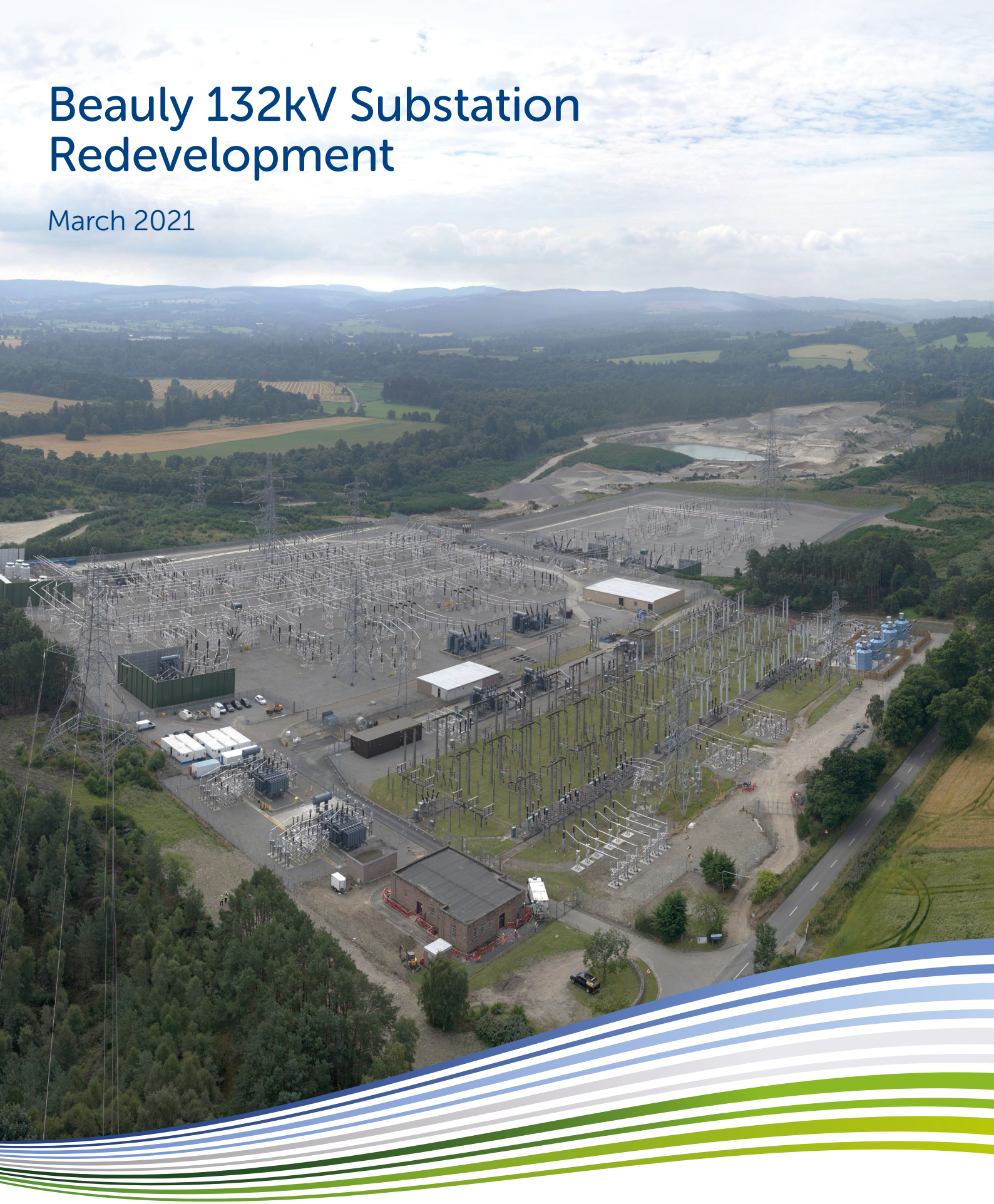
Beauly 132kV Substation Redevelopment

March 2021

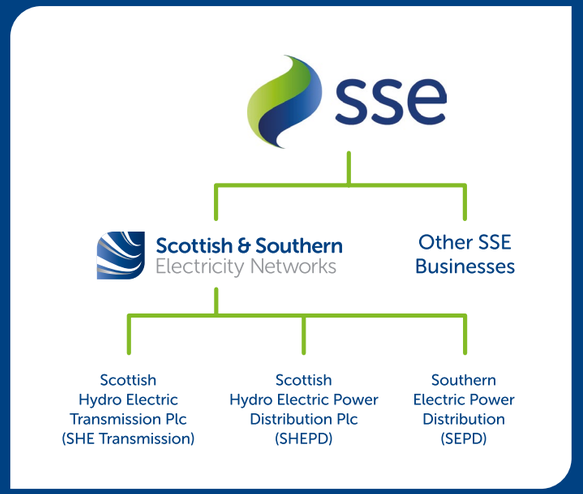


Scottish & Southern Electricity Networks

TRANSMISSION

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.



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

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.

The planning process during COVID

As the transmission network operator in the north of Scotland, SSEN Transmission play a vital role in powering the country, providing a safe and reliable supply of electricity at local, regional and national level on which the people and organisations whose work is critical to the Coronavirus response depend.

This virtual exhibition is being held as part of the statutory Pre-Application Consultation (PAC) requirements for a major planning application due to be submitted in Summer 2021. The process requires a 12-week period for consultation and comment on the proposed development, the Proposal of Application Notice (PAN) which commences that period was submitted on 24th February 2021. We propose to hold a second event in May 2021 to present design development and demonstrate how we have responded to comments, prior to the formal planning application submission.

The approach to consultation for the PAC process usually involves at least one face to face public event. Due to the ongoing COVID pandemic the Government issued Statutory Instrument 2020 No. 124 The Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 on 24th April 2020. The regulations formalised the removal of face to face events and requires the replacement of consultation with the community and interested parties by alternative means.

The standard and accepted approach since that time has been to hold virtual events which are interactive and enable visitors to ask questions and engage with the project team via a live text chat function.

SSEN Transmission have developed a consultation platform to reflect the guidance provided by the Regulation together with advice issued by Scotland's Chief Planner. In addition, as required by guidance we have extended the period for comments to encompass the entire 12-week period. We are committed to continuing quality engagement with all stakeholders as we all respond to these challenges and you have our commitment that we will keep our customers, communities and stakeholders up to date.

Following the completion of the 12-week statutory consultation period, a planning application to the Council can be made.

We intend to make the submission during Summer 2021. At that point interested parties can make comments directly to the Council. Prior to the submission of an application, comments can be submitted to the project team either via the feedback form or via email to the Community Liaison Manager.

Project overview

There has been a sustained increase in generation in the Beauly area which is pushing the 132kV substation beyond its existing capacity. The condition of the existing substation is a concern with various elements showing signs of deterioration which requires remedial works to be done.

Following the completion of a technical options assessment exercise, it is recommended that the existing Air Insulated Switchgear (AIS) busbar (outdoor substation) arrangement is replaced with a new Gas Insulated Switchgear (GIS) double busbar (indoor substation).

This will be located within a new building to be constructed adjacent to the existing site area.

The high quantity of circuits at Beauly is a particular driver for a Gas-insulated Substation at Beauly 132kV, as the area of land required for an AIS solution is considered impractical due to the land constraints and development limitations in the area.

Furthermore, as SF6-alternative products are now available for 132kV equipment, the risk of leakage (greenhouse gas emissions) associated with traditional GIS solutions is significantly reduced. This also benefits our aims of minimising our overall carbon footprint of network assets.

As part of these works, the entire existing area of 132kV outdoor switchgear towards the north of the site will be decommissioned and removed. Within the existing substation boundary, this will include equipment associated with two cable circuits and one overhead line circuit, which will instead be rerouted via cables into the new switchgear building.

Three transformers that have been on the site for many years will be removed and replaced with brand new transformers, housed in bespoke noise enclosures. We are also proposing to decommission four spans of overhead line that currently run into the substation from the north. These will be replaced by one shorter span to a new termination tower, which will then run via underground cable into the substation.

Additionally, the proposed reinforcement works are being driven by the Loch Luichart Extension II wind farm, which signed their connection offer in February 2019. The current offer states that this connection is to be provided by October 2024.

Existing AIS equipment required to be replaced

Project details

Delivery of this project will involve the following elements:

- Decommissioning parts of the existing 132kV substation.
- Construction of a new 132kV GIS substation building.
- Decommissioning of three existing transformers within the existing 132kV substation.
- Their replacement with three new transformers, all installed with noise enclosures.

Outwith the planning application and to accommodate these works, a section of one of the existing overhead lines will be replaced by underground cable to the new GIS equipment.

Some of the existing towers (pylons adjacent to the substation) will be removed and replaced by a sealing end tower, which transitions an overhead line into cable.

Construction timeline

November 2020
Initial consultation period starts

Summer 2021
Planning submission

May 2022
Contractor award

September 2022
Construction starts on site

November 2025
Construction finishes

Beauly Substation - Before

Beauly Substation - After

What else is happening at Beauly Substation?

There are currently several projects at Beauly over and above the Beauly 132kV Redevelopment discussed in this booklet both current and expected in the future.

Noise Mitigation

The physical noise mitigation works are complete, with the aim of reducing the noise of a piece of apparatus within the substation, by means of the installation of acoustic barriers and reactor jackets. Noise monitoring to assess the results of these physical works are being undertaken, while software modifications are progressing.

Beauly Security Fence upgrade

The "Centre for the Protection of National Infrastructure" (CPNI) has deemed Beauly to be a critical part of the transmission network and as such the existing perimeter fence is to be upgraded to meet security requirements.

Western Isles Converter Station

This project is currently under consideration by OFGEM (the government regulator for gas and electricity markets in Great Britain) with the results due back in early 2022.

Whilst the project relates to the Western Isles, the works involve the installation of a converter station to be situated at Beauly. Further details can be found at the project website:

www.ssen-transmission.co.uk/projects/western-isles

NOA projects

Two projects at Beauly have been given a proceed recommendation by National Grid Electricity System Operators Network Options Assessment report.

Beauly to Blackhillock
Construction of a new 400kV double circuit overhead line between Beauly and Blackhillock substations by 2030.

Beauly to Loch Buidhe 275kV Reinforcement
Replaces the existing Beauly – Shin – Loch Buidhe 132kV double circuit OHL with a 275kV double circuit OHL.

As these projects develop, SSEN Transmission will continue to engage with the local community to ensure they are well informed and provided the opportunity to share their views.

Preferred Site and Engineering Considerations

GIS Building Location

The project team identified four possible options for the Beauly Substation redevelopment as a direct, in-situ replacement was not considered feasible, due to the configuration of the existing electrical equipment.

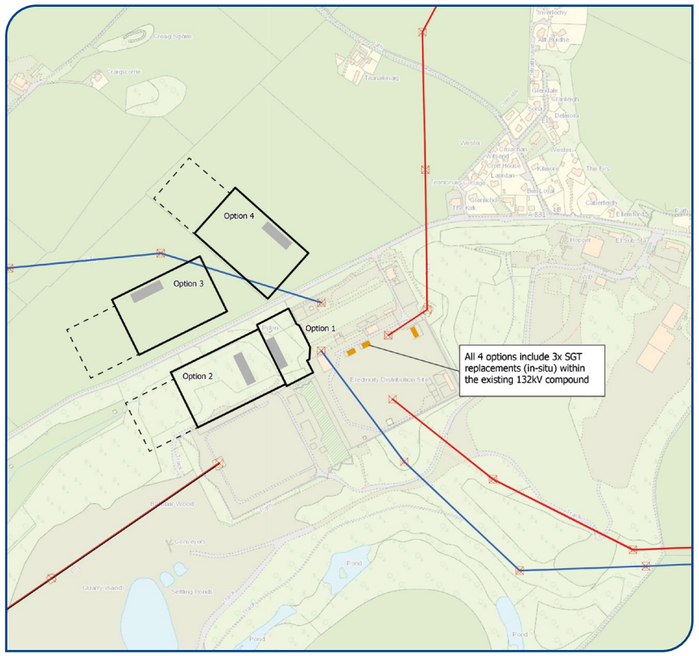
These were each scored across a range of factors, including environmental, economic, technical and network security. The options were presented to local stakeholders during our October 2020 consultation.

The GIS substation will be housed within a building and will be connected to the transformers via cable and gas insulated busbar.

After our initial design process and consultation:

- Option 1 was the preferred site location due to its proximity to the existing substation and reduced construction constraints.
- Options 3 and 4 were ruled out due to environmental concerns, including landscape and visual impact.
- Option 2 was ruled out due to difficulties in constructability, as well as economic factors.

A further location in the nearby quarry area was considered based on community feedback, as it was recognised as having some advantages such as visual screening.



Proposed location of Options 1 - 4

Unfortunately, neither the technical nor economic case made this a viable option. A particular limitation was the lack of available cable routes, for the interfaces required with the rest of the substation. Even if such cable routes were available, the overall impact on the environment would be increased. It would also increase the footprint of the Beauly site more than Option 1.

Construction Considerations

Construction traffic for the project will be carefully managed to minimise disruption to the local road network.

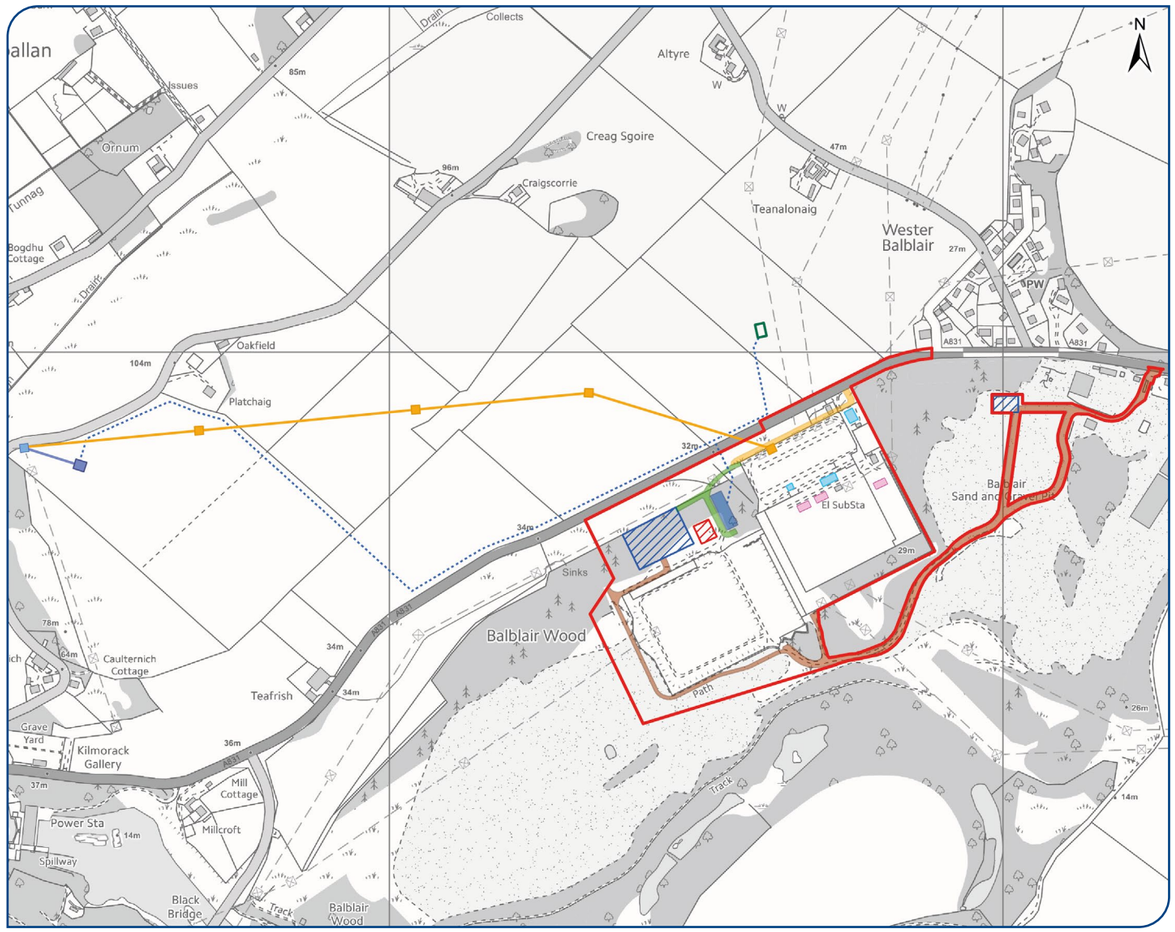
A detailed Construction Traffic Management Plan will be developed for the project in conjunction with the Highland Council agreeing appropriate and safe routes to and from the site.

All construction vehicles will be required to use approved access routes. It is currently proposed to use the Balblair quarry entrance as the main site construction access point for most of the construction traffic in order to avoid queuing vehicles at the existing substation entrance on the A831.

As with previous projects it is anticipated that the heavy abnormal loads, such as the transformer deliveries, will be routed from Invergordon via the A9, A832, A862 and A831 roads via Beauly.

Movement of abnormal loads will be restricted to take place outside peak flow hours to minimise disruption to general traffic flows. Appropriate signage warning motorists of the presence of construction vehicles will be implemented, where appropriate. Measures will also be put in place to minimise dust and dirt being deposited on the local roads due to the construction operations.

Project Map



Legend

- Pre-Application Notice (PAN) Red Line Boundary
- Proposed Underground Cable
- Proposed 132kV Overhead Line
- 132kV Overhead Line to be Decommissioned
- Electricity Tower to be Decommissioned
- Existing Tower
- Proposed 132kV GIS building
- Proposed Area Allocated for Drainage (SUDS)
- Construction Compound and Laydown Area
- Proposed Permanent Access Track
- Proposed Buildings to be Demolished
- Proposed Construction Access (Permanent)
- Proposed Construction Access (Temporary)
- Replacement of Supergrid Transformers
- 132kV Tower with Cable Sealing End Platform
- Proposed Cable Joint

GIS Substation 3D images

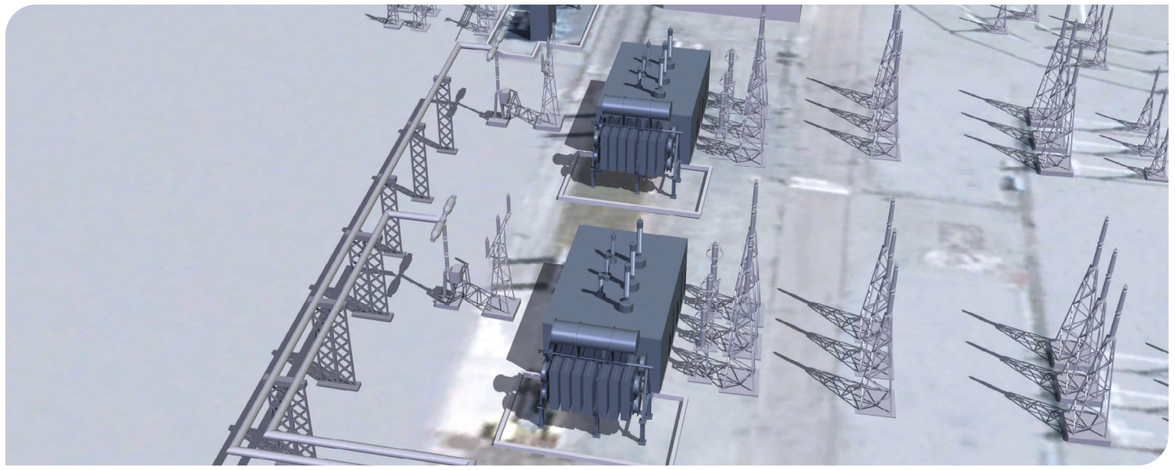
Beauly Substation - Before

Beauly Substation - After

Acoustic Noise

It is recognised that acoustic noise is a key concern for the community around the Beauly substation. The project is therefore being developed with this in mind.

Transformers are known to be one of the key sources of noise inside substations. The scope of this project includes the direct replacement of three existing transformers. These units date from the 1970's and two of them do not currently benefit from any external noise mitigation. The third is contained within a retrofitted acoustic barrier. All three will be replaced by brand new transformers, which will each have bespoke noise enclosures closely fitted around its main body.



New SGT2 and SGT4, illustrating noise enclosures fitted around main body

An independent consultant has been appointed to model the potential noise impact of the project, to ensure the development achieves the aim of not adversely affecting key property receptors in the surrounding area.

Initial modelling indicates that:

- For overall noise emissions, the project will have low impact.
- The equipment being replaced by the project, notably the transformers, will benefit from a significant reduction in noise.
- Noise emissions from Beauly substation will receive a net benefit as a result of the project.

This modelling will be updated with the new baseline noise information following the completion of the SVC noise enclosure installation works in the 275kV substation.

Detailed information on construction and operational noise will be provided as part of the planning application for the development.

Transformers

To accommodate the additional load, three existing 120MVA transformers will be replaced by three new 360MVA transformers, which will be housed in specialist noise enclosures. The new transformers will be situated in similar locations to the existing transformers.

Existing transformers to be replaced

Environmental Considerations

The impact of the proposed development on the environment and ecology has been considered at every step in the site selection and the design process.

Environment and Ecology

Ecology surveys have already taken place, and more surveys are planned for Spring 2021. Tree surveys have also taken place to ensure that where possible, we can retain existing trees, and avoid impacting their root systems, particularly for those trees along the A831 and at the entrance to the existing substation.

An Environmental Appraisal or Environmental Impact Assessment (if required) will be prepared to support the planning application for this development.

The planning submission will include a very detailed environmental appraisal and will set out environmental mitigation measures and commitments to be put in place during construction and operation to minimise environmental impact. Discussions are underway with a local landowner to identify potential sites for compensatory planting and habitat creation.

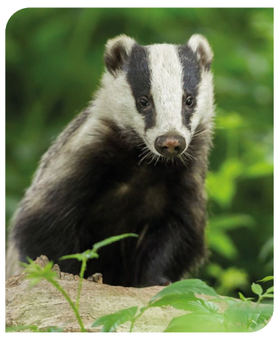
Environmental surveys

The following environmental surveys have already taken place:

- Protected Species Surveys (including Pine Marten, Red Squirrel, and Badger).
- Phase 1 Habitat Survey.
- Bat survey – Potential Roost Features Assessment.
- Landscape and visual survey.
- Tree survey.
- Cultural heritage walkover.

Additional environmental surveys will take place between March - May 2021, including further bat surveys, badger surveys and breeding bird surveys. Landowners have been contacted to plan for access.

These surveys will help to ensure that the baseline environmental conditions are well understood and that appropriate steps can be taken to minimise the impact of the development on local wildlife, trees and archaeology.



What happens now?

As described within 'The Planning Process During Covid' information, the 12-week formal consultation period for the Pre- Application Notice (PAN) commenced on submission on 24th February 2021.

We will be seeking feedback from members of the public on this exhibition until 9th April 2021, general comments on the proposals can be made throughout the 12-week period to 20th May 2021. At that time, interested parties will have an opportunity to make formal submissions to the Council to support or object to the proposals.

Please see our planning application timeline below:

- Carry out detailed design, ecology and environmental surveys and other assessments needed to inform planning application.
- First pre-application consultation event. **25th March 2021**
- Consider all feedback on proposals. Continue to progress detailed design and Environmental Appraisal/Environmental Impact Assessment.
- Second pre-application consultation event. **May 2021**
- Consider all feedback. Finalise detailed design and Environmental Appraisal/Environmental Impact Assessment.
- Submit planning application to Highland Council. **July 2021**
- **Statutory Consultation** Highland Council will carry out a statutory consultation following submission during which time representations can be made directly to the planning authority.
- Determination of planning application.
- Subject to receiving planning consent, and any other consents, construction commences. **Autumn 2022**
- Construction Complete **2025.**

How do I have my say?

We understand and recognise the value of the feedback provided by members of the public during all engagements, consultations and events. Without this valuable feedback, the Project Development team would be unable to progress projects and reach a balanced proposal to submit for planning.

We are keen to receive your views and comments with regards to the following questions:

- Has the project information provided explained the need for the Beauly 132kV Redevelopment project?
- Have we adequately explained the different parts of the overall project?
- Have we been clear in providing the reasons for selecting our proposed site for the GIS building?
- Do you have any concerns about our preferred site for the GIS building?
- Do you have a comment or preference on the appearance, such as colour, of the GIS building and transformer enclosures?
- Are there any additional factors, or environmental features, that you wish to be brought to the attention of the project team?
- Following review of the Consultation material displayed today and the project information brochure, how would you rate your understanding of the Beauly 132kV Redevelopment project.
- Do you have any further comments you would like the project team to consider?

Comments

Your views and comments can be provided to the project team by completing the feedback form or by writing to our Community Liaison Manager. All received feedback will be assessed and the proposed options adapted where necessary.

Feedback

We will be seeking feedback from members of the public on this exhibition until 9th April 2021, general comments on the proposals can be made throughout the 12-week period to 20th May 2021.

To provide feedback on the proposal or to gain further information on the project, visit our virtual event or contact our Community Liaison Manager. Once planning applications have been submitted there will be an opportunity for the public to make formal representations to The Highland Council for the proposed Beauly 132kV Redevelopment before a decision is made on our application.

Community Liaison Manager, Sally Cooper

sally.cooper@sse.com

07918 470281

Sally Cooper
Scottish and Southern Electricity Networks,
10 Henderson Road,
Inverness IV1 1SN

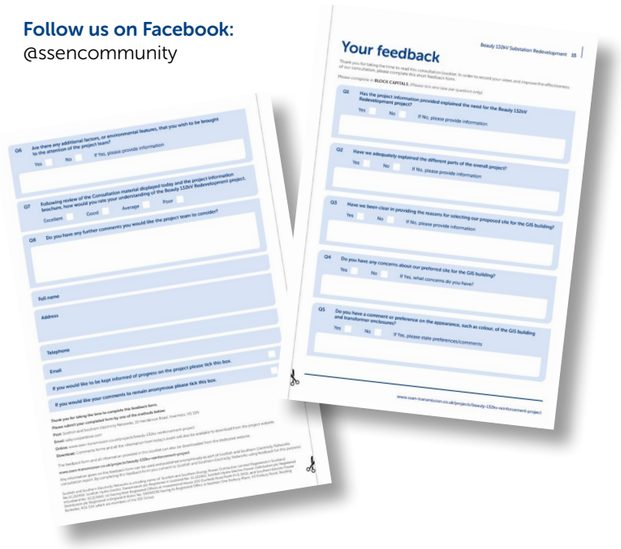
Additional information

Information will also be made available via the project webpage and social media channels:

Project Website:
www.ssen-transmission.co.uk/projects/beauly-132kv-reinforcement-project

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 project information provided explained the need for the Beauly 132kV Redevelopment project?**

Yes ☐ No ☐ If No, please provide information

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

Yes ☐ No ☐ If No, please provide information

Q3 **Have we been clear in providing the reasons for selecting our proposed site for the GIS building?**

Yes ☐ No ☐ If No, please provide information

Q4 **Do you have any concerns about our preferred site for the GIS building?**

Yes ☐ No ☐ If Yes, what concerns do you have?

Q5 **Do you have a comment or preference on the appearance, such as colour, of the GIS building and transformer enclosures?**

Yes ☐ No ☐ If Yes, please state preferences/comments

Q6 **Are there any additional factors, or environmental features, that you wish to be brought to the attention of the project team?**

Yes ☐ No ☐ If Yes, please provide information

Q7 **Following review of the Consultation material displayed today and the project information brochure, how would you rate your understanding of the Beauly 132kV Redevelopment project.**

Excellent ☐ Good ☐ Average ☐ Poor ☐

Q8 **Do you have any further comments you would like the project team to consider?**

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, 10 Henderson Road, Inverness, IV1 1SN

Email: sally.cooper@sse.com

Online: www.ssen-transmission.co.uk/projects/beauly-132kv-reinforcement-project

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/beauly-132kv-reinforcement-project

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.