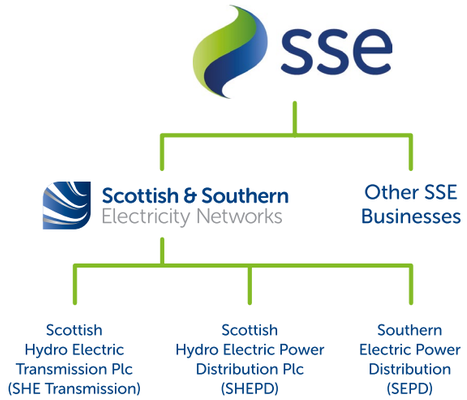
North East 400kV OHL Upgrade

October 2020

Scottish & Southern Electricity Networks

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.

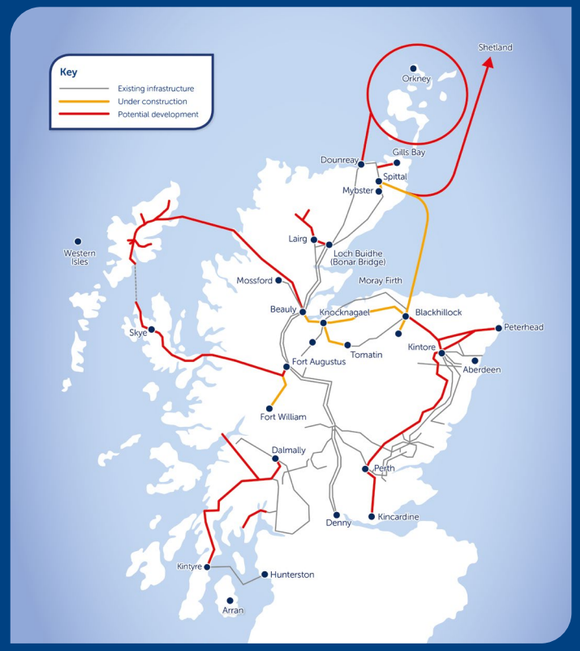
Our licence stipulates that we must develop and maintain an efficient, co-ordinated and economical system of electricity transmission.

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 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



Project requirement

As the transmission network provider for the north of Scotland, Scottish and Southern Electricity Networks (SSEN) are responsible for the maintenance of the existing Transmission network and also ensuring that the current network can facilitate connection requests from developers when necessary.

The requirement for this project has been necessitated by a planned significant increase in electricity generation capabilities in the north-east of Scotland.

Connections for the Moray East Offshore Windfarm, Moray West Offshore Windfarm and the North Connect HVDC Interconnector are required, as well as increased network capacity to accommodate an increase in generation capability at Peterhead Power Station.

These projects are currently scheduled to be completed by 2024, with the first connection due in 2021.

The overall works will be split between upgrades to the existing overhead line network in the region, alongside the construction of several new substations along the route of the line.

Map of 275kV overhead line network across north east and east coast of Scotland.

East Coast Upgrades

There are also plans to carry out similar works on the east coast of the existing Transmission network south of Kintore, as with the north east works, this will involve the upgrading of the existing OHL network from 275kV to 400kV and additional substation works. For further information on works being carried out south of Kintore please visit:

www.ssen-transmission.co.uk/projects/east-coast-onshore-275kv-ohl-upgrade

Planning applications

Overhead Lines

A Section 37 application was made to the Energy Consents Unit for consideration in March 2019 under the Electricity Act 1989 for the upgrade of the existing overhead transmission line to operate at 400kV.

In October 2020 this application was approved allowing us to formally progress these works.

The Section 37 consent covers all aspects of the overhead line works, including diversions, replacement of insulators, tower and foundation repairs and provision of access tracks to enable these works.

Substations

For works at the associated substations along the overhead line route, applications will be made under the Town and Country Planning Act for the works required to enable the connection of the overhead lines at 400kV into the substations. These applications are made to the relevant local authority, in this instance Aberdeenshire Council, for determination.

At the present moment planning applications have been granted and construction is underway at new substation sites in Rothienorman and New Deer.

We have been granted planning permission for a new substation in Peterhead and are due to commence construction in October 2020.

In July 2020 we submitted a planning application for a new substation at Leylodge, Kintore; this application is currently going through the formal planning process.

Separate consultations have been held for all substation developments and each proposal has its own dedicated project website and information brochure, if you have further queries on ongoing works at any of our sites then please contact **gary.donlin@sse.com** for further information.

Project timeline

October 2020
S37 consent granted for OHL works

Autumn/Winter 2020
On site surveys and preparatory works for overhead line and substation works

2021 - 2022
Overhead line and substation works

Spring/Summer 2023
Final commissioning and energisation of the project for 400kV operation

Our proposed solution

Existing 275Kv OHL network in the North East to be upgraded to 400Kv

The north east section of works can broadly be split between overhead line and substation works. The Overhead Line (OHL) reinforcement works would involve replacing all of the conductors, insulators and fittings on the existing overhead line steel lattice towers along with reinforcement of a number of tower foundations between Peterhead, New Deer, Rothienorman, Kintore and Blackhillock as well as reconfiguring a short section of the overhead line to divert it out of Keith substation. This will allow the overhead lines to operate at 400kV.

Works to accommodate the connection of the overhead lines at 400kV will be required at the substations along the route, these being Peterhead, New Deer, Rothienorman, Kintore and Blackhillock.

This will include the replacement of existing equipment and, in some cases, the expansion of the substations to allow installation of additional new equipment for operation of these substations at 400kV.

Project details - overhead lines

Conductor Replacement

The existing conductor is Twin Zebra Aluminium Conductor Steel Reinforced (ACSR) Conductor.

This conductor has been in place since the overhead line was constructed in 1963 and 1973 and is due for replacement.

The replacement conductor we will use is an All Aluminium Alloy Conductor (AAAC) of stranded construction.

Foundation Works

The new conductor has a different sag and tension characteristics to the existing conductor. Initial studies have identified that a number of towers will require their foundations to be reinforced.

Foundation Works will be carried out at various points along the line between Peterhead, New Deer, Rothienorman, Kintore and Blackhillock.

Insulator Replacement

The existing 275kV insulators will be replaced for 400kV insulators.

These are slightly longer than the existing insulators as they have more discs.

The insulator and conductor replacement will allow the overhead line to transfer a higher capacity of power.

Access

To enable the works to be undertaken, temporary access tracks and site compounds with welfare facilities will be required, however these will be removed once construction is complete. Equipment including telehandlers, tractors, tracked excavators, all-terrain vehicles and other specialist equipment will be required to facilitate these works.

These works are currently underway between Kintore and Rothienorman under a separate project, although 400kV operation will not occur until 2023.

Keith overhead line diversion

The existing overhead line is being diverted past the Keith Substation as this does not form part of the 400kV network, allowing the existing connection to the substation to be removed and a bypass created. This will result in four new towers being installed and seven towers removed which will improve the visual impact of towers and overhead lines in the area. A temporary construction compound will be established near to the Keith Substation site to facilitate these works.

Access to the new tower locations would be established via access tracks.

The new towers will require excavations to allow the construction of reinforced concrete foundations to support the towers, as well as the creation of temporary laydown areas to allow the erection of the towers.

Equipment including telehandlers, cranes, tractors, tracked excavators and all-terrain vehicles will be required to facilitate these works.

The lines will then be fitted with insulators and conductors strung between them and connected into the existing network.

Project details - substations

In order to allow the overhead line network to operate at 400kV we also must carry out reinforcements on substations across the region. These works involve the construction of new substations alongside the extension of some existing substations.

Kintore Works

Kintore is a pivotal point in the existing transmission network as this is where the north east and east coast sections of our proposals meet and as such, we have submitted a planning application in July 2020 to construct a new GIS substation at Leylodge, Kintore.

Our proposals involve a phased development of a new substation operating at 400kV, with 'Phase 1' completed to tie in with the network north of Kintore in October 2023 and 'Phase 2' completed for the network south of Kintore energising to 400kV operation in 2026.

In addition to this and as part of regular assessment of our assets, we have identified a need to replace infrastructure which form part of the existing Kintore 132kV substation due to their age and condition. These works are required to be completed before 2026. A number of options are being reviewed and it is likely that we will look to develop a new 132kV substation in close proximity to the existing site. This may require reconfiguration of our existing assets and their interconnectivity. We have not concluded our options for a change of the Kintore 132kV busbar and we will be developing our technical solution and programme to meet the asset replacement timescales.

Example of GIS equipment used at Beauly substation

Rothienorman, New Deer and Peterhead Substations

In October 2020 we are due to begin construction on a new 400kV substation in Peterhead, we gained planning consent for this development in October 2019 and began road improvement works in the area in August 2020.

We began construction on two new substations at Rothienorman and New Deer in Summer 2019 to further reinforce the network, these are designed to initially operate at 275kV before stepping up to 400kV; to enable the operation of these substations at 400kV there will be a requirement to replace limited pieces of electrical equipment at these substations.

At Rothienorman there will be a requirement to deliver four new transformers to facilitate operation at 400kV, carried out within the existing footprint of the substation.

Delivery of the Super Grid Transformers to Rothienorman will be coordinated under the supervision of our specialist abnormal load contractors and Police Scotland.

Our neighbours will be advised in advance of any restrictions on road movements once these have been established, however our aim will be to keep any disruption to a minimum.

Progress at Rothienorman Substation, August 2020

Blackhillock Transformer Removal

At Blackhillock substation, the Super Grid Transformers currently step the voltage down from 400kV to 275kV to allow connection to the existing network.

The Super Grid Transformers are to be disconnected in 2023, which will allow a direct connection to the 400kV network. Removal of the Super Grid Transformers will be coordinated under the supervision of our specialist abnormal load contractors and Police Scotland.

Our neighbours will be advised in advance of any restrictions on road movements once these have been established, however our aim will be to keep any disruption to an absolute minimum and to always provide advance notice of any disruption or road closures.

Key considerations

This project is proposed as an upgrade to the existing Overhead Line network in the North East region of Scotland and, excluding the re-alignment of the Overhead Line at Keith Substation, does not involve the construction or introduction of any new steel lattice towers.

An environmental Impact Assessment (EIA) was required as part of the Section 37 consent application under the Electricity Act 1989. An EIA Report was submitted to the Energy Consents Unit of the Scottish Government as part of the section 37 application. A summary of the key findings of the EIA Report is provided below.

Visual Effects

There would be no material change to the appearance of the overhead line following the reinforcement works as the associated fittings will be visually similar to those present already.

The exception to this would be the reconfiguration of the overhead line on the outskirts of Keith. As such, the Visual Impact Assessment concentrated on this element of the Proposed Development only.

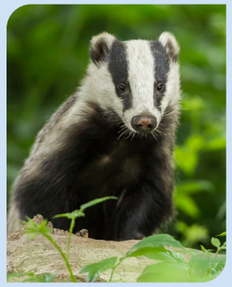
The assessment concluded that there would be some significant adverse visual effects during the construction phase, although these would be short term and limited to the immediate area.

Once construction is complete, there would likely be a small number of significant beneficial visual effects in the immediate area due to the overall reduction of towers and movement further from Keith.

Terrestrial Ecology (Habitats and Species)

Field surveys identified a variety of different habitats along the overhead line route, the majority of which were considered to be low sensitivity given that the route crosses large areas of intensively farmed agricultural land utilised for arable crops and pasture.

The overhead line does not pass through any sites designated for their natural heritage. Potential effects on ecology would be limited to the construction phase, with no anticipated effects once the Proposed Development is operational. Protected species with potential to be affected by the Proposed Development are badger, otter, pine marten, red squirrel and bat species, either through disturbance during construction or as a result of injury. Species protection plans shall be put in place to minimise potential effects to protected species during construction.



Ornithology

The overhead line does not pass through any sites designated for ornithological interests, with the closest being the Buchan Ness to Collieston Coast Special Protection Areas (SPA) on the Peterhead coast.

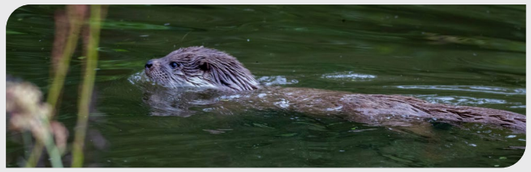
Baseline data on bird species was gathered from a number of sources, with targeted breeding bird surveys carried out in areas where new infrastructure is proposed; i.e. the reconfiguration of the overhead line on the outskirts of Keith. There is potential for effects on bird species principally during the construction phase, such as damage to nests or disturbance to young from construction works. The magnitude of these effects is likely to be low and, subject to the mitigation measures proposed, no significant effects are likely.

Water Environment

The overhead line crosses and passes over or near to a number of watercourses, many of which are field drains. The project is not anticipated to increase flood risk at any of these watercourses.

A number of private water supplies were identified within 250m of the existing overhead line and construction access routes. With the implementation of good practice and working control measures no adverse effects are anticipated.

Where a requirement for excavations (e.g. foundation upgrades) is identified within 250m of a private water supply, a more detailed risk assessment will be undertaken prior to any construction works to identify any measures required to protect the quality and quantity of water from these supplies.



Cultural Heritage

A desk-based assessment of known cultural heritage sites within the vicinity of the Proposed Development was carried out to inform a Cultural Heritage Management Plan (CHMP).

The CHMP lists all known heritage features within 200m of the overhead line and construction access routes, together with mitigation measures to be set in place to protect them where necessary.

Traffic and Transport

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

This will be created in agreement with Aberdeenshire and Moray Councils.

Noise

Construction noise is considered to be short term and intermittent and will be controlled through the implementation of a noise management plan.

An assessment of operational noise was undertaken to identify predicted changes in noise levels as a result of the overhead line upgrade. During dry weather conditions, noise from the conductors would be very low and not readily noticeable.

During wet weather conditions, the conductors would produce more noise; however, various factors, such as the increase in background noise produced by rainfall and the lower noise levels inside a building compared with outside areas, would either mask or reduce the noise from the overhead line to acceptable levels.

Electromagnetic Fields

The existing overhead line produces electric and magnetic fields due to carrying an electric current.

As the voltage capacity would be increased, the electric and magnetic fields would increase proportionately.

While there are no statutory regulations to limit exposure to these fields, guidelines endorsed by the UK Government set out exposure levels to be adhered to.

The assessment of electric and magnetic fields concluded that exposure levels to both field types are below the levels set in the guidelines, thus no significant effects would occur.

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:

- Has the information provided explained the need for the North East overhead line upgrade works
- Have we adequately explained the different parts of the overall project clearly?
- Do you support or object the decision by SSEN to upgrade the Transmission network in the North East?
- Are there any additional factors, issues or concerns which you wish to bring 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 Gary Donlin, Community Liaison Manager. We will be seeking feedback from the members of the public and Statutory Bodies until **Wednesday 28th October 2020**

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

Community Liaison Manager, Gary Donlin

gary.donlin@sse.com

07384 624 777

Gary Donlin
Scottish and Southern Electricity Networks,
1 Waterloo Street,
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/north-east-400kv

Follow us on Twitter:
@ssencommunity

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 **Has the information provided explained the need for the North East overhead line upgrade work**

Yes ☐ No ☐ Unsure ☐

Q2 **Have we adequately explained the different parts of the overall project clearly?**

Yes ☐ No ☐ Unsure ☐

Q3 **Do you support or object the decision by SSEN to upgrade the Transmission network in the North East?**

Support ☐ Object ☐ Neither ☐

Q4 **Are there any additional factors, issues or concerns which you wish to bring to the attention of the Project Team?**

Please use space below to provide further 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 and Southern Electricity Networks, 1 Waterloo Street, Glasgow, G2 6AY

Email: gary.donlin@sse.com

Online: www.ssen-transmission.co.uk/projects/north-east-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 dedicated website:

www.ssen-transmission.co.uk/projects/north-east-400kv

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.