

Muaitheabhal wind farm connection and Balallan switching station

Public consultation exhibition

October 2023



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Who we are

We are SSEN Transmission, the trading name for Scottish Hydro Electric Transmission. We are responsible for the electricity transmission network in the north of Scotland, maintaining and investing in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network.



Our network consists of underground and subsea cables, overhead lines on wooden poles or steel towers, and electricity substations. It extends over a quarter of the UK's land mass, crossing some of its most challenging terrain.

Our first priority is to provide a safe and reliable supply of electricity to our communities. We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for onwards distribution to homes and businesses in villages, towns and cities.

Our operating area is home to vast renewable energy resources and this is being harnessed by wind, hydro and marine generation. Working closely with National Grid, the GB transmission System Operator, we also enable these electricity generators to connect to the transmission system by providing their connections and allowing the electricity generated by them to be transported to areas of demand across the country.

Scotland's transmission network has a strategic role to play in supporting delivery of the UK and Scotland's Net Zero targets. We're already a mass exporter of renewable energy, with around

two thirds of power generated in our network area exported to demand centres further south. By 2050, the north of Scotland is expected to need 40GW of low carbon energy capacity to support net zero delivery. For context, we currently have around 8GW of renewable generation connected in the north of Scotland.

As a natural monopoly, we are closely regulated by the GB energy regulator, Ofgem, who determines how much revenue we are allowed to earn for constructing, maintaining and renovating our transmission network in the north of Scotland. These costs are shared between all those using the transmission system, including generation developers and electricity consumers. Following a minority stake sale which completed in November 2022, we are now owned 75% by SSE plc and 25% by Ontario Teachers' Pension Plan Board.

As a stakeholder-led business, SSEN Transmission is committed to inclusive stakeholder engagement, and we conduct this at an 'Advanced' level as assessed by AccountAbility, the international consulting and standards firm.

The Pathway to 2030 Holistic Network Design

In July 2022, National Grid, the Electricity System Operator (ESO) who are responsible for making sure that the electricity flows across the UK's system, balancing supply and demand at all times, set out how the transmission network needs to develop to accommodate the growth in renewable electricity across Great Britain. This also included the UK and Scottish Government's 2030 offshore wind targets of 50GW and 11GW. For the north of Scotland, this needs over £7 billion of investment in the transmission network to deliver the 2030 targets and help the country on its pathway to net zero and greater energy independence.



These projects have been highlighted as critical to delivering the UK and Scottish Government's targets, with the development of them accelerated to meet the target dates of energisation by 2030.

Muaitheabhal wind farm connection: project need and overview

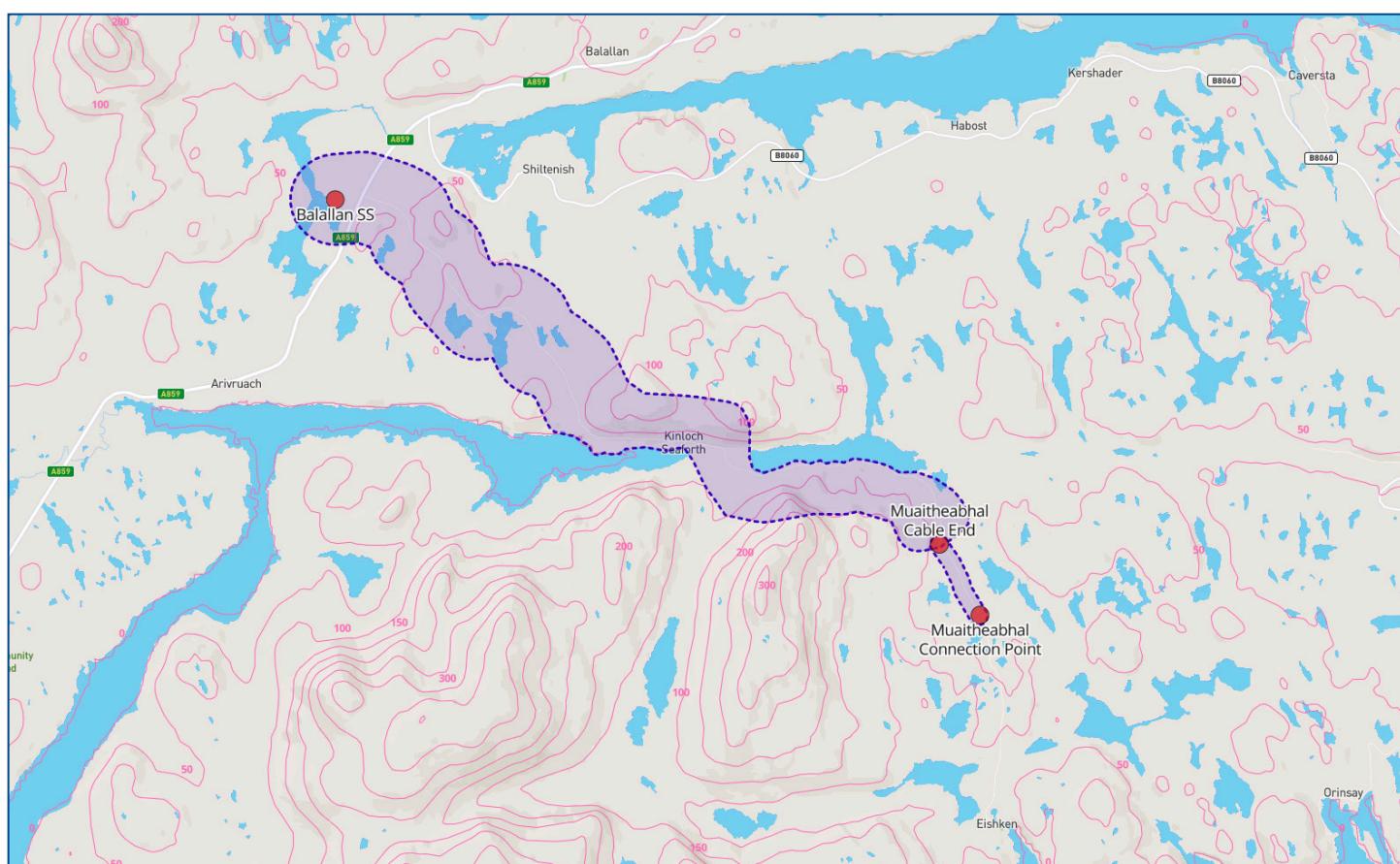
The required connection will comprise of 9km of low profile overhead line, 1km of underground cable and a substation at the wind farm. This shall connect into the proposed Balallan switching station.

This project will facilitate the connection of the proposed Muaitheabhal wind farm located near to Eishken. The connection will consist of 3 main components, an overhead line, underground cable and a substation. The substation shall be used to increase the voltage level of the wind farm output. An increased voltage level allows for more efficient transfer of power, with reduced losses. The overhead line and underground cable will facilitate transfer to the proposed Balallan switching station which will connect the wind farm to the grid on the island.

The proposed overhead line will follow the corridor shown below between 'Balallan SS' and 'Cable End'. This will be constructed using low profile pole technology. It will consist of double pole structures, featuring 3 conductors and 1 optical fibre. The underground cable section shall run in the corridor identified between the 'cable end' and 'connection point' and feature one joint location. This section of the connection requires undergrounding due to the turbine wake induced by the proximity of the turbines.

At the Muaitheabhal connection point a substation shall be constructed and consist of 3 buildings housing all electrical switchgear to protect it from the elements. These buildings shall be of various sizes, two shall be approximately 40x20m and one shall be approximately 40 x 55m with an approximate overall platform size of 140m x 85m.

Muaitheabhal wind farm planned overhead line and underground cable corridors



Muaitheabhal wind farm connection: Environmental



Ecology, habitats and ornithology

The project has assessed at a high level, and will continue to assess in detail, the risk to species and habitats in the area and in consultation with the key stakeholders will give full consideration to any risks highlighted. The proposed route has the potential to encounter protected species and sensitive habitats within the project area, however does not cross any of the environmental designations on Lewis.

The connection requires over one years' worth of bird surveys; these began in March 2023 and will continue into Spring 2024. This data set will be invaluable for informing the final alignment and any mitigation required in consultation with Nature Scot.



Cultural heritage

Scheduled and non-scheduled heritage features have been mapped and risk assessed through the stages of the route optioneering process.

The project works will be designed and constructed to ensure these features are avoided, where possible. Where this is not possible further site assessments will be conducted in consultation with the planning authority.



Landscape and visual amenity

The connection routing process aims to identify locations that minimise the effect on landscape and visual amenity. A full Landscape and Visual Impact Assessment (LVIA) will be undertaken and included in the detailed environmental assessment to come.



Geology, hydrology and hydrogeology

Risks to the aquatic environment have been considered as part of the selection process. We look at proximity to surface waterbodies (rivers/lochs/coastal), proximity to aquifers and drinking waters and also the potential for Ground Water Dependent Ecosystems (GWDTEs).

Habitat mapping is underway and further peat surveys will be delivered to further inform the connection alignment, access and construction methodologies, to minimise impact on these habitats. A Peat Management Plan will be developed and implemented during construction. Pollution Prevention Plans will also be prepared, to map out the measures to protect the water environment.

Muaitheabhal wind farm connection: Social

The interaction of our project with those who live, work and travel near it is embedded in our assessment of a proposed connection route and our approach to how we construct and operate the line on the Islands.



Landscape and visual

Landscape Designations, the Landscape Character and the Visual Amenity of the location within which the OHL will sit are key factors in our assessment of where to site the line and individual poles, as well as how to construct it.

When assessing the visual aspect of the OHL we take account of settlements and residential properties, key transportation and recreational routes utilised by tourists and visitors to an area, vantage points and tourist destinations from where views and landscape appreciation is important.

We also consider whether the OHL will compromise any of the special qualities for which it is designated e.g., a National Scenic Area or whether it will compromise the characteristic elements of its landscape character.



Land use and recreation

The land and how it is utilised is included in our assessment for the siting of the OHL. Recreational uses including footpaths, cycle routes and sporting activities (fishing, stalking, shooting) are identified and factored into the assessment of options for the OHL.

A traffic management plan will be developed for managing construction traffic during the OHL build and replacement and should it be needed a plan can also be developed to help manage any disruption to recreation during the build of the line.



Proximity to dwellings

The proximity of a line and pole to those living along its route is taken account of when we work through the options for routing the new line. We always aim to try and keep any line at least 100m away from any properties wherever possible.

However, in some cases this may not be possible due to routing constraints. Where this is the case we will aim to place the new line in a position where it minimises effects on the properties whilst still being a technically feasible option.

Next steps

The interaction of the project with the environment in which it sits (i.e. flora, fauna and human/social) will be further assessed in detail as part of ongoing environmental assessments.

Low profile pole options

Low profile overhead lines allow us to connect generators and demand centres with minimal infrastructure, mainly due to the absence of concrete in the foundations. All low profile poles are constructed in a similar manor and typically require very little in the way of access tracks to facilitate the build.

Typically SSEN Transmission has only delivered low profile pole structures made of wood. Whilst these have served the network well and continue to have their place, they are limited in mechanical strength and therefore electrical capacity. Furthermore, wood poles rely on creosote for their preservation, creosote is a difficult substance to handle and is accompanied by health and safety risks.

SSEN Transmission has proactively developed a suitable alternative which is able to provide greater electrical capacity whilst maintaining all the benefits of a wood pole structure.

The new Low Profile structure can be seen in the bottom right of this page. It appears very similar in comparison to its wooden counter part other than the poles which are made of steel. This structure will require a very similar land take to a wood pole and be of similar height and presence.



Construction of an overhead low profile steel pole

A typical "H" low profile pole installation requires foundations of approximately 2.5m by 3m across and to a depth of around 2 metres. To minimise construction impact and the requirement for access tracks helicopters are used wherever possible to help deliver the materials to the site.

The picture below shows a typical helicopter delivery of the steel work used on the top of a pole and the baulk timbers used in the foundation at the base of each structure. Helicopters are also used to assist with the stringing of the conductors.



Above is a typical example of a low profile pole.

Construction of access tracks

Access tracks will only be constructed where access by all-terrain vehicles or the use of trackway is not feasible.

Access tracks will be constructed with imported and/or locally sourced material.

Access tracks are not usually retained after construction of the overhead line. Permanent access may be required to terminal structures where an OHL meets a cable section.



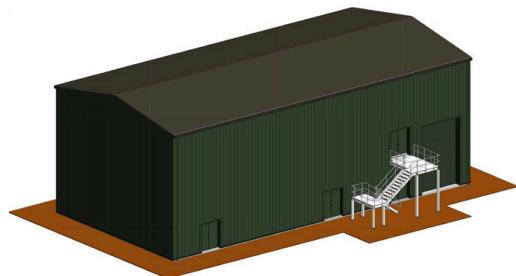
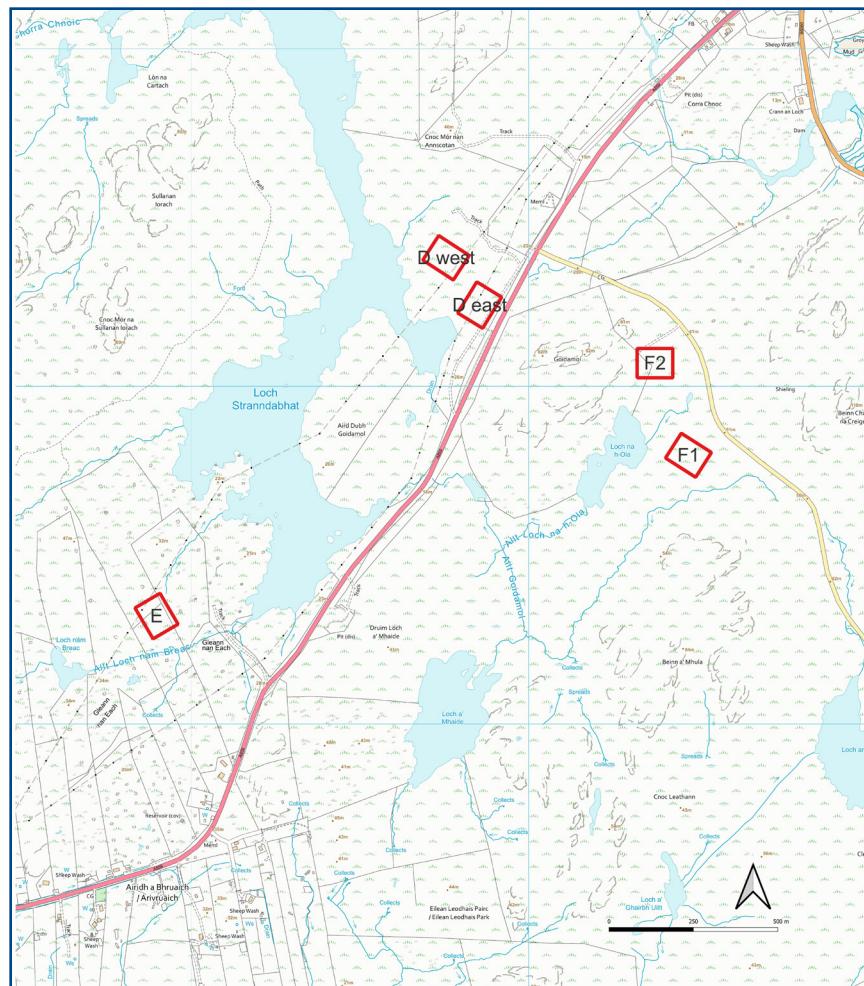
Balallan 132kV switching station: project need and overview

The Switching Station will house all the required Gas Insulated Switchgear (GIS) to accommodate the connection of the 132kV overhead line from Muaiteabhal Wind Farm and the 132kV overhead line to Harris and Stornoway.

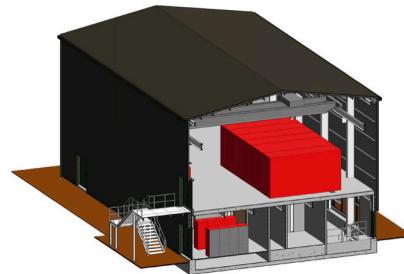
The Switching Station will enable the Muaiteabhal wind farm to connect onto the new 132kV Overhead Line and export electricity to the mainland via the proposed Stornoway 132kV Substation. To reduce the size of the footprint required, Gas Insulated Switchgear (GIS) has been utilised which provides a footprint approximately 2/3 smaller than that of traditional Air Insulated Switchgear. A permanent access road will be built into the site. The Switching Station will also include ancillary equipment on the ground floor including control and protection panels, communication equipment, low-voltage switchgear, batteries, and welfare facilities.

Outline building dimensions are expected to be 39m (long) x 16m (wide) x 13m (high) within an overall platform measuring approximately 90m x 107m.

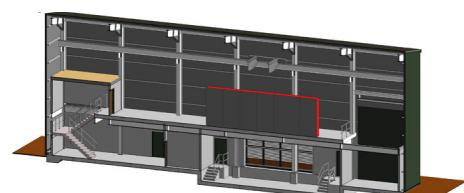
Balallan 132kV switching station site options plan



3D view north



3D view of section 1-1



Long section through cable basement

Balallan 132kV switching station: Environmental

Environmental assessments of the potential sites will consider landscape and visual amenity, ecology, habitats, ornithology, geology/hydrogeology, hydrology, and cultural heritage.



Ecology, habitats and ornithology

The risk to species and habitats in the area will be assessed and consultation with key stakeholders will be undertaken to ensure full consideration is given to any risks highlighted. Within this locality there is the potential to encounter protected species and sensitive habitats, however, we aim to avoid or minimise impacts during the site selection process.

During site selection a high-level assessment of the species and habitats present will be made. This will aid us in identifying a proposed site which can be designed to avoid or minimise impacts where possible. Further, more detailed, assessment will then be undertaken in future stages of the project.



Cultural heritage

Scheduled and non-scheduled heritage features will be mapped and risk assessed through the stages of the site selection optioneering process.

The site selection process will aim to ensure these features are avoided, where possible. Where this is not possible further site assessments will be conducted in consultation with the planning authority.



Landscape and visual amenity

The site selection process aims to identify locations that minimise the effect on landscape and visual amenity. A full Landscape and Visual Impact Assessment (LVIA) will be undertaken and included in the detailed environmental assessment to come.



Geology, hydrology and hydrogeology

Risks to the aquatic environment will be considered as part of the selection process. We look at proximity to surface waterbodies (rivers/lochs/coastal), proximity to aquifers and drinking waters and also the potential for impacts to Ground Water Dependent Ecosystems (GWDTEs).

Habitat mapping is underway and further peat surveys will be undertaken to inform the identification of a proposed site. The impact on peatland habitats will form a key consideration in the site selection process and as the project progresses. Where necessary a Peat Management Plan will be developed.

Balallan 132kV switching station: Social

The interaction of our project with those who live, work and travel near it is embedded in our site selection assessments and our approach to how we construct and operate the switching station.



Landscape and visual

Landscape Designations, the Landscape Character and the Visual Amenity of the location within which the site will sit are key factors in our assessment of where to locate the site, as well as how to construct it.

When assessing the visual aspect of the site we take account of settlements and residential properties, key transportation and recreational routes utilised by tourists and visitors to an area, vantage points and tourist destinations from where views and landscape appreciation is important.

We also consider whether the switching station will compromise any of the special qualities for which the landscape is designated e.g. a National Scenic Area or whether it will compromise the characteristic elements of its landscape character.



Land use and recreation

The land and how it is utilised is included in our assessment for the siting of the switching station. Recreational uses including footpaths, cycle routes and sporting activities (fishing, stalking, shooting) are identified and factored into the assessment of options for the site.

The site selection process will also consider the impact on traffic in the area and the on the local road network. Where needed plans can be developed to help manage any disruption to recreation during the build of the site.

Next steps

Once a proposed site is identified the interaction with the environment in which it sits (i.e. habitats, species and human/social) will be further assessed in ongoing environmental assessments.

Biodiversity net gain

We recognise that we have significant interaction with the environment through the activities we undertake in Scotland as we seek to develop and improve the transmission network. With this work comes a legal responsibility to design and build our projects in a manner which protects the natural and built environment.

We are committed to protecting and enhancing the environment by minimising the potential impacts from our construction and operational activities on biodiversity. To this end, we have committed to no net loss of biodiversity in non irreplaceable habitats for all of our projects gaining consent from 2020 onwards, and net gain of biodiversity on all projects gaining consent from 2025.

This means that during the development, construction and operation of our projects, we will leave the environment no worse than when we found it, and where possible make it even better, leaving a positive environmental legacy at all of our SSEN Transmission sites.

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Please let us know if you have ideas for biodiversity improvement projects in your local area that SSEN Transmission could get involved with.

Example project: Thurso South substation

Creation of approximately 10 hectares of pollinator habitat to support the rare endemic great yellow bumblebee and contribute to wider conservation efforts for this species.

A collaboration with The Bumblebee Conservation Trust facilitated research on forage availability for bumblebees, identifying the need for a diverse seed mix containing key flowering species to enhance early, main and late forage to support the full lifecycle of bumblebees.



Example project: Tomatin Bog Pool Creation

Temporary silt settlement ponds used during the construction of the adjacent substation were highlighted for their potential in creating bog pool habitats, specifically for the enhancement of the local dragonfly and damselfly population.

Collaborating with the British Dragonfly Society, the silt ponds were repurposed by softening banks and shallowing deeper sections to create excellent habitat for dragonfly and damselfly. Rocks and deadwood were placed nearby to further enhance the habitat and support other invertebrates.



Working with landowners

SSEN Transmission recognises landowners and occupiers as key stakeholders in the development of our projects and is committed to consultation and engagement with all parties likely to have an interest in our proposals.

As the project design develops, we will work with landowners and occupiers to mitigate the effects of our infrastructure on their properties. Our team of dedicated land managers will be on hand to answer queries and address concerns throughout.

We will be required to carry out various engineering and environmental surveys to inform the design process. Consent will be sought from affected landowners and occupiers in advance for these surveys.

Once we have finalised the design of the substation and associated works, we will be required to secure the appropriate land rights from landowners and occupiers in order that appropriate consents can be sought from Scottish Ministers. Our land managers will endeavour to reach a voluntary agreement with landowners and occupiers, however, as a statutory undertaker, we may require to underpin voluntary discussions with an application to Scottish Ministers for a Necessary Wayleave or Compulsory Purchase Order. Ultimately this is to ensure nationally significant infrastructure projects are delivered on time and in line with our licence obligations. We also have a duty to protect the interests of the UK bill payer. Statutory powers are not used lightly as we aim to work with landowners and occupiers to secure the necessary land rights voluntarily.

All potentially affected landowners and occupiers have the opportunity to provide feedback at our in person consultation events and by submitting a feedback form. We would encourage all those with an interest to submit their views through this consultation.

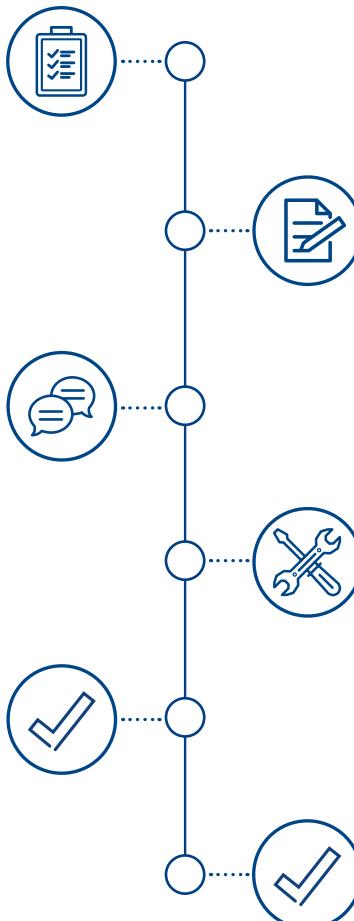
Contact details for the dedicated project land managers can be found on the relevant webpages.



Project timeline

2023–2025

- Public consultation.
- Route assessment and environmental surveys.



Spring 2025

- Submit planning application.

2026–2027

- Design refinement and contractor discussions.

2027

- Construction starts.

2029

- Construction complete, commissioning begins.

2030

- Project complete.



Notes

Notes

What happens now and how do I have my say?

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

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

- Have the projects been clearly explained?
- Has the process for identifying the possible sites for Balallan Switching Station been explained?
- Have the environmental studies done to date been discussed and findings articulated in a clear manner?
- Were the steps taken by SSENT to arrive at the most optimal design for an OHL clearly explained?
- Did SSEN discuss the plans for enhancing infrastructure required to facilitate the number of projects coworking on the island?
- Did SSENT shed light on their commitment to biodiversity net gain?



To support everyone online, we provide accessibility and language options on our website through 'Recite Me'. The accessibility and language support options provided by 'Recite Me' include text-to-speech functionality, fully customisable styling features, reading aids, and a translation tool with over 100 languages, including 35 text-to-speech.

Please select "Accessibility" on our website to try out our inclusive toolbar."

Comments

Your views and comments can be provided to the project team by completing a feedback form or by writing to, Community Liaison Manager. We will be seeking feedback from the members of the public and Statutory Bodies until **Friday 10th November 2023**.

All received feedback will be assessed and the proposed options adapted where necessary.



**Lisa Marchi-Grey
Community Liaison Manager**



lisa.marchi@sse.com



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Lisa Marchi-Grey
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Inverness, IV1 1SN
(Return address)

Additional information

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

Project website:

[ssen-transmission.co.uk/projects/
balallan-switching-station-and-132kv-OHL](http://ssen-transmission.co.uk/projects/balallan-switching-station-and-132kv-OHL)
[ssen-transmission.co.uk/projects/project-map/
mauaitheabhal-wind-farm-connection](http://ssen-transmission.co.uk/projects/project-map/mauaitheabhal-wind-farm-connection)

Follow us on Facebook:
[@ssencommunity](https://www.facebook.com/ssencommunity)

Follow us on Twitter:
[@assettransmission](https://twitter.com/assettransmission)

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 been clearly explained?

Yes No Unsure

Comments:

Q2 Has the process for identifying the possible sites for Balallan Switching Station been explained?

Yes No Unsure

Comments:

Q3 Have the environmental studies done to date been discussed and findings articulated in a clear manner?

Yes No Unsure

Comments:

Q4 Were the steps taken by SSENT to arrive at the most optimal design for an OHL clearly explained?

Yes No Unsure

Comments:

Q5 Did SSEN discuss the plans for enhancing infrastructure required to facilitate the number of projects coworking on the island?

Yes No Unsure

Comments:

Q6 Did SSENT shed light on their commitment to biodiversity net gain?

Yes No Unsure

Comments:

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: 10 Henderson Road, Inverness, IV1 1SN

Email: lisa.marchi@sse.com

Online sSEN-transmission.co.uk/projects/project-map/balallan-switching-station-and-132kv-OHL
sSEN-transmission.co.uk/projects/project-map/mauaitheabhal-wind-farm-connection

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 project websites.

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.

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