: Site Layout Plan (Volume 2)** present the site location and site layout plan of the Proposed Development.

Overhead Line Connection

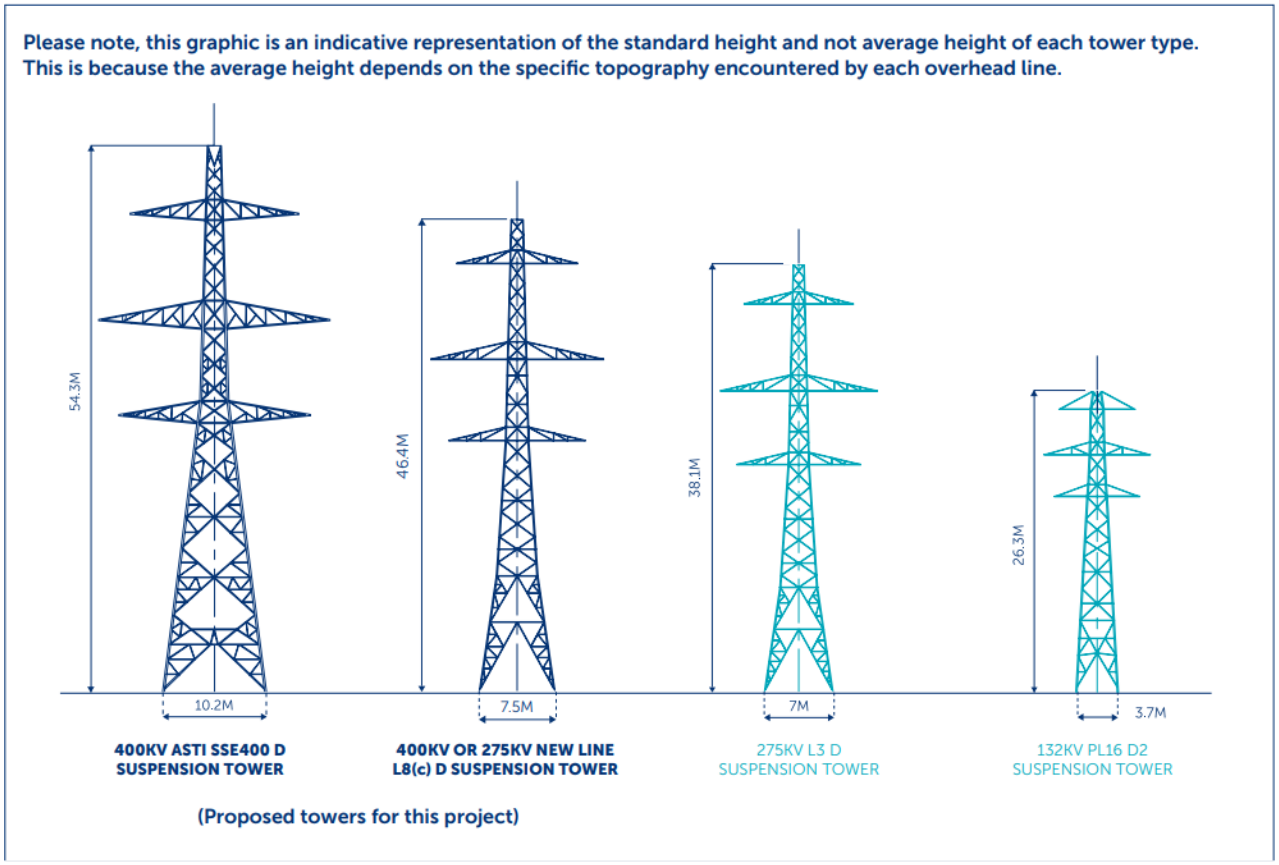
2.3.4 The proposed 400 kV 'In' leg will divert from the existing New Deer to Peterhead OHL to the Netherton Hub via downleads for a length of approximately 3.3 km, while the proposed 400 kV 'Out' leg will connect the Netherton Hub via downleads back to a new proposed OHL ('The Rebuild') that will connect to the Peterhead substation, for a length of approximately 2 km.

The Proposed Development will consist of eighteen steel lattice towers – eleven towers along the 'In' leg and seven towers along the 'Out' leg – which will support six conductor bundles on six cross arms and an earth wire between the peaks for lightning protection. The 'In' Tie-In to the Netherton Hub from the west will use the same L8(c) towers as the existing line. These towers are expected to have an average height of approximately 55 m. The 'Out' Tie-In from Netherton Hub eastwards will use the ASTI SSE400 tower design due to the requirement to support larger conductors to facilitate greater power transfer. These towers are expected to have an average height of approximately 57 m. **Plate 2.1** illustrates both the ASTI and L8(c) tower designs against examples of a 275 kV and a

132 kV suspension tower. It is possible tower types may be subject to change post-determination of the Section 37 application and following completion of geotechnical investigations.

2.3.5 The average distance between the towers is expected to be between 320 m and 350 m for both the 'In' and 'Out' sections, with the distance between them depending on several factors such as altitude, climatic conditions and topography.

Plate 2.1: Indicative Tower Design Drawings



Temporary Diversion

Two temporary diversion towers will be erected at Grid Reference NK 03349 43523 and Grid Reference NK 06972 43735 respectively, as shown on **Figure 1.2: Site Layout Plan (Volume 2)**, to facilitate the diversion of the existing OHL to the new length of OHL during the construction phase. Once the permanent towers have been erected and the conductors transferred to the new OHL, these two towers will be dismantled. Further information on the construction methodology of this stage is provided in **Section 2.3**.

Existing OHL and Towers

2.3.6 Once the conductors have been transferred from the temporary diversion to the new length of OHL, the existing OHL and the 12 redundant towers located between the two points of diversion will be dismantled. The tower foundations will be removed to approximately 1.2 m below ground level to enable reinstatement of the ground to its previous use (agricultural land). The existing OHL and towers are shown on **Figure 1.2: Site Layout Plan (Volume 2)**.

The Limit of Deviation

2.3.7 The Limits of Deviation (LoD) comprise an area which defines the practical limits within which micro-siting of the overhead line infrastructure can be sited and construction can be undertaken within the terms of the Section 37 consent. The LoD is shown on **Figure 1.2: Site Layout Plan (Volume 2)**.

2.3.8 The location of the proposed tower positions, presented in **Figure 1.2: Site Layout Plan (Volume 2)**, has been determined on the basis of environmental and technical considerations, including engineering analysis of ground conditions and suitability based on desk studies and site walkover surveys.

2.3.9 It is possible that individual tower locations, types, working areas and access tracks may be subject to minor changes in position post-determination of the Section 37 application and following completion of geotechnical investigations. No towers or working areas will be located outside the proposed LoD.

Horizontal LoD

2.3.10 The proposed horizontal LoD is:

- OHL infrastructure (i.e. steel lattice towers and all working areas, EPZs, conductors and forestry Operational Corridor):
  - Suspension towers: 100 m LoD radius around the tower position; Tension towers: 200 m LoD radius around the tower position;
  - OHL conductors: 100 m LoD either side of the alignment centreline;
  - All construction working areas must remain within the LoD (public road improvements works are excluded from this).
- Access tracks outwith the OHL infrastructure LoD (distance is either side of the track centre line):
  - 100 m LoD for new temporary or permanent access tracks;
  - 100 m LoD for upgrades to existing tracks in very poor condition;
  - 50 m LoD for upgrades to existing tracks in very good, good, fair, or poor condition.
  - Where access tracks are within the OHL infrastructure LoD, the LoDs would be merged.
- Widening of the LoD through areas of forestry and woodland to 145 m either side of the alignment centreline, to allow for movement to the forestry Operational Corridor in the event of tower micrositing.

Exclusion Zones

2.3.11 There are a small number of areas within the Horizontal LoD where construction activities, the location of access tracks and the micrositing of towers will be avoided due to the presence of environmental features (for example, residential properties, areas of Native Woodland). Reference is made to these features being avoided in the relevant chapters of this EAR.

Vertical LoD

2.3.12 It is possible that further engineering analysis at the detailed design stage might alter the required heights of towers necessary to maintain statutory ground clearance. A vertical LoD, i.e. the maximum height of a tower above ground level, is therefore also sought to allow a height increase of 9 m on the proposed tower heights.

2.4 Construction Methodology

Construction Activities

2.4.1 The construction of High Voltage OHL typically follows a standard sequence of events as follows:

- Phase 1 – Enabling Works;
- Phase 2 – Construction Works;
- Phase 3 – Commissioning;
- Phase 4 – Removal of Existing OHL Sections; and
- Phase 5 – Re-instatement

2.4.2 These are referred to in detail in the following sections.

Phase 1 - Enabling works

Construction access

2.4.3 Safe construction access will be required to each tower construction site for delivery of materials, plant, fittings, fixtures, working platforms and operatives. Access requirements to each tower have been considered as part of the design process to ensure that each access track is suitable for the tower type and the construction operations required at that particular tower.

2.4.4 As shown on **Figure 1.2: Site Layout Plan (Volume 2)**, approximately 10 km of new access tracks and 1 km of upgraded existing tracks, will be created to provide an access route for construction vehicles between the public road network and the tower locations.

2.4.5 Access track upgrades, construction of new access tracks and ground protection can be undertaken in a number of ways. Although the final preferred method for each access track will be selected by the Principal Contractor based on the suitability to withstand expected construction loads, cause the least environmental damage and be installed / recovered at the lowest cost, assumptions have been made for the purpose of the assessment presented in this EAR.

2.4.6 The following methods could be used:

- **Upgrade of existing tracks** will typically consist of the existing surface being remodelled to the correct width and cross fall. A wheeled or tracked 360 excavators or Dozer shall engineer the access track to the correct specification. Once the track has been widened and with the correct cross fall, type 1 material shall be laid on the surface to give a final running surface. The type 1 shall be laid by either 360 excavators or dozer with jersey spreader attachment. The type 1 shall be brought to the work face by either 8-wheel Lorries or Articulated Dump Trucks (ADTs) and will be guided into the tipping position by means of 2-way radio. Once the load is tipped the plant shall spread the type 1 to the required line and level. A roller shall compact the surface.
- **Floating track construction typically** consists of a terram and/or geogrid placed on the existing surface and rock placed on top to form the track. This method is predominantly used on a section of track where peat is expected or known. Firstly, the terram and /or geogrid are placed on the existing surface by the excavator/operators on the ground. Then crushed rock is brought to the work front by 8-wheel lorry or dump truck. The delivery wagon shall be directed into position by the excavator operator by means of 2-way radio. Once into position the wagon shall tip its load and the excavator will spread the rock to the required depth/line. The machine shall track in the spread fill to desired grade/levels.
- **Cut/Fill and Cap construction typically** consists of the track line being stripped with turves, peat & subsoils being stored separately to aid in future reinstatement. and the underlying strata being used to cut/fill the track line. This will be executed by a tracked 360 Excavator. Once the track line has been formed with appropriate ditches, a layer of crusher run shall be installed and laid to required grade/level.

2.4.7 It is anticipated there will be approximately 9.2 km of temporary access tracks created using cut/fill and cap methods, approximately 0.06 km of floated track for All Terrain Vehicles (ATV) tracks where peat or boggy ground are present, approximately 0.19 km of track upgraded, currently in ‘Very Poor’ condition and approximately 0.52 km of track upgraded, currently in ‘Good/Fair’ condition. Existing tracks in ‘Very Poor’ condition are typically ATV track and treated as if it were a new track in terms of footprint and potential impact, while existing tracks in ‘Good/Fair’ condition are typically suitable for anticipated construction traffic and are treated as though some minor surface repair or widening may be required.

Temporary Tower Diversion

2.4.8 To facilitate the construction of the Proposed Development, two temporary tower diversions are required to be constructed to allow for continued operation of the network. These temporary tower diversions are presented in **Figure 1.2: Site Layout Plan (Volume 2).**

2.4.9 Once the temporary tower assembly is complete, the stringing operations can then take place to move the existing circuit over to the temporary towers. The sequence for moving the circuits over to the temporary towers is typically as follows:

- a short single circuit outage is taken on the existing OHL to allow for the circuit to be moved across to the temporary tower;
- this is followed by a double circuit outage to allow for the earth wire to be moved across to the temporary tower to provide lightning protection and communications for protection of the circuit; and
- upon completion of this, the circuit that has been moved across can then be energised and the temporary diversion is then complete.

2.4.10 Once the main construction works have been completed the above sequence is then reversed to move the circuit back over to the modified existing OHL and the temporary tower or towers can then be dismantled and the surrounding area reinstated.

Bellmouth Junctions

2.4.11 Seventeen Bellmouth Junctions will be created between the public road network and the access tracks to allow construction vehicles to enter and exit the public road network from the site safely. **Figure 1.2: Site Layout Plan** provides an overview of the location of each of these proposed junctions.

Public Road Improvement (PRI) Works

2.4.12 To enable larger construction vehicles to access the site, a small number of PRI works may need to take place. The types of work include short sections of road widening, junction widening, passing place lengthening, and passing place creation. Given the uncertainty on the scale and nature of these works, it is not appraised in this EAR. Once further information is available, this will be reviewed to determine if an update to the appraisal is required.

Watercourse Crossings

2.4.13 Where possible, watercourses have been avoided in the design of the proposed tower positioning and associated accesses, although due to the linear nature of Proposed Development and topographical challenges, nine watercourse crossings will be required, associated with proposed tower accesses. These watercourse crossings are presented in **Table 2.1**.

Table 2.1: Surface Water Bodies to be crossed by the Proposed Development

Watercourse ID	Watercourse name	Crossing Location (BNGR)[4]
1	Unnamed watercourse	403903, 844591
2	Unnamed watercourse	403943, 844659
3	Tributary of Burn of Ludquharn	404213, 845202
4	Unnamed watercourse	404259, 845219
5	Unnamed watercourse	404914, 845362
6	Unnamed watercourse	405089, 845446
7	Unnamed watercourse	406321, 844579
8	Unnamed watercourse	404285, 843861

[4] British National Grid Reference

Watercourse ID	Watercourse name	Crossing Location (BNGR)[4]
9	Unnamed watercourse	403989, 843764

2.4.14 The design of the crossings will be agreed by the Principal Contractor as part of the detailed design, following best practice in consultation with the Scottish Environment Protection Agency (SEPA). Appropriate authorisations will be obtained by the Principal Contractor, as required.

2.4.15 All watercourse crossing engineering works (including both temporary and permanent watercourse crossings) will be in compliance with the Environmental Authorisation (Scotland) Amendment Regulations 2025 (EASR)[5] and will follow best practices in line with SEPA guidance.

2.4.16 Given the uncertainty on the nature of these works, it is not appraised in this EAR. Once further information is available, this will be reviewed to determine if an update to the appraisal is required.

Site Compounds

The location of the main site compound, determined by the appointed Principal Contractor, will store bulk materials and contain offices. Given the uncertainty on its size and location, it is not appraised in this EAR and will be consented under a separate planning application or may qualify as permitted development. There will be small compounds located at each proposed and existing tower comprising a welfare area, parking and laydown area which have been considered in this EAR.

Vegetation clearance

2.4.17 Some vegetation clearance will be required to facilitate the creation of new access tracks and Bellmouth Junctions, the widening of existing access tracks and the construction of tower foundations. This clearance will predominantly be limited to low lying grass but there may be some minor tree felling and the removal of a small number of hedgerows to accommodate construction works.

Phase 2 – Construction Works

Foundations

2.4.18 Different approaches to forming foundations may be used for the steel lattice towers, subject to ground conditions at each proposed tower location as presented on **Figure 1.2: Site Layout Plan (Volume 2)**. These are likely to comprise:

- spread type e.g. concrete pad and column; or
- piled type e.g. driven pre-cast concrete, steel tubular pile, micro pile, or continuous flight auger.

2.4.19 Foundation types and designs for each tower will be confirmed by the appointed Contractor following detailed geotechnical investigation at each tower position. All tower positions will require foundations at each leg. The foundation type is expected to be a combination of conventional (concrete pad and column) and piled type. This assumption is based on an initial geotechnical desktop survey and the anticipated different construction methodologies required due to the varying terrain. Dimensions of pad and column foundations will be confirmed following micro-siting but usually consist of formation to depths of between 3 m and 6 m below ground level (bgl) and will typically be in the order of 6 m x 6 m in plan size for each tower leg. The foundation is located beneath the ground with a layer of soil covering it of sufficient depth for habitats to reinstate. The permanent footprint above ground is typically 1 m x 1 m (with a maximum dimension of 1.5 m x 1.5 m) and referred to as the ‘concrete neck’. The base dimensions of the tower footprint range between 7.47 m x 7.47 m and 22.51 m x 22.51 m.

2.4.20 Where conditions are suitable, the Applicant may opt to use steel equivalent foundations, known as steel grillages, instead of reinforced concrete. The construction activities and environmental impact,

2. [5] UK Government (2025). The Environmental Authorisations (Scotland) Amendment Regulations 2025. Available from: The Environmental Authorisations (Scotland) Amendment Regulations 2025

bar the pouring and transport of concrete, are anticipated to be effectively the same as conventional pad and column foundations where steel grillages are used.

2.4.21 Where ground conditions indicate deep peat (>1.5 m / 2.0 m) or near surface rock, piles, mini-piles, or rock anchors may be more appropriate engineering solutions. The piling solution within peat will depend on the material encountered below the peat, however typically a casing would be required to prevent the borehole from collapsing in on itself due to the structural instability of peat. Mini-pile solutions typically involve installing up to twelve piles (each between 150 mm and 300 mm diameter) below each tower leg. The piles are encompassed within a near surface pile cap, upon which the tower leg rests. Pile depths can extend up to 25 m. Where near surface rock is evident, rock anchors are normally employed. Rock anchors do not require a casing, and the pile cap normally rests on the bedrock.

2.4.22 Where encountered, topsoil (including peat) will be stripped from the locations within the tower working area to allow installation of tower erection pad(s) as necessary to accommodate construction plant. Concrete is likely to be brought to site ready-mixed, although tower locations with difficult and remote access may require limited batching on site. Once the concrete has been cast and set, the excavation will be backfilled, using the original topsoil where possible.

2.4.23 It is anticipated that the formation of each tower foundation will take approximately four weeks. **Plate 2.2** provides an illustrative image of tower foundation construction.

Plate 2.2: Illustrative Image of Tower Foundation Construction

Steel Lattice Tower Construction

2.4.24 Tower construction (indicative image shown on **Plate 2.3**) can typically commence four weeks after the foundations have been cast, subject to weather conditions and concrete curing rates. Tower steelwork will 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. A working area, up to either 80 m x 80 m for suspension towers or up to 100 m x 100 m for tension towers, is required at each tower location to facilitate access, laydown, and assembly. Tower working area arrangements will differ depending on the tower type (suspension and tension) but will share the following constituents:

- crane pad constructed out of crushed stone, geogrid, and geotextiles to form a level stable base on which the crane can safely work. The pad can be installed as soon as tower foundation is complete. It must be constructed in accordance with the temporary works design (compacted and tested) to ensure the made up ground meets the ground bearing capacity required during crane lifting operations;
- piling stone pad where required to provide suitable ground to support the piling rig during operations, either a one level pad or split-level pads to suit the ground profile. The pad can be installed as soon as access is ready. It must be constructed in accordance with the design (compacted and tested) to ensure the made-up ground meets the ground bearing capacity required for the drilling rig;
- telehandler stone pad is required to provide suitable ground to support the telehandler during operations. The pad can be installed as soon as tower foundation is complete. It must be constructed in accordance with the temporary works design (compacted and tested) to ensure the made-up ground meets the ground bearing capacity required during crane lifting operations;
- tower access surround, this area will not require stone however will be used as a laydown area for materials throughout the tower construction process. Where ground is level, trackway matting may be utilised to spread the load across the ground. If the site is particularly sloped, then the compound will be micro sited as much as possible to provide a sufficient working area; and
- tension towers require a temporary ‘holding out position’ to raise the tower working platforms which will be utilised when stringing the conductors (see section below). This platform is winched into position by a tractor at one and a half the tower height away and once in position gets locked off and attached to concrete sledges. Where this holding out position cannot be left in situ for the duration of the stringing works due to on-site constraints (e.g., roads / walkways) the platform can be locked off to alternative concrete sledges closer to the tower body.

Plate 2.3: Illustrative Image of Tower Construction

Conductor Stringing

2.4.25 The conductor will be delivered to site on wooden drums in pre-determined pulling section lengths. Prior to stringing the conductors, temporary protection measures (e.g. netted scaffolds), will be required across public roads and existing access tracks.

2.4.26 **Plate 2.4** provides an illustrative image of temporary scaffolding.

Plate 2.4: Illustrative Image of Temporary Construction Scaffolds

2.4.27 Conductor stringing equipment (i.e. winches, tensioners and ancillary equipment) are set out at Equipotential Zones (EPZs) at either end of pre-selected sections of the OHL. They are usually placed approximately one and a half times the tower height from the tension tower which terminates the section being pulled.

2.4.28 Pilot wires (or 'bonds') will be pulled through the section to be strung. These will 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 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.

2.4.29 The pilot wire will be installed using the following method:

- **Conventional piloting**: this involves fitting running out blocks (wheels) to each of the cross arms and the earthwire peak. The pilot wires are reeled onto the running blocks attached to each arm and the peak of the first tower and then lowered to ground to be attached to a tractor through a spreader bar. Once attached to the tractor, pulling will commence to the next tower by driving the tractor along the alignment. Where obstacles such as ravines, poor ground conditions or environmental constraints are encountered, a polypropylene rope or winch bond can be manually laid out and connected to the end of the previously pulled pilot wires. A tractor positioned at an accessible point underneath the line will then be used to winch in the polypropylene rope / winch bond and pull the pilot ropes towards the tractor where they can be reconnected to the next set of pilot bonds. Alternatively, in areas which are inaccessible, drones can be used to pull a rope though the area which in turn can be used to pull progressively larger ropes over the inaccessible area, minimising impact. In addition to this, trestles or scaffolding shall be put in place to protect crossings. Scaffold trestles / frames can be manually delivered from the nearest access point where an area is not accessible by tractor or ATV. When the next tower is reached, the same procedure is repeated where all the pilot wires are lifted up to the running blocks on the tower and lowered back down to the tractor to continue to the next tower until the section is completed.

- **Helicopter piloting**: where it is not considered practical to conventionally pull the pilot wires, helicopter piloting may be utilised. For this process, a similar setup is required whereby a helicopter has the bond beneath it which is then attached to the pilot wire. The helicopter then pulls the pilot wire to the first tower and lowers it into the running block before progressing to the next tower. Once the end of the section is complete the helicopter will continue past the tower before looping back to let the pilot wire rest on the ground. This is repeated for all phase conductors then earth wire. Where any obstacles are present along the route, they may require protection via trestles or scaffolding.

Phase 3 – Commissioning

2.4.30 The new OHL and support towers will be subject to an inspection and snagging process. This allows the Principal Contractor and the Applicant to check that the works have been built to required specification. The circuits will be energised from the New Deer and Netherton Hub substations in a phased sequence.

Phase 4 – Dismantling existing OHL and towers

2.4.31 The following elements of the Proposed Development require dismantling / removal:

- Removal of conductors and insulators between the points of diversion along the existing 400 kV New Deer to Peterhead OHL; and
- Removal of 12 redundant towers as shown on **Figure 1.2: Site Layout Plan (Volume 2)**.

2.4.32 The first step of the dismantling process is the removal of the conductors and insulators. The conductors will be dropped to ground level and collected using winch and cable drum. Once the conductors and insulators are dismantled, tower removal can commence. This process is typically completed by cutting the legs and felling the tower in a controlled manner. The towers are then cut into sections using hydraulic shears and these sections will either be extracted from the site using an ATV or flown out by helicopter depending on the location of the tower. The tower leg stubs, and concrete foundation will be removed to approximately 1.2 m below ground level, with the remaining foundations buried in situ, and the ground reinstated.

2.4.33 It is expected that waste material will be disposed of in line with measures set out in the CEMP, which will be the responsibility of the Principal Contractor.

2.4.34 It is expected this phase will take approximately three to four months to fully complete, although this will depend on a number of factors including resourcing, and the type of terrain encountered to dismantle the towers.

Phase 5 - Reinstatement

2.4.35 Following commissioning of the Proposed Development, all construction sites will be reinstated. Reinstatement will form part of the contractual obligations for the Principal Contractor and will include the removal of all temporary lattice tower diversions, temporary access tracks, all work sites around the tower locations and the re-vegetation of all construction compounds.

2.4.36 Reinstatement principles are presented in the Applicant's General Environmental Management Plans (GEMPs) (see **Appendix 2.1 (Volume 3)** for a copy of GEMPs relevant to the Proposed Development).

Reinstatement of Tower Access Routes

2.4.37 Reinstatement of excavated temporary tracks will involve the replacement of subsoil and topsoil, and grading and installation of drainage, as required, with turves replaced. Where required, donor turves may be sourced from adjoining areas to replace lost turves and provide a mosaic from which vegetative cover of the established species are able to recover. Where there are insufficient turves, the ground will be allowed to vegetate naturally, although some seeding may be required to stabilise sites and prevent erosion, or where landowner requirements dictate otherwise. Temporary tracks

placed on top of the existing ground level (of floated construction type) may not require any reinstatement measures after removal of the stone and geotextile base.

Reinstatement of Tower Sites

2.4.38 Topsoil will be stored within the working area for each tower during construction. Where possible, turves will be removed and stored on top of the topsoil bunds for use in the reinstatement. Sub-soils removed to enable the construction of the foundations will be temporarily stockpiled in separate bunds within the working area.

2.4.39 Each site will be allowed to re-vegetate naturally wherever possible.

Material Use

2.4.40 Wherever possible, the Applicant will seek opportunities to minimise import and export of materials. Potential measures include reusing any waste arising from the construction into design; for example, topsoil will be utilised in restoring the Site.

2.4.41 All scrap metal, conductors and glass insulators from the dismantled towers will be removed from site and managed in line with waste management measures presented in the CEMP, which will be the responsibility of the Principal Contractor.

Construction Traffic

2.4.42 Vehicle movements will relate to a variety of project requirements including movement of workers to site, construction of new or upgraded access tracks to enable delivery of the foundation materials, tower components and conductor materials to site in addition to the delivery and collection of materials and construction plant from the main site compound to individual tower locations. Removal of waste materials associated with the dismantled towers will also be required.

2.4.43 The Principal Contractor will identify a safe area within the main contractor's compound for parking away from the public road, however there will also be an area for vehicles to park at the smaller tower compounds.

2.4.44 A Construction Traffic Management Plan (CTMP) will be developed by the Principal Contractor, which will be agreed with Aberdeenshire Council's highways department in advance of construction works commencing.

2.5 Construction Programme and Working Hours

2.5.1 The construction phase of the Proposed Development is expected to take place over 24 months between July 2028 and December 2030.

2.5.2 Construction activities will, in general, be undertaken during daytime periods only. A seven day working week will be required due to the phased nature of the works, limitations of outage availability and working patterns of some contractors. Working days will commence at 07:00 and finishing at 19:00 during British Summer Time (BST). Working days during Greenwich Mean Time (GMT) will commence at 07:30 and finish at 18:00 (or as daylight allows). Any variation in these working hours will be agreed in advance with Aberdeenshire Council.

2.6 Construction Environmental Management

Construction Environmental Management Plan

2.6.1 A CEMP will be prepared and implemented by the Principal Contractor. This document will detail how the Principal Contractor will manage the site in accordance with all commitments and mitigation detailed in this EAR, statutory consents and authorisations, in addition to industry best practise and guidance. **Table 2.2** sets out key construction good practice measures **and Chapter 13: Schedule of Mitigation** provides a schedule of the committed mitigation measures relevant to the Proposed Development.

2.6.2 The CEMP will also reference the Applicant's set of General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) that are applied as a standard requirement to all construction sites and practices. The GEMPs considered relevant to this project are listed in **Table 2.2** and provided in **Appendix 2.1 (Volume 3)**, and the SPPs are provided in **Appendix 7.5 (Volume 3)**.

2.6.3 The implementation of the CEMP will be managed on-site by a suitably qualified and experienced Environmental Clerk of Works (ECoW), with support from other environmental professionals as required. The Applicant will also audit and inspect environmental performance to ensure compliance to legislation, conditions and best practices, in line with their ISO 14001 accredited Environmental Management System.

Construction Good Practice

2.6.4 Construction Good Practice includes tried and tested mitigation measures which it is reasonable to assume are being implemented. It specifically includes:

- The Applicant's set of General Environmental Management Plans (GEMPs) and Species Protection Plans (SPPs) that are applied as a standard requirement to all construction sites and practices. The GEMPs and SPPs considered relevant to this project are provided in **Table 2.2** (GEMPs)**.**
- Other standard construction practices or legislative requirements including recommended published guidance from statutory bodies.

2.6.5 **Table 2.2** lists key good practice measures which will be implemented by the Principal Contractor during the construction phase.

Table 2.2: Key Construction Good Practice Measures

Ref	Title	Description
GE1	General Environmental Management Plans	• Oil storage and refuelling; • Soil management; • Working in or near water; • Working in sensitive habitats; • Working with concrete; • Waste management; • Private water supplies; • Forestry; • Dust management; • Biosecurity on land; • Restoration; and • Bad weather.
GE2	Noise Management Plan	The Principal Contractor will be required to produce and implement a Noise Management Plan for their construction activities. The plan will be implemented by the Applicant for any construction works of a similar nature

Ref	Title	Description
		that are associated with the Proposed Development e.g. maintenance. The plan will be agreed with Aberdeenshire Council. This will ensure compliance with the relevant EC Directives and UK Statutory Instruments that limit noise emissions associated with a variety of construction plant; and guidance set out in BS 5228-1:2009+A1:2014 which covers noise control on construction sites.
GE3	Site Water Management Plan	A Site Water Management Plan will be developed to manage potential risks to the water environment including locations for silt mitigation measures, dewatering of excavations inclusive of pump locations, monitoring points, cut off drains, and SuDS (incl. compound). In addition, this plan will show how rivers downstream will be protected from sedimentation or pollution resulting from the project activities. The Site Water Management Plan will include details of the layout of the Proposed Development, as well as any access tracks detailing all locations of water mitigation measures. All relevant activities will be undertaken in compliance with The Environmental Authorisations (Scotland) Amendment Regulations 2025[5]. GEMPs for 'Oil Storage and Refuelling', 'Soil Removal, Storage and Reinstatement', and 'Working with Concrete' will be adhered to.
GE4	Construction Traffic Management Plan	A Construction Traffic Management Plan will be developed by the Principal Contractor, which will be agreed with Aberdeenshire Council's roads team as part of pre-commencement conditions in advance of construction.
GE5	Soil Management	Soil management will follow the general guidance set out in GEMP - 'Soil Removal, Storage and Reinstatement'. Additionally, reinstatement shall be completed as soon as practicably possible in order to prevent environmental disturbance.
GE6	Dust	Dust will be managed through implementation of standard control measures such as management of stock piles of top soil to supress dust and road cleaning.
GE7	Waste	Waste Management will be undertaken in accordance with Section 34 of the Environmental Protection Act 1990[6] and the principles of the waste hierarchy, as set out in GEMP – 'Waste Management'.
GE8	Emergency	An Environmental Emergency Response Plan will be developed by the Principal Contractor to deal with, among other things, accidental spills and leaks. Appropriate oil spill kits will be located on site and in key vehicles. Site staff will be trained in their use and provided with advice on action(s) to be taken and who should be informed in the event of a pollution incident. Emergency response teams and contractors, their locations and response times will be identified in the plan.
GE9	Welfare facilities	On-site welfare facilities will be adequately designed and maintained to ensure all sewage is disposed of appropriately. This may take the form of an on-site septic tank with soak away, tanking and off-site disposal depending on agreement with Scottish Environment Protection Agency (SEPA); or discharge to foul sewer.
GE10	Adverse weather	The proposed programme includes year-round working. Details provided in the GEMP will include management measures to deal with adverse weather conditions.
GE11	Driver induction	A driver induction will be undertaken to include a safety induction, speed control and the identification of specified access routes during the construction phase.
GE12	Car Sharing	Adoption of car sharing will be undertaken where possible to reduce the number of vehicles arriving and departing from the site.
GE13	Local residents	Local residents will be kept informed of any potentially disruptive activities and actions being taken to mitigate the impact of these activities.
GE14	Road condition	The Principal Contractor may be required to undertake road condition surveys throughout the construction works and carry out any remedial road works (as considered appropriate) resulting from the construction traffic. This is the responsibility of the Principal Contractor and will be agreed with Aberdeenshire Council prior to construction commencing.

[6] UK Government (1990). Environmental Protection Act 1990

Ref	Title	Description
GE15	Weight restrictions	The Applicant will ensure that HGVs adhere to weight restrictions on roads in the area.
GE16	Excavation Cover	Excavations will not be left open overnight, unless a ramp with a 45 degree angle is included to allow animals to escape should they fall in. All excavations will be backfilled immediately where possible.

Enhancements - Biodiversity Net Gain

2.6.6 The Applicant is committed to protecting and enhancing the environment by minimising the potential impacts from construction and operational activities. In line with this approach, the Applicant has undertaken a Biodiversity Net Gain Assessment (see **Appendix 7.4: Biodiversity Net Gain Assessment (Volume 3)**) for the Proposed Development. This will entail quantification of the pre- and post-development biodiversity across the Site to determine the actions necessary to work towards a net gain biodiversity target.

2.7 Operation and Decommissioning

2.7.1 The Proposed Development is designed to have a minimum operational design life of 80 years for the towers (repainted every 15 – 20 years) and 40 years for the conductors and insulators. During this time, the Applicant will have ownership of, and responsibility for, maintenance activities for all elements of the Proposed Development. Maintenance works will be carried out routinely to ensure the safe operation of the Proposed Development and as soon as practicable following any unexpected events on-site.

2.7.2 The Proposed Development would not have a fixed operational life. The effects associated with the construction phase can be considered to be representative of worst-case decommissioning effects. As such a separate assessment on decommissioning has not been undertaken.