



Scottish & Southern
Electricity Networks

TRANSMISSION

Kinardochy Substation Site Selection

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.

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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.

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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.

How will access to site be maintained in the winter months if Schiehallion Road is used?

During our consultation with the local community and other stakeholders we received several comments raising concerns about the potential use of Schiehallion Road during both the construction and operational phases, particularly during winter and busy months for local tourism.

Following this feedback, we have now taken the decision not to use this route and instead, propose that access during both the construction and operational phases will be from the B846. Access points for the overhead line are already established from Schiehallion Road.

How will the elevation of the substation be shielded if site 4 is progressed?

A landscape and visual impact appraisal (LVIA) is currently being undertaken using substation design information. The LVIA will be one element that informs the final substation design, as well as ensuring appropriate mitigation is incorporated. This can include achieving an appropriate site level, using the existing landform features and the creation of sympathetic earth bunds and planting. Landscaping details will be submitted as part of the Town and Country Planning Consent Application.





If site 4 is progressed would the laydown area and access to site be screened in order to help minimise local and tourist disruption?

Site 4 is our preferred site and during the planning process we will work with the local authority planners to minimise the visibility of all temporary structures and access tracks.

Three potential laydown (site compound) option areas were presented at the last consultation, however we only intend on taking a maximum of two of these locations forward. A Landscape and Visual impact appraisal is currently being undertaken and will consider the impacts of the proposed development and ways to minimise any perceived impacts.

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Can the substation platform be reduced if site 4 is progressed so it doesn't sit so high and have an impact on surrounding views?

Since the consultation we have undertaken a topographical survey of the area surrounding the site platform, although the density of forestry has made this challenging in places. As there is natural topography and forestry cover at the location, we will look to utilise this alongside any balance of earthworks to provide the optimal platform level with respect to the surrounding area.

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Could the site be potentially extended after these works conclude?

There are currently no plans to extend the site beyond which we are currently consulting upon. As the Transmission Network continuously develops and responds to changing requirements, the proposed platform includes some additional space provision for future development, if the network requires it. Any extension to the site beyond that currently proposed would be subject to a new planning application, with associated public consultation.

Can ground opposite site 2 be considered?

The area surrounding site 2 is constrained due to the limited space available due to existing infrastructure and steep 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.

Is the difference in costs pushing site 4 as being preferred?

In determining the most optimum location to deliver a substation, we follow a Substation Site Selection process, which has been tried and tested on many substations within our network. This process reviews a number of factors including technical, operational, environmental and economic.

At our site selection event we presented the key conclusions which supported selection of Site 4. A number of attendees requested further detail with regard to the factors that influenced our site selection. The table below set out the key factors considered, our RAG rating of the factors which clearly shows why site 4 (Kinardochy) is our preferred site.

Site Selection Red, Amber Green Status		
Topic	Site	
	Site 1	Site 4
Operational/ Technical	Most Constrained	Moderately Constrained
Environmental	Moderately Constrained	Least Constrained
Economic	Most Constrained	Moderately Constrained
Total	Most Constrained	Moderately Constrained
Site Ranking	2	1

Key

- Most Constrained
- Moderately Constrained
- Least Constrained





Site 4 was favoured due to the relative size of the site when compared with site 1;

- Site 1 was constrained on multiple sides by the aqueduct, forestry roads and an existing warehouse.
- Due to the size of the platform, the arrangement would overlap the base of the embankment slope of the adjacent aqueduct.

Site 4 has reduced health and safety considerations during construction (site 1 is adjacent to an existing live substation and aqueduct);

- The stability of the aqueduct is a key concern and we do not wish to introduce any risk to the stability of the hillside which supports the aqueduct.
- We have worked in this area previously in the construction of the Tummel 275kV substation. This substation required significant and challenging civil engineering works to create the platform due to underlying rock. The underlying geology has been reviewed during site selection and it is expected that Site 1 will have comparable conditions to those encountered at the Tummel 275kV substation site.

Site 4 will involve less modification to the existing OHL resulting in the requirement for fewer additional towers to achieve connection; Site 4 is less constrained by existing development which would negate any potential future expansion requirements.

Site 4 is more economic due to the reduced requirement of works on the existing OHL and the relative ease of construction when compared to Site 1 and the constraints and ground conditions described previously.

Has consideration to peatland on site 4 been considered?

Consideration of peatland has been addressed through initial ground investigation undertaken across the proposed site. Peat probing was undertaken at the proposed site in 2016 with further investigations in 2019 which has provided ground data to optimise the site position to avoid areas of deep peat. This has ensured the selected site has minimised impact on existing peatland.

The SNH Carbon and Peatland map 20161 indicates that there is an area of Class 1 peatland in the southwestern section of the PAN boundary.

An area of deep peat (> 3 m) was identified at the southwestern boundary of the Proposed Development (between the existing 132 kV and 275 kV OHL). However, the Proposed Substation and the construction laydown area options are all located outside of this area of deep peat.

There are no sites designated for habitat conservation located in direct proximity to the Proposed Development site.

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Why does the site plan show a large area of empty space with regards to what the project actually needs?

The site plan, or electrical layout plan, provides an outline of the infrastructure that is required to meet the need of the network at this time. There is an area provisioned for the potential additional future voltage control equipment, which would only be installed as contracted generation increases and the network requirements have been clearly established.

The location plan provides an outline (edged in red) area of consideration for development. This redline provided the area within which we could optimise the layout, siting and arrangement of our proposal, including elements such as access roads, overhead line works, and forestry works.





Will site 4 be visible from standing on the Lime Kiln?

The Category B Listed building: LB5741/ MPK10499: Tomphubil Limekiln will be used as a point of visual assessment and considered when designing the landscaping plan. Our specialist environmental consultant is undertaking an appraisal to determine the visual and cultural and built heritage impacts of our proposal. It is likely that there will be visibility from this location, however the extent of this is yet to be confirmed.

A Landscape and Visual impact appraisal is currently being undertaken and will consider the impacts of the proposed development and ways to minimise any perceived impacts.

Landscaping details will be submitted as part of the Town and Country Planning Consent Application.

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If the B846 is used for access what will the impact on this road be with regards to increase of traffic and heavy weight vehicles?

It is proposed that construction traffic shall be travelling from the south on the B846. Any abnormal loads will also travel from the south via the B846. A new access point is proposed to be installed c. 1.5 km north of the B846/Schiehallion Road junction.

Pre and post conditions surveys shall be undertaken by the main contractor in advance of any development works. Any wear or tear caused, as a result of the construction traffic, shall be repaired on completion of the works.

A detailed traffic management plan will be submitted as part of our consent application, which will detail the anticipated traffic volumes.

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Will traffic come from Aberfeldy or from Loch Tummel to site along the B846?

It is proposed that construction traffic shall be travelling from the south on the B846. Any abnormal loads will also travel from the south via the B846.

What are the drainage arrangements for the site, and will they affect Loch Kinardochy?

The drainage arrangements are yet to be confirmed as they will be subject to the results of the ground investigation across the proposed site. However, the drainage arrangements will comprise drainage and surface water management systems to control surface water runoff.

The design principal will aim to mimic the natural drainage of the site. Due to the relatively large size of any proposed excavation it is likely the system will comprise perimeter drainage together with attenuation features discharging into Allt Kinardochy watercourse located approximately 200m to the north of the site.

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Will there be a restriction to access to Loch Kinardochy during construction?

We are proposing to form a new access road serving both construction and permanent access requirements. The access will be taken off the B846, connecting Aberfeldy and Tummel Bridge. In this respect, we do not envisage any restrictions to the access to the loch.

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What is the expected additional generation on the network to warrant this substation?

The Kinardochy substation will connect to the Beauly – Denny transmission circuit which is one of the main transmission corridors on the SHE-T network. The Kinardochy substation will allow additional low carbon generation to connect to the SHE Transmission network by allowing the electricity transmission system operator National Grid Electricity System Operator (NGESO), to safely manage voltage levels on this corridor.

This in turn will allow additional power flows from the wider network, maximising use of the existing transmission circuits.





How often is a fluctuation in voltage expected?

The voltage on the GB Transmission system is continuously changing in response to varying generation and demand profiles. The voltage changes are therefore affected by factors such as time of day, season and weather conditions. SHE Transmission design the system to comply with the Security and Quality of Supply Standards (SQSS) which sets the limits for voltage changes on the GB electricity system.

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What level of fluctuation is tolerable?

The level of voltage fluctuation which is permitted is governed by the Security and Quality of Supply Standards (The SQSS). This Standard sets the limits for both planned and unplanned voltage variation. The SQSS also sets the operational limits that the UK Transmission System must comply with.

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Why were the 9 sites that were considered restricted to the same mid-section of the same line?

Our studies have shown us that reactive compensation is required on the 275kV circuit of the Fort-Augustus – Denny overhead line, within the Tummel bridge area, where we are observing these voltage changes. In this regard, the reactive compensation requires to be situated in close proximity to this section of network.

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Were Environmental Impact Assessments carried out for each of the 9 considered sites?

Full environmental impact assessments (EIA's) as set out by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, are not carried out on multiple site options at the site selection stage.

However, we follow a consistent internal site selection process which considers a range of environmental topics as part of the overall balance of considerations, which also includes engineering and economic aspects. Examples of the environmental topics we assess during this project development stage include landscape and visual, ecology, protected species, hydrology, soils and geology, cultural heritage and noise.

The objective of the guidelines for substation site selection is to facilitate the design, consenting, construction and operation of the substation in a manner that is technically feasible and financially viable whilst causing, on balance, the least disturbance during construction and operation to the environment and the people who live, work and use it for recreation. We also commission environmental specialists to undertake a range of desk-based studies, and site surveys and walkovers in order to firstly assess each site option, and then undertake a comparative assessment of the sites, with the aim of identifying the least constrained site, based on the range of environmental criteria.

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What level of environmental risk mitigations have been taken for the preferred site 4?

As discussed above we undertake a range of environmental assessments at the site selection stage to ensure we identify the least constrained site to take forward for subsequent consultation and consent application.

We then undertake a further detailed environmental appraisal on the proposed site prior to consent application in order to develop a range of appropriate mitigations e.g. site specific drainage plan. We have also developed a variety of environmental management plans for potential risks such as water management, pollution control measures and species protection plans. These risk mitigations, along with consent conditions and other commitments are included onto a commitment's register and implemented on site. We also include various environmental risk mitigations into the design of our substations, including a tertiary system for oil pollution prevention, which has been reviewed and agreed by SEPA.

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How do I have my say?

SHE Transmission expect to submit their planning application for the substation under the Town and Country Planning (Scotland) Act 1990 and for the overhead line (OHL) tie-ins via a Section 37 application under the Electricity Act to The Scottish Ministers in the first quarter of 2020. The applications will be advertised and opportunities for representations will be available at that time. SHE 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.



