

# Foyers Substation Works

Consultation Booklet

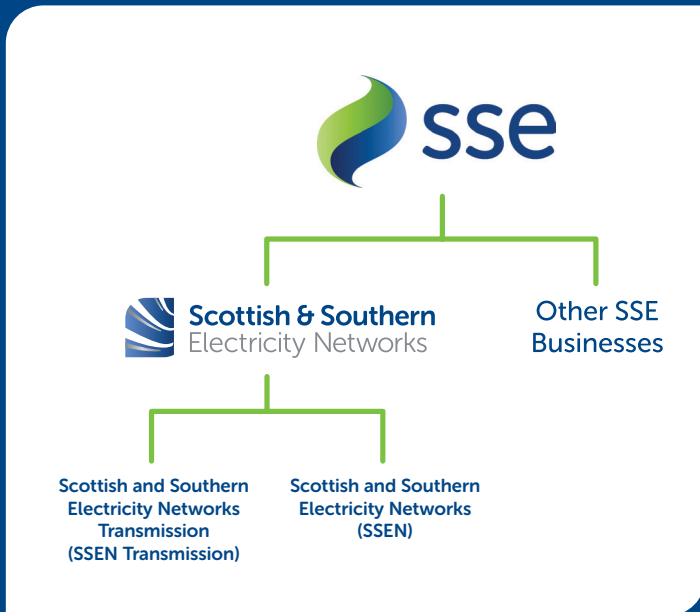
October 2022



Main photo: Existing  
Foyers Switching Station

# Who We Are

We are Scottish and Southern Electricity Networks Transmission (SSEN Transmission), operating under licence as Scottish Hydro Electric Transmission Plc (SHE Transmission) for the transmission of electricity in the north of Scotland.



## What is the difference between Transmission and Distribution?

Electricity Transmission is the transportation of electricity from generating plants to where it is required at centres of demand. The Electricity Transmission network, or grid, transports electricity at very high voltages through overhead lines, underground cables and subsea cables. Our transmission network connects large scale generation, primarily renewables, to central and southern Scotland and the rest of Great Britain. It also helps secure supply by providing reliable connection to the wider network of generation plans.

The Electricity Distribution network is connected into the Transmission network but the voltage is lowered by transformers at electricity substations, and the power is then distributed to homes and businesses through overhead lines or underground cables.

## Overview of Transmission Projects

In total we maintain about 5,000km of overhead lines and underground cables – easily enough to stretch across the Atlantic from John O’Groats all the way to Boston in the USA.

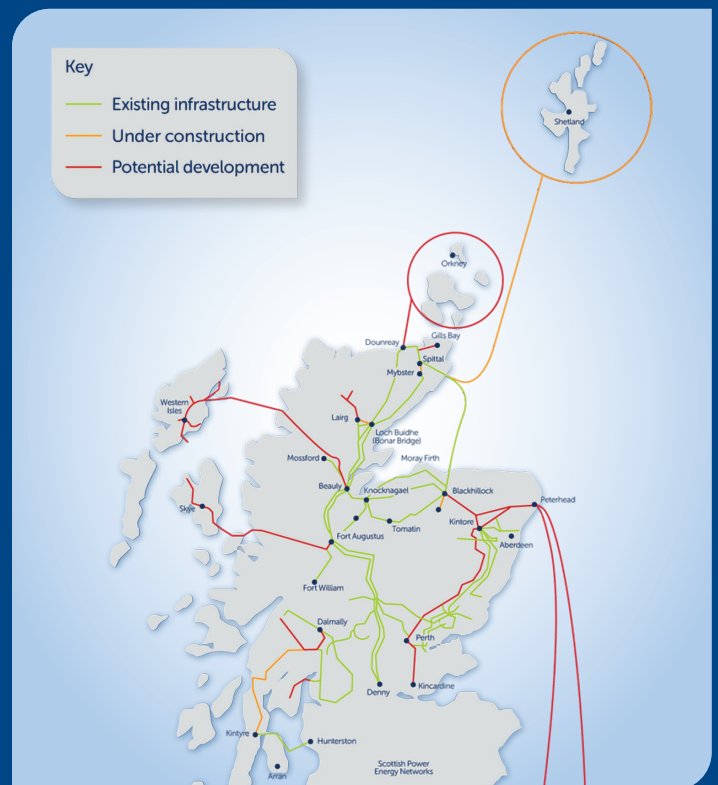
Our network crosses some of the UK’s most challenging terrain – including circuits that are buried under the seabed, are located over 750m above sea level and up to 250km long.

The landscape and environment that contribute to the challenges we face also give the area a rich resource for renewable energy generation. There is a high demand to connect from new wind, hydro and marine generators which rely on Scottish and Southern Electricity Networks to provide a physical link between the new sources of power and electricity users. Scottish and Southern Electricity Networks is delivering a major programme of investment to ensure that the network is ready to meet the needs of our customers in the future.

## Our responsibilities

We have a licence for the transmission of electricity in the north of Scotland and we are closely regulated by the energy regulator Ofgem.

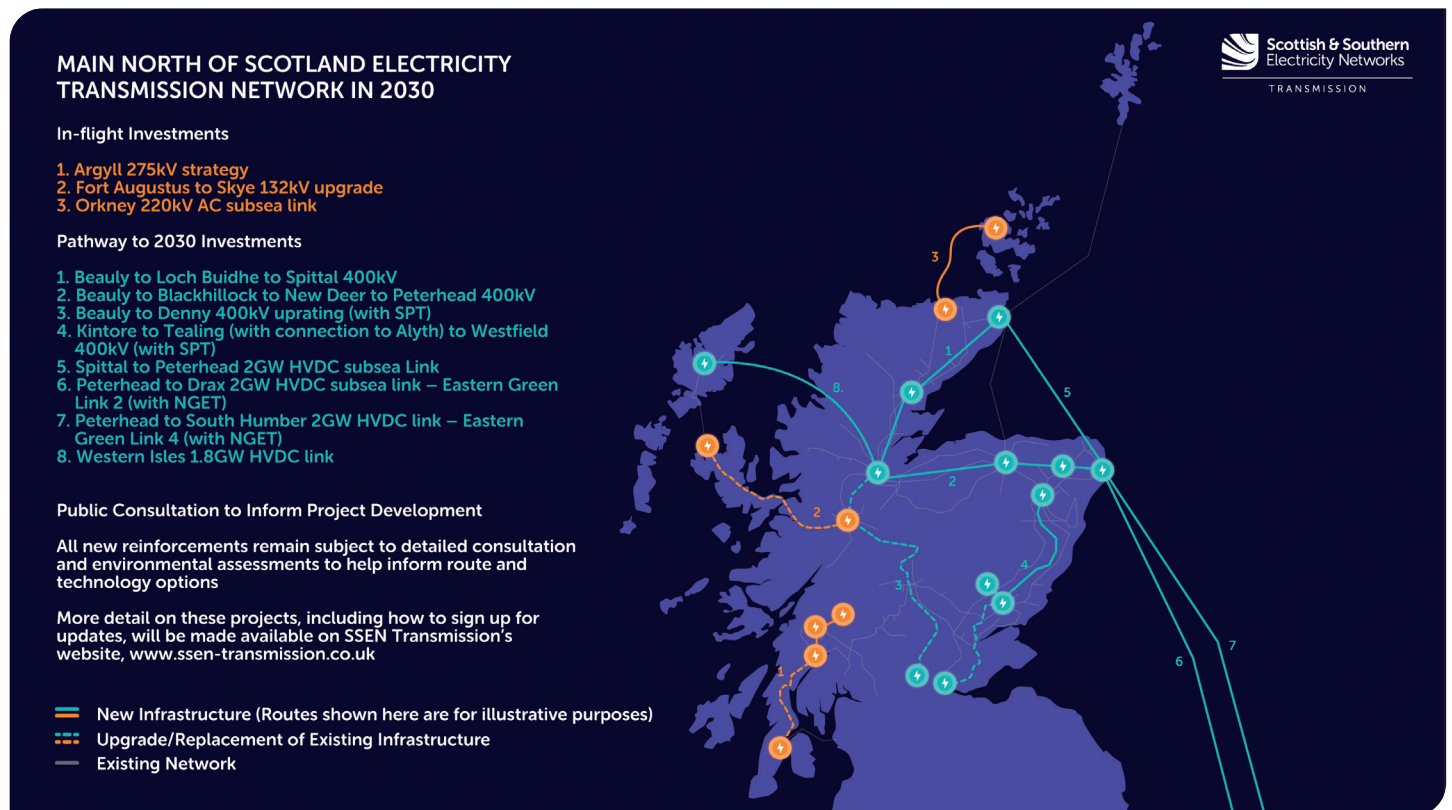
Our licence stipulates that we must develop and maintain an efficient, co-ordinated and economical system of electricity transmission.



# The Pathway to 2030 Holistic Network Design

In July 2022, National Grid, the Electricity System Operator (ESO), published the Pathway to 2030 Holistic Network Design (1), setting out the blueprint for the onshore and offshore electricity transmission network infrastructure required to enable the forecast growth in renewable electricity across Great Britain, including the UK and Scottish Governments 2030 offshore wind targets of 50GW and 11GW.

For the north of Scotland, this confirms the need for over £7bn of investment in onshore electricity transmission infrastructure to deliver 2030 targets and a pathway to net zero, several of which will require accelerated development and delivery to meet 2030 connection dates. The need for these reinforcements has been further underlined within the recent British Energy Security Strategy (2). This sets out the UK Government's plans to accelerate homegrown power for greater energy independence. The strategy aims to reduce the UK's dependence on and price exposure to global gas wholesale markets via the deployment of homegrown low carbon electricity generation supported by robust electricity network infrastructure.



## Projects in surrounding areas

**Red John:** The project includes the construction of two 275kV point of connections for the Red John Pumped Storage Scheme 450MW at the new Red John 275kV Switching Station. The Red John 275kV Switching Station consists of a new 4-bay 275kV GIS double busbar switching station complete with bus section and two bus couplers.

The Red John 275kV Switching Station will be connected to the existing Knocknagael 275kV Substation by approximately 9km of double circuit 275kV underground cable.

The project also includes enabling and wider works necessary to facilitate the connection of the Red John Pumped Storage Scheme onto the 275kV transmission network at the existing Knocknagael 275kV substation.

**This project will be back out to public consultation later in 2022.**

# Project Need and Overview

**The required project need is being driven by operational requirements and asset condition assessments of the affected existing transformers serving the Foyers pumped storage hydro electric power station.**

The project is required to upgrade the two existing transformer assets at Foyers power station, which converts the 18 kilovolt (kV) output to 275kV for export to the Transmission network.

These assets are coming to the end of their operational life and need replacing. The consequent deterioration in their condition poses a risk of failure, meaning the power station would no longer be able to generate renewable energy risking reliability of supply to customers.

The upgrade will consist of an offline construction of a new 275/18 kilovolt (kV) double transformer compound, also accommodating associated primary plant and control buildings and equipment (as near as possible to the existing substations) as well as the installation of a new bay at the foyers substation to connect the existing hydro power station to the grid.

## Project overview

The following elements are anticipated requirements for the upgrade works:

- Design and construction of a new offline intermediate compound with 275kV/18kV transformers
- New Control building, 18kV Air Insulated Switchgear (outdoor)
- A new Bay at the existing Foyers substation
- Landscaping and biodiversity requirements

The site is located within SSEN Foyers Hydro Scheme approximately 28 km South West of Inverness and lies on what are expected to be rock cut platforms into the steeply sloping Southern shore of Loch Ness. Ground levels range from approximately 16m AOD at Foyers Power Station, with a rise North Eastwards towards the Switching Station at approximately 87m AOD at the entrance to the site access road.

Within an existing compound adjacent to Foyers Power Station there are two 18/275kV generation transformers which are banked together and directly connected to the sealing end of a single 275kV oil filled cable.

Generation Transformer 1 was manufactured and installed in 1991 and Generation Transformer 2 was manufactured and installed in 1982. Due to the layout of the substation at the generation site, the transformers are very confined and do not meet current standards in terms of adequate fire damage zones, oil containment, operability, maintenance access and business separation.

The condition of Generation Transformer 2 is advanced in its degradation both internally and externally. This condition is in line with its age and oil samples indicate that the unit is experiencing insulation polymerization and with historic

vibration issues, there is concern over the unit's ability to perform as required to the end of RIIO-T2. Based on the oil leaks and rusting, as well as the oil analysis, this unit requires replacement during RIIO-T2.

Oil samples taken from Generation Transformer 1 indicate early signs of insulation breakdown with an increasing trend in analysed gases driving a need for more frequent monitoring. There are also external condition issues to be addressed regarding oil leaks and rusting with this unit.

An oil filled 275kV cable connects the power station and switching station. This cable is the last 275kV oil filled cable circuit in operation in the network following a long-term strategy of replacement over the years.

The Foyers site is largely constrained owing to the terrain, landscape and proximity to Loch Ness. The project has undertaken a detailed Optioneering process to assess the technical feasibility, environmental impact and commercial viability of a number of possible options to meet the asset requirements detailed above.

# Our consultation process

**At SSEN Transmission, we are committed to delivering a robust and transparent consultation process underpinned by inclusion and accessibility. As a stakeholder led business, we understand the importance of involving communities and key stakeholders throughout the each stage of our development process.**

This period of engagement in the development phase is vital in shaping our proposals and to do this effectively, we need to capture feedback from stakeholders, harness local knowledge to identify risks in key areas of the corridor and explore potential community benefit opportunities.

Today we are presenting our approach to developing this project, including technology options, environmental considerations, the site selection process, and presenting maps which aim to give stakeholders and community members a better visual representation of the work on the project to date.

If you require additional support to submit your views, please contact our Community Liaison Manager Ryan Davidson who will happily assist you.

## What we're consulting on today

This consultation event is the first of two planned public consultation events following the submission of the Proposal of Application Notice (PAN).

The PAN submission triggers the initial formal Town and Country Planning (major application), consultation process for this site—including the 12-week (minimum) pre-application consultation period. We are therefore holding this and other consultations to share information on where our site selections and design inputs are to date.



## Who we're consulting with

We are keen to hear feedback from a broad range of stakeholders including but not limited to local residents, landowners, businesses, non-statutory consultees and statutory consultees such as the local authority, Nature Scot, SEPA, Historic Environment Scotland and Scottish Forestry.

Further public consultation is anticipated early next year presenting our refined and preferred site options for feedback, prior to planning application submission in 2023. A consultation with statutory stakeholders is due to take place in November 2022.

# Environmental considerations

The following potential environmental impacts will be assessed as part of the Environmental Appraisal (EA), which will be submitted as part of the planning application to The Highland Council. The EA will be available for members of the public to view and comment on, following submission of the consent application.



## Landscape and visual assessment

The appearance and character of the landscape is already influenced by transmission infrastructure including the existing Foyers Switching Station, nearby steel lattice towers and overhead lines. The proposed development would be seen in relation to this and the existing Foyers Pumped Storage Hydro Power Station. The site is located within the Loch Ness and Duntelchaig Special Landscape Area (SLA), a locally designated area highlighting special landscape qualities.

A landscape and visual assessment will be carried out to understand how the proposed development will be viewed within the surrounding area, to identify any significant effects and propose recommendations to mitigate these effects.



## Cultural Heritage

An appraisal including a walkover survey of the site and its surrounding area has been undertaken to understand the potential effects on the historic environment. There are no designated assets identified within the proposed development boundary. Dun Scriben fort and Dun Deardail forts scheduled monuments 2km northwest and 2.2km northeast respectively are the nearest designated assets. Three undesignated heritage assets are within 250m of the site. There are six listed buildings within 250m of the site, and a further nine within 2km, with the closest being the Category B Old Boleskine Church, Burial Ground and Watch House 80m to the east. General Wade's Military Road (B852) runs in close proximity to the east of the site.

Consultation will be carried out with The Highland Council to identify any on-site archaeological investigation that would be required before construction works commence and if required a Written Scheme of Investigation would be prepared which would set out a strategy for archaeological mitigation in advance of the construction works.



## Terrestrial Ecology & Ornithology

The site has been surveyed to identify habitats, protected species and birds. Survey is ongoing. The site is predominantly wooded with an existing tarmac access road, the Foyers Switching Station and Foyers Power Station present. The surrounding area is dominated by native woodland, commercial forestry and Loch Ness. A biodiversity net gain condition assessment was also undertaken concurrently with the habitat survey which allows the biodiversity units of the site to be calculated.

Seven European designated sites for nature conservation are located within 20km. The closest such designation is Ness Woods, a Special Area of Conservation (SAC) located approximately 2.4km northeast, for which its qualifying interest is Otter (*Lutra Lutra*), Western acidic oak woodland (Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles) and mixed woodland on base-rich soils associated with rocky slopes (Tilio-Acerion forests of slopes, screes, and ravines).

Inverfarigaig Site of Special Scientific Interest (SSSI) is a national designation recorded 2km northeast. This overlaps with Ness Woods SAC. The qualifying interest for which Inverfarigaig SSSI is designated is Upland Mixed Ash Woodland. The Survey Area contains suitable habitats to support protected and notable species including pine marten, red squirrel, badger, bats, reptiles and amphibians. A programme of bat survey has been undertaken (May to October 2022). Breeding bird surveys encompassing the site and a 250m survey buffer were undertaken between May and August 2022. Surveys indicate that the site and surrounding area support widespread and common breeding birds. The proposed development will seek to maintain and enhance such habitats where practicable.



## Water, Environment & Soils

The Scottish Environment Protection Agency (SEPA) flood screen maps indicate that both Foyers Power Station and the Site is located partially within the fluvial floodzone of Loch Ness. Localised pluvial flood risk zones are identified at the Switching Station site. The site is underlain by the Middle Old Red Sandstone (Undifferentiated) rock unit, which is classified as a moderately productive aquifer and has 'Good' overall status.

A site water management plan will be developed to manage potential risks to the water environment during construction and sustainable urban drainage systems will be incorporated into the design to account for any increased surface water runoff resulting from the proposed development. No peat soils have been identified within the site.

One private water supply has been identified within 1km of the site. It is upslope of the site and considered not at potential risk of adverse effects from the proposed development. Further assessment will take place to confirm any required mitigation.

Scottish Water indicates that there are no water abstraction points within 2km of all Site Options. The site is located within a Surface Water and Groundwater Drinking Water Protected Area.



## Woodland & Forestry

The Site is predominantly wooded and categorised within the Ancient Woodland Inventory. Survey found woodland habitat tended to have a diverse structure with a developed canopy, shrub layer and ground flora; overly mature and mature trees, standing and fallen deadwood, and obvious signs of regeneration. Evidence of ancient management was also noted including historical coppicing, wood banks and dry-stone walls. This was most noted within the portion of woodland to the northwest of the power station. Commercial forestry plantations are present in the surrounding area and adjacent to the northern site boundary. Further assessment will be undertaken to identify required mitigation. All tree felling will be compensated by an equivalent area of new tree planting with the long term management of woodland within our land ownership managed by way of a woodland management plan.



## Land Use & Recreation

Currently the site is generally wooded and provides access to the banks of Loch Ness. There are areas clear of woodland surrounding the switching station and existing access road. Part of the site is located within the Foyers Power Station operating area which is heavily managed and restricted to public access.

A consented boat house is currently under construction adjacent to Loch Ness and in close proximity to the proposed development. Core Path 8573 (Foyers Pier to Inverfarigaig by Loch Ness-side) routes through the site. National Route 78 of the National Cycle Network runs adjacent to the site on the B852. The site is situated on the east banks of Loch Ness which given its notable history and dramatic landscape is a popular attraction and offers a number of water activities. The surrounding area is well used by walkers, cyclists and tourists. Foyers village is located approximately 1 km to the south and offers holiday accommodation and visitor services.



## Noise

The current daytime noise climate in the wider rural area is low, consisting primarily of operational noise from the existing Foyers Hydro Electric Power Station and associated Transmission substation, with distant road traffic noise and occasional water activity using Loch Ness. Construction noise is considered to be short term and intermittent and can be controlled through the implementation of a noise management plan, which would include working hours agreed with The Highland Council. Baseline noise monitoring surveys will be undertaken at noise sensitive receptors within the vicinity of the site to inform an operational noise assessment. Appropriate mitigation measures will be considered dependent on the results of the assessment.



## Traffic

The construction of the proposed development will require vehicles to deliver plant, machinery and workers to the site. Access would use the existing entrance off the B852 at the northeast corner of the site as is used currently for the existing switching station. An appropriate construction traffic management plan would be developed to ensure road safety for all other road users during the construction works for suitable management of all abnormal loads and vehicle movements.



# Engineering Considerations

One of the fundamental project constraints is replacing and relocating the generation transformer units without incurring significant electrical losses associated with the 18kV connection routed back to the Power Station. Owing to limited land availability and challenging site topography at Foyers, the options to relocate the generation transformers beyond the vicinity of Foyers Power Station would result in significant electrical losses owing to a longer 18kV connection route. As such, options to locate the replacement transformers at the 275kV Switching Station, or further away from the site, were deemed unfeasible due to the associated electrical losses at this voltage over the required length in the connection route.

The project has therefore identified a number of options with an aim to meet the asset needs detailed in the section above. The following 3 options provide alternative strategies for replacing the existing generation transformers at Foyers with modern specification units:

## Option 1

This option proposes the offline construction of a new intermediate substation compound located 150m North East of Foyers Power Station. The new substation compound will facilitate new 18/275kV generation transformers and a small control building to house the associated new transformer protection and control panels. With this option, it's feasible to install two 18kV generator circuit breakers and a relatively short section of 18 kV cable circuit. This cable circuit would be implemented to connect the existing Foyers Power Station to the new intermediate substation compound, with 275 kV cable required to connect the new intermediate compound to Foyers 275kV Switching Station.

## Option 2

This option assumes a 'like-for-like' replacement of current Generation transformer assets within the existing space at Foyers Power Station i.e. new 18/275kV replacement transformers installed within the existing transformer compound location. The existing 275kV cable circuit, which provides supply to the existing banked transformers, would be replaced with new 275kV circuits, connecting to Foyers Switching Station.

## Option 3

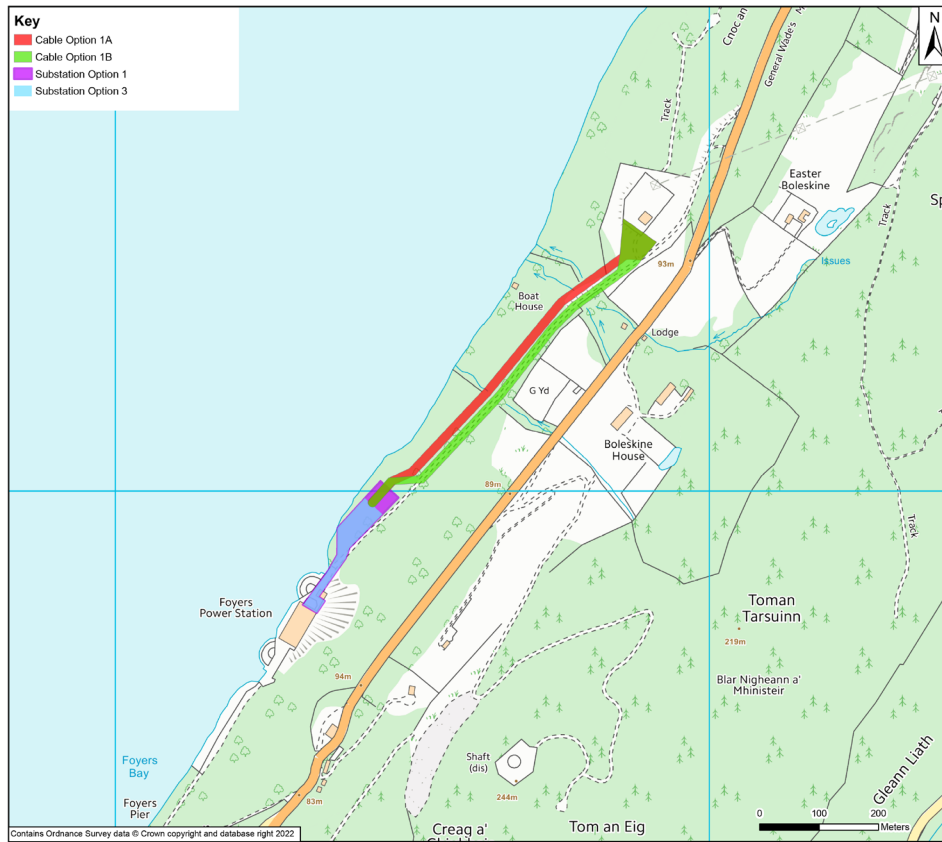
This option proposes a hybrid solution of options 1 and 2. The option would involve offline construction of a new intermediate substation compound to facilitate one new 18/275kV generation transformer, in an area 150 m North East of Foyers Power Station. The new compound would also include for a small Control building to house the associated transformer protection and control panels. Following removal of the existing transformers at the Power Station compound, a new 18/275kV generation transformer would also be installed within the existing Power Station transformer compound. A single 18kV cable circuit would be required to connect Foyers Power Station to the new intermediate substation compound. 275kV cable circuits will be required between Foyers 275 kV Switching Station and the new transformers at the intermediate compound and the existing Power Station compound. The area of intermediate platform required for a single transformer, North East of the Power Station, is approximately 75% of the size of the Option 1 substation platform facilitating new transformers.

To enable each of the above options, there will be a need to extend the existing main 275kV busbar at Foyers Switching Station to accommodate the new 275kV transformer feeder bays for the new generation transformer circuits. Modifications will be required to the existing busbar droppers, with new low-level busbars and post insulators required, to enable connection to the new generation transformer bay. To the East of the Switching Station site, a new full width compound extension will be installed to accommodate the new generation transformer bay.

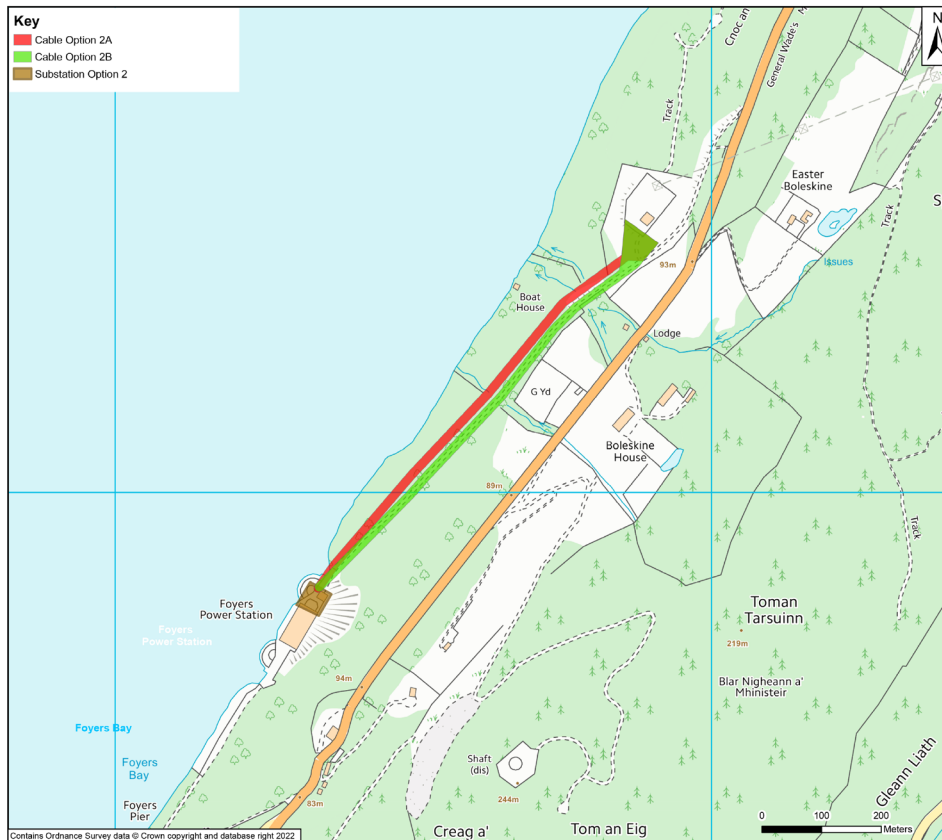
**The above 3 options have been assessed based on the following criteria:**

- Health and Safety Implications
- Construction Timescales
- Technical Feasibility
- Environmental Implications
- Economic Impact

## Substation Options 1 and 3



## Substation Option 2



# Substation options

A summary of advantages and disadvantages associated with each option are outlined below:

## Substation Option 1 - Advantages and Disadvantages

ENVIRONMENTAL	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Would require removal of habitat listed as Ancient Semi-Natural woodland and Native Woodland.</li> </ul>
<ul style="list-style-type: none"> <li>The location of Option 1 near to the existing Power Station, and on the lower banks of the Loch, means it would benefit from landform, topography and woodland cover to limit the visual influence inland to the east of the receptors.</li> </ul>	<ul style="list-style-type: none"> <li>Option 1 has the potential to directly and indirectly impact protected species due to the presence of habitat suitable to support a range of species such as bats, pine marten and badgers.</li> </ul>
<ul style="list-style-type: none"> <li>Visual receptors on the western shores of the Loch Ness would have distant glances of the option where landform and intervening vegetation allow, limiting the visual influence of the site option.</li> </ul>	<ul style="list-style-type: none"> <li>Potential for indirect impacts on the Scheduled Monument of Dun Scriben, Fort (SM6220) from distant views to the south east - although these are unlikely to be significant.</li> </ul>
<ul style="list-style-type: none"> <li>Visual receptors on the western shores of the Loch Ness would have distant glances of the option where landform and intervening vegetation allow, limiting the visual influence of the site option.</li> </ul>	<ul style="list-style-type: none"> <li>Removal of woodland and considerable earthworks would affect the special qualities of the Loch Ness and Duntechaig Special Landscape Area (SLA), and the key characteristics of the Broad Steep-Sided Glen Landscape Character Type (LCT 225).</li> </ul>
	<ul style="list-style-type: none"> <li>Option 1 would extend the visible presence of energy infrastructure within the SLA.</li> </ul>

ENGINEERING	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>The new intermediate substation compound allows for current standards to be achieved as well appropriate business separation between SSE Transmission and Generation.</li> </ul>	<ul style="list-style-type: none"> <li>A significant volume of imported material and retaining wall structures are required to establish an earthworks platform at the intermediate area North East of the Power Station.</li> </ul>
<ul style="list-style-type: none"> <li>The option enables clearer definition of the ownership boundaries between SSE Generation and Transmission and it reduces the use of shared facilities with SSE Generation.</li> </ul>	<ul style="list-style-type: none"> <li>The intermediate substation platform may have a larger impact to the local landscape.</li> </ul>
<ul style="list-style-type: none"> <li>The option presents an opportunity to address the risks presented by the existing 275kV oil filled cable in a sensitive location as well as the single circuit risk to the connection of this key operational site.</li> </ul>	<ul style="list-style-type: none"> <li>Access to the site is via the B852 which is narrow and winding. A large volume of construction traffic is expected to be generated by this option, thus local authority and environmental approvals will need to be sought early on in the project.</li> </ul>
<ul style="list-style-type: none"> <li>Design allows for operational and maintenance access within proposed intermediate substation (which is currently limited within the existing Power Station compound due to spatial constraints).</li> </ul>	<ul style="list-style-type: none"> <li>The installation of new 18kV generation circuit breakers will be the first of its type on the network.</li> </ul>
<ul style="list-style-type: none"> <li>The design does not require an extension of the existing Power Station transformer compound boundary and there is no impact to the SSE Generation back-up diesel generator building and fuel store.</li> </ul>	

## Substation Option 2 - Advantages and Disadvantages

ENVIRONMENTAL	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the in-situ nature of the Option, there is likely to be some impact to distinct habitats and protected species, although considerably less than Option 1 and 3.</li> </ul>
<ul style="list-style-type: none"> <li>There are likely to be negligible impacts on the special qualities of the SLA.</li> </ul>	<ul style="list-style-type: none"> <li>Core Path Foyers Pier to Inverfarigaig, and the Caledonia Way are likely to be affected by Option 2.</li> </ul>
<ul style="list-style-type: none"> <li>The key characteristics of LCT 225 are unlikely to be affected.</li> </ul>	

ENGINEERING	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>In-situ replacement avoids the need to undertake significant earthworks and construct a separate compound (as detailed in Option 1), reducing the visual landscape impact.</li> </ul>	<ul style="list-style-type: none"> <li>The option does not comply with modern standards and does not address the overlapping of fire damage zones between the 2x transformer units due to spatial constraints within the existing power station compound.</li> </ul>
<ul style="list-style-type: none"> <li>Environmental constraints associated with the intermediate compound are removed with this option.</li> </ul>	<ul style="list-style-type: none"> <li>This option does not address the SSE Transmission and Generation business separation requirements. Reliance on shared facilities with SSE Generation would remain unchanged.</li> </ul>
	<ul style="list-style-type: none"> <li>Design does not allow for sufficient operational and maintenance access within the proposed substation layout at the Power Station. This would also constrain access for SSE Generation to maintain the Station Transformer.</li> </ul>
	<ul style="list-style-type: none"> <li>Design will require removal of the SSE Generation back-up diesel generator building and fuel store. This will require advance diversionary works by SSE Generation with a new location for the diesel generator to be identified on site.</li> </ul>
	<ul style="list-style-type: none"> <li>Full site shutdown for an extended period will be required to undertake the works. The Power Station availability will be extremely compromised with this solution. diesel generator to be identified on site.</li> </ul>

## Substation Option 3 - Advantages and Disadvantages

ENVIRONMENTAL	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Option 3 would require removal of habitat listed as Ancient Semi-Natural woodland and Native Woodland, although less than Option 1.</li> </ul>
<ul style="list-style-type: none"> <li>The location of Option 3 near to the existing Power Station, and on the lower banks of the Loch, means it would benefit from landform, topography and woodland cover to limit the visual influence inland to</li> </ul>	<ul style="list-style-type: none"> <li>Option 3 has the potential to directly and indirectly impact protected species due to the presence of habitat suitable to support a range of species such as bats, pine marten and badgers.</li> </ul>
<ul style="list-style-type: none"> <li>Visual receptors on the western shores of the Loch Ness would have distant glances of the option where landform and intervening vegetation allow, limiting the visual influence of the site option.</li> </ul>	<ul style="list-style-type: none"> <li>Potential for indirect impacts on the Scheduled Monument of Dun Scriben, Fort (SM6220) from distant views to the south east—although these are unlikely to be significant.</li> </ul>
	<ul style="list-style-type: none"> <li>Removal of woodland and considerable earthworks would affect the special qualities of the Loch Ness and Duntechaig Special Landscape Area (SLA), and the key characteristics of the Broad Steep-Sided Glen Landscape Character Type (LCT 225).</li> </ul>
	<ul style="list-style-type: none"> <li>Removal of woodland and considerable earthworks would affect the special qualities of the Loch Ness and Duntechaig Special Landscape Area (SLA), and the key characteristics of the Broad Steep-Sided Glen Landscape Character Type (LCT 225).</li> </ul>
	<ul style="list-style-type: none"> <li>Core Path Foyers Pier to Inverfarigaig, and the Caledonia Way are likely to be affected by Option 3.</li> </ul>

ENGINEERING	
ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>The option addresses the spatial constraints within the existing Power Station compound (associated detailed within option 2), allowing current standards to be achieved. However, impact between fire damage zone from new GT2 and GT1 assets still applies.</li> </ul>	<ul style="list-style-type: none"> <li>The option does not comply with modern standards and does not address the overlapping of fire damage zones between the 2x transformer units due to spatial constraints within the existing power station compound.</li> </ul>
<ul style="list-style-type: none"> <li>The option would result in a smaller intermediate substation compound and platform in comparison to Option 1 (however civil and environmental challenges associated with the new platform still apply).</li> </ul>	<ul style="list-style-type: none"> <li>This option does not address the SSE Transmission and Generation business separation requirements. Reliance on shared facilities with SSE Generation would remain unchanged.</li> </ul>
	<ul style="list-style-type: none"> <li>Design does not allow for sufficient operational and maintenance access within the proposed substation layout at the Power Station. This would also constrain access for SSE Generation to maintain the Station Transformer.</li> </ul>
	<ul style="list-style-type: none"> <li>Design will require removal of the SSE Generation back-up diesel generator building and fuel store. This will require advance diversionary works by SSE Generation with a new location for the diesel generator to be identified on site.</li> </ul>
	<ul style="list-style-type: none"> <li>Full site shutdown for an extended period will be required to undertake the works. The Power Station availability will be extremely compromised with this solution. diesel generator to be identified on site.</li> </ul>

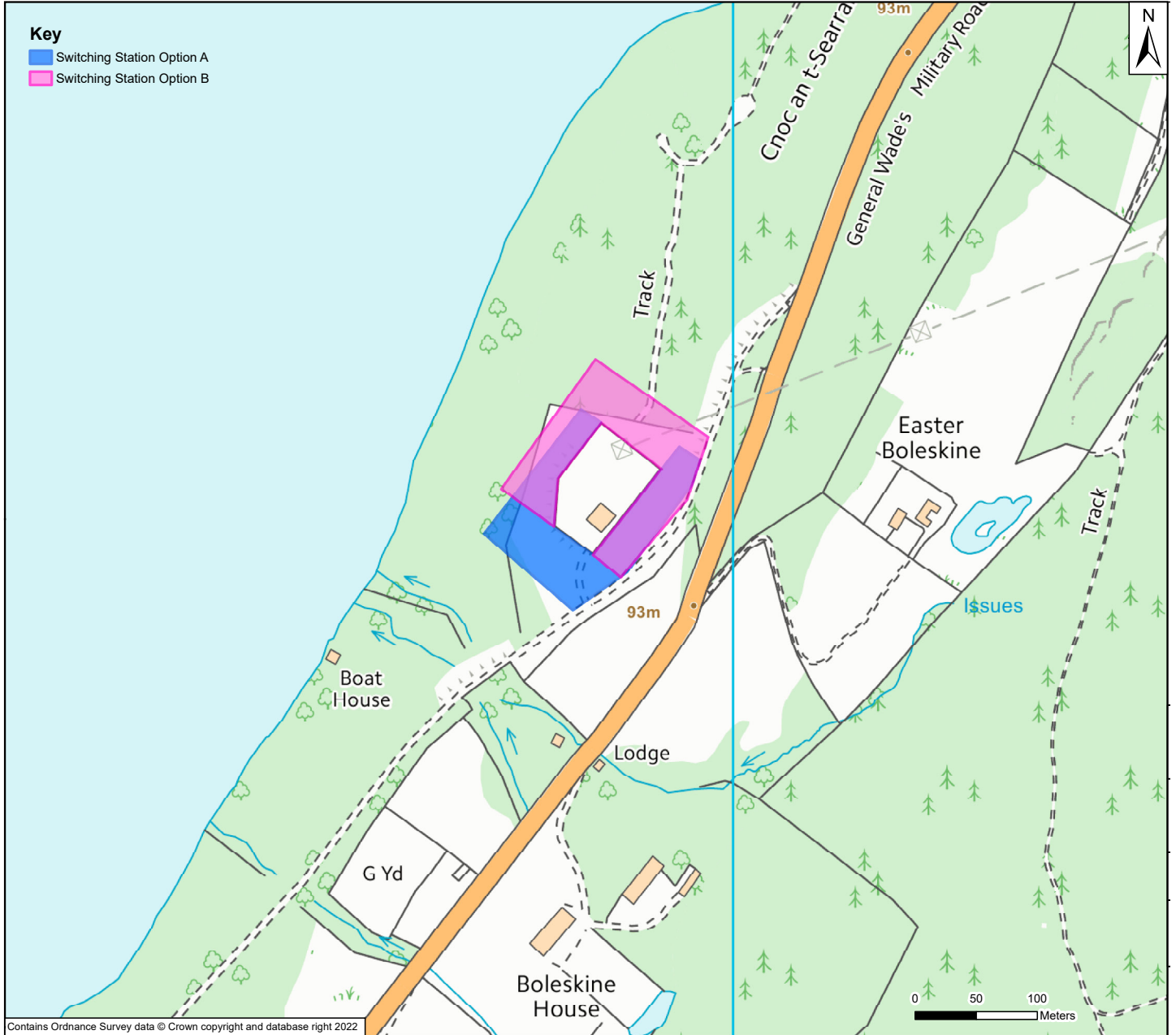
## Underground Cable 'A' Options

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Option 1A and 2A would require removal of habitat listed as ancient semi-natural woodland and Native Woodland, causing direct impact on the integrity of these designations.</li> </ul>
<ul style="list-style-type: none"> <li>There are unlikely to be impacts on designated and undesignated heritage assets. Due to the steep topography and previous disturbance from existing tracks, subsurface archaeology is unlikely to be impacted.</li> </ul>	<ul style="list-style-type: none"> <li>Option 1A and 2A have the potential to impact protected species such as Badger, Pine Marten, Bats, Red Squirrel due to the presence of habitat to support a range of species within the footprint, or within close proximity to each option.</li> </ul>
	<ul style="list-style-type: none"> <li>Options 1A and 2A are within distinct habitats, containing a combination of Highland BAP priority habitats, SBL habitats and Annex 1 habitats.</li> </ul>
	<ul style="list-style-type: none"> <li>Option 1A and 2A run alongside the road, entirely within woodland, which would require a large strip of woodland removal on the steep wooded slopes of the Loch, as well as potential earthworks, which would affect the special qualities of the Loch Ness and Duntechaig SLA and the key characteristics of Landscape Character Type at the site.</li> </ul>
	<ul style="list-style-type: none"> <li>Although located underground, both options would be visually intrusive for a limited stretch for the users of Core path 8573 - Foyers Pier to Inverfarigaig by Loch Ness-side.</li> </ul>

## Underground Cable 'B' Options

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>
<ul style="list-style-type: none"> <li>There are unlikely to be impacts on designated and undesignated heritage assets. Due to the steep topography and previous disturbance from existing tracks, subsurface archaeology is unlikely to be impacted.</li> </ul>	<ul style="list-style-type: none"> <li>There are unlikely to be impacts on designated and undesignated heritage assets. Due to the steep topography and previous disturbance from existing tracks, subsurface archaeology is unlikely to be impacted.</li> </ul>
<ul style="list-style-type: none"> <li>Due to their proposed position underneath the existing tarmac road, retained woodland along the 'B' options would provide screening from potential visual receptors and means there is less likely to be compromise to the special qualities of the SLA, and the key characteristics of LCT 225.</li> </ul>	<ul style="list-style-type: none"> <li>Options 1B and 2B would require removal of habitat listed as ancient semi-natural woodland and Native Woodland, causing direct impact on the integrity of these designations. However, the impact would be less in comparison to the 'A' options</li> </ul>
	<ul style="list-style-type: none"> <li>Options 1B and 2B have the potential to impact protected species such as Badger, Pine Marten, Bats, Red Squirrel due to the presence of habitat to support a range of species within the footprint, or within close proximity to each option.</li> </ul>

# Switching station options



## Switching Station Option A (extension to south and east)

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Option A would require removal of habitat listed as ancient semi-natural woodland and NWSS woodland and would have a direct impact on the integrity of these designations.</li> </ul>
<ul style="list-style-type: none"> <li>Option A would be perceived in the context of the existing transmission infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Option A contains distinctive habitats including a Highland BAP priority habitat, SBL priority habitat and Annex I habitat, and has the potential to impact protected species such as Bats, Badgers, Pine Marten and Red Squirrel.</li> </ul>
<ul style="list-style-type: none"> <li>For residential and recreational receptors on the western shore of Loch Ness, landform, distance and intervening vegetation would limit the visual influence of the option.</li> </ul>	<ul style="list-style-type: none"> <li>Potential for indirect impacts on the Scheduled Monument of Dun Scriben, Fort (SM622) with the introduction and expansion of infrastructure in views to the south east - although these are likely to be significant in nature.</li> </ul>
<ul style="list-style-type: none"> <li>There is no commercial forestry within this option.</li> </ul>	<ul style="list-style-type: none"> <li>There is potential for indirect impacts on a number of Listed Buildings with the introduction and expansion of infrastructure in views to the north east.</li> </ul>
	<ul style="list-style-type: none"> <li>There is the potential for indirect impacts on the Scheduled Monument of Dun Scriben, fort (SM6220) with the introduction and expansion of infrastructure in distant views to the south east. It is unlikely that these impacts would be significant in nature due to the distances involved.</li> </ul>
	<ul style="list-style-type: none"> <li>Users of Core Path 8573 - Foyers Pier to Inverfarigaig by Loch Ness-side would have a direct view of both options for a limited stretch, and users of Core Path 14518 - Foyers to Inverfarigaig could have potential views of the options through intervening vegetation and topography. People traveling along the B852 and cycling along The Caledonia Way would have direct views of both Options for a limited stretch. Visitors to Clan Fraser Cemetery and Boleskine House could potentially have views of the Options through screening vegetation.</li> </ul>

## Switching Station Option B (extension to north)

ADVANTAGES	DISADVANTAGES
<ul style="list-style-type: none"> <li>Unlikely to Affect the Ness Woods SAC qualifying interest, or the integrity of the Inverfarigaig SSSI.</li> </ul>	<ul style="list-style-type: none"> <li>Option B would require removal of habitat listed as ancient semi-natural woodland and NWSS woodland and would have a direct impact on the integrity of these designations.</li> </ul>
<ul style="list-style-type: none"> <li>Option B would be perceived in the context of the existing transmission infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>Option B contains distinctive habitats including a Highland BAP priority habitat, SBL priority habitat and Annex I habitat, and has the potential to impact protected species such as Bats, Badgers, Pine Marten and Red Squirrel. However Option B would have slightly lesser impact on Annex I habitat.</li> </ul>
<ul style="list-style-type: none"> <li>Option B is located on higher grounds and on a wider area of the embankment where earthworks are likely to be slightly less intrusive than those to the south west of the switching station.</li> </ul>	<ul style="list-style-type: none"> <li>Potential for indirect impacts on the Scheduled Monument of Dun Scriben, Fort (SM622) with the introduction and expansion of infrastructure in views to the south east - although these are likely to be significant in nature.</li> </ul>
<ul style="list-style-type: none"> <li>There is no commercial forestry within this option.</li> </ul>	<ul style="list-style-type: none"> <li>There is potential for indirect impacts on a number of Listed Buildings with the introduction and expansion of infrastructure in views to the north east.</li> </ul>
	<ul style="list-style-type: none"> <li>There is the potential for indirect impacts on the Scheduled Monument of Dun Scriben, fort (SM6220) with the introduction and expansion of infrastructure in distant views to the south east. It is unlikely that these impacts would be significant in nature due to the distances involved.</li> </ul>
	<ul style="list-style-type: none"> <li>Option B contains areas of commercial forestry to the north of the Switching Station.</li> </ul>



# Substation site selection

## Overview of the substation site selection process

**SSEN Transmission has developed and implemented a formal process for the selection of sites for new substations of 132kV and above. The main aim of the process is to provide a consistent approach to the selection of new substation sites and is underpinned by our statutory obligations to:**

‘Develop and maintain an efficient, coordinated and economical electricity transmission system in its licenced area’ and in so doing, 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 any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites buildings or objects’.

Our site selection process ensures the design, consenting, construction and operation of a substation is done in a manner that is technically feasible and financially viable whilst causing, on balance, the least disturbance during construction and operation to the environment and the people who live, work and use it for recreation.

### Key Stages

For most new substation projects, following pre-site selection activities, the approach follows two principal stages, each iterative and increasing in detail and resolution, bringing cost, technical and environmental considerations together in a way which seeks the best balance at both stages. This staged process leads to the identification of a proposed substation site, which will be taken forward for planning.

**The key site selection stages are:**

#### Pre-Site Selection Activities

The starting point in all substation site selection projects is to establish the need for the project and to select the preferred engineering option to deliver it. This process will be triggered by the preparation of several internal assessments and documents.

#### Stage 1: Initial Site Screening

This stage seeks to identify technically feasible, economically viable and environmentally acceptable site options within a defined area. The search area may vary depending on terrain, other infrastructure, designated areas and features and connection options. The aim is to identify several potential sites which can be initially assessed for suitability.

#### Stage 2: Detailed Site Selection

This stage seeks to identify a preferred substation site, which avoids where possible physical, environmental and amenity constraints, is likely to be acceptable to stakeholders, and is economically viable, taking into account engineering and connection requirements. This stage will be reported in a Substation Site Selection Report. Following public and stakeholder consultation, the Report will be updated to include any feedback and modifications made and confirm the proposed substation site to take forward for planning.

## What happens next: the Planning Application Process

**The outcome of the substation site selection process will be a development for which consent under the Town & Country Planning regime will be sought. The application will identify:**

- The site boundary clearly shown in red (the Planning Red Line Boundary) including any access route (up to the public road including junction improvements).
- The proposed development in relation to the site boundary with dimensions of all permanent structures, buildings, perimeter fencing, and any key drainage features (SuDS pond) and key electrical features, such as transformers.

In some cases, the application will be subject to Environmental Impact Assessment (EIA) under the Town & Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2017. This may result in further alterations to the Proposed Development to reflect outcomes of the EIA consultation process. Should the Proposed Development be deemed non-EIA (due to its scale or number and significance of potential environmental effects), a voluntary Environmental Appraisal is carried out to support the application.

Further public and stakeholder consultation will be undertaken to present our proposals ahead of submitting a planning application.

Where overhead line elements are required, a similar application is made to the Scottish Ministers under Section 37 of the Electricity Act 1989. This will specifically cover the overhead line, not the main substation works.

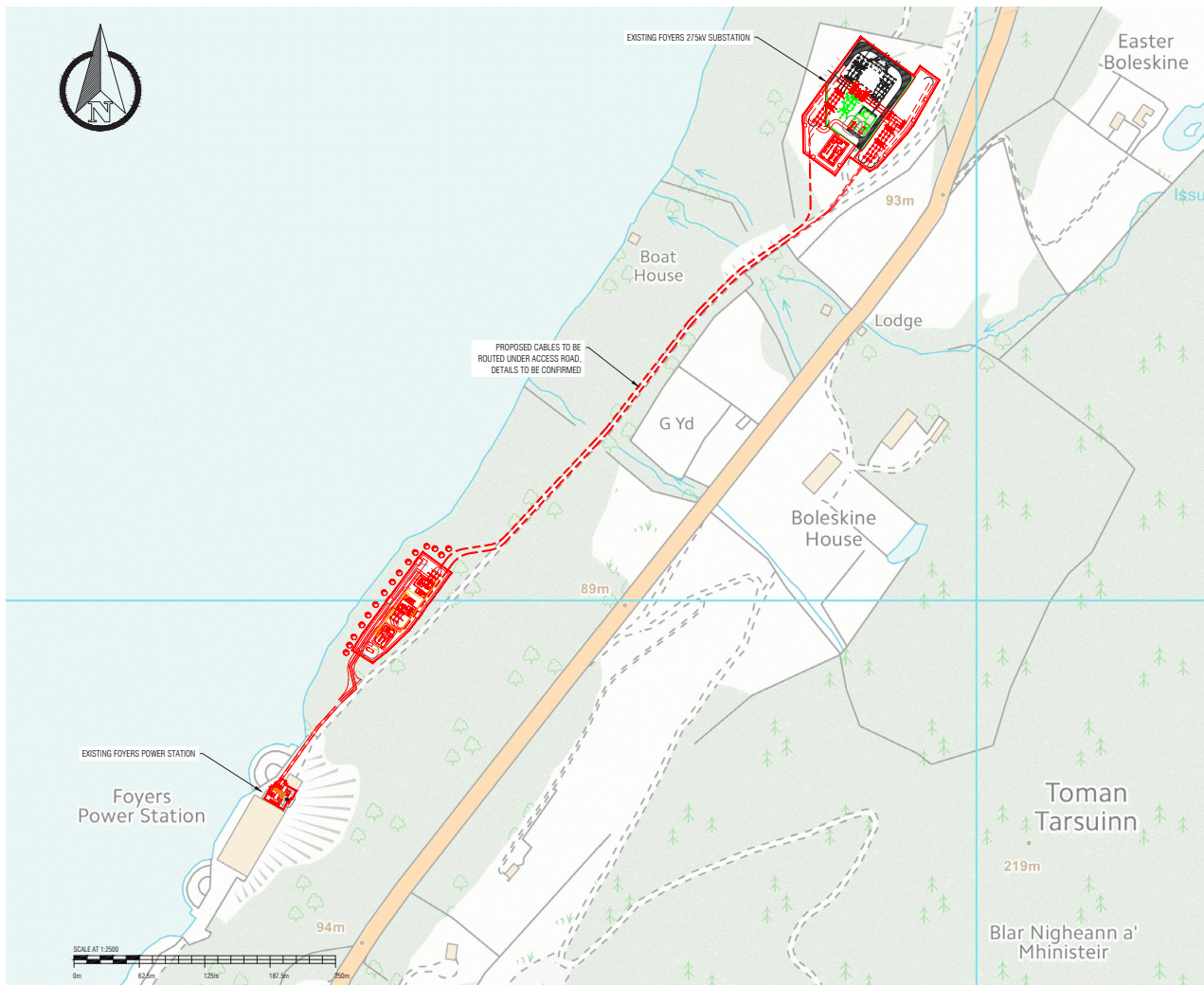
# Preferred options

Option 1 is our preferred option. There are fundamental issues with Option 2 including the inability to comply with modern standards. In addition, the works to overhaul the existing Power Station transformer compound, for Options 2 and 3, requires extensive diversion works on the existing below ground services and infrastructure. The period of time required for a Power Station outage is likely to be extensive and there would of-course be no generation output from Foyers during this period. As a result, there would be an increased risk to the network given this stations importance in network security and resilience.

Options 2 and 3 offer a reduced impact to the local landscape and visualisation. However, owing to the technical constraints associated with these options, the adverse impact to the wider SSE business and the significant safety issues expected during operation, Option 2 and 3 are deemed unviable.

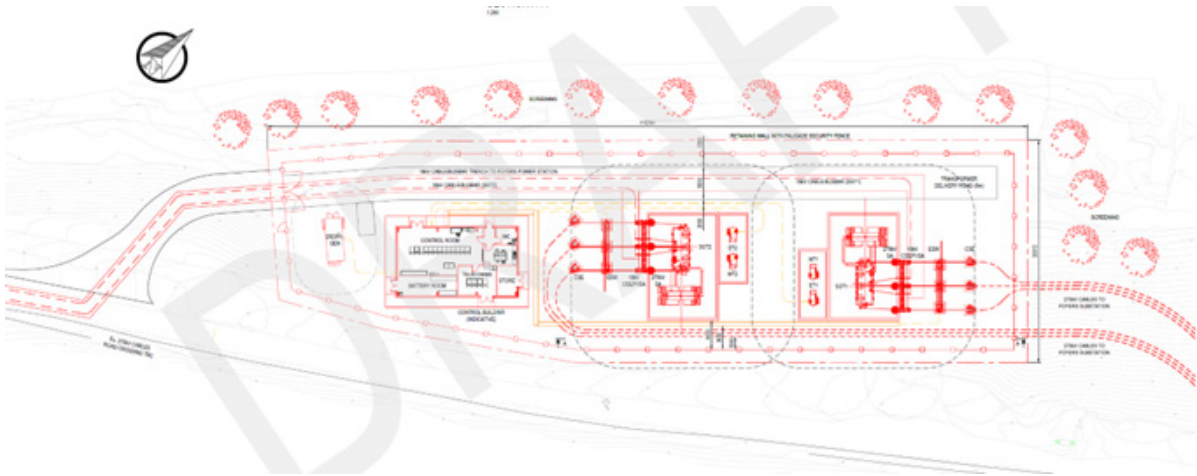
Option 1 to undertake offline construction of a new intermediate substation compound is the most suitable option to enable replacement of the existing generation transformers with modern specification 18/275kV transformers units.

## Option 1 - Extent of Development at Foyers:

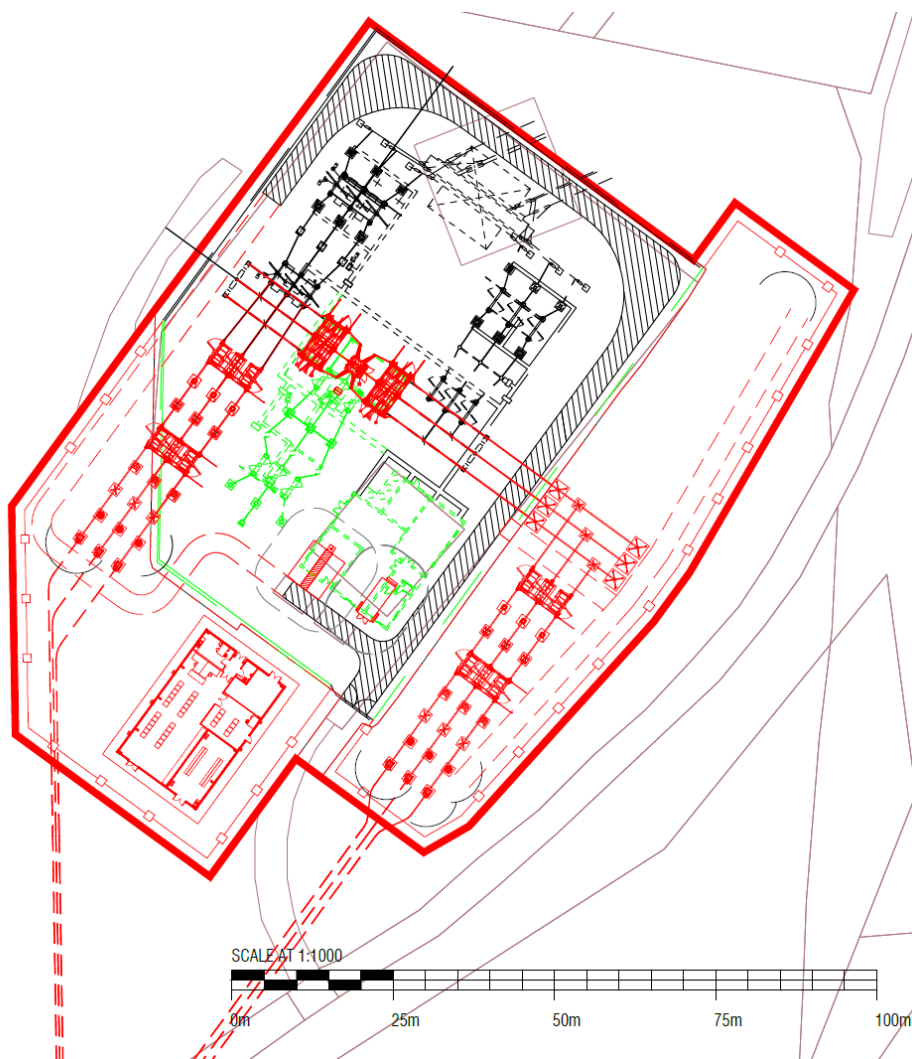


(Note, the underground cable circuit shown is only indicative and not final. The optimal cable route shall be designed to be installed within the existing access road/verge between the Power Station and Switching Station.)

## Option 1 - Intermediate Substation Compound



## Option 1 - Extension of Foyers 275kV Switching Station:



Existing Switching Station extended to accommodate the 2x new 275kV circuit bays.

# What happens next

The outcome of the substation site selection process will be a development for which consent under the Town & Country Planning regime will be sought. The application will identify:

- The site boundary clearly shown in red (the Planning Red Line Boundary) including any access route (up to the public road including junction improvements).
- The proposed development in relation to the site boundary with dimensions of all permanent structures, buildings, perimeter fencing, and any key drainage features (SuDS pond) and key electrical features, such as transformers.

Further public and stakeholder consultation will be undertaken to present our proposals ahead of submitting a planning application. Dates of which will be published on the project web page and postcards invitations will be sent to properties within a 10km radius of the project site. You can sign up for project updates via the project web page.

## Project timeline



**Spring 2023**  
Second public consultation



**June 2023**  
Planning application



**March 2024**  
Anticipated consent granted



**June 2024**  
Construction starts



**December 2025**  
Project completion



# Biodiversity net gain

**We recognise that we have significant interaction with the environment through the activities we undertake in Scotland as we seek to develop and improve the transmission network. With this work comes a legal responsibility to design and build our projects in a manner which protects the natural and built environment.**

We are committed to protecting and enhancing the environment by minimising the potential impacts from our construction and operational activities on biodiversity. To this end, we have committed to no net loss of biodiversity in non irreplaceable habitats for all of our projects gaining consent from 2020 onwards, and net gain of biodiversity on all projects gaining consent from 2025. This means that during the development, construction and operation of our projects, we will leave the environment no worse than when we found it, and where possible make it even better, leaving a positive environmental legacy at all of our SSEN Transmission sites.

As this project progresses through the development process, we will actively seek ways to avoid and minimise impacts on biodiversity, through careful routing design to avoid areas of highest biodiversity value, to implementing habitat restoration and improvement measures in areas within and surrounding the proposed development. Some examples of biodiversity improvements that have been implemented on other recent projects include:



## Creag Rhiabach bird boxes:

Installation of wooden bird boxes made from reused and recycled construction materials to support local raptor populations at key locations across the highlands, including kestrels, tawny owl and barn owl.

## Argyll Coast and Countryside Trust (ACT) Woodland Planting Collaboration:

Argyll's rainforest is a unique and rare habitat of ancient and native woodland. This collaboration with ACT will help deliver SSEN Transmission's compensatory tree planting commitments in Argyll while helping towards ACT's woodland planting ambitions, supporting its charitable objectives including biodiversity gain, health and wellbeing improvement for local people, outdoor learning opportunities and climate change workshops.



## Thurso South Substation:

Creation of approximately 10 hectares of pollinator habitat to support the rare endemic great yellow bumblebee and contribute to wider conservation efforts for this species.



**Please let us know if you have ideas for biodiversity improvement projects in your local area that SSEN Transmission could get involved with.**

# What happens now and how do I have my say?

**We understand and recognise the value of the feedback provided by members of the public during all engagements and consultations. Without this valuable feedback, the project development team would be unable to progress projects and reach a balanced proposal.**

We are keen to receive your views and comments in regards to the following questions:

- Have we adequately explained the need for this project?
- Do you feel sufficient information has been provided to enable you to understand what is being proposed and why?
- Are you satisfied that our approach taken to select our preferred site has been adequately explained?
- Do you agree with our preferred site, if not, why?
- Are there any factors, or environmental features, that you consider may have been overlooked during the preferred site selection process?
- Do you have any particular concerns or queries on the proposed project?
- Do you have any other comments (positive or negative) or concerns in relation to the need for the project, the transmission infrastructure requirements or about the preferred site.

## Comments

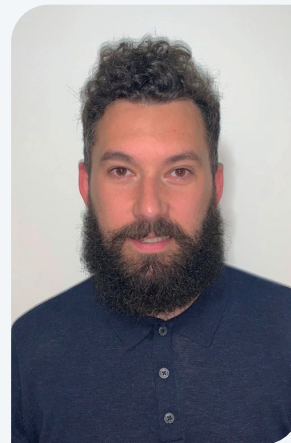
Your views and comments can be provided to the project team by completing the feedback form or by writing to our Community Liaison Manager. All feedback received will be assessed and the proposed options adapted where necessary.

**Follow us on Twitter:**  
@ssetransmission

## Feedback


We will be seeking feedback from members of the public on this exhibition and the virtual exhibition until **18th November 2022**.

Feedback is welcomed throughout the development of the project. To provide comments on the proposal or to gain further information on the project, visit our virtual event or contact our Community Liaison Manager.



**Ryan Davidson**  
Community Liaison Manager

 ryan.davidson@sse.com

 01463 728 072  
07901 133 919

 **Ryan Davidson**  
Scottish Hydro  
Electric Transmission,  
1 Waterloo St,  
Glasgow, G2 6AY

## Additional information

Information will also be made available via the project webpage and social media channels:

**Project website:**  
[www.ssen-transmission.co.uk/projects/foyers-substation-extension/](http://www.ssen-transmission.co.uk/projects/foyers-substation-extension/)

**Follow us on Facebook:**  
@ssencommunity

# Your feedback

Thank you for taking the time to read this consultation booklet. In order to record your views and improve the effectiveness of our consultation, please complete this short feedback form.

Please complete in **BLOCK CAPITALS**. (Please tick one box per question only)

**Q1** Have we adequately explained the need for this project?

Yes  No  Unsure

**Comments:**

**Q2** Do you feel sufficient information has been provided to enable you to understand what is being proposed and why?

Yes  No  Unsure

**Comments:**

**Q3** Are you satisfied that our approach taken to select our preferred site has been adequately explained?

Yes  No  Unsure

**Comments:**

**Q4** Do you agree with our preferred site, if not, why?

Yes  No  Unsure

**Comments:**

**Q5** Are there any factors, or environmental features, that you consider may have been overlooked during the preferred site selection process?

Yes  No  Unsure

**Comments:**

**Q6 Do you have any particular concerns or queries on the proposed project?**

Yes  No  Unsure

Comments:

**Q7 Do you have any other comments (positive or negative) or concerns in relation to the need for the project, the transmission infrastructure requirements or about the preferred site.**

Comments:

Full name

Address

Telephone

Email

If you would like to be kept informed of progress on the project please tick this box.

If you would like your comments to remain anonymous please tick this box.

Thank you for taking the time to complete this feedback form.

Please submit your completed form by one of the methods below:

**Post:** Scottish Hydro Electric Transmission, 1 Waterloo St, Glasgow, G2 6AY

**Email:** ryan.davidson@sse.com

**Online:** [www.ssen-transmission.co.uk/projects/beaully-blackhilllock-new-deer-peterhead-400kv](http://www.ssen-transmission.co.uk/projects/beaully-blackhilllock-new-deer-peterhead-400kv)

**Download:** Comments forms and all the information from today's event will also be available to download from the project website.

The feedback form and all information provided in this booklet can also be downloaded from the project websites.

Any information given on the feedback form can be used and published anonymously as part of Scottish and Southern Electricity Networks consultation report. By completing this feedback form you consent to Scottish and Southern Electricity Networks using feedback for this purpose.

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