



Project overview

Project Requirement

A number of significant generation projects in the North East and East Coast of Scotland connecting to the transmission network has triggered the need for an upgrade to the East Coast transmission network. This upgrade includes a new 275kV substation near Alyth.

The East Coast transmission network will be upgraded in two stages.

Stage 1: Upgrade of the existing 275kV network for October 2023

Stage 2: Upgrade of the existing 275kV network to 400kV operation for October 2026.

Stage 1 will allow for early delivery of increased capacity on the network, relieving some congestion on the network and allowing generation to connect.

Stage 2 will deliver the full capacity increase required to facilitate the new generation connections. Without these necessary reinforcements, the network cannot facilitate all generation connections.

The Alyth substation is an integral part of both of these reinforcements. The substation will operate at 275kV between 2023 and 2026.

The substation will be built so that minimal upgrades are required to bring it up to 400kV operation for 2026 (Stage 2).

These upgrades will be undertaken in 2025/26 and will include the installation of two 400/275kV transformers.

The Alyth substation is proposed to be built at the point where the existing 275kV overhead line (OHL) network converges on an existing OHL T-Junction near Alyth. The current OHL arrangement leads to an unequal sharing of power flows on OHLs between the Fetteresso, Tealing and Kincardine substations, which limits the capacity of the OHLs and the ability of the network to accept new generation connections.

Establishing a substation at the T-Junction and connecting the OHLs into the substation addresses this issue.

The substation will also include reactive compensation equipment to stabilise voltage on the network.

Along with the new OHL configuration, this will help to balance power flow and increase capacity on the OHLs. This will allow new generation to connect while keeping the network fully operable and compliant with all necessary technical standards.

Planning Application

The proposal for a new substation at Alyth was first granted planning permission (under the Town and Country Planning (Scotland) Act 1974) on the 19th December 2012. An application for Public Road Infrastructure works was approved on the 23rd December 2014. A follow-up planning application to extend the timescale of the original consent was approved in February 2015. A third planning application for the substation was submitted in order to amend the landscaping plan of the original consent, it was approved on the 20th June 2018.

SHE Transmission's project team have assessed the design proposals of the most recent consent for the site and have determined that the previous air insulated switchgear (AIS) design is no longer suitable, and thus are now seeking to progress with a gas insulated switchgear (GIS) solution.

Although the overall footprint of the development platform is comparable to that which has been consented, given that the proposals are now for the infrastructure to be housed within buildings, this constitutes a material change to the extant planning consent and as such a new planning application is required to be submitted for consideration. The planning application will be submitted no earlier than the 2nd September 2019 – that being 12 weeks after the submission of the Proposal of Application Notice.

In addition, there are changes proposed to the overhead lines (OHL) and towers. These changes will be dealt with via a Section 37 application which will be submitted to the Scottish Government's Energy Consents Unit. The main change being that the new OHL tie-ins will now avoid the removal of trees along the western edge of the substation site.

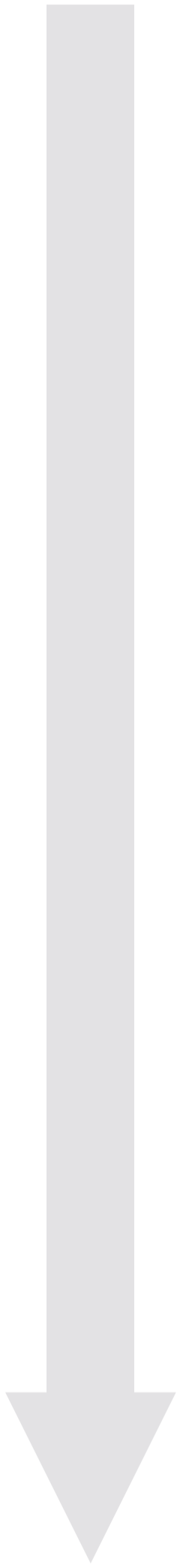
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Project Timeline



Autumn 2019

Revised Planning
Permission Submitted

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Spring 2020

Revised Planning
Application Approved
(anticipated)

.....

Spring 2021

Public Road Improvements
Commence

.....

Autumn 2021

Main Substation
Construction Commences

.....

Autumn 2021

Construction of New Towers

.....

Autumn 2023

OHL Tie-In and
Substation Completion



Our proposed solution

The site was preferred as it is close to the junction tower where the existing 275kV overhead line (OHL) between Fetteresso, Tealing and Kincardine is located.

Proximity to the existing junction tower has the benefit of reducing OHL diversions therefore is beneficial from a technical and cost perspective. The site benefits from an existing tree line which provides natural screening to the north west of the site.

The following additional factors were considered during the site selection appraisal; ecology, topography, flood risk, ground conditions, access constraints, security and connectivity to services.

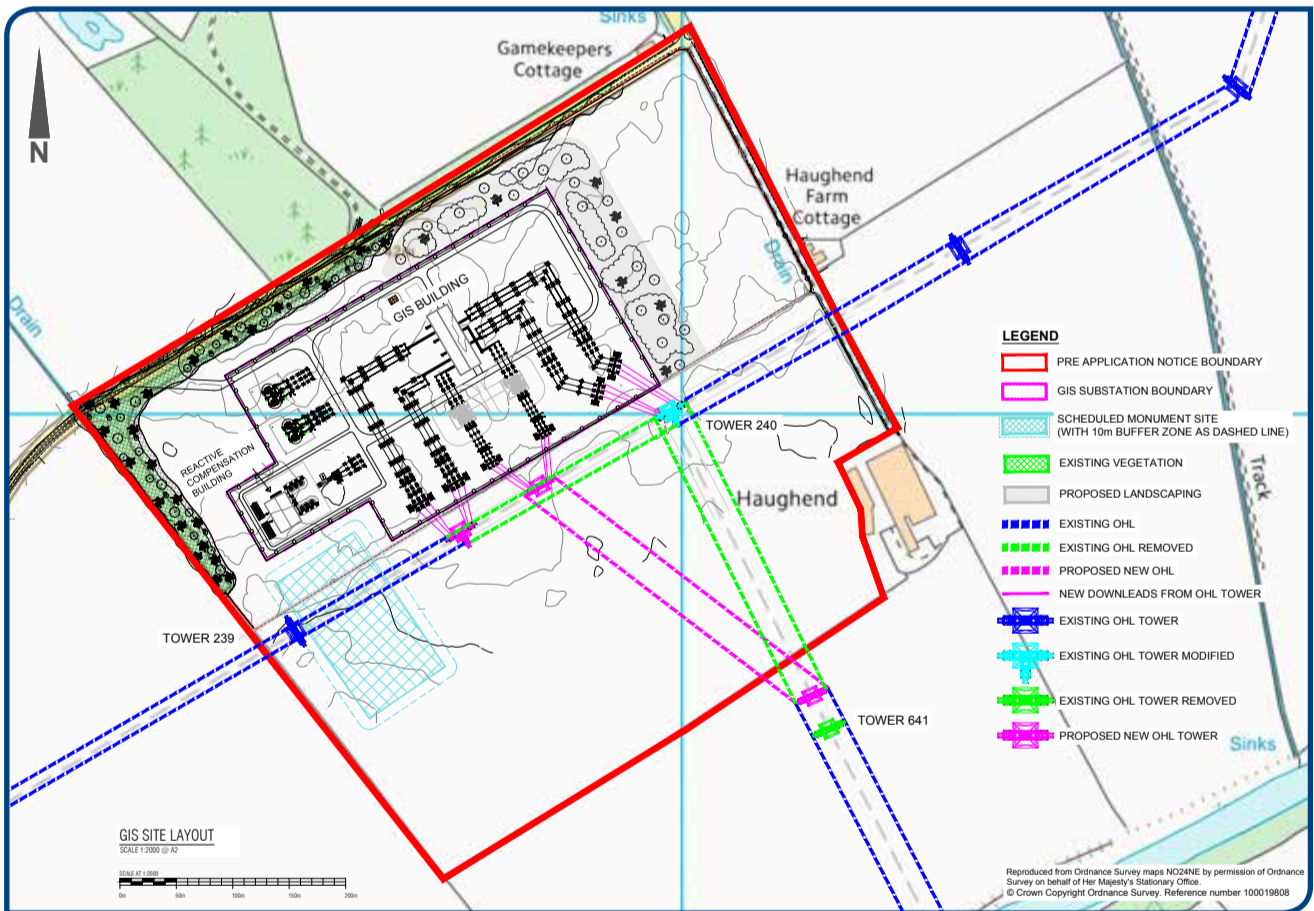
Substation

The substation will connect into the existing overhead line (OHL) circuits from Fetteresso, Kincardine and Tealing. The substation will consist of both Gas Insulated Switchgear (GIS) and Air Insulated Switchgear (AIS). The GIS equipment will be housed in a building. This equipment will operate at 275kV but will be built to a 400kV standard.

Reactive compensation equipment (equipment to help stabilise network voltage) will be installed. Some of this equipment will also be housed in a building. The use of GIS has allowed us to include the new reactive compensation equipment without increasing the footprint of the substation.

Overhead line tie in

The 275kV overhead line tie ins are all existing circuits, which together form an important part of the SSEN transmission network. Due to their importance and the nature of the electricity network, these circuits must be kept live throughout delivery of this project. To facilitate this, two temporary bypass designs have been developed. This will require temporary towers to be erected in close proximity to the existing lines. The final substation design will have 3 new towers to facilitate the connection and 1 existing tower will be removed.





Project details

Screening

Appropriate screening and bunding for this site to lessen the visual impact of our proposal will be implemented. At this early stage the screening measures would involve the use of the existing tree line and planting a variety of trees around designated areas of the footprint of the site to mitigate the visual impact.

SSEN have committed to delivering Biodiversity Net Gain for all Projects by 2025 as one of our main sustainability goals. The planting and screening will be designed to take this into account. Utilising native species to screen and enhance the site.



Existing tree line acting as natural screening.



Shows Wildflower Meadow one year after seeding at recently constructed Spittal Substation in Caithness.

Transport, Infrastructure and Construction Methods

Transport Infrastructure and Construction Methods

Construction of the substation will require plant and machinery, along with vehicles to transport materials and workers to the site. The largest plant item for the substation will be a Super Grid Transformer.

The transformer is likely to weigh in excess of 170 tonnes when transported. Vehicle access during construction would be via the B954 and Haughend Road adjacent to the site.

It is proposed to widen Haughend Road between the substation site and the B954. This will include the permanent removal of the disused railway bridge on Haughend Road. These improvements will be captured under a separate planning application. A new permanent access to the substation will be formed off Haughend Road for use during construction and to provide ongoing access and maintenance to the substation during its lifetime.

Earthworks

Building the substation platform will require significant volumes of graded stone. Our intention is to retain as much material on site as possible.

This would mean there would be a mass balance of material on site to minimise vehicle movements in the local area, however local sources of stone will be required as part of our development works into the platform design. This will be established during detailed design.

Laydown and Office

Temporary offices, welfare and storage facilities for the main work force will be established during the planned construction period. These will be located in close proximity to the platform.



Environment

Landscape and visual

The landscape is already influenced by transmission infrastructure including steel lattice towers and overhead lines and the proposed works would be seen in relation to this.

Landscape mounding and planting will be incorporated into the design to provide opportunities to screen the substation site and to ensure the overall character of the area isn't diminished.

A landscape and visual assessment will be carried out to understand how the project will look within the surrounding area and identify any significant effects.

Noise

The nearest noise sensitive receptors within the vicinity of the proposed substation site are neighbouring residential properties. The current daytime noise climate in this rural area is low, consisting primarily of agricultural noise with distant road traffic noise.

A noise assessment has been undertaken as part of the development process and the substation will be designed to ensure noise levels at the nearest noise sensitive receptors all fall within guidance and Perth and Kinross Council recommended levels.

Electromagnetic fields

Electromagnetic Fields (EMF) arise from electric charges and current flow.

Exposure guidelines have been developed by the International Commission on Non-Ionising Radiation Protection (ICNIRP) to ensure protection of human health in different situations, occupational exposure and public exposure.

These guidelines are adopted in the UK. The substation will be designed to adhere to the ICNIRP guidance for MF limits.

Cultural heritage

There are no designated heritage assets within the footprint of the proposed substation site; however a short distance to the south is a rectilinear enclosure which is recorded as cropmarks visible on aerial photographs, although no remains are visible on the ground surface. This site is designated as a Scheduled Monument.

There are no visible undesignated heritage assets within the substation site, although 15 assets were identified within 750 m during previous survey work which relate mostly to prehistoric and medieval or later settlement and land use. It was previously agreed that a Written Scheme of Investigation would set out an appropriate strategy for archaeological mitigation in advance of commencing the construction works; this would include the protection of the nearby scheduled monument.

Water, environment and soils

The site drains in a gently sloping southerly direction via a series of field drains and unnamed watercourses into the River Isla which is located approximately 500m to the south of the site. It is part of the River Tay SAC and designated for its oligotrophic to mesotrophic standing waters.

The site lies within the Tay local flood management plan catchment area. The management plan does not identify the project site as being within a 'potentially vulnerable area' for flooding.

The SEPA national flood risk assessment map does not identify the project site as being within an area likely to experience river water flooding. There are small areas of the site highlighted as susceptible to surface water flooding.

The majority of the site is on arable land.

Cultural heritage

There are no major tourist attractions in the immediate area. In terms of recreation, the site is known to be visited by bird and wildlife enthusiasts due to the nesting Osprey and fishing takes place on the River Isla, which is a renowned salmon and trout river.

Nature conservation

The proposed area for the substation has already been surveyed to identify habitats, protected species and birds but will undergo updated survey work over the coming months.

The project is not located within any sites designated for their natural heritage. The River Isla is the main watercourse in the vicinity of the site, which forms part of the River Tay Special Area of Conservation (SAC). The qualifying interests of the SAC include lamprey, otter and salmon.

There are two unnamed tributaries present close to the site that flow into the River Isla. Both are unclassified by Scottish Environment Protection Agency (SEPA) and appear to be of low ecological value due to their modified appearance.

Ecological surveys carried out have recorded a variety of species at the site, mostly in the adjacent woodland including red squirrel and roosting bat habitat.

In 2014 SSEN erected a 25m tall platform along with two perching posts, to allow work on adjacent pylons. The Ospreys have since used and successfully bred. For the proposed substation works, SHE-T will continue to monitor and mitigate any possible adverse effects on the Ospreys.





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.

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

- Has the requirement for the project been clearly explained?
- Have we explained the approach taken to select the proposed substation site adequately?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?

Comments

Your views and comments can be provided to the project team by completing a feedback form or by writing to Louise Anderson, Community Liaison Manager.

Please note that comments made to SHE Transmission are not representations to Perth and Kinross Council, as planning authority at this stage. The opportunity for lodging representations will be when the application is formally submitted to Perth and Kinross Council for formal consideration.

We will be seeking feedback from members of the public and Statutory Bodies until 16:00, Friday 26 July 2019.

Community Liaison Manager Louise Anderson



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www.ssen-transmission.co.uk/projects/alyth-275kv-substation-reactive-compensation

Information

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

Project Website:

www.ssen-transmission.co.uk/projects/alyth-275kv-substation-reactive-compensation

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