Lochay 132/11kV Transformer Replacement Project

2020 FAQ's

Scottish & Southern Electricity Networks

ssen.co.uk

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.

Fish pass access

Safe operation of the fish pass was a misunderstanding on SSEN Transmission's part. Operation of the fish pass ensures SSE Renewables (SSER) are compliant with their license obligations not to impede passage of fish.

SSER take access at least weekly, but weather dependent can go to daily access to all upper and lower areas of the fish pass to ensure it remains clear and functioning. The access required is for routine operations but also required in the event of a fault of the fish pass system or generator at all times to maintain SSER's license obligations associated in line with the operation of Lochay Power station.

Any impediment of the fish pass that could have occurred with the December 2019 design would not be permanent, but during Construction only.

Why the December 2019 design is no longer being considered

Further design development and safety considerations resulted in selecting the site which is being reinforced by SSER's potential water management issue. The inherently safer design is the option that has been selected.

Other site locations investigated

All feasible options were revisited with an open mind. There were other issues associated with the potential sites that were identified during the site assessment.

Location 1 was the site that was presented in December 2019. This option would have required deviations from SSEN Transmission's standard specifications including those relating to safety. It is generally recognised by the project team that this option was presented prematurely.

Location 2 is the site that is being developed.

Location 3 is to the east of the Power Station and it was ruled out due to visual impact and space constraints.

Location 4 is on land owned by Boreland Estates to the east of the public road and was ruled out due to possible flood risk and visual impact.

Power station outages

For the December 2019 location, outages would be a longer duration since the transformers are in the exact same location and more work involved regarding surrounding walls, bunds, cables, etc. This outage time is substantially reduced in a remote location.

The duration of the outages was indicated by the SSEN Transmission project team to SSER as being a number of months of full station outage, followed by a period of an additional 4 months where only one machine (50% of station Capacity) will be connected to the transmission network.

This would present SSER with significant challenges with respect to managing the water captured not only directly at Lochay but the cascade above at Cashlie and Lubreoch Power stations, totaling 240km^2 of catchment area.

For clarity, without a network connection, Lochay power station cannot pass water in any significant volumes. These outage durations would put reservoir levels into a high position leading into the winter months, significantly reducing the ability to absorb weather events throughout the winter and spring, potentially resulting in significant and long duration spill events in Glen Lyon and prolonged high flows in the river Lochay.

During the long station outage there is a risk to maintaining compensation (minimum) flows (as required by our license agreement) in the river Lochay. The proposal for the offline build significantly reduces risk to the management of water by minimising power station outages and is a significant improvement with regards safety responsibilities over the in-situ build option.

Footprint size

We have reduced the footprint from the May 2019 proposal, and we would further optimise this if the opportunity presents itself.

We have been advised by SSER that there is a construction exclusion zone in place around the penstock, which extends 8m either side of the penstock. Therefore, construction in proximity to the penstock was not considered.

The footprint cannot be made longer and narrower since the 132kV overhead line (OHL) enters from the east side and the 11kV cables to the power station exit the south of the building. In addition, a longer site would encroach the penstock exclusion zone.

We also looked into reducing the footprint size of the site by removing the planned car parking area from inside the substation compound, however, the car park spaces should be as close as possible to the point of work to reduce distance when carrying heavy equipment.

Additionally, the spaces would also be used as a turning head for long vehicles. Hence, the spaces are required to remain within the fenced area.

Control building

The equipment that would be housed in the new control building, is currently housed within Lochay Power Station. Our regulator, OFGEM have imposed regulatory licence conditions on SSEN Transmission including a number of obligations relating to separation of activities between electricity network businesses and its competitive energy activities in this case SSER.

OFGEM has asked the different businesses within the SSE Group to separate and as such SSEN Transmission has to remove, where practicable, their equipment that is currently housed within the power station that is operated by SSER. It is necessary to have the control building on the same site as the substation.

A new control building is not just for the September 2020 design, it was also included with the proposal presented in December 2019.

Other transmission sites that require asset replacement

SSER operate some 60+ hydro power stations across Scotland. On many of these, the transformers are SSEN assets with a wide age profile.

Each site has its own specific requirements thus an average downtime for transformer replacement varies. In our experience a brownfield replacement requires a few months compared to a greenfield replacement which requires less than a month.

Both greenfield and brownfield options have been used depending on the individual projects' specifics.

Local input to screening

A landscape mitigation plan is currently being drafted by our environmental consultant. This will include details on proposed trees and shrubs, proposed locations and specifications.

The draft landscape mitigation plan will be shared for comment with the local community, stakeholders and all interested parties prior to the planning application submission. In any planning consent we anticipate Stirling Council would control final finishes and landscape mitigation by way of planning condition.

We are committed to promoting Biodiversity Net Gain (BNG) as part of our projects. This is to ensure there is net gain of biodiversity resulting from our projects. Our environmental consultant will undertake a BNG assessment to support production of a plan to ensure biodiversity net gain and allow quantification of the gain. This will indirectly link to the landscape mitigation plan.

Visual amenity

SSEN Transmission has reviewed the possibility of diverting the 132kV OHL temporarily to allow the new substation to be built closer to the power station but unfortunately this is not possible because of the following factors;

- A temporary OHL cannot be routed to the left of the proposed substation site because the Power Station buildings and access will be in the way.
- A route for the temporary OHL would have to go to the right of the proposed Sub Station Between the proposed Sub Station and the road, this would involve the removal of trees.
- Extra outages would have to be agreed.
- Extra tower strengthening may be required on tower 2.
- A temporary pole line may conflict with 33kV works.
- Temporary OHL would have to be designed to take winter loading into account.
- A temporary OHL would have to be removed before the new conductor could be connected to the gantry, this would increase the outage time.

Visualisations from the September 2020 consultation events are being revisited in order to better reflect how the substation will look form the surrounding area and to show the accurate representation of the substation platform level (119m) in comparison to the road level (118.5m).

The project team are also looking to engage with architectural services to assist in developing our proposal in a way that means it is 'sympathetic' to the local environment. We anticipate our environmental consultant will also provide feedback and comment in this regard. The environmental and planning documents to be submitted as part of the planning application will detail proposed fence colour/finish.

The proposed details will be based on consultation comments received to date in conjunction with professional advice from our environmental and engineering consultants.

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