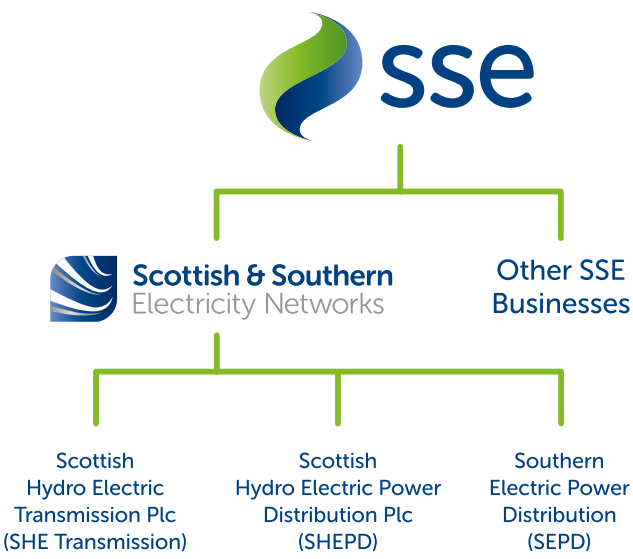
Scottish & Southern Electricity Networks

TRANSMISSION

Who we are

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



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.

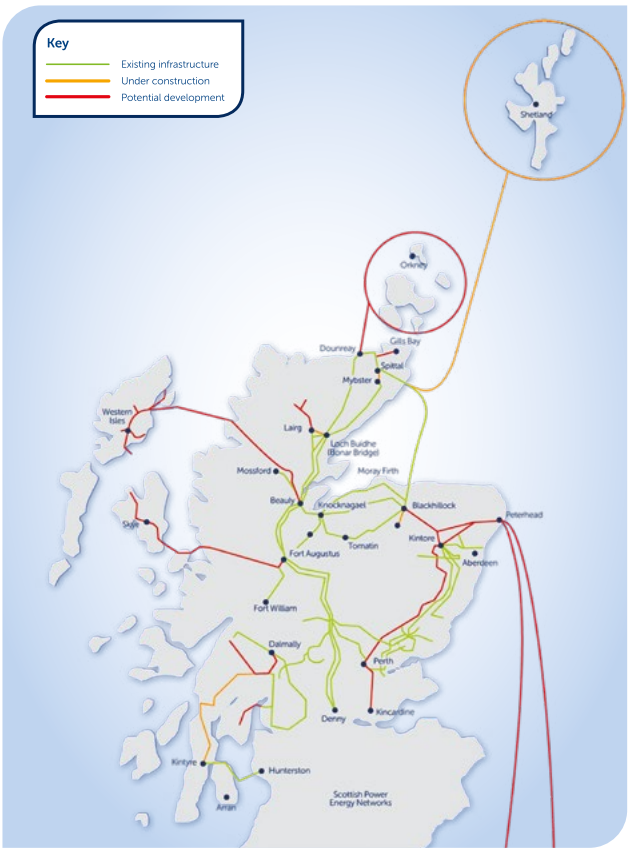
What is the difference between transmission and distribution?

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 plants.

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



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Project need

The Peterhead 275/132kV grid substation is situated to the south of Peterhead, Aberdeenshire, on the opposite side of the A90 to the Peterhead Power Station.

The indoor, air insulated switchgear (AIS) substation was constructed in circa 1975, approximately 1-mile inland from the north east coastline. The substation was initially constructed with two 275/132kV super grid transformers (SGTs). In 2010, a third SGT was installed at Peterhead Substation to accommodate increased electrical load on the network.

All three transformers are ground mounted indoor units with freestanding radiators that are situated outdoors. SGT1 and SGT3 are housed within individual rooms that form part of the main substation building while SGT2 is housed in a separate, standalone building.

SGT1 and SGT2 are more than 45 years old and have reached the end of their serviceable capabilities.

This places the electrical network at risk and supports the need to replace the SGTs.

In line with SSEN Transmission's statutory obligations, that we must develop and maintain an efficient, co-ordinated, and economical system of electricity transmission, we are proposing to replace SGT1 and SGT2 at Peterhead 275/132kV substation.

A view of the existing Peterhead 275/132kV substation.

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Project details

To enable the SGT replacement works at Peterhead there is a requirement to undertake works including public road improvements for transportation of SGTs. Formation and construction of a new substation compound and buildings to house the transformers and associated equipment and underground cable installation works.

Substation

The substation development works will involve:

- Construction and installation of a substation platform
- Installation of a suitable drainage system
- Construction of two steel framed, clad buildings to match the existing Peterhead 275/132kV substation buildings
- Installation of two 240MVA SGTs and associated switchgear into the buildings; and
- Construction of earthing bunds and planting of screening to achieve our Biodiversity Net Gain commitments.

Underground cable

The new SGTs will be connected into the existing Peterhead 275kV/132kV substation via high voltage underground cables.

Road alterations and improvement works

Road alteration works are proposed for the Peterhead 400kV substation project which is presently under construction. The SGTs to be delivered for this project are smaller units but the delivery requirements will be assessed, and the following road upgrades may be required:

- Widening of the unnamed road to the north of the Newton of Sandford at the junction with the A90 (N)
- Minor widening of the unnamed road to the north of Newton of Sandford
- Potential widening or realignment of the minor road to the west of Newton of Sandford; and
- Formation of a site entrance.

Screening

There may be the need to screen this site to lessen the visual impact of our proposal. This is a decision that will be taken in conjunction with Aberdeenshire Council. At this early stage of the process, we do not have detailed designs of screening measures, however, if required, these would most likely involve earth bunding and planting a variety of trees around designated areas of the footprint of the site.

Project timeline

October 2021
Proposal of Application Notice and Public Consultation Event

Autumn/ Winter 2022
Environmental and Engineering Surveys

Spring 2023
Submission of Town and Country Planning Application

Spring 2024
Planning Applications Determination

Spring/ Summer 2024
Construction Contracts Awarded

Summer 2024
Construction Works Commence

Summer 2025
Construction Works Completed

October 2025
Final Commissioning and Energisation

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Substation site selection

Space within the existing 275/132kV substation is limited, and due to the system loading it is not possible to replace the SGTs in their current locations.

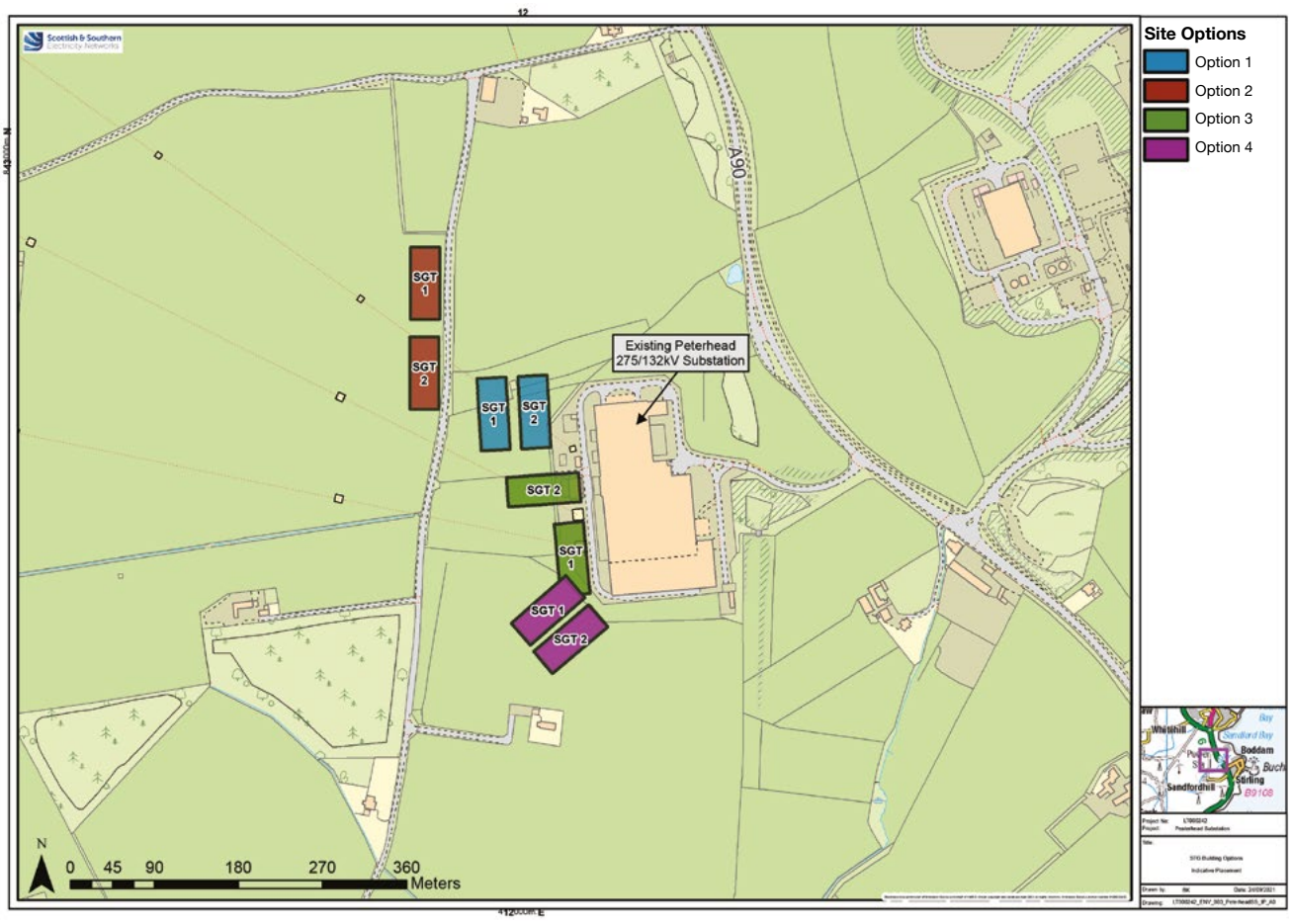
It is proposed that the two new SGT buildings, that will be housing the new SGTs and associated equipment, are built off-line, close to the existing substation. A new platform and compound will be constructed on which the new SGT buildings will be built. High voltage electrical cables will be installed between the existing substation and the new SGTs to connect the SGTs into the substation. A number of options for the location of the new SGTs were considered, as shown in the image below.

The following factors were considered during the site selection appraisal: ecology, environmental impact, drainage, topography, flood risk, ground conditions, access constraints and proximity to the existing Peterhead 275/132kV substation.

Options 1, 2 and 3 were found to clash with planned works associated with the new 400/275kV substation, which is presently under construction.

Furthermore:

- Option 1 also falls within a cable corridor which has been secured by a third-party developer for the future North Connect project.
- Option 3 requires that the construction of the buildings be done one after the other and includes the demolition of the existing SGT2 building, where the new SGT1 building will be constructed. This results in an extended construction period and an increase in the overall project risk.



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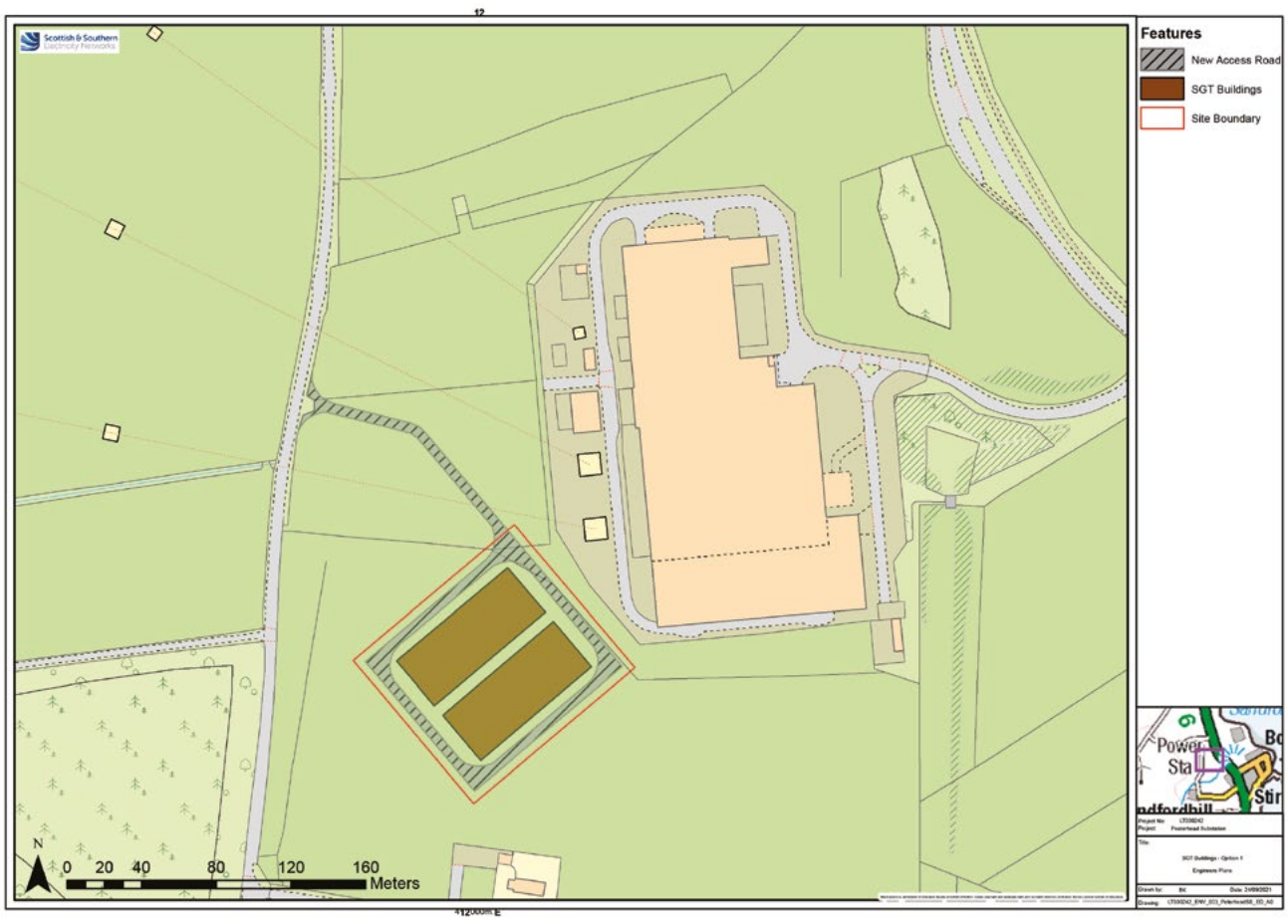
Our preferred site

Option 4 is our preferred location; we propose to construct the new SGT buildings to the south west of the existing Peterhead 275/132kV substation with an access road to the minor road to the west of the substation. Our preferred location is shown on the image below.



Temporary construction compound

Temporary offices, welfare and storage facilities will be established during the planned construction period. These will be near the substation platform. It is envisaged that the temporary construction compound will be to the west/south-west of the new SGT compound.

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What else is happening in Peterhead?

Alongside the Peterhead SGT replacement project, SSEN Transmission are currently developing and constructing other projects in Peterhead.

We've provided a list of SSEN Transmission projects in the region below, alongside a short description of where you can access further information.

Peterhead substation 400kV upgrade

This Peterhead 400kV substation project will facilitate the movement of energy between the north of Scotland and centre of demands.

The substation will drive the delivery of low carbon generation to homes and businesses across the UK, aiding the country in its move towards a low carbon economy.

This project is to develop a 400kV substation near the existing Peterhead 275kV substation. The substation will be developed to operate at 400kV, however, there will be electrical interconnection to the existing 275kV substation via two new 400/275kV super grid transformers.

At the moment, on the Peterhead project we are preparing the substation platform for the delivery of the two new super grid transformers due in mid-February 2022, steel structures are being erected to encase this equipment, we have created access roads spanning the full perimeter of the substation and installed security fencing. Out with the substation platform we have redirected the existing 132kV overhead line from a new tower 3R erected to underground ducts which are routed into the existing 275kV substation.

This allows for the 400kV overhead line to feed into the new Peterhead 400kV substation. Works will continue over the coming years with a completion date set for October 2023.

For further information on the Peterhead 400kV upgrade project, please refer to our website:
www.ssen-transmission.co.uk/projects/peterhead-substation/

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What else is happening in Peterhead?

Eastern HVDC

Stakeholders in Peterhead will already be familiar with this project which we have recently consulted on in October 2020 and August 2021.

The Eastern HVDC Link project is a proposal to install a sub-sea high-voltage direct current (HVDC) cable from Sandford Bay, at Peterhead, to Drax in England. SSEN Transmission as the TO for northern Scotland and National Grid Electricity Transmission plc ('National Grid') as the TO for England and Wales, are working together to develop the project.

The link between Peterhead and Drax in North Yorkshire is needed for 2029 and will comprise the following works by SSEN Transmission at Peterhead:

- Approximately 440km of subsea cable between landfall sites in Aberdeenshire and East Riding of Yorkshire.
- Approximately 2km of onshore underground DC cable from the landfall near Peterhead to a new converter station nearby.
- New converter station at Boddam, Peterhead.
- Approximately 1km of underground AC cables between the new converter station and Peterhead 400kV substation.
- Enabling works at the at the Peterhead 400kV substation (currently under construction).

The project is currently completing onshore & offshore engineering and environmental surveys before the submission of the planning applications in Q1 2022.

Our last public event in August 2021 was the pre-application consultation and feedback received is currently being recorded and will be included in the Proposal of Application Consultation report which form an important part of the forthcoming planning application.

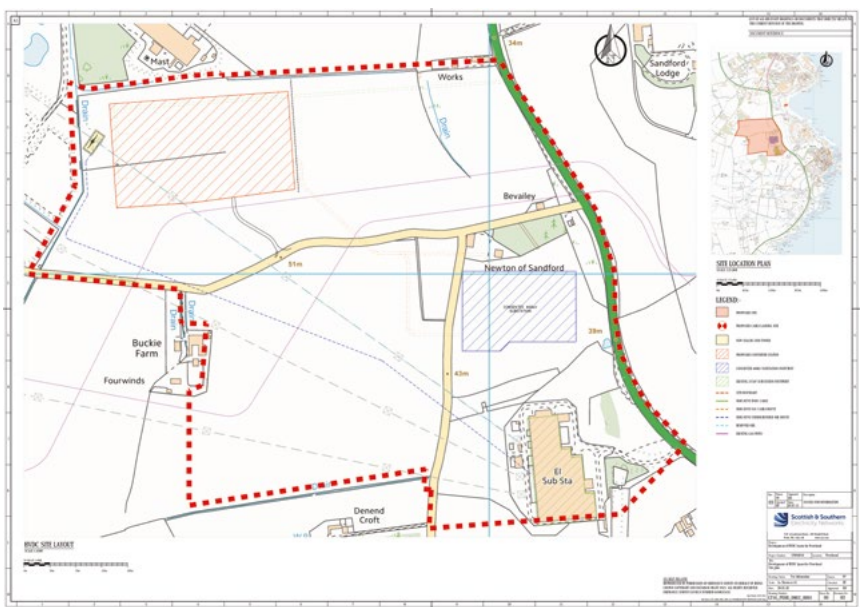
For further information on the Eastern HVDC project, please refer to our website: **www.ssen-transmission.co.uk/projects/eastern-hvdc-link**

This view includes the consented Peterhead 400kV substation and associated infrastructure. Although not shown, this view would also include landscape mitigation for the 400kV substation and fewer overhead lines. Landscape mitigation for the proposed development would also be introduced.

Eastern HVDC 2

The Eastern HVDC 2 has received a Proceed Signal in the 2021 Network Options Assessment and is in the early stages of its development with consideration being given to potential locations in the vicinity of Peterhead to accommodate the Convertor Station and the onshore cabling required.

The project will engage with key stakeholders once initial studies are completed. Delivery is for 2031.



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Environmental considerations

Water environment and soils

The substation site is not in an area identified as being at risk from flooding. However, Sustainable Urban Drainage Systems would be incorporated into the design to account for any increased surface water resulting from the development.

Private water supplies will be identified, and an appraisal undertaken to determine potential risks to any supplies.

Where required, measures will be identified and put in place to ensure that the quality and quantity of water from these supplies would not be adversely affected.

Terrestrial ecology (habitats and species)

The proposed substation site lies within enclosed fields used for a mixture of livestock and arable pasture. The site is not located within any sites designated for their natural heritage. Protected species surveys near the site did not identify any signs or places of shelter for protected species, and there was little obvious habitat suitable for protected species.

Protected species surveys will be undertaken at the proposed site prior to submission of the planning application and species protection plans would be put in place to minimise potential effects to protected species, where required.

Ornithology

Breeding bird surveys carried out in the area recorded several bird species, including some species of conservation importance No Schedule 1 or Annex 1 species were recorded breeding.

Further ornithological surveys will be undertaken on the proposed site prior to the submission of planning application of he substation. The findings of these surveys will help inform where mitigation measures are required to minimise effects on any birds present during the construction phase and beyond.

Cultural heritage

There are a number of designated historic sites within 2km of the site. An archaeological appraisal of the substation site and its surrounding area would be undertaken to understand the potential effects on the historic environment and inform mitigation measures where required.

Traffic and transport

A Construction Traffic Management Plan (CTMP) will be developed and used to control vehicle movements and numbers during the construction phase of the works.

This will be created in agreement with Aberdeenshire Council and Transport Scotland.

Landscape and visual

The appearance of the substation within the landscape and how it is seen from nearby homes and roads will be carefully considered as part of an appraisal of the landscape and visual impacts.

Landscape mitigation measures would be developed as part of the substation proposal to minimise potential effects on the surrounding area as far as practicable. The approach to landscape mitigation will be discussed with Aberdeenshire Council following the appraisal.

Noise

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 Aberdeenshire Council.

Noise monitoring surveys are being undertaken at noise sensitive receptors within the vicinity of the Proposed Development. Appropriate mitigation measures will be considered dependent on the results of the survey.

All environmental factors will be further considered after the selection of the preferred site.

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What happens now, 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:

- Has the need for the project been clearly explained?
- Have we explained the approach taken to select the proposed 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?
- Do you have any other comments regarding the proposed SGT location and layout?
- Following review of the provided information, how would you describe your understanding of the Peterhead SGT replacement project?
- Overall, how do you feel about the Peterhead SGT replacement project?
- And finally, from your experience to date, can you rate the quality of consultation undertaken on the Peterhead SGT replacement project?

Comments

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

We will be seeking feedback from the members of the public and Statutory Bodies by 3rd December 2021.

All received feedback will be assessed and the proposed options adapted where necessary.

Feedback can be submitted online via the project website or via the project Community Liaison Manager:

Dav Lynch
Community Liaison Manager

dav.s.lynch@sse.com

07918 404 443

Dav Lynch
Scottish and Southern Electricity Networks,
200 Dunkeld Road,
Perth PH1 3AQ

Additional information

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

Project website:
www.ssen-transmission.co.uk/projects/peterhead-super-grid-transformer-replacement

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