

East Coast 275kV & 400kV Overhead Line Reinforcement Projects

April 2021



Scottish & Southern
Electricity Networks

TRANSMISSION

Glossary

Insulators

Parts attached to steel lattice towers, these usually resemble large discs and can be seen dangling down from a towers arm.

Generators/Drivers

A project that is creating energy, therefore causing the need for work to be done on the Transmission Network (such as a power station).

kV

Kilovolts, the volume of electricity being transported.

Conductors

The long metal lines that travel from pylon to pylon.

Steel Lattice Towers

Also known as pylons.

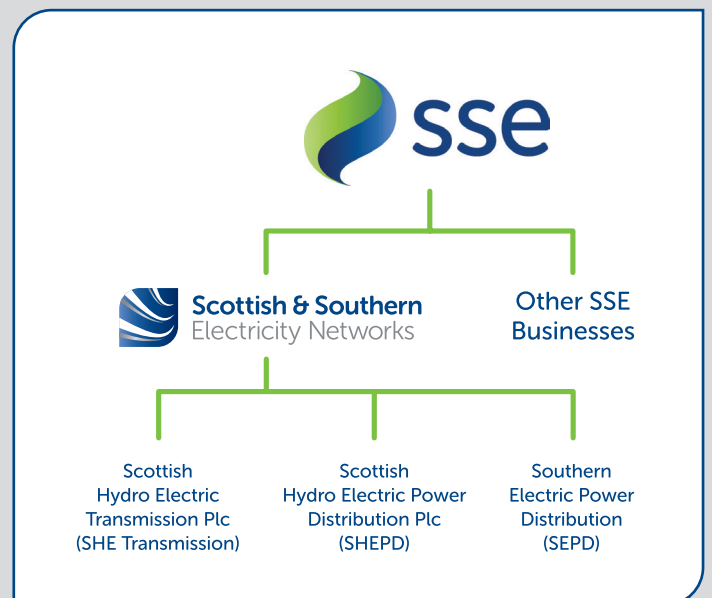
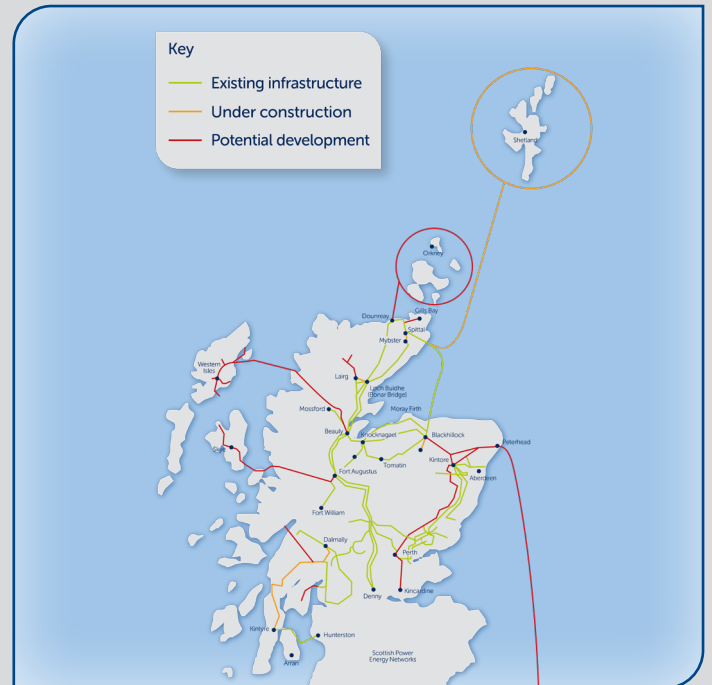
Transmission Network

The infrastructure we own to transport energy across the country.

About us

We are Scottish Hydro Electric Transmission (SHE Transmission), part of the SSE Group, responsible for the electricity transmission network in the North of Scotland. We operate under the name of Scottish and Southern Electricity Networks, together with our sister companies, Scottish Hydro Electric Power Distribution (SHEPD) and Southern Electric Power Distribution (SEPD), who operate the lower voltage distribution networks in the North of Scotland and central southern England.

As the Transmission Network Owner, we maintain and invest in the high voltage 132kV, 275kV, 400kV electricity transmission network in the North of Scotland. Our network consists of underground cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass, crossing some of its most challenging terrain. We power our communities by providing a safe and reliable supply of electricity. We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for distribution to homes and businesses in villages, towns and cities.



Background & Project Location



As the Transmission Network Owner for the North of Scotland, Scottish and Southern Electricity Networks Transmission (SSEN Transmission) is responsible for the maintenance and development of the transmission network in an economic, efficient and coordinated manner.

SSEN Transmission is proposing to upgrade the existing electricity transmission infrastructure across the north of Scotland to enable new connections to link to Great Britain's transmission system, allowing the onward supply of power to centres of demand.

SSEN Transmission is developing a significant number of projects in the East Coast of Scotland to strengthen the network serving the region and allow developers of onshore and offshore renewable electricity to connect.

Two of the projects within the East Coast region that SSEN Transmission are developing are the East Coast 275kV overhead line upgrade and the East Coast 400kV overhead line upgrade, both of these projects will ensure our network remains fit for purpose.

The transmission network currently operates at a maximum voltage of 275kV in the East Coast region, we propose increasing this in 2023 to 400kV to cope with the increased volumes of electricity being transmitted.



The map pictured above indicates the location of the overhead line that will be developed as part of the East Coast 275kV and East Coast 400kV overhead line projects.

The area south of the grey dotted line is where the Transmission Network switches from SSEN Transmission to Scottish Power ownership

East Coast 275kV Project Details

The East Coast 275kV overhead line (OHL) upgrade works are the first part of the phased onshore reinforcement on the East Coast. These onshore reinforcements comprise works on existing infrastructure in both the SSEN Transmission and Scottish Power Transmission (SPT) area, with the bulk of the works in the SSEN Transmission area.

The East Coast steel lattice towers and the OHLs which they support are currently operating at 275kV. The projected growth in generation capacity within the SSEN Transmission area gives rise to increased north to south power transfer requirements and therefore the OHLs are required to transfer more power. As a result the conductors will operate at an elevated temperature. The elevated temperature can cause the conductors to sag. As a responsible operator we have modelled the future sag and under this project will undertake works to ensure the conductors remain within a safe clearance height.

The works required are termed as re-profiling works, where works such as vegetation clearance or changing of fittings on some towers, to raise the conductor will be undertaken. This will ensure safe clearance between the ground and the conductor is maintained.

Works will be undertaken to re-profile 185km of the existing 275kV overhead line between Kintore and Fetteresso and the 275kV overhead line between Tealing and Alyth. We will also be looking to re-profile 36km of the existing 275kV overhead line between Tealing and the SSEN Transmission/SPT border.

The re-profiling works will consist of tightening and adjusting the wires (conductors), as well as a programme of vegetation clearance to ensure that the safety distance from the wires to the ground is adequate for safety. Over and above the re-profiling works and the vegetation clearance, works will also be undertaken by way of tower earthing studies and conductor testing. There is also the potential for some foundation works on a number of towers.

As part of this project SSEN Transmission are also looking to construct three new towers to accommodate a connection to the new Alyth substation which is currently in construction, these towers will be constructed on land just outside Meigle in Perthshire.



East Coast 275kV programme of works

The East Coast 275kV works will commence in Summer 2021 and last until October 2023. The main activities and timescales are detailed below.

Please note that dates are subject to change.

Access Works
2021-2023

**Vegetation
Clearance**
2021-2023

**Re-profiling
(Alyth – Tealing)**
2021-2023

**Re-profiling
(Tealing – Westfield)**
2021-2023

**Re-profiling
(Kintore-Fetteresso)**
2021-2023

**Construct 3 new
towers for
Alyth substation**
2021-2023

**Dismantle one tower
at Alyth substation**
2021-2023

To access the towers, we will use a variety of methods including the construction of access tracks, use of existing tracks, laying aluminium Trakway panels on suitable ground or by foot.

New access tracks to towers will only be required where foundations need to be refurbished or where cranes are required to erect new towers or install body extensions to the existing towers.

We will agree any access requirements with the relevant landowners before commencing works on the projects.

East Coast 400kV Project Details

The East Coast 400kV works are the second part of the phased onshore reinforcement on the East Coast.

The East Coast 400kV Upgrade comprises of replacing the conductors, insulators and fittings on the existing OHL steel lattice towers between Kintore, Fetteresso, Alyth (future substation) up to the border with Scottish Power Transmission (SPT) near to Blairingone (east of Stirling). SPT will carry out similar works on their section of the OHL. This will allow the overhead lines to operate at 400kV.

The existing conductor is made using aluminium wrapped around a steel core. The replacement conductor we will use is an All Aluminium Alloy Conductor (AAAC). The AAAC is made using all aluminium stranded wire – the change means the conductor will be twice as strong as the steel, 70% lighter and able to carry twice the amount of power. The line will then be able to operate at 400kV following the refurbishment.

Our Principal Contractors have carried out a number of extensive surveys and assessments of the existing line and examined steelwork, condition of fittings and ground clearances. They will also carry out site investigations with regards to the condition of tower foundations. Teams of highly skilled linesmen and civils operatives will carry out the required refurbishment and upgrades to the steelwork and foundations ahead of replacing the conductors. The linesmen will start the refurbishment on the North section of the line, from Kintore to Fetteresso in April 2023. The South section will be complete from Fetteresso -Alyth – Kincardine over 2 years, with the North side in 2024 and the South side prior to November 2025.

To ensure a consistent supply of power to Kintore and Kincardine throughout the refurbishment works, we will de-energise (turn off) one side of the tower line and keep the other side live. The linesmen will then prepare the line to be removed before using winches to remove the existing conductor. The same winches are used to pull the new conductor into place.

The linesmen will carry out the works in sections of the line varying between 3km and 6km at a time. Working areas will be situated at each end of the section to position the winches and other essential equipment required to pull the new conductor into position.

As part of the works to refurbish the conductors on the line, various additional works have been identified as being required to make the towers safe and meet required ground clearances at various locations along the route. These include re-tensioning of conductors, replacement of conductor fittings, concrete foundation upgrades, steel strengthening and a small number of tower extensions (3m to 5m), which will be installed using cranes.

The existing East Coast overhead line passes through populated areas, crosses public highways, railway lines and rivers. To ensure that our work has as little impact as possible on the lives of those living and working in the area, we will utilise protection systems such as scaffolding and netting across roads to keep people safe and allow main travel routes to stay open.



East Coast 400kV programme of works

The East Coast 400kV works will commence in Spring 2023 and last until November 2026. The main activities and timescales are detailed below.

Please note that dates are subject to change.

Access Works

March 2023 –
Nov 2026

Tree Cutting

2023-2025

Tower refurbishment

2023-2026

Re-conductoring (Kintore – Fetteresso)

April – October 2023

Re-conductoring (Fetteresso - Kincardine)

April 2024 –
October 2026

Re-instatement & restoration

August 2023 –
November 2026

Install temporary scaffolding

April 2023 –
October 2026

We have identified various areas along the line where tree felling will be required to minimise the potential of any damage to the lines.

Working with the community

Throughout the life of our projects, we aim to work positively with local communities and keep people informed about what we are doing. This is particularly important when we are developing a proposal as we want to understand what local people think about our plans.

When our project progresses into construction, we will continue working closely with the local community to ensure that our work has as little impact on the lives of those living and working in the area and has many long term positive effects as possible.

During some operations, we will position staff in locations to help with information, provide reasonable instruction and ensure safety of the public.

Each of these East Coast overhead line projects have their own dedicated project website. This is where you will find regular, more specific updates regarding the latest news and timelines relating to the individual projects works.

<https://www.ssen-transmission.co.uk/projects/east-coast-275kv-ohl-upgrade/>

<https://www.ssen-transmission.co.uk/projects/east-coast-400kv-ohl-upgrade/>

If you would like further information about the East Coast overhead line projects, please contact our Community Liaison Manager:

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Notes



**Scottish & Southern
Electricity Networks**

TRANSMISSION



SSEN Community



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