

Consultation Document

Lairg to Loch Buidhe Reinforcement

REF: LT000061/ENV/CD/001



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Lairg to Loch Buidhe Reinforcement Consultation Document

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Copies of this document can be found online at:

<https://www.ssen-transmission.co.uk/projects/lairg-loch-buidhe/>

Copies will be placed on deposit for public viewing during normal opening hours at the following locations:

Bonar Bridge Library Carnegie Building Lairg Road Bonar Bridge IV24 3EA	Lairg Library Community Centre Main Street Lairg IV27 4DD
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A public consultation event detailing the proposals within this document will be held on 6th

December 2017 from 3pm to 7pm at the following location:

Lairg Community Centre
Main Street
Lairg
IV27 4DB

Scottish Hydro Electric Transmission Plc request that all consultation responses are received by:
Friday 26th January 2018.

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GLOSSARY

Amenity	The natural environment, cultural heritage, landscape and visual quality. Amenity also includes the impact of SHE Transmission's works on communities, such as the effects of noise and disturbance from construction activities.
Cassley	Location of the Cassley GSP at the northern end of Loch Shin.
Conductor	A metallic wire strung from structure to structure, to carry electric current.
Connection Option	One of several possible routes which a new transmission line could follow between the required electricity connection points
Dalchork Substation	Preferred 132 kV Dalchork Substation, which is the northern connection point of the preferred 132 kV OHL alignment.
EIA	Environmental Impact Assessment in terms of Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
EIA Scoping	The process of seeking an 'EIA scoping opinion' from the consenting authority incorporating representations from statutory and non-statutory organisations on the proposed scope of environmental assessment required to support an application for consent
EIAR	Environmental Impact Assessment Report in terms of Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017
GSP	Grid Supply Point. An electricity network connection point used for linking transmission voltage OHLs (132 kV or greater) with smaller voltage distribution OHLs (33 kV or lower).
GWDTE	Groundwater Dependent Terrestrial Ecosystem are wetlands which critically depend on groundwater flows and /or chemistries.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities.
kV	Kilovolt (1000 volts) - capacity of an electricity power line
Listed Building	A building that has been recognised through the Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997 as of special architectural or historical interest.
LOD	Limits of Deviation, an area which defines the practical limits within which micro-siting of the OHL infrastructure can occur within the terms of the s37 consents which are to be sought. The purpose of limits of deviation is to allow flexibility within a s37 consent for the final micro-siting of individual towers to respond to localised ground conditions, topography, engineering and environmental constraints
Micrositing	The process of positioning individual structures to avoid localised environmental or technical constraints.
NETS SQSS	National Electricity Transmission System Security and Quality of Supply Standard

OHL	Overhead Line
Preferred Route	The OHL corridor option which is considered to represent the optimum balance between the various environmental, engineering and technical considerations
Preferred Alignment	The OHL alignment which is considered to represent the optimum balance between the various environmental, engineering and technical considerations
Proposed Alignment	The final OHL alignment which will be brought forward as the basis of an application for consent under section 37 of the Electricity Act 1989
Route Option	One of several possible alignments which a new transmission line could follow
s37 Consent Application	An application for development consent under section 37 of the Electricity Act 1989, as amended
SAM	Scheduled Ancient Monument
SHE Transmission	Scottish Hydro Electric Transmission Plc
Shin Substation	The existing 132 kV substation located at Inveran.
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
Stakeholders	Organisations and individuals who can affect or are affected by the Proposed Development.
Substation	An electricity network connection point used for linking transmission voltage OHLs (132 kV or greater)
UGC	Underground Cable
VP	Vantage Point locations overlooking the area of search for connection options from which ornithology surveys were carried out.

EXECUTIVE SUMMARY

SHE Transmission is the electricity transmission license holder in the north of Scotland and has a duty under Section 9 of the Electricity Act 1989 to facilitate competition in the generation and supply of electricity. The company also has obligations to offer non-discriminatory terms for connection to the transmission system, both for new generation and for new sources of electricity demand.

The area around Lairg is currently served by a 132 kV OHL which runs from Cassley Grid Supply Point (GSP) near the north end of Loch Shin to the Shin substation at Inveran, via the existing GSP at Lairg. The connection of additional renewable energy to the network in recent years means that the existing circuit is at capacity.

Current renewable energy generation connections to the existing infrastructure include:

- 49.3 MW of wind farm and hydro generation at Lairg GSP; and
- 16.5 MW of hydro generation at Cassley GSP.

The project is being driven by the request for connection of renewable energy projects, including the 72.6 MW Creag Riabhach wind farm and the 66 MW Sallachy wind farm.

To meet our connection obligations a new 132 kV OHL, supported by steel lattice towers, is required between the preferred Dalchork Substation, by Lairg, and Loch Buidhe Substation. Certain ancillary works, such as road improvements will also be required to facilitate the construction of the Proposed Development. The existing single circuit 132 kV OHL between Lairg GSP and Shin Substation would be decommissioned and removed once the new 132 kV OHL and preferred Dalchork Substation are fully commissioned.

The Preferred Alignment and location of the preferred Dalchork Substation has been selected to provide an optimum balance of environmental and technical factors through a collaborative working approach between the environmental and engineering teams. Consultation responses provided by stakeholders throughout the development of this project have helped shape the proposed solution presented in this document.

It is anticipated that an application for consent for the 132 kV OHL and Dalchork Substation will be submitted in May 2018.

SHE Transmission has published this Consultation Document to invite comments from all interested parties on how amendments to the Preferred Alignment have been selected and how the change in scope to 132 kV have been incorporated into the design of both the OHL and the preferred Dalchork Substation.

When providing comments and feedback on this Consultation Document, SHE Transmission would be grateful for your consideration of the questions below:

1. Have we explained the reason for selecting our preferred 132kV overhead line alignment?
2. Have we explained the approach taken to select the preferred 132kV overhead line alignment adequately?
3. Have we explained the reason for selecting our preferred substation location?
4. Have we explained the approach taken to select the preferred substation location adequately?
5. Are there any factors, or important points, that should be brought to the attention of the Project Development Team in regards to the preferred route alignment and/or preferred substation location?

1. INTRODUCTION

1.1 Purpose of Document

1.1.1 SHE Transmission is planning to construct and operate a new 132 kV OHL, supported by lattice steel towers, between a new substation by Lairg and the Loch Buidhe substation, approximately 17 km in length. Figure 1.1 presents the location of the project.

1.1.2 In June 2014, SHE Transmission undertook consultation on a proposal for a 275 kV technical solution, which was required to connect c.314 MW of renewable developments in the Lairg area. This proposal raised concerns regarding the potential for an adverse effect due to the close proximity of the preferred OHL alignment to residential dwellings. As a result of consultation with the community SHE Transmission has listened to concerns and made a number of changes to the OHL alignment.

1.1.3 Whilst changes to the OHL alignment were being progressed, SHE Transmission undertook a review of renewable developments seeking connection to the transmission network. This resulted in the scope of the project changing to a 132 kV technical solution.

1.1.4 In light of these changes this consultation document has been published to outline the process and rationale by which amendments to the preferred OHL alignment have been selected and how the change in scope to 132 kV have been incorporated into the design of both the OHL and the preferred substation.

1.1.5 Comments are now sought from statutory authorities, key stakeholders, elected representatives and the public to seek feedback regarding the rationale of the decisions made to accommodate the key design changes. All comments received will inform further consideration of design of the preferred 132 kV substation and the 132 kV OHL for which statutory permissions will be sought.

1.2 Document Structure

1.2.1 This document is structured as follows:

- Section 1 - Introduction: describes the purpose of the consultation document,
- Section 2 - The Proposals: describes the background, need for the proposed development and the preferred technical solution.
- Section 3 - Substation Site Selection: describes the key considerations and decisions of the substation site selection exercise. This section also describes the rationale for selecting the location of the preferred substation site.
- Section 4 – OHL Route Selection: summarises the main stages and key considerations of the OHL route selection process. This section also describes the rationale for selecting the location of the preferred OHL alignment.
- Section 5 - The Proposed Development: provides an overview of the proposals including the anticipated general design and typical construction methods.
- Section 6 - Consultation on the Proposals: provides an overview of the proposed consultation process, highlighting the timescale and the key questions to consider when responding.
- Section 7 - Next Steps: describes the next steps in the development of the project.

2. THE PROPOSALS

2.1 Background and Project Need

2.1.1 SHE Transmission is the electricity transmission license holder in the north of Scotland and has a duty under Section 9 of the Electricity Act 1989 to facilitate competition in the generation and supply of electricity. The company also has obligations to offer non-discriminatory terms for connection to the transmission system, both for new generation and for new sources of electricity demand.

2.1.2 The area around Lairg is currently served by a single circuit 132 kV OHL which runs from Cassley Grid Supply Point (GSP) near the north end of Loch Shin to the Shin substation at Inveran, via the existing GSP at Lairg. The connection of additional renewable energy to the network in recent years means that the existing circuit is at capacity. The design of the existing OHL is presented in photograph 1.

2.1.3 Current renewable energy generation connections to the existing infrastructure include:

- 49.3 MW of wind farm and hydro generation at Lairg GSP; and
- 16.5 MW of hydro generation at Cassley GSP.



Photograph 1: Existing single circuit 132kV OHL at Gunns Plantation

2.1.4 When the Lairg to Loch Buidhe Reinforcement project was instigated there were a number of renewable developments in the area which totalled a potential for c.314 MW requiring connection to the transmission

network. The scale of these potential developments means the only viable solution is a 275kV OHL connection between a new 275 kV / 132 kV substation by Lairg to the Loch Buidhe Substation.

- 2.1.5 In the intervening period the number of developers seeking connection has reduced, however SHE Transmission is aware of other wind farm developments in the area, although these developers have not, as yet, submitted a request for connection or their offers have lapsed.
- 2.1.6 Following SHE Transmission's review of the portfolio of renewable development projects in the area (both contracted and projects in scoping/early design), the preferred technical solution has changed from the original 275 kV OHL reinforcement proposal.

2.2 Preferred Technical Solution

- 2.2.1 When determining the preferred technical solution, SHE Transmission is obliged to consider a number of factors when developing proposals for a new transmission project (132 kV or above). The choice of conductor and tower suite in combination, or the potential for placing circuits underground are assessed. The operational voltage and required capacity limit the possible choice that can be employed. This process involves the technical/operational requirements (i.e. what capacity requires connection and where is it in relation to the existing transmission network), how much each option will cost, and what effect will the preferred technical solution have on people and the environment.
- 2.2.2 The NETS SQSS provides the criteria that SHE Transmission must use to plan and design the transmission system. For this particular project the application of these criteria gives a requirement to build a connection between Lairg and Loch Buidhe that is capable of delivering full generator output assuming one circuit is switched off for maintenance.
- 2.2.3 When developing projects, SHE Transmissions preference is to route new proposals by OHL. Table 2.1 summarises the rationale why it is our preference to use OHL's in preference to UGC's.

Table 2.1: Rationale for using overhead lines

FACTOR	RATIONALE
License obligations	As part of its obligations under the Electricity Act 1989 and Transmission Licence, SHE Transmission has a number of responsibilities including: (i) the development and maintenance of an efficient, coordinated and economical system of electricity transmission ; (ii) to facilitate competition in the supply and generation of electricity; (iii) to ensure that the security of the network is maintained as the demand and/or generation connections change over time; and (iv) to have regard of potential effects to people and the environment .
Economic	Under the terms of our license obligations SHE Transmission is obliged to develop the preferred technical solution in the most cost effective manner possible. UGC's are significantly more expensive than OHL solutions. The cost ratio between cabling and OHL options vary greatly as it is dependent on the capacity requirements, number and length of cables, topography and terrain.
Technical/Operational	The licence under which SHE Transmission operates requires it to build a secure network in accordance with the NETS SQSS, capable of withstanding single circuit faults without loss of supply and without disconnection of power stations. The nature of faults on overhead and underground networks are different. For overhead lines, many faults such as those caused by lightning are temporary

FACTOR	RATIONALE
	<p>and only last a few seconds. Sustained faults on overhead networks are usually relatively easy to find. Repairs and can normally be carried out within twenty-four hours. Even for severe overhead line issues, three days would be considered the maximum time required to restore supplies.</p> <p>For underground networks, fault rates are generally lower but repair times are considerably longer, running into weeks and months in some cases. Repair costs are also considerably higher often amounting to hundreds of thousands of pounds.</p> <p>The operating characteristics of an UGC compared to an OHL are different. While the charging current for a short length of cable (<1 to 5 km) could readily be compensated, the charging current for longer lengths of cable (>10 km) may cause significant voltage rise which is likely to require additional reactive compensation equipment at other locations to correct. As such, careful technical design is required to ensure a satisfactory network solution.</p>
Environmental	<p>The licence under which SHE Transmission operates requires it to have regard to the desirability of preserving the natural beauty, of conserving flora, fauna and geological and physiographical features of special interest and protecting sites, buildings and objects of architectural, historic or archaeological interest; and do what we reasonably can to mitigate the effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects.</p> <p>In line with our license obligations SHE Transmissions general approach is to utilise OHL's as the scale of transmission cable installations can have a significant effect on the environment during construction, and place restrictions on use of land after installation. Some examples of this are given below: -</p> <ul style="list-style-type: none"> • Cable installations generally take up to five times longer to complete than an equivalent overhead. • Disturbance to hydrology, habitats, flora, fauna, land use and archaeological sites can be significant. • The on-going land use above the cable route must be restricted, particularly in relation to tree planting, some deep agricultural operations and no buildings. • Excavations for the repair of cables and access for associated plant may cause prolonged disruption. <p>During project development, SHE Transmission undertake a robust route selection exercise for OHL's that adhere to statutory and licensing requirements, our own guidelines, as well as industry best practise to minimise potential effects through design.</p> <p>Once the preferred OHL route alignment is selected SHE Transmission undertakes detailed environmental assessments to identify key issues of concern (usually through the EIA scoping process), identify potential effects and mitigate those which are deemed to be significant effects through the EIA process.</p> <p>The development of our projects is an iterative process and includes stakeholder consultation at key stages. In some instances, where a significant</p>

FACTOR	RATIONALE
	<p>effect is identified SHE Transmission may have to revisit the preferred technical solution.</p> <p>Under the terms of our license obligations to develop an efficient, coordinated and economical system of electricity transmission SHE Transmission is obliged to seek the most cost effective solution. Where a constraint requires revisiting the technical solution (E.g. undergrounding part of an OHL due to a significant effect on ornithology or residential amenity) SHE Transmission is required to fully justify any significant delay to programme or additional cost.</p>

2.2.4 Due to changes in the background generation in the Lairg area SHE Transmission undertook review of the reinforcement options, which are summarised below:

- A new build 275 kV OHL using 275 kV steel lattice towers (between c.44 m and 60 m in height) between the preferred location of the Dalchork Substation and Loch Buidhe Substation;
- A new build 275 kV underground cable between the preferred location of the Dalchork Substation and Loch Buidhe Substation;
- A new build 132 kV OHL using 275 kV steel lattice towers (between c.44 m and 60 m in height) between the preferred location of the Dalchork Substation and Loch Buidhe Substation;
- A new build 132 kV OHL using 132 kV steel lattice towers (between c.25 m and 40 m in height) between the preferred location of the Dalchork Substation and Loch Buidhe Substation;
- A new build 132 kV underground cable between the preferred location of the Dalchork Substation and Loch Buidhe Substation; and
- Upgrade the existing 132 kV OHL between the preferred location of the Dalchork Substation and Shin Substation.

2.2.5 Figure 2.1 presents a diagram showing the OHL tower options under consideration. Figure 2.2 presents the design and installation requirements for an UGC.

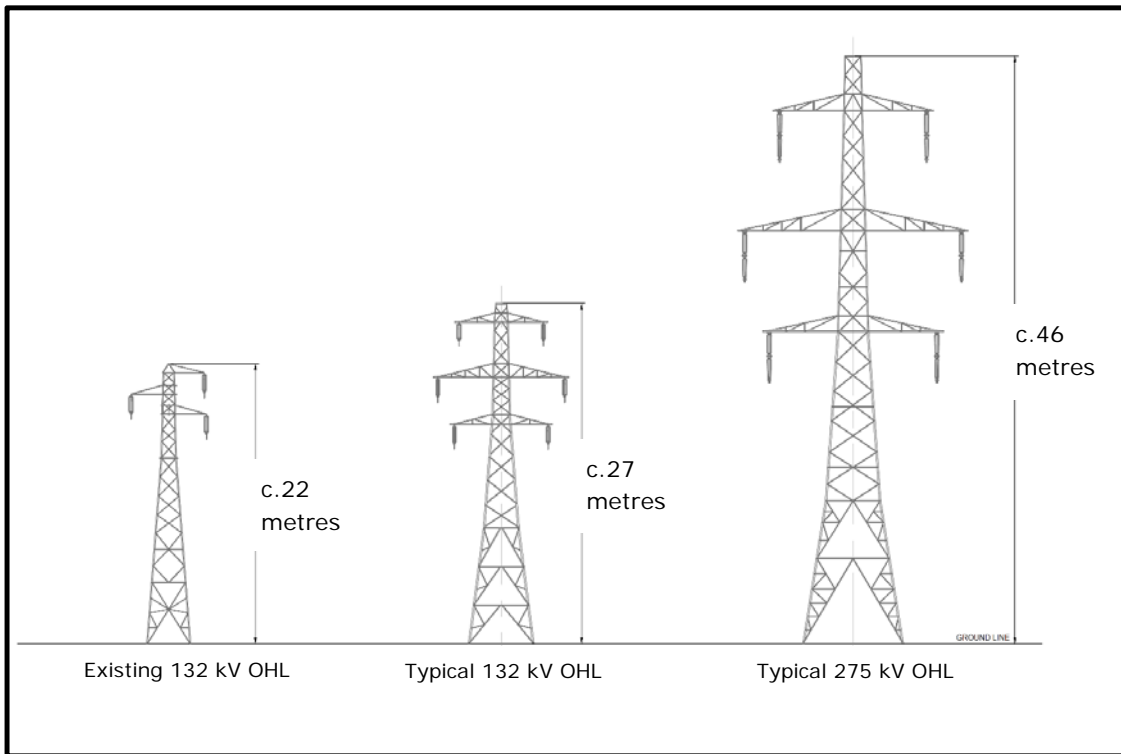


Figure 2.1: Steel lattice tower options

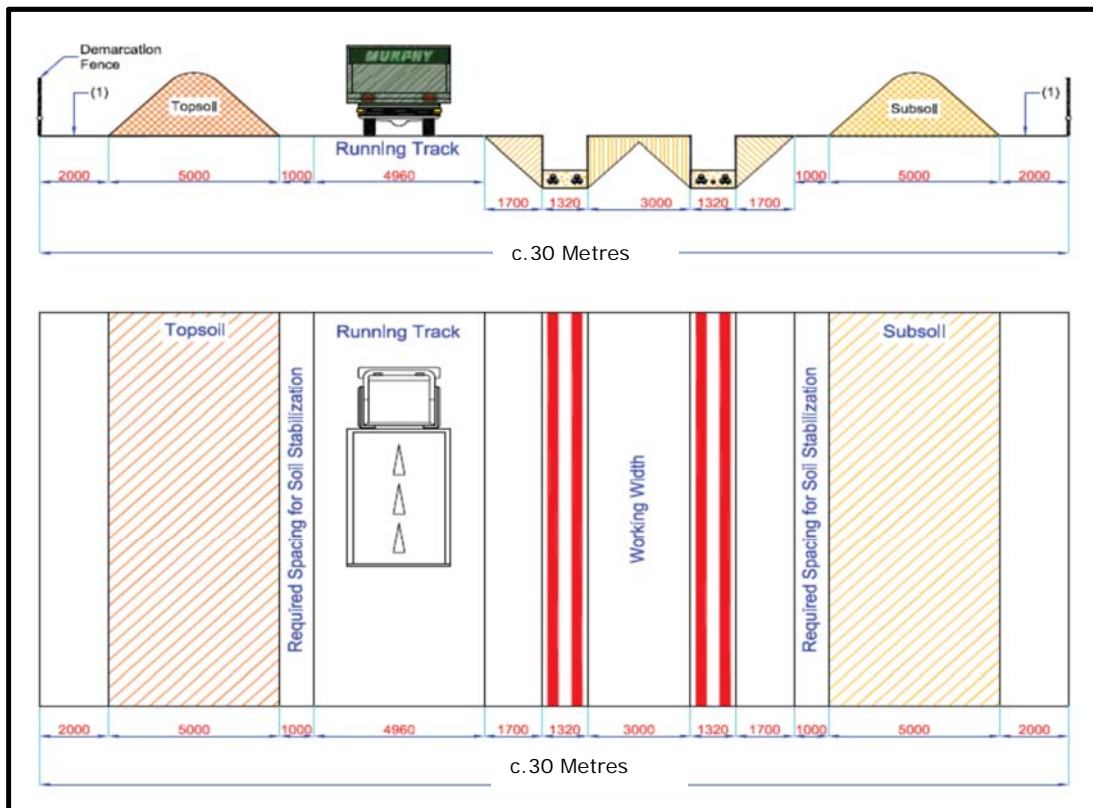


Figure 2.2: Typical underground cable design and installation requirements

2.2.6 The review concluded the preferred solution would be to construct a new build 132 kV OHL, supported by steel lattice towers c.27m in height as it can accommodate forecast generation, it is the preferred technical solution

and is the most cost effective solution (see table 1). Upgrading the existing 132kV OHL is not the preferred solution as it is not capable of accommodating forecast generation.

2.2.7 As such the main elements of the proposal which SHE Transmission will seek consent for are as follows:

- Construction and operation of a new 132 kV substation near Lairg (Dalchork Substation);
- construction and operation of a new 132 kV OHL, supported by L7 series steel lattice towers, between the preferred location of the Dalchork Substation to the Loch Buidhe Substation; and
- the removal of the existing 132 kV OHL between Lairg GSP and Shin Substation following commissioning of the new 132 kV OHL and Dalchork Substation.

3. SUBSTATION SELECTION PROCESS

3.1 Background

- 3.1.1 A new substation is required to connect the new 132 kV OHL from Loch Buidhe with the existing 132 kV OHL to Cassley GSP and Lairg GSP. SHE Transmission has selected a site within Dalchork Wood following internal guidance, industry best practise and through engagement with stakeholders.
- 3.1.2 This section summarises how SHE Transmission has identified the preferred substation site, which SHE Transmission intends to take forward for detailed environmental assessment, and consent under the Town and Country Planning (Scotland) Act 1997, as amended.
- 3.1.3 The overall aim of the site selection process is to locate a preferred substation site in a systematic manner, which is technically feasible, economically viable, and could be anticipated to cause the least disturbance to the environment and those living in it, working in it, visiting it or using it for recreational purposes.

3.2 Methodology

- 3.2.1 An initial substation site selection exercise was undertaken by SHE Transmission in order to identify potential sites based on basic engineering parameters. The main factors influencing site selection were the requirements for:
- a location in proximity of the existing Cassley to Shin 132 kV OHL;
 - a location in proximity to proposed renewable developments seeking connection;
 - a site with reasonable access from a main road;
 - a site of a sufficient size to accommodate the necessary substation equipment; and
 - a site considered least likely to give rise to adverse effects on the environment, and people living and working in the area.
- 3.2.2 A desk-based study was undertaken to gather baseline information on the following potential constraints within the area of search for substation options:
- areas, sites and features which are designated or otherwise protected at the international, national and local level for landscape, cultural heritage and ecological sensitivity;
 - known areas outside of designated areas, which support species of high or moderate conservation concern¹ (particularly in relation to ornithology);
 - residential amenity (dwellings, curtilage);
 - access;
 - topography and gradient;
 - areas prone to flooding (1:1000 year return);
 - watercourses and bodies;
 - private water supplies;
 - agricultural land;
 - wind farms (operational and proposed); and
 - existing infrastructure (roads, railways, footpaths).

¹ Birds of high conservation concern include species listed in Annex 1 of the Birds Directive (2009/147/EC), and species otherwise considered under threat due to population decline, rarity or unfavourable conservation status, as defined by the red and amber list in Eaton et al (2009) Birds of Conservation Concern 3, *British Birds* 102.

3.2.3 Following initial site identification, a number of site visits were undertaken to determine the landscape character, topography, gradients and access restrictions, as well as to identify the ecological habitat types present, and to understand the likely visual amenity issues.

3.3 Initial Substation Site Selection

3.3.1 A high-level analysis identified seven sites and an initial assessment was undertaken according to the criteria within SHE Transmission substation site selection guidance, through a workshop and site visits. Four of the seven sites (B, D1, E and F) were discounted, based on cost, technical and environmental considerations. Figure 3.1 presents the location of the substation options.

3.3.2 The remaining three sites being A, C and D were considered potentially feasible, and were taken forward for further detailed analysis in accordance with the above guidance. The assessment considered that Site A was the preferred overall on balance of factors considered. It was preferred in terms of technical/operational requirements and cost. In environmental terms, it was preferred in some aspects, such as landscape and habitats, whilst there were concerns regarding residential amenity (visual and noise). The results of the assessment are summarised in Table 3.1 below.

Table 3.1 Summary of Substation Site Options

SITE OPTION	SUMMARY OF SITE
A	<ul style="list-style-type: none"> • Site A is located adjacent to the existing Lairg GSP and requires the shortest length of new OHL from Loch Buidhe, and allows direct connection to the existing single circuit 132 kV OHL to Cassley GSP; • Site A is the lowest cost option due to capital and operational/maintenance costs as there would be fewer towers, conductors and fittings to install and maintain; • Site A will require upgrading of the existing public road, which may have potential effects to residential properties along the road during construction. During the operational phase, there would be a better road which would benefit local residents; • In environmental terms, the habitats within Site A comprise potentially sensitive water dependent habitats within the western part of the site, and less sensitive dwarf heath on the remainder of the site. No tree felling would be required on the site; • The surrounding landscape already accommodates existing transmission and other infrastructure. However, the location of Site A in proximity to numerous individual properties may give rise to adverse visual and noise effects; and • Site A is located approximately 1 km from the A836 and National Cycle Route 1.
C	<ul style="list-style-type: none"> • Site C is located close to the A836 and would require a short extent of new access track for construction and operation maintenance activities; • Site C would require a greater length of new OHL, but is located close to the existing 132 kV OHL; • In environmental terms, the habitats within Site C were considered to have the potential to support protected ecology species, with anticipated loss of habitat (tree felling) likely to cause disturbance; • There are no residential properties in the vicinity of Site C; and • Site C would also be highly visible from the A836/A838 junction and from National Cycle Route 1.
D	<ul style="list-style-type: none"> • Site D is located close to the A836;

SITE OPTION	SUMMARY OF SITE
	<ul style="list-style-type: none"> • Site D is least preferred based on cost and technical considerations as it would involve the longest length of new OHL from Loch Buidhe and is located at greatest distance from the existing 132 kV OHL; • In technical terms, a greater amount of tree felling (than for Site C) would be required for the construction of a substation at Site D, as well as a short extent of new access track from the A836, since the site is enclosed within an area of plantation forestry. • In environmental terms, the habitats within Site D were also considered to have the potential to support protected species, with anticipated loss of habitat (tree felling) likely to cause disturbance; • Site D would have greater opportunity to take advantage of screening from tree cover; and • There are no residential properties located near Site D.

3.4 Review of Site Selection

3.4.1 The first public consultation exercise was undertaken in November 2013 to seek an early understanding of public perception and key concerns. This consultation with the public highlighted the following concerns with the Site A location:

- proximity to residential properties, with associated potential noise and visual amenity impacts;
- access to the substation is not suitable due to the steep gradient and tight bends in proximity to residential property; and
- possible access restrictions for residents at Lairg Muir, Saval and Savalbeg during construction;

3.4.2 On further investigation of the concerns identified the decision was made by SHE Transmission to eliminate Site A from further consideration.

3.5 The Preferred Substation Site

3.5.1 Following conclusion of the substation site selection assessment Site C was selected as the preferred substation site.

3.5.2 Subsequent public consultation undertaken between June 2014 and February 2017 has highlighted no significant concerns with the location of the preferred substation at the revised Site C, with the exception of a request to change the name from the Saval Substation to the Dalchork Substation. This request was fulfilled and henceforth the substation will be known as the preferred Dalchork Substation.

3.5.3 As noted in section 2 the preferred technical solution changed from 275 kV to 132 kV. Due to the extensive consultation undertaken SHE Transmission believes the preferred site location still meets the revised project requirements. The key benefit of this change is a reduction in the area required to create a level platform for the substation from c.285 metres by 239 metres to c.240 metres by 120 metres. In addition, the change to 132kV means supergrid transformers are no longer required, which means road improvements will be less, and issues associated with operational noise is considered highly unlikely during the operational phase.

3.5.4 An indication of the reduction in size of the preferred Dalchork substation is shown on Figure 3.2.

4. OVERHEAD LINE ROUTE SELECTION PROCESS

4.1 Background

- 4.1.1 In order to provide connections to the transmission grid network at Loch Buidhe Substation a new OHL between the preferred Dalchork Substation (see section 3) and Loch Buidhe Substation. SHE Transmission has selected an OHL alignment following internal guidance, industry best practise and through engagement with stakeholders.
- 4.1.2 This section summarises how SHE Transmission has identified the preferred OHL alignment, which SHE Transmission intends to take forward for detailed environmental assessment and consent under section 37 of the Electricity Act 1989, as amended.
- 4.1.3 The overall aim of the route selection process is to develop a preferred alignment in a systematic manner, which is technically feasible, economically viable, and could be anticipated to cause the least disturbance to the environment and those living in it, working in it, visiting it or using it for recreational purposes.

4.2 Methodology

- 4.2.1 SHE Transmission undertakes a three-stage approach when developing projects of this nature, which is summarised in Table 4.1:

Table 4.1: Development of an Overhead Line

STAGE	SCOPE OF WORKS
Stage 1: Identification of OHL route options and selection of preferred OHL route.	<ul style="list-style-type: none"> Establish area of search between defined connection points; Identify route options capable of accommodating the preferred OHL solution; and Undertake consultation with stakeholders to gain feedback on proposals.
Stage 2: Identification of OHL alignment options and selection of preferred OHL alignment.	<ul style="list-style-type: none"> Identify alignment options within the preferred OHL route capable of accommodating the preferred OHL solution; and Undertake consultation with stakeholders to gain feedback on proposals.
Stage 3: Environmental Assessment	<ul style="list-style-type: none"> Engineering design development to produce OHL alignment, tower positions and heights, and access proposals; Undertake EIA Scoping to identify key issues requiring assessment; Undertake detailed site surveys; Undertake technical assessments to establish effects and propose mitigation for those deemed to be significant; Complete an EIA Report; and Submit application for s37 consent. <p>Note: Consultation with stakeholders is undertaken throughout this process.</p>

- 4.2.2 This consultation document is written with regard to the first two stages shown in Table 3 regarding the development of the preferred OHL alignment.
- 4.2.3 On establishing the area of search a desk-based study is undertaken to gather baseline information on the following potential constraints within the area of search for connection options:
- areas, sites and features which are designated or otherwise protected at the international, national and local level for landscape, cultural heritage and ecological sensitivity;
 - known areas outside of designated areas, which support species of high or moderate conservation concern² (particularly in relation to ornithology);
 - residential amenity (dwellings, curtilage);
 - access;
 - topography and gradient;
 - areas prone to flooding (1:200 year return);
 - watercourses and bodies;
 - private water supplies;
 - agricultural land;
 - wind farms (operational and proposed); and
 - existing infrastructure (roads, railways, footpaths).
- 4.2.4 Following initial route identification, a number of site visits were undertaken to determine landscape character, topography, gradients and access restrictions, as well as to identify the ecological habitat types present within and outside designated sites, and to understand visual amenity issues around Lairg.
- 4.2.5 The baseline information collected was used to compile a map of potential constraints to be considered in the route selection process. The route selection process followed a hierarchical approach to avoid, minimise and reduce negative interaction with or effects on sensitive features.

4.3 Stage 1 - Overhead Line Route Selection

- 4.3.1 Stage 1 of the route selection exercise comprised an initial strategic review of the area of search, between the potential northern substation options (substation sites A, C and D, as detailed in section 3) and Loch Buidhe substation. This was completed by SHE Transmission, in order to identify broad parameters within which an OHL could be constructed. Engineering and cost factors required the identification of the most direct route options possible, taking due account of major high level engineering restrictions including major water features such as Loch Shin.
- 4.3.2 As a result of this process, five potentially feasible routes were identified by SHE Transmission for consideration. Constraints and route options are shown on Figure 4.1.
- 4.3.3 A detailed analysis of these initial route options was undertaken in accordance with relevant SHE Transmission OHL route selection guidance, as detailed below.
- 4.3.4 Route 1 was identified as having advantages in terms of access as it was located in close proximity to the alignment of the existing 132 kV OHL between the two connection points. However, it also represented the longest OHL route, and was therefore less preferred in terms of capital and operational/maintenance costs. In technical terms, tree felling would likely be required within the woodland at Achinduich. In environmental terms, a new OHL within Route 1 would be highly visible from properties at Achinduich and Aultnagar. Further north, Route 1 included numerous individual properties within Lairg, with associated technical, wayleaves and visual amenity considerations. In addition, Route 1 included a greater extent of sensitive marshy grassland/peatland

² Birds of high conservation concern include species listed in Annex 1 of the Birds Directive (2009/147/EC), and species otherwise considered under threat due to population decline, rarity or unfavourable conservation status, as defined by the red and amber list in Eaton et al (2009) Birds of Conservation Concern 3, *British Birds* 102.

habitat, with the potential to support groundwater dependent terrestrial ecosystems (GWDTE), than the other corridors and crosses the largest extent of class 4.1 agricultural land (suitable for mixed agriculture).

- 4.3.5 Route 2 was broadly similar to Route 1, but represented a shorter and straighter orientation between the northern and southern connection points, avoiding proximity to properties at Achinduich and Aultnagar. In technical terms, Route 2 also incorporated woodland at Achinduich and, although this could be used for screening an OHL from the residential properties, it may also require some tree felling. In environmental terms, Route 2 followed the same route through Lairg as Route 1 and included the same number of residential properties. Route 2 also included a similar extent of peatland, but was comprised of a lesser extent of class 4.1 agricultural land overall. North of Lairg, Route 2 adopted a more direct route to substation Site C, with potential visual impact from properties at Saval. The route to substation Site D was the same as for Route 1.
- 4.3.6 Route 2A was developed as an alternative to Route 2, in order to potentially reduce the number of angle changes which may be required by an OHL within this route, with associated reductions in cost over Route 2. In technical terms, Route 2A was preferred over Route 2 as it avoided the woodland at Achinduich. In environmental terms, an OHL within Route 2A would be screened by the woodland at Achinduich. The remaining environmental considerations were similar to those described above, for Route 2.
- 4.3.7 Route 3 was identified as a more direct option, avoiding the outskirts of Lairg and providing access only to the two northern-most substation site options. In environmental terms, Route 3 encompasses a greater extent of the Strath Carnaig and Strath Fleet Moors SPA and SSSI than Route 1, 2 or 2A. An OHL within this route would have greater potential for disturbance to breeding hen harrier for which the SPA / SSSI is designated. East of Lairg, Route 3 crosses Strath Fleet and an OHL in this location would introduce large scale elements into an area of open moorland landscape where no such features currently exist. There would be visual impact to road users on the A836 and A838, as well as to properties within Strath Fleet.
- 4.3.8 Route 4 represented an alternative route to the east of Lairg and the hillsides of Meall Dola and An Stoc-bheinn. A high level technical assessment was undertaken, which determined that this route would be the most challenging in terms civil engineering works due to the extent of new access tracks required in an area with difficult terrain and possibly poor ground conditions. Due to the extent of engineering works required this route would also be the least preferred of all options in terms of capital and operational/maintenance costs. In environmental terms this route is also the least preferred option as it encroaches to the greatest extent into the Strath Carnaig and Strath Fleet Moors SPA and SSSI, with the greatest risk of disturbance to breeding hen harrier. Route 4 also included the greatest extent of peatland habitat, as well as extensive habitat with the potential to support groundwater dependent terrestrial ecosystems (GWDTE). Other environmental considerations were similar to those described above, for Route 3.
- 4.3.9 Based on the above analysis, as well as the initial selection of substation Site A (as described in Section 3), Route 2A was identified as the preferred option.
- 4.3.10 The preferred OHL route option was presented at a public consultation in November 2013 in order to seek an early understanding of public opinions about the proposals. Feedback from this consultation was collated and used to inform subsequent design refinements, particular to address concerns raised by the public relating to introduction of the proposed infrastructure into the environment around Lairg. As discussed in Section 3, the key outcome was to change the location of the preferred substation option in the vicinity of Lairg.

4.4 Stage 2 - Overhead Line Alignment Selection

- 4.4.1 Stage 2 of the route selection process comprised more detailed examination of the potential alignment options around Lairg, in response to concerns raised during consultation in November 2013. Stage 2 was also based on the decision to eliminate substation Site A from further consideration, which meant only connection options between Loch Buidhe substation and substation options at Site C and Site D were further evaluated. This stage is designed to focus on narrower OHL alignments rather than broad route options (c.1 km). These alignments

were developed to enable a more focussed consideration of the various technical, economic and environmental constraints identified earlier.

4.4.2 The following general factors and requirements informed the development of alternative alignments:

- limiting the number of changes in direction (angles);
- minimising the requirement to cross existing electricity infrastructure;
- minimising construction effort on-site (e.g. proximity to existing tracks and public roads, avoiding steep gradients and difficult ground conditions);
- ensuring a direct approach for substation entries;
- minimising crossing linear features (e.g. roads, railway lines, rivers); and
- minimising the length of new OHL and the number of towers.

4.4.3 Four alternative alignments were identified, which included variations at specific locations along the route, as illustrated on Figure 4.2.

4.4.4 A detailed analysis of these alternative alignments was undertaken, which is summarised below.

4.4.5 Alignment 1 was developed to allow consideration of a similar alignment to that of the existing 132 kV OHL and, from Site D to Site C, the route selected was considered to represent the most direct option, minimising the overall length of the OHL. From Lairg to Loch Buidhe, Alignment 1 represented an alignment within Corridor 2A (described above), which was identified as the preferred route on a technical, economic and environmental basis. In technical terms, it was recognised that, where Alignment 1 progresses through Lairg, construction works may be disruptive and would pose greater engineering and construction challenges compared to the other alternatives due to number of temporary OHL diversions and temporary outages to the local electricity supply in Lairg which would be required. In environmental terms, the northern half of Alignment 1 was considered to present a potential collision risk to black-throated diver (*Gavia arctica*) flying between Loch Beannach and Loch Shin. In addition, Alignment 1 would be highly visible from the A836 and National Cycle Route 1 and from residential properties in and around Lairg. In addition, it would cross core paths within Gunn's Plantation. In its southern half, Alignment 1 would encounter few environmental constraints, as described for Route 2A.

4.4.6 Alignment 2 represented an alignment located entirely within Route 2A and it adopted the same route as Alignment 1 from Lairg to Loch Buidhe, Alignment 2 included two 'variations' in the northern section, variations 2(i) and 2(ii), allowing for access to either substation Site C or Site D. In technical terms, Alignment 2 would require a number of angle changes near Torroble and Lairg; therefore, it was not considered preferable. In environmental terms, Alignment 2 crosses extensive sensitive bog habitat north of Lairg and, north of substation Site C, would present the same diver collision risk as for Alignment 1. It would also have a visual impact on the south west facing properties at Saval, although it would be less visible from the A839 than the other alternative alignments. It would also be visible from local authority core paths in Gunn's Plantation and would pass in close proximity to residential properties at Torroble and in Lairg.

4.4.7 Alignment 3 represented a straighter alignment overall, similar to that of Route 3, while adopting the same route as Alignment 1 from Lairg to Loch Buidhe. Alignment 3 included two 'variations' in the northern section, variations 3(i) and 3(ii), to allow for access to either substation Site C or Site D. Further south, Alignment 3 included three 'variations', variations 3(i), 3(iii) and 3(iv), which were developed in response to feedback from the community regarding the proximity of an OHL to properties in Lairg. In technical terms, Alignment 3(i) included fewer angle changes, although topography and gradient was considered more challenging (than for Alignment 1 and Alignment 2) in the vicinity of Torroble and Balnadelson. Alignment 3(iii) and 3(iv) were considered less preferable than 3(i) on the basis of topography and access. In environmental terms, Alignment 3(i) would present the same potential collision risk to black-throated diver as for Alignment 1 north of substation Site C, while also increasing the potential collision risk by passing between component lochs of the Lairg and Strath Brora Lochs SPA. Further south, Alignment 3(iii) and 3(iv) encroach further into the Strath Carnaig and Strath Fleet Moor SPA and SSSI and would pass through a more remote area; therefore, these 3 variations

were considered less preferable than Alignment 3(i) east of Lairg. East of Lairg, Alignment 3(i) would pass to the rear of residential properties at Culbuie and Balcharn, while passing close to properties at Balnadelson and Tomich. However, Alignment 3(iii) was considered to have the potential to 'ring-fence' properties at Tomich while traversing the hillside behind these houses, and Alignment 3(iv) was identified as being potentially more prominent in views looking east from properties in Lairg, due to its higher elevation. Therefore, Alignment 3(i) east of Lairg was identified as being preferable on the basis of cost, technical and environmental factors, followed by Alignment 3(ii) further north, to Site C.

- 4.4.8 Alignment 4 was developed in order to allow further consideration of a route much further to the east than the other alternative alignments, representing an alignment within a combination of Route 3 and 4 and presenting a connection option to Site D only. However, it was recognised that this represented the longest route and the most challenging alternative technically, in terms of ground conditions, topography and access. In environmental terms, Alignment 4 was considered overall to be least preferable as it crossed Strath Carnaig and Strath Fleet Moor SPA and SSSI for the longest distance, with the potential for the greatest impact on breeding hen harrier and peatland habitat. Alignment 4 presented the same diver collision risk as for Alignment 3(i) north of substation Site C and, further south, it crossed open moorland with high wildness value and would give rise to the introduction of industrial features into a landscape where these do not currently exist. Alignment 4 would also be highly visible from the A839 and from residential properties in Strath Fleet.
- 4.4.9 Based on the above analysis, as well as the results of the substation site selection exercise, the Preferred Alignment was identified as being Alignment 3, which is shown on Figure 4.3.
- 4.4.10 A formal consultation exercise was undertaken in June 2014 to seek feedback from stakeholders on the selection of a preferred OHL alignment, and substation location. The general consensus was stakeholders were content for the substation site to be located at the revised Site C within Dalchork Wood. However, there were still significant concerns over the route alignment due to proximity to residential properties and potential effects on croftland.
- 4.4.11 An outcome from this consultation was for the local community to propose their own preferred OHL alignment, located to the east of Lairg and the Lairg Windfarm, as shown in Figure 4.4. SHE Transmission undertook an assessment comparing the communities preferred route option against SHE Transmission's preferred OHL alignment using SHE Transmission's OHL guidance.
- 4.4.12 The assessment concluded that whilst environmental sensitivities do exist within SHE Transmission's preferred alignment, particularly with regard to proximity to residential properties, the potential impact of the communities preferred OHL alignment on internationally designated sites and their qualifying interests is greater, which is consistent with established routing practice, is in accordance with the Holford Rules³, and gives priority to the avoidance of high amenity areas (primarily, internationally designated sites/interests). The potential to enhance screening of views from local properties will require further consideration through the design development and EIA process.
- 4.4.13 Due to the ongoing concerns in the community regarding the OHL alignment the local MP (at the time), Dr Paul Monaghan, requested that a liaison group be set up to discuss concerns and to identify a way forward. The liaison group meetings were undertaken in the Lairg Community Hall on:
- 26th July 2016;
 - 5th October 2016; and
 - 10th February 2017.
- 4.4.14 In the period between October 2016 and February 2017 SHE Transmission revisited the route alignment assessment, and undertook further site visits to check constraints against site surveys which had been completed for the EIA. A high-level assessment, and consultation with our operations team, was also

³ Holford (1959), Guidelines for the Routeing of New High Voltage Overhead Transmission Lines. "The Holford Rules".

undertaken on the feasibility of undergrounding a section of the OHL between the Lairg Windfarm and Savalbeg, as this was deemed to be the area of most concern to the community.

- 4.4.15 The assessment concluded undergrounding part of the OHL alignment was not preferred on technical and operational grounds. This is due to the difficulty of finding suitable locations for sealing end compounds (SEC)⁴ (which could pose their own landscape and visual amenity issues), unsuitable operational access for an HGV carrying testing equipment for SEC's, crossing beneath the railway, and effect on croftland (see table 1). Other technical issues foreseen included concerns over the electrical protection of our assets, which may require additional land to locate protection equipment at the sealing end compounds resulting in very prominent infrastructure in elevated positions.
- 4.4.16 The assessment of the OHL route alignment concluded it would be possible to amend the preferred OHL alignment to the east of the community as nesting and flight activity by hen harrier were further east than first thought. This allowed SHE Transmission to route the OHL away from property as far as possible, whilst minimising the potential effect on the qualifying species of the designated sites.
- 4.4.17 This option was presented to the community in the liaison group in February 2017, which concluded it was going in the right direction but wished it located further east. Due to the flight activity observed during EIA assessments SHE Transmission believes the preferred OHL alignment should not be located further east as this could pose a likely significant effect to the qualifying species of the designated sites.

4.5 The Preferred Overhead Line Alignment

- 4.5.1 Based on the information available from site surveys, and ongoing consultation SHE Transmission believes the amendment to the east of Lairg to be the optimum solution for the preferred OHL alignment, which avoids residential areas as far as possible whilst minimising the effect to the qualifying species of the designated sites.
- 4.5.2 As such SHE Transmissions preferred OHL alignment is provided in Figure 4.5.

⁴ A sealing end compound is a structure where an overhead line terminates on to an underground cable.

5. THE PROPOSED DEVELOPMENT

5.1 Overview

5.1.1 The proposals comprise both the construction of a new substation, as indicated on Figure 3.2, and the construction of a new OHL as shown on Figure 4.5.

5.2 Substation Design and Construction

5.2.1 A new substation is required in the vicinity of Lairg in order to enable new generation to connect into the transmission network. SHE Transmission will seek planning consent under the Town and Country Planning (Scotland) Act 1997 (as amended) for the new substation, to be called the Dalchork Substation.

5.2.2 The new substation will require an area of generally level ground in the order of c.240 metres by 120, with access to the local road network, and in proximity to the existing Cassley-Shin 132kV OHL. Discounting overhead line terminal towers, 132 kV substation plant would generally be less than 10m high, however there will be a requirement for a communications mast in the order of 25 m. The substation would contain a single storey building to house the substation control equipment, an office and welfare facilities. The site would be surrounded by a 2.5m high security fence of palisade construction.

5.2.3 The substation will not generally be illuminated as it will be an unmanned facility with access only required for operations and maintenance. Floodlights would be used during maintenance works or in the event of a fault during the hours of darkness.

Construction Activities

5.2.4 Construction of a substation typically follows a standard sequence of events:

- complete pre-construction surveys, as required by a construction environmental management plan;
- install temporary site drainage;
- establish temporary or permanent accesses (including any necessary vegetation management);
- install site compounds / laydown areas and site services (water, power and telecoms);
- complete cut and fill earthworks to create a level platform;
- install permanent drainage, including Sustainable Drainage System (SuDS);
- construct the control building and other civil engineering works;
- install substation electrical infrastructure;
- connect overhead lines;
- commission electrical infrastructure;
- dismantle and remove temporary works; and
- reinstate / restore temporary works areas and undertake landscaping in line with an agreed planting scheme.

Construction Access Arrangements

5.2.5 Improvements to the local road network, such as localised widening at bends in the road or strengthening of roads or bridges, may be required in advance of the construction works commencing. Due to the reduced

scope of the project, supergrid transformers will not be required which means improvements to the road network will be minimal, due to no requirement for abnormal loads.

- 5.2.6 The substation access road, including the bellmouth with public roads, would form part of the Proposed Development for which SHE Transmission will seek planning consent under the Town and Country Planning (Scotland) Act 1997 (as amended).
- 5.2.7 Consultation with the local authority roads department and Transport Scotland will be required in due course once the transport requirements for the project have been confirmed and detailed assessments have been undertaken.

Operations and Maintenance

- 5.2.8 Substation plant requires maintenance and inspection at regular intervals. Most substations have a monthly inspection. Maintenance is completed about once every four to six years on each circuit. As the substation would have several circuits, it is likely that some maintenance would be completed most years.
- 5.2.9 As supergrid transformers are not required SHE Transmission considers the potential effect on the local community regarding the potential for nuisance issues relating to noise during the operational phase to be negligible.

5.3 Overhead Line Design and Construction

- 5.3.1 The OHL proposals are anticipated to comprise the installation of two circuits, each with three wire conductors supported from glass or porcelain insulators attached to the horizontal cross arms on both sides of lattice steel towers. An earth wire with a fibre optic core would be suspended between tower peaks, above the conductors.
- 5.3.2 It is anticipated that the Proposed Development will consist of 66 new 132 kV towers. The standard tower height is expected to be in region of 27 m although this would vary to accommodate changes in topography and where the line crosses roads and watercourses. The tallest tower is c.36 m, and SHE Transmission propose a maximum of 40 m in our consent application to allow for micro-siting of towers following ground investigations. Photograph 2 shows the type of tower proposed to be used.



Photograph 2: Typical new build 132kV OHL.

5.3.3 The spacing between towers would vary depending on topography and land usage. The height and distance between towers will be determined later in the design process; however, an average spacing of c.267 m is anticipated.

5.3.4 SHE Transmission shall apply for consent under section 37 of the Electricity Act 1989, as amended, for the new 132kV OHL.

Construction Activities

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

- complete pre-construction surveys, as required by a construction environmental management plan;
- install temporary site drainage;
- establish temporary or permanent accesses (including any necessary vegetation management);
- install tower foundations;
- assemble and erect towers;
- erect temporary scaffolds and install temporary scaffolds to protect roads, railways and rivers;
- string conductors (wires);
- dismantle and remove temporary scaffolds;
- remove temporary tower compounds and access tracks;
- dismantle and removal of redundant infrastructure, where required; and
- reinstate / restore temporary works areas.

Construction Access Arrangements

5.3.6 The main access points for delivery of material, plant, equipment and workforce will be taken from the A836 (Dalchork Substation and Achinduich) and the A839 (east of Balnadelson). This is designed to minimise any disruption to the local community during construction works.

5.3.7 Access tracks, including the bellmouths at junctions with public roads, would form part of the associated works for which SHE Transmission will seek deemed planning consent under the Town and Country Planning (Scotland) Act 1997 in the SHE Transmission application under s37 of the Electricity Act 1989.

Foundation Installation

5.3.8 A tower compound would be established at each tower location, within which foundation installation and subsequent tower erection would take place. Each compound would be fenced for safety.

5.3.9 There are three main types of tower foundation, which are:

- Mass Gravity;
- Piled; and
- Rock Anchor.

5.3.10 Foundation types and designs for each tower would be confirmed following detailed geotechnical investigation at each tower position. The extent of ground works would vary according to the foundation design. However good practice construction methods would ensure environmental impacts are minimised.

5.3.11 Photograph 4 shows a typical mass gravity foundation under construction. An excavation is made (sides supported by sheet piles), followed by the pouring of a reinforced concrete base.



Photograph 4: Mass Gravity Foundation Construction

Tower Assembly and Erection

5.3.12 Tower steelwork is generally delivered to site either as individual steel members or as prefabricated panels, dependent on the method of erection for the tower. The preferred method of assembly and erection would use a crane, as shown in photograph 5.



Photograph 5: Tower Assembly and Erection

Conductor Stringing

- 5.3.13 Prior to stringing the conductors, temporary protection measures (normally netted scaffolds), would be erected if necessary for features such as roads, railways and existing transmission infrastructure is to be crossed.
- 5.3.14 Conductor stringing is carried out using winch and tensioner (as shown in photograph 6). Pilot wires are pulled through the section to be strung first, which are connected to the conductor at the tensioner end. The conductor is pulled via the pilot wires through the section and under controlled tension to avoid contact with the ground and any under-running obstacles including protection scaffolds. Once the conductor has been strung between the ends of the section it is then tensioned to provide the necessary sag and then permanently clamped at each tower.



Photograph 6: Tower with Rollers and Winch, Ready for Stringing

5.4 Project Construction Programme

- 5.4.1 It is anticipated that the construction programme would last approximately 19 months and that construction will commence in September 2019 (subject to consents and approvals being granted), which would allow completion in April 2021. Final commissioning and ground restoration/reinstatement works would be completed in 2021.
- 5.4.2 The detailed construction phasing and programme would be subject to change as the design progresses, and is dependent on consents and wayleaves being agreed.

6. CONSULTATION

- 6.1.1 SHE Transmission is inviting comments on the reinforcement proposals described in this document. You may comment in person at the forthcoming public exhibition (detailed below), by post or by email.
- 6.1.2 The public exhibition will be held in Lairg Community Centre on the 6th December 2017. The event will be advertised in local community notice boards, email and by letter drop.
- 6.1.3 When providing comment and feedback, SHE Transmission would be grateful for your consideration of the questions below:
- Have we explained the reason for selecting our preferred 132kV overhead line alignment?
 - Have we explained the approach taken to select the preferred 132kV overhead line alignment adequately?
 - Have we explained the reason for selecting our preferred substation location?
 - Have we explained the approach taken to select the preferred substation location adequately?
 - Are there any factors, or important points, that should be brought to the attention of the Project Development Team in regards to the preferred route alignment and/or preferred substation location?
- 6.1.4 Comments forms will be available at the public exhibition or by download at <https://www.ssen-transmission.co.uk/projects/lairg-loch-buidhe/>
- 6.1.5 Comments can also be posted or emailed to the SHE Transmission Project Liaison Manager, at the address below:
- Lisa Marchi-Grey
SHE Transmission
10 Henderson Road
Inverness
IV1 1SN
- E-mail address for representations: lisa.marchi@sse.com
- 6.1.6 The consultation process will close on Friday 26th January 2018.

7. NEXT STEPS

7.1 Consideration of responses on the preferred OHL alignment and substation site

- 7.1.1 All relevant comments received during this consultation will inform further consideration of the design of our proposals. Depending on the issues arising from this consultation SHE Transmission may consult further.
- 7.1.2 These responses, together with the assessment undertaken as part of the EIA process, will be used to develop and refine the proposals, in order to minimise the effects of the proposed transmission infrastructure on the environment and people of the area.

7.2 Scoping of the Environmental Impact Assessment

- 7.2.1 Due to the changes to the proposed reinforcement option and revised OHL alignment to the east of Lairg (as outlined in this document), and a change to the EIA regulations in May 2017, SHE Transmission is required to re-scope the requirements of the EIA. As such SHE Transmission intends to submit a new scoping report to the Scottish Ministers in December 2017, under Regulation 12 of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, for their opinion as to the information to be provided in the EIAR prepared in respect of the overhead transmission line.
- 7.2.2 The project has the potential to have significant effects on the environment by virtue of its nature, size, and location. Therefore, SHE Transmission believes this constitutes 'EIA development' which will require to be the subject of an Environmental Impact Assessment (EIA) involving the preparation of an Environmental Impact Assessment Report (EIAR). SHE Transmission has therefore decided that a formal screening request (to ascertain whether or not an EIAR is required) will not be necessary.
- 7.2.3 In May 2016, SHE Transmission submitted an EIA Scoping Report for the 275 kV technical solution, which proposed the following topics for assessment due to a 'likely significant effect':
- Landscape and Visual Amenity;
 - Ecology;
 - Ornithology; and
 - Cultural Heritage.
- 7.2.4 A scoping opinion was received from the Scottish Ministers in August 2016 outlining the scope of the EIA for the 275kV technical solution.
- 7.2.5 The scoping report will make reference to consultation undertaken to date, and to the comments received during this consultation process.

7.3 The Environmental Impact Assessment Report

- 7.3.1 The EIAR will describe the findings of the environmental impact assessment (EIA) carried out for the proposed OHL, in line with the agreed EIA Scope. The EIA process will identify the likely significant effects on the environment and will propose measures to mitigate these effects, in order to reduce or remove adverse effects. Mitigation measures may include proposals for deviation within the proposed route, involving minor

realignments or for further assessments to be undertaken post-consent. It will also comment on the dismantling of the existing 132 kV OHL, where appropriate.

- 7.3.2 Detailed studies will be undertaken, as required through the scoping exercise, in tandem with consultations with the relevant statutory and other consultees. Studies would be undertaken in accordance with approved methodologies and/or industry best practice.

7.4 Statutory Consents Procedure

Section 37 application

- 7.4.1 If the decision is made to proceed with a proposed OHL alignment, an application will be made to the Scottish Ministers for consent under Section 37 of the Electricity Act 1989, as amended, to construct and operate the proposed OHL between the proposed Dalchork Substation and Loch Buidhe Substation.
- 7.4.2 Notices of the application for consent will be placed in national and local newspapers, to provide the opportunity for representations to be made within a given period, and to state the address to which these representations should be submitted. In addition, The Highland Council will be invited to comment on the proposal, as a statutory consultee; the Scottish Ministers must take their representations into account when determining the application.
- 7.4.3 Other stakeholders (such as SEPA, SNH, Historic Environment Scotland, Forestry Commission Scotland, Transport Scotland, and Marine Scotland) and Community Councils within the area affected by the proposed OHL will be consulted in this process.

Town and Country Planning Permission

- 7.4.4 Consent will be sought for the preferred Dalchork Substation in accordance with the requirements of the Town and Country Planning (Scotland) Act 1997, as amended. The substation development would be categorised as major development (as the development area would be over 2ha) and accordingly pre-application discussions and consultations will be required, at least 12 weeks in advance of the submission of the application for consent.
- 7.4.5 The determination period for major developments is four months (or longer if an extension is agreed), during which time the application is registered and consultations with statutory bodies are undertaken.
- 7.4.6 Neighbour notifications will be undertaken by The Highland Council as part of the application determination and notice of the application for planning permission will be placed in local newspapers, to provide the opportunity for representations to be made. The planning authority will also carry out a separate consultation exercise as part of the planning application process.