

Kinardochy Substation

Proposal of Application Notice (PAN) FAQs

March 2020



Scottish & Southern
Electricity Networks

TRANSMISSION

Who are Scottish and Southern Electricity Networks?

Scottish and Southern Electricity Networks is the trading name of Scottish and Southern Energy Power Distribution Limited, Scottish Hydro Electric Transmission plc, Scottish Hydro Electric Power Distribution plc and Southern Electric Power Distribution plc.

What is the Transmission network?

It's the highest voltage electricity network in the UK – the 'motorway network' of the energy world. It transmits large quantities of electricity over long distances via wires carried on a system of mainly metal towers (pylons) and large substations. Transmission voltages in Scotland are 132kV, 275kV and 400kV. Larger generation schemes usually connect to the Transmission system.

The lower voltage parts of the system are called distribution networks. In Scotland, these local networks operate below 132kV whereas in England the distribution network includes 132kV.

How are Transmission network upgrades paid for?

Investments in projects are made by SHE Transmission plc. Electricity transmission companies are authorised to recover the costs of such investments through 'use of system' charges which are levied by National Grid Electricity Transmission plc on generators and suppliers of electricity. Suppliers recover their costs from all electricity customers. In order to protect the interests of customers, the transmission companies have to demonstrate to the energy regulator, Ofgem (Office for Gas and Electricity Markets) that proposed investments are necessary, are efficient and are economical so that the charges which are ultimately levied on all electricity customers are justified.

This means SHE Transmission is subject to a funding mechanism established by Parliament and regulated by Ofgem. Cross subsidies between different businesses in the SSE group is not permitted.

How and to what extent are electricity consumers' interests considered?

SHE Transmission are regulated by the Office for Gas and Electricity Markets (Ofgem), the regulator responsible for representing consumers' interests. Electricity consumer interests are therefore one of our key drivers and this is enshrined in our statutory duties under the Electricity Act.

In particular we have a statutory duty to develop, maintain and operate an efficient, economic and co-ordinated transmission system. Since the costs of these projects will ultimately be paid for by electricity consumers, we have a responsibility to take cost into account with due weighting in a comparison against other important factors.

- 1. Will screening measures either by bunds or additional tree planting be put in place to screen the substation from the west for anyone returning from the Braes of Foss carpark to the B846?**

Our environmental consultants have been engaged to produce a detailed landscape design plan which include elements of screening bunds as well as screen planting. This will include an assessment on how we can enhance biodiversity within our site.

- 2. Will there be a commitment by SSEN Transmission for additional tree planting in places where their presence is needed to conceal the site?**

SSEN Transmission as part of the planning application will design a suitable landscape plan to adequately screen the substation site with the aim of preventing low level visualisation of the site.

- 3. For traffic management could both the north and south routes be used for different types of loads which could help spread out the traffic disruption, noise and wear and tear of the roads?**

A Traffic Management Plan (TMP) will be developed in consultation with the Roads Department at Perth and Kinross Council and Transport Scotland, with the aim of identifying the least disruptive route for vehicle movements associated with the construction of the substation, to actively mitigate the impact to the surrounding community.

The local road network will be considered for both abnormal load movement and HGV construction traffic. Initial route assessments have identified the south route will be used for abnormal load movements, such as the STATCOM transformer due to the width restrictions crossing the River Tummel at Tummel Bridge. HGV and general construction traffic route assessments will consider the existing road use in the area, geometry, long term condition and degradation and as such mitigation and improvement measures may be required.

- 4. What fire precaution measures are being put in place for the proposed Kinardochy substation and will these form part of the planning application?**

Fire risk is assessed throughout the development of the project and mitigation measures incorporated into the substation design as required. Plant and equipment considered to be a fire hazard, along with any element at risk, will be assessed and a fire protection design basis process is followed. This ensures appropriate fire protection measures are implemented as part of our proposals.

- 5. Is there an effective firebreak built into the design? What other measures are taken to ensure the facility and surrounding area is kept safe from fire?**

Fire safety is of the upmost concern and is a priority consideration when designing any of our assets. Any fire hazards identified within the substation will be risk assessed and thorough mitigation measures will be designed and implemented as required to ensure all elements at risk (including third party property) are protected.



6. What combustible elements of the substation if exposed to high temperatures could have an impact on the environment?

The main item of equipment that could have an impact on the environment if exposed to high temperatures is the STATCOM transformer. If the transformer was exposed which resulted in a fire it would release burnt hydrocarbon gases due to the insulating oil burning off. This would need to be extremely high temperatures to cause this and is considered an extreme event since the equipment is designed to operate at temperatures of +40°.

7. Can the substation be buried and any surface infrastructure made green to help with screening?

Standard substation design is based on an external arrangement which allows for safe operation, maintenance and control of fire risk. A subterranean transmission substation will have significantly increased fire, construction and operational safety risks.

8. Have the project team looked at the possibility of a substation in the vicinity of Gr NN 765,588 in the woods just East of Tummel Bridge Power Station?

The area identified (NN765588) is comparably constrained to the Site 2 option due to the limited space available as a result of existing linear infrastructure and its topography. In addition, the overhead line circuit that requires the reactive compensation installed upon would require diversion to tie in to the new substation site, where there is limited space to do so.

9. What is SF₆ gas?

For decades, SF₆ gas has been used extensively across the electrical industry as an insulating gas for switchgear in substations. SF₆ gas was chosen for its excellent insulating properties making it possible to reduce equipment size and improve reliability and safety. However, SF₆ gas is a greenhouse gas and as such, if released, it is harmful to the atmosphere.

In 2019 SSEN Transmission became one of the first transmission operators in the UK to install SF₆ free circuit breakers on its network on 132kV switchgear. As part of SSEN Transmission's commitment to reduce its greenhouse gases, it is working with suppliers to install SF₆ alternatives where the technology is available, as well as working with the Energy Networks Association to support industry wide adoption of these technologies.

10. Why are SSEN Transmission using SF₆ in the construction of the Kinardochy substation

SSEN Transmission has been one of the first transmission operators in the UK to install SF₆ free circuit breakers on its network. Due to limitations of the technology available, the scale of the equipment, siting requirements and the potential for future installation, gas insulated switchgear (GIS) is required at Kinardochy substation. This ensures we can develop an optimised substation solution with a moderate footprint with respect to the locale and the sensitivities.

An air insulated switchgear (AIS) option has been considered as part of our early options assessment and a suitable comparison carried out to assess the viability of this option against the proposed GIS option. The installation of an AIS design would lead to a decrease in SF₆ but not remove it from the site completely. Further to this, the AIS substation would increase the overall platform footprint, increase the vehicular traffic during construction and increase the visual impact of the overall site.

11. Are there any alternatives that can be used in Kinardochy substation?

Within our timescales for delivery, there are no viable SF₆ alternative gases for 275kV or 400kV voltages, which is the required voltage range of the switchgear. We are committed to using SF₆ alternative gases to reduce greenhouse gases, SSEN Transmission is working with suppliers to install SF₆ alternatives where the technology is available. It is our intention to use an SF₆ alternative gas, where possible, to reduce the volume of SF₆ we have on site.

There are options for interconnecting the substation components via gas insulated bars (GIB) and lines (GIL) that have been tested at these voltages on other Transmission Operators networks. We are readily exploring available alternatives in our commitment to deliver a net zero network.

12. Could the substation be built without SF₆ gas?

As referred above, an Air Insulated Switchgear (AIS) substation had been considered in our early review of site designs and options. This was ruled out during our site selection process due to the scale of the infrastructure balanced against a number of other factors we require to consider as part of our proposals.

Consequently, an AIS solution requires a much larger land take and accordingly much longer civil engineering works and total construction activity. This solution would not allow us to meet our contracted date to complete the reinforcement.



13. How are leaks of SF₆ gas managed?

The building will be designed such that all ducts, trenches etc at low level (below ground) will be sealed, not only to prevent the escape of gas and spread of fire but also to prevent any vermin or other small animals entering the building. SF₆ gas is heavier than air and any leak will sink to the lowest point within the building.

Although a leak is rare, should SF₆ be released, through the design of the switchgear and with the appropriate maintenance and monitoring of the equipment this will ensure that any leakage is detected and rectified as soon as possible.

14. When is SSEN Transmission planning to upgrade the 275kV to 400kV - is the main switch gear building and site being designed to house the larger 400kV equipment?

Yes, we have provisioned for the installation of 400kV capable equipment. Operating initially at 275kV. This will minimise the amount of work required to upgrade the system to 400kV in future, when it is required on the network.

15. If the Beauly-Denny transmission line was entirely 400kV would this substation be required at all? Why doesn't the 400kV line require the same type of facility in this area?

Our system studies have identified a requirement for reactive compensation on the 275kV circuit in our proposed year of delivery. If both circuits were 400kV, reactive compensation would still provide a benefit to network security and voltage control.

We have designed the reactive compensation substation with 400kV rated equipment, which will initially operate at 275kV. The proposed equipment will require only minor modification to operate at 400kV.

16. Can SSEN Transmission guarantee that no lights will be illuminated in or on any part of the building or compound except during an emergency situation to facilitate safe entry by SSEN Transmission staff?

As an unmanned site, the permanent lighting solution will generally support access and egress to the substation during emergencies. We have taken on a number of queries regarding lighting throughout the consultation and will work with our appointed contractor to optimise the lighting positioning, function and use to minimise unnecessary light pollution.

17. Can SSEN Transmission confirm that during the construction phase no lighting will be visible on any part of the building, contractors' compound or construction equipment outside normal construction hours (7am-7pm)?

During construction we will work with our appointed contractor to minimise lighting on site to that which is required. In some circumstances, we may require to work outside of the hours of 7am and 7pm.

18. Will the construction of the substation cause any reduction in the 4G broadband signal coverage or broadband performance and capacity to any of the properties in the immediate vicinity?

SSEN Transmission will install connections into proprietary fibre cable communications system as part of the construction and will not require a BT landline.

19. Can SSEN Transmission provide broadband coverage to the area?

The fibre cable included within SSEN Transmission overhead line is limited to SSEN Transmission's use only and for third parties to obtain use of this for commercial purposes, they will be required to obtain their own wayleaves prior to making use of the line.

20. Is it possible to see visualisations with current tree species shown, including larch and sitka spruce?

This will form part of the landscape design and mitigation plan which will be submitted as part of the planning application.

21. Will the noise assessment include an assessment of noise as might be experienced from Schiehallion etc.

SSEN Transmission has undertaken noise measurement as part of the survey process in investigating the site and will submit this information as part of the planning application, where the Planning Authority will set the limits to which SSEN Transmission will have to have its equipment conform.

22. Can viewpoints that will be used for the LVIA include both the summit of Schiehallion and also the c1000m point reached where the standard ascent path levels out as well as Dun Coillich and Meall Tairneachan?

We have appointed a landscape and visual consultant who are assisting us with our application, they have been in discussions with Perth and Kinross Council with regard to the selection of appropriate viewpoints.

23. The proposed site is on that of a site of historic significance, next to a loch created by mining lime. Has consideration of the local heritage been considered in SSEN Transmission's assessment of the proposed site?

The environmental assessments will include an assessment on archaeology and cultural heritage; both designated and non-designated.



24. Will the planning application include a guarantee that the proposed substation, if built, would definitely not be visible from the top of the Lime Kiln?

SSEN Transmission as part of the landscape mitigation are aiming to prevent any long term low level visualisation of the substation and this would include views taken from the lime kiln.

Whilst we cannot guarantee, we will see what we can do as part of landscape mitigation design works.

25. Ospreys have been seen feeding at the loch, how much will this project affect them as the areas is quiet and peaceful?

We do not believe it is possible to deliver our plans without taking a long-term, sustainable view of our projects, both individually and combined, considering the impact on the environment, society and the wider economy. In developing this project, we have carried out detailed environmental assessments which include ecology and ornithology. During the construction period access to feeding on this loch will not be restricted at any time. The construction works will close in the evenings and as such there will still be opportunity for feeding.



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How do I have my say?

SSEN Transmission expect to submit their application for planning consent under the Electricity Act to Perth and Kinross Council in quarter 3 of 2020.

The application will be advertised and opportunities for submission of representations will be available at that time. SSEN Transmission will continue consulting with the Scottish Government, Local Energy and Consents Unit, Perth and Kinross Council and other key statutory bodies as well as the local community prior to submitting a formal application.



SSEN Community



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