



Scottish & Southern  
Electricity Networks

TRANSMISSION

# Lochay 132/11kV Transformer Replacement

## Frequently Asked Questions





## 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.

## Why is the proposed site larger than the existing site?

The existing substation was constructed in 1958 when the hydro station was commissioned. Since 1958, electricity regulations and specifications have changed significantly which impact the way in which electricity infrastructure is designed, constructed and maintained. With the introduction of the Construction (Design and Management) Regulations, the Government has introduced legal requirements to ensure that health and safety risks are managed throughout the lifecycle of a project. We must take note of these regulations and ensure that all equipment can be maintained safely. The standard safe method of maintenance in the energy industry is by a mobile work platform (also known as a MEWP) which requires space to manoeuvre around the platform to access the plant at high level for maintenance, whilst allowing for clearance to live electrical equipment. The existing substation did not cater for these maintenance requirements. The transformers themselves are larger in overall footprint as they are designed to allow for noise enclosures to be fitted around the transformer tank if noise mitigation is deemed a requirement in future. This is now common design practice.





## Why is the proposed site not nearer the existing site and so close to the main roads in Glen Lochay?

There are two main constraints in this area which have prevented the substation being positioned any closer to the existing site:

- 1) The underground penstock pipeline which feeds Lochay Power Station
- 2) The 33kV overhead line SHE Transmission need to maintain a safe distance from this Penstock to ensure that it's protected.

In addition it is no longer good practice to locate oil filled transformers so close to a watercourse. Usually, the Scottish Environment Protection Agency's (SEPA) good practice guidance requires that works should not commence within 10m of a watercourse; however, it is likely that this distance will increase due to the sensitivities of the watercourse Special Area of Conservation (SAC). The River Lochay, which is near the existing Lochay substation, forms part of the Loch Tay SAC. "The River Tay SAC is designated as a Natura 2000 site for Atlantic salmon, sea lamprey, river lamprey, brook lamprey, clear water-lochs and otters. It is also important for freshwater pearl mussel which is a protected species. The proposed location is 100m north of the River Lochay and further away than other options which is advantageous.

## How will the proposed site be screened to ensure it is integrated with the existing structures and surrounding landscape and that the visual impact is minimal?

The main power station building has been designed and finished to sympathetically respond to this attractive landscape setting. It was a well-established objective of the then North of Scotland Hydro Electricity Board to ensure hydro power buildings and infrastructure harmonised with their Highland surroundings. The new development of SHE Transmission intends to follow the same principle by screen planting and additional tree planting sympathetic to that already established on site. Additional design improvements will be encouraged during the detailed phase to allow maximum possible distance from the public road to accommodate additional screening.

## Why have alternative sites not been taken forward and on what grounds have these alternatives been dismissed?

SHE Transmission undertook a detailed site selection assessment for any new or upgrade to existing electrical assets. The site selection process has identified a site which SHE Transmission consider at this stage, to be the best solution based on technical, environmental, safety and economic parameters. These designs were presented at the consultation event and will undergo further detailed review following the feedback from the event.

There are several constraints which are considered in this assessment which are factors in why the existing substation site cannot be used; oversailing conductors, proximity to live equipment, 3rd party equipment, underground services including the power station penstock pipeline. In addition to this, with the introduction of the Construction (Design and Management) Regulations, the Government has introduced legal requirements to ensure that health and safety risks are managed throughout the lifecycle of a project. We must take note of these regulations and ensure that all equipment can be maintained safely throughout the lifetime of the plant.





## **Will the narrow road up to the power station cause a problem with the increase in the volume of traffic required for the construction works and the size of the transformers being delivered?**

The access road to the power station has been assessed and it does not require any modifications or widening to enable the safe delivery of the transformers. In relation to the volume of traffic we are currently assessing traffic figures as a result of the earthworks strategy/design and look to keep movements as low as possible.

## **Can the transformers, control building and new pylon be separated to create an opportunity to restrict the overall footprint and thereby narrow the proposed site?**

By the nature of electrical equipment, there are restrictions to where the equipment must be located and connected to ensure the substation operates correctly. SHE Transmission have undertaken design studies to provide what we feel as the most efficient solution at this stage of the consultation. We aim to minimise the footprint of the substation as much as possible.

## **Can a tailor made solution be looked at instead of a standard SSEN layout?**

SHE Transmission undertake a detailed site selection assessment which is tailored for that specific site. The site selection assessment is based on key technical, environmental, safety and economic parameters and is used to identify the preferred layout for the substation. The design presented is tailor made for the site.

## **Could the control building be outside the security fence, on a separate adjacent site?**

The control building must be within the substation fence line.

## **Does the new pylon have to be on a unified flat site or could it be outside the new security fence and not on any raised platform?**

The transmission pylon has to be positioned in a location which allows for the connection into the substation. This does not have to be within the substation fence line, however SHE Transmission must ensure that there are no safety clearance infringements with the proposal.

## **Do the transformers have to be side by side?**

There is no technical reason why the transformers have to be side by side, however consideration on the delivery, offloading, removal, and fire damage protection of the transformers has led to SHE Transmission positioning the transformers in this way

## **Could the existing transformers be decommissioned and removed first so that the new transformers could be put in the existing site?**

There are several constraints why the existing substation site cannot be used; oversailing conductors, proximity to live equipment, 3rd party equipment, underground services including the power station penstock pipeline. In addition to this, with the introduction of the Construction (Design and Management) Regulations, the Government has introduced legal requirements to ensure that health and safety risks are managed throughout the lifecycle of a project. We must take note of these regulations and ensure that all equipment can be maintained safely throughout the lifetime of the plant.

## **Are there safety implications of the new pylon being on a raised platform so close to a public road?**

Any overhead line modifications will comply with legislations and statutory clearance requirements.





## Is there a chance of drainage and flooding issues due to the nature of the current landscape and impact of the proposed build?

SHE Transmission has undertaken ground investigation and appointed specialist civil engineers to prepare drainage strategy and design drainage plans to prevent flooding due to the current landscape and the proposed development. The importance of the River Lochay which is a part of the wider River Tay Special Area of Conservation and its proximity to the newly proposed substation is a key consideration of drainage strategy.

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 Scottish Environment Protection Agency (SEPA) National Flood Risk Assessment Flood Map, does not identify the project site as being within an area likely to experience river or surface water flooding. Relevant sections of the SSEN General Environmental Management Plans (GEMPs) will be built in to a Contractor Environmental Management Plans (CEMP) to be implemented by the project's selected contractor. This will mitigate the potential for impact to waterbodies during construction.

## How loud will the new transformers be when the power station is not generating?

The noise output from the transformers often varies depending on the level of generation export. SHE Transmission expect that the noise levels from the transformers will be within the statutory noise requirements. The transformers themselves are designed to allow for noise enclosures to be fitted around the transformer tank if noise mitigation is deemed a requirement in future.



## Will water levels be extracted from nearby watercourses?

The new substation is a like for like replacement of the existing substation with modern equivalent equipment. No additional water is expected to be extracted for electricity generation as a result of this development. A permanent drinking water supply will be installed but the new substation will be normally unmanned.

## What sort of disruption is to be expected during construction, and how will it be managed?

There is potential for travel disruption during construction, when we take delivery of key plant items or because of increased volumes of traffic on the local road network. Disruption will be minimised and typically controlled through an agreed Traffic Management Plan with Stirling Council as part of any consent conditions. SHE Transmission aims to ensure that construction traffic uses the roads safely and that any inconvenience to the public is kept to a minimum whilst maintaining a safe environment for the workforce and other road users.

As part of the Environmental Assessments, potential impact from construction noise will be evaluated and mitigation measures instigated where necessary. These are controlled through Consented conditions.

## How do I have my say?

SHE Transmission expect to submit their application for planning consent under the Electricity Act to Stirling Council in late summer 2019. The application will be advertised and opportunities for submission of representations will be available at that time. SHE Transmission will continue consulting with the Scottish Government Local Energy and Consents Unit, Stirling Council and other key statutory bodies as well as the local community prior to submitting a formal application.

SHE Transmission will look to hold a second public consultation ahead of their submission to Stirling Council for planning consent, to present renewed proposals after carefully considering the concerns recently raised from the local community. The consultation will be advertised to allow all interested parties to view the renewed proposals and provide feedback.



Scottish and Southern Electricity Networks is a trading name of: Scottish and Southern Energy Power Distribution Limited Registered in Scotland No. SC213459; Scottish Hydro Electric Transmission plc Registered in Scotland No. SC213461; Scottish Hydro Electric Power Distribution plc Registered in Scotland No. SC213460; (all having their Registered Offices at Inveralmond House 200 Dunkeld Road Perth PH1 3AQ); and Southern Electric Power Distribution plc Registered in England & Wales No. 04094290 having its Registered Office at Number One Forbury Place, 43 Forbury Road, Reading, Berkshire, RG1 3JH which are members of the SSE Group.

