

The Melgarve Cluster

December 2021 / January 2022

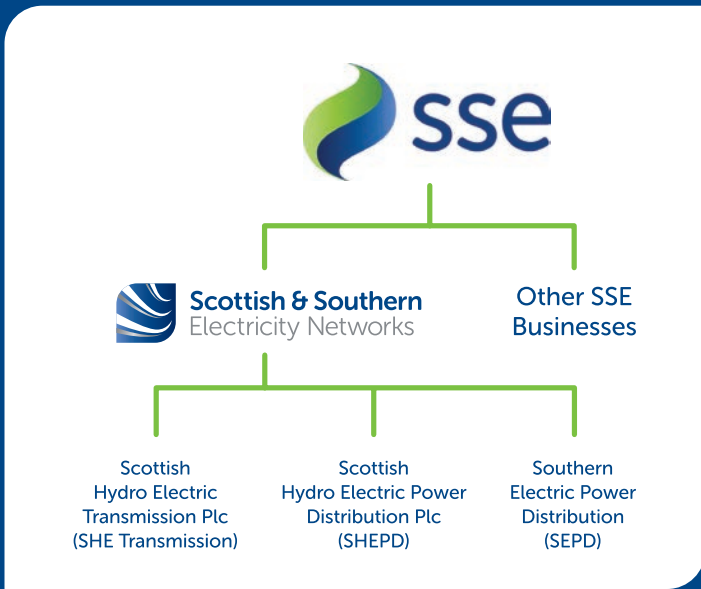


Scottish & Southern
Electricity Networks

TRANSMISSION

Who we are

We are Scottish and Southern Electricity Networks Transmission (SSEN Transmission), 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.

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.

Overview of Transmission Projects



Project need and overview

This project is needed to connect the GlenShero wind farm (168MW), the Cloiche wind farm (200MW) and the Dell wind farm (49.8MW) into the existing Melgarve 400/132kV substation to enable export of the electricity from these wind farms into the SSEN Transmission system.

This will involve the following elements of work which have been collectively termed as The Melgarve Cluster:

Glenshero wind farm connection

The design and construction of c.5.5km of 132kV underground cable (UGC) to connect the Glenshero wind farm into the existing Melgarve 400/132kV substation by Autumn 2024.

Project Timeline:

- Preferred route consultation – November 2021
- Preferred alignment consultation – Spring 2022
- Environmental Assessment commenced – Spring 2022
- Construction commences – Spring 2023
- Project completion – Autumn 2024

Cloiche wind farm connection

The design and construction of c.11km of 132kV overhead line (OHL) to connect the Cloiche wind farm into the existing Melgarve 400/132kV substation by Summer 2025.

Project Timeline:

- Preferred route consultation – November 2021
- Preferred alignment consultation – Spring 2022
- Environmental Assessment commenced – Spring 2022
- Submission of Section 37 application – Winter 2022
- Section 37 consent granted – Winter 2023\24
- Construction commences – Spring 2024
- Project completion – Summer 2025

Melgarve substation extension

Each of the three wind farms will connect to the transmission Network via the SSEN Transmission Melgarve 400/132kV substation. To enable the connection of the new wind farms, additional work will be required at Melgarve substation to accommodate them. This will require an extension to the Melgarve substation by Summer 2025.

Project Timeline:

- Preferred extension option consultation – November 2021
- Environmental Assessment commenced – Spring 2022
- Pre-application consultation – Summer 2022
- Submission of Town and Country planning application – Autumn 2022
- Town and Country planning granted – Spring 2023
- Construction commences – Summer 2023
- Project completion – Summer 2025

Dell wind farm connection

The design and construction of c.16km of 132kV OHL to connect the Dell wind farm into the existing Melgarve 400/132kV substation by Spring 2026.

Project Timeline:

- Preferred route consultation – November 2021
- Preferred alignment consultation – Spring 2022
- Environmental Assessment commenced – Spring 2022
- Submission of Section 37 application – Spring 2023
- Section 37 consent granted – Spring 2024
- Construction commences – Summer 2024
- Project completion – Spring 2026

In the interest of transparency, we are presenting this cluster of works as a whole to ensure all local community members are aware of the full extent of the proposals and are invited to comment on the development of each.

Cloiche OHL, Dell OHL and Glenshero UGC routing

SSEN Transmission published the Route Selection Consultation Document on the project website in November 2021. This provides the detailed justification for the preferred routes presented.

Overhead lines and underground cables are subject to a detailed routing process. This ensures the final route selected meets technical requirements, is cost effective, causes the least impact on the environment and least disturbance to those living, working or visiting the area.

Route options have been identified at varying widths, departing from the standard 1 km width in order to take account of physical and development constraints identified, namely the topography, and the operational and proposed wind turbines within the area.

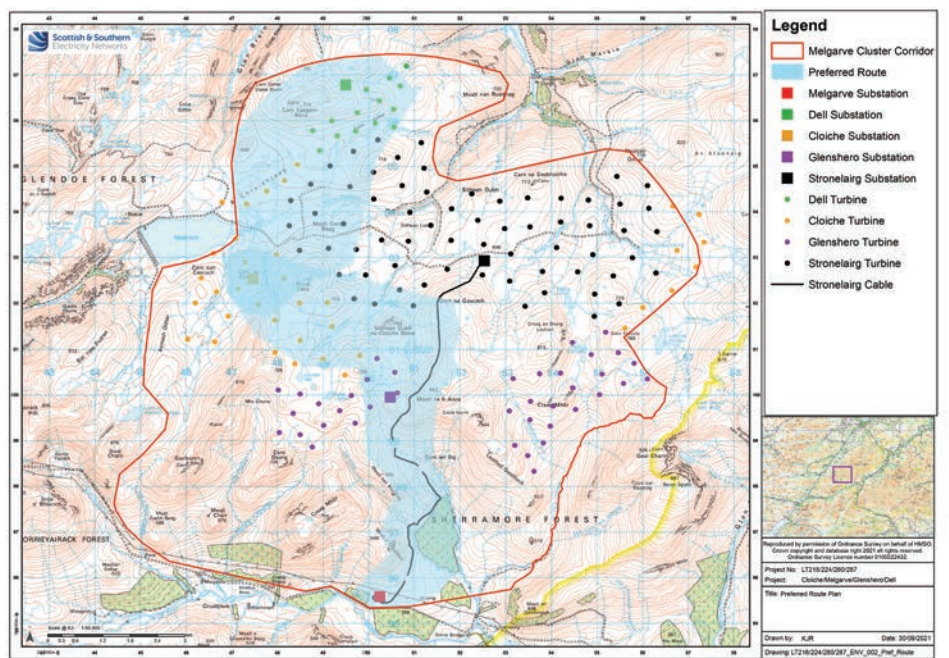
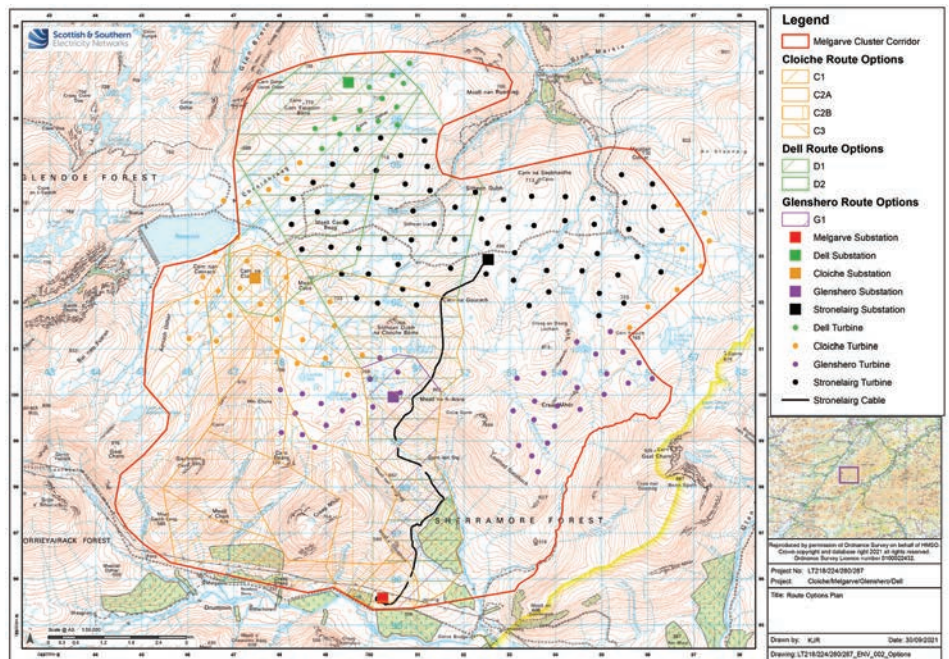
This consultation seeks views from the public, statutory authorities and other interested stakeholders on the preferred option identified for the connection of Glenshero, Cloiche and Dell wind farms.

All Route Options considered are shown to the right.

SSEN Transmission have selected:

- Route option G1 is the preferred route for the UGC connection of Glenshero wind farm to Melgarve 400/132kV substation, as there is no other viable option.
- Route option C3 is the preferred route for the OHL connection of Cloiche wind farm to Melgarve 400/132kV substation due to the least technical and environmental constraints such as topography, access, cultural heritage, sensitive habitats, and landscape character.
- Route option D1 and route option C3 are the preferred routes for the connection of Dell wind farm to Melgarve 400/132kV substation due to the least technical and environmental constraints such as interaction with existing infrastructure, cultural heritage, sensitive habitats, and landscape character.

A map showing the preferred route is shown to the right.



Technical considerations

OHL Technology

The connection of Dell and Cloiche wind farms into Melgarve substation is proposed to be via two new 132kV single circuit OHLs.

The proposed structures are of the L7 suite of towers. An example of this tower type is shown in the pictures to the right, however under a single circuit arrangement conductors would only be strung on one side. As Cloiche and Dell wind farms follow the same preferred route, this gives the opportunities to consider combining both onto one OHL. This is under review and SSEN Transmission will aim to report back on the outcome of this at the next OHL consultation. This tower type was selected due to the high altitude of the proposed routes. Traditionally a single circuit 132kV route would be strung on wood pole trident structures, this type of structure would not be suitable for this location as it cannot withstand the high wind, ice and snow loadings that it would be subjected to.

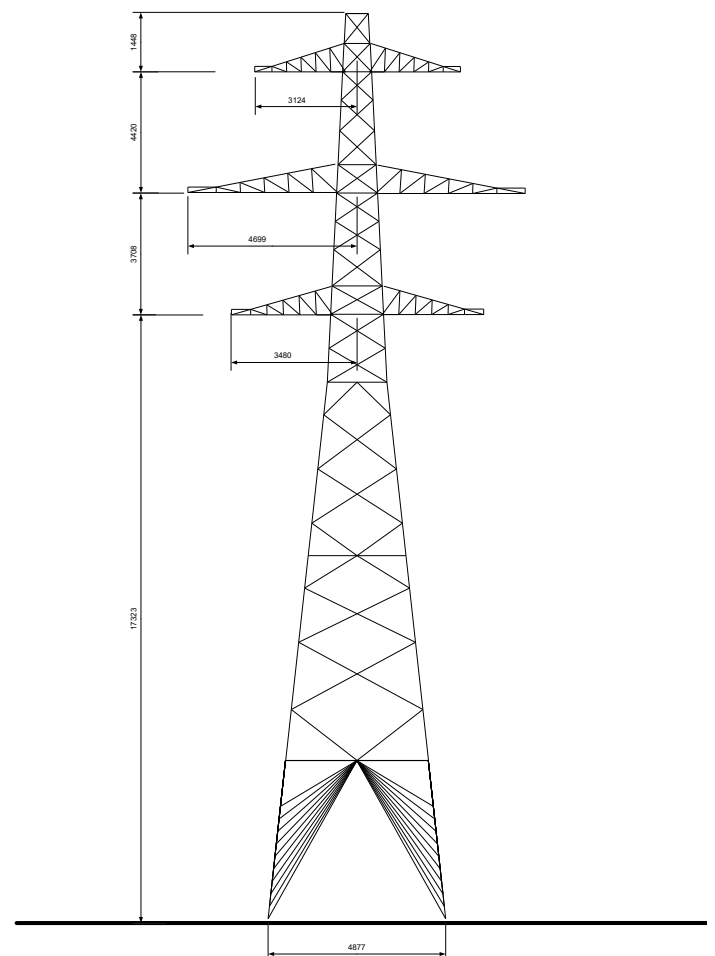
Access roads will be required to each tower location, these will be predominantly stone roads to allow safe access to the construction sites. Concrete foundations will then be installed approximately 2m below ground level. The tower steelwork will then be delivered and assembled on site and erected using a crane. The conductor and earthwire will then be installed in sections before connecting into the proposed substations.

The Dell and Cloiche OHL connections will need to transition onto an UGC to cross underneath the existing Beaully Denny OHL and connect into Melgarve substation. It is proposed that the OHL will terminate into cable sealing end compounds (this consists of a terminal tower that allows the OHL conductor to connect onto a UGC) north of the Beaully Denny OHL and then UGCs will be installed from the cable sealing end compounds into the Melgarve substation.

The overhead line route options were evaluated in terms of the following engineering considerations:

- Major crossings such as overhead lines (132kV, 275kV, 400kV, HVDC), rail, bridges, rivers, canals, oil and gas pipelines or hydro pipelines.
- Road crossings
- Elevation
- Contaminated land
- Flooding
- Terrain
- Peat
- Access
- Angle Towers

The preferred OHL route has the benefit of an existing access track that can be utilised for construction (this was previously used for the installation of the UGC which connects Stronelairg wind farm into Melgarve substation) and the terrain is generally not as steep as the other routes.



Technical considerations

Underground cable

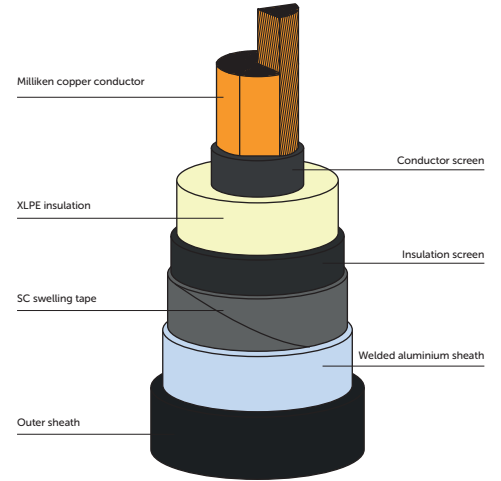
Glenshero wind farm connection

The Glenshero developer opted for an UGC connection. The Glenshero wind farm is proposed to be connected to Melgarve substation via a 132kV single phase circuit underground cable (1*2000mm² CU) with cross-bonding system. The cable size was determined based on the required load and the cable route.

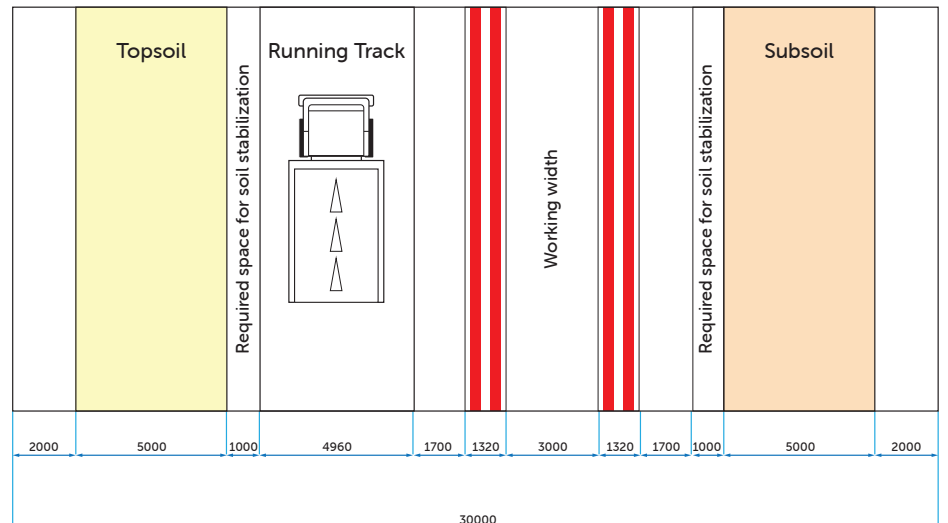
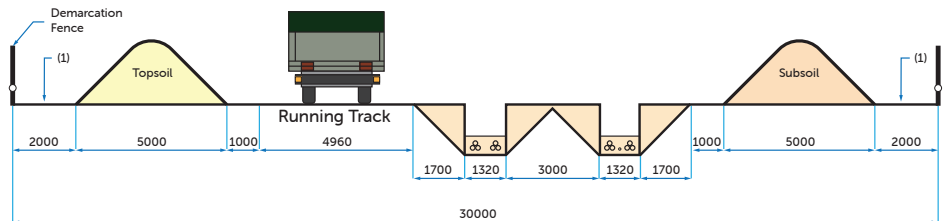
The cable will be connected into the Melgarve substation existing 132kV GIS busbar.

Opposite is a diagram showing the general build up of a transmission cable.

The c.5.5km cable route will have the same route as the existing cable circuit connecting Stronelaig wind farm and Melgarve substation. The existing haul road can be used for construction and almost all the route challenges are known such as peat, rocks, road crossings and water courses.



The drawing to the right shows an indicative construction corridor for a double circuit cable installation including running track for vehicles and separate storage areas for topsoil and subsoil.



OHL/UGC consents and environmental considerations

The Dell and Cloiche OHL connections into Melgarve substation require consent by the Scottish Ministers under Section 37 of the Electricity Act 1989 (as amended), henceforth referred to as S37 consent, prior to construction commencing.

The Glenshero developer has opted for an UGC solution which can be constructed under the Town & Country Planning (General Permitted Development) (Scotland) Order 1992 (as amended). Such developments are considered as Class 40 (Electricity undertakings) as they do not require S37 consent and are out with national scenic areas and sites of special scientific interest.

During project development, SSEN Transmission undertake a robust route selection exercise that adheres to statutory and licensing requirements, as well as industry best practise to minimise potential effects through design.

The development of SSEN Transmission's projects is undertaken via a systematic process and includes stakeholder consultation at key stages. In some instances, where a significant effect is identified SSEN Transmission may have to revisit the preferred technical solution.

SSEN Transmission's licence obligations are to develop an efficient, co-ordinated and economical system of electricity transmission. As such SSEN Transmission is obliged to seek the most cost-effective solution, which is usually an OHL (unless the developer opts for an UGC connection).

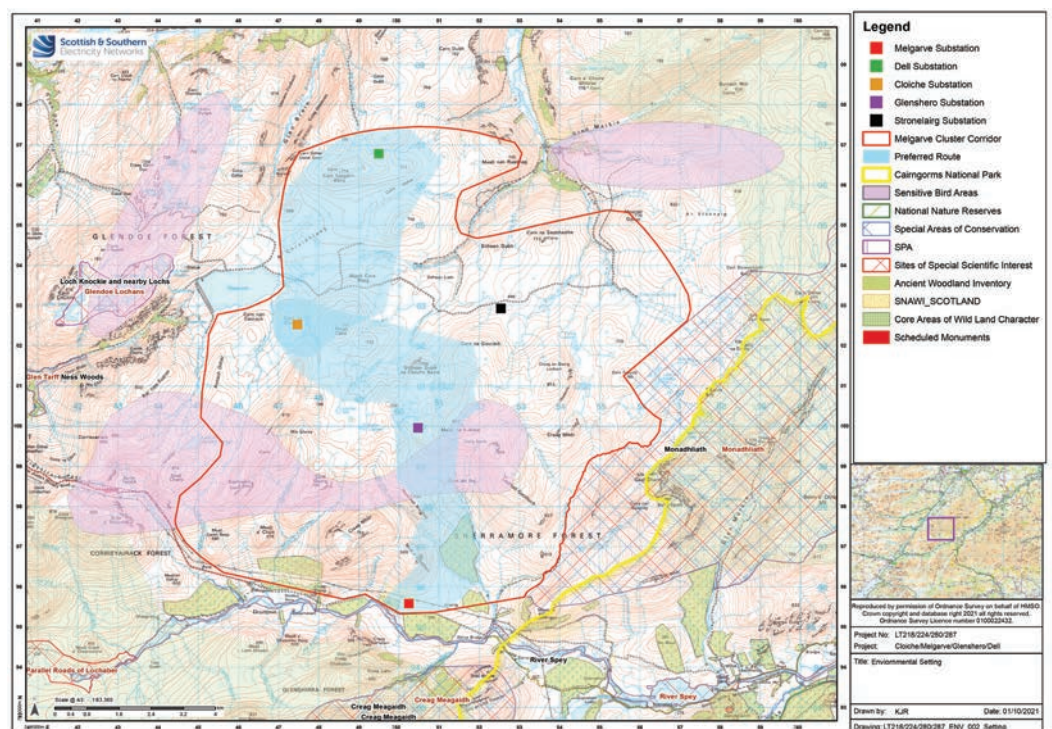
Where a constraint requires revisiting the technical solution (E.g. undergrounding part of an OHL due to a significant effect being identified) SSEN Transmission is required to fully justify any significant delay to programme or additional cost.

Once the Proposed Route is selected, SSEN Transmission undertakes engineering design and further detailed environmental assessments to identify key issues of concern, identify potential effects and mitigate those which are deemed to be significant effects through alignment selection and the Environmental Impact Appraisal (EIA) process.

Key environmental sensitivities for the development of the Glenshero, Dell and Cloiche connections are potential adverse effects to landscape character, sensitive peatland habitats, protected species, ornithology (including Golden Eagle and Slavonian Grebe) and cultural heritage. Following a review of environmental information gathered to date the Preferred Route (D1 + C3) is preferred due to having the least constraints to development in terms of habitats and landscape character.

The drawing below provides the environmental setting and the Preferred Route.

- The next steps in the consenting process are to: Conclude route options assessment;
- Undertake alignment options assessment;
- Undertake EIA screening and scoping (if EIA Development);
- Undertake detailed environmental assessments and reporting on the preferred technical solution; and
- Submit an application to the Scottish Ministers for S37 consent for Dell and Cloiche.



Melgarve 400/132kV substation extension

Each of the three wind farms will connect to the transmission Network via the SSEN Transmission Melgarve 400/132kV substation. To enable the connection of the new wind farms, additional work may be required at Melgarve substation to accommodate them. This project is still in the optioneering stage and consultation on this will take place in Spring 2022.

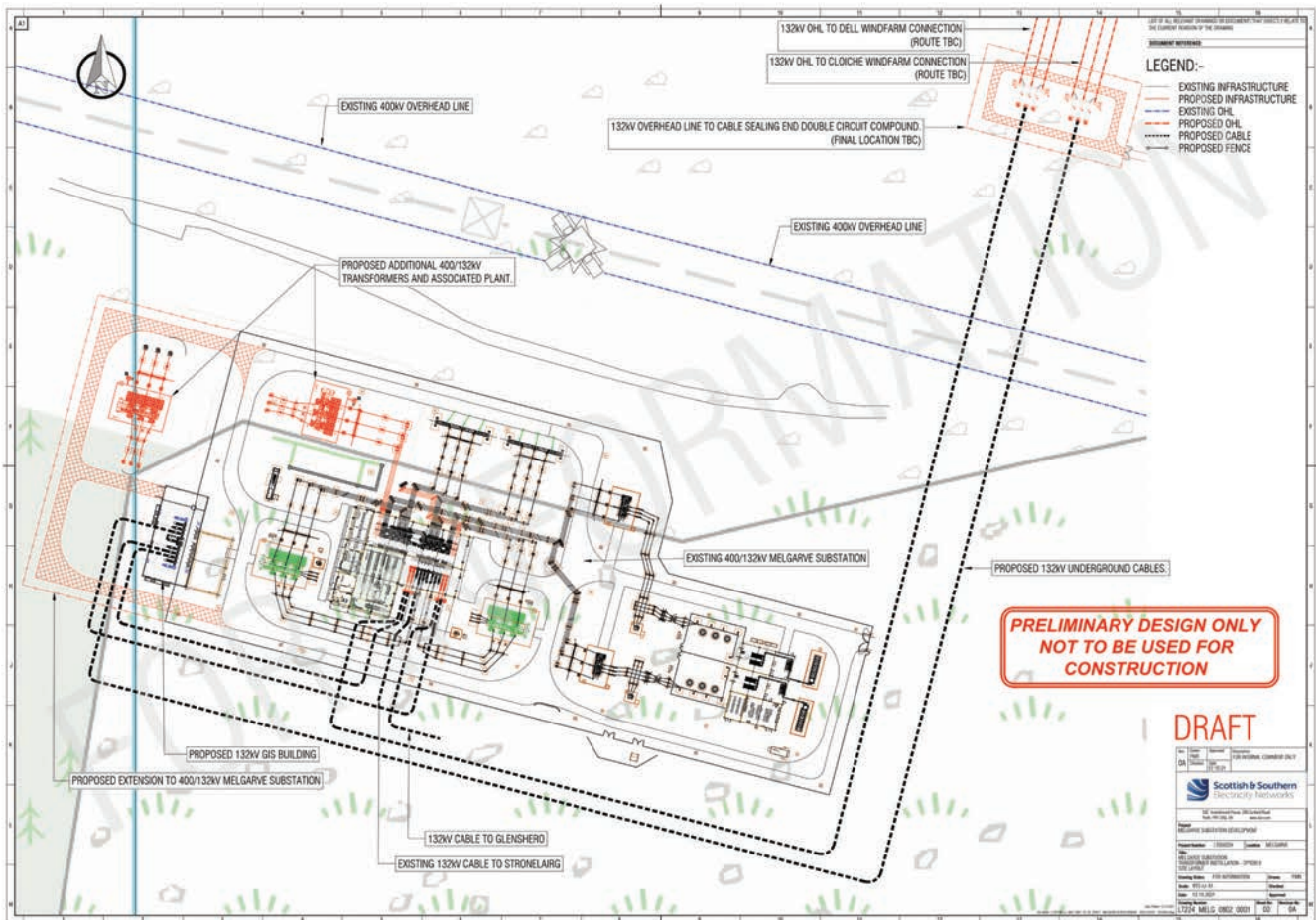
There are several potential options being investigated to accommodate these connections at Melgarve which depend on network requirements. There is a potential that two new 400/132kV Super Grid Transformers (SGTs) and a new 132kV GIS busbar that requires to be housed within a new building. This would require an extension of the existing Melgarve substation.

Following an initial high-level assessment, the preferred option to extend the Melgarve substation would be to the west due the least civil engineering requirements and shortest cable connections. The extension to the existing Melgarve substation would require permission from The Highland Council planning authority under the Town & Country Planning (Scotland) Act 1997 (as amended) prior to construction commencing.

We will consult fully on our preferred option in Spring 2022 along with updates on the wind farm connections



Existing Melgarve Substation



Melgarve substation extension considerations

An extension to the west of the existing substation has been chosen as the preferred option. The following considerations have been taken into account in selecting this option.

Technical considerations

When identifying the most suitable location for the Melgarve transformer extension, a options to the North, South, East and West of Melgarve Substation were considered and the technical engineering requirements of each were evaluated:

North extension

The existing Melgarve substation platform is essentially 'cut' into a hillside, an extension to the north of Melgarve would require a significant civil excavation into a solid rock face, with the potential for rock blasting being required. The existing access road to the north of the site would have to be re-aligned and the integrity of the existing Beauldy Denny OHL tower foundation would be at risk.

South extension

The south of the existing Melgarve substation descends down towards the River Spey. An extension to the south would require a significant import of civil materials to build up the platform to the existing site level, resulting in a large increase in construction traffic in the area. The area to the south of the site also has to remain free for the routing of the new 132kV wind farm cables into the substation.

East extension

An area to the east of Melgarve was identified as a potential location however, as per the north extension, an east extension would require a significant civil excavation into a solid rock face, with the potential for rock blasting being required. Installing the transformers to the east of the site would result in longer lengths of 400kV & 132kV cable required to connect the transformers to the GIS and also longer cable trench excavations.

West extension

The area to the west of the site has a small decline westwards and will require the least civil works to bring the platform to the same level as the existing platform. Locating the transformers in the west extension results in the shortest lengths of 400kV and 132kV cable required to connect the transformers to the GIS.

From a technical engineering perspective, the extension to the west of the existing Melgarve site is the preferred solution.

Consents and environmental considerations

The extension to the existing Melgarve substation will require permission from The Highland Council planning authority under the Town & Country Planning (Scotland) Act 1997 (as amended) prior to construction commencing.

During project development, SSEN Transmission undertake a robust assessment process that adheres to statutory and licensing requirements, as well as industry best practise to minimise potential effects through design. The development of SSEN Transmission's projects is undertaken via a systematic process and includes stakeholder consultation at key stages. In some instances, where a significant effect is identified SSEN Transmission may have to revisit the preferred technical solution.

Key environmental sensitivities for the development of the Melgarve substation extension are landscape character and natural heritage (including designations (River Spey Special Area of Conservation/Site of Special Scientific Interest), sensitive habitats, and forestry). The north extension is preferred on environmental grounds as it avoids the requirement to fell trees. However, it is recognised that there is a risk to the integrity of the existing Beauldy Denny OHL tower. Therefore, in order to develop the solution to the west, mitigation in the form of compensatory planting would be required.

The next steps in the consenting process are to:

- Conclude options assessment;
- Undertake EIA Screening and Scoping (if EIA Development);
- Undertake detailed environmental assessments and reporting on the preferred technical solution; and
- Submit an application for planning permission to The Highland Council.

What happens now, 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:

- Has the need for the project been clearly explained?
- Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?
- Do you have any other comments regarding the route options and layout?
- Following review of the provided information, how would you describe your understanding of the Melgarve Cluster project?
- Overall, how do you feel about the Melgarve Cluster project?
- And finally, from your experience to date, can you rate the quality of consultation undertaken on the Melgarve Cluster project?

Comments

Your views and comments can be provided to the project team by completing a feedback form or by writing to Louise Anderson, Community Liaison Manager.

We will be seeking feedback from the members of the public and Statutory Bodies by 28 January 2022.

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

Feedback can be submitted online via the project website or via the project Community Liaison Manager:

Louise Anderson
Community Liaison Manager



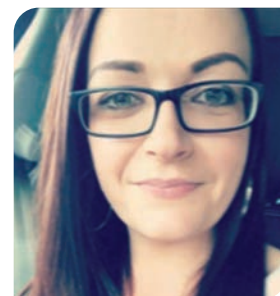
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Additional Information

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

Project Website:

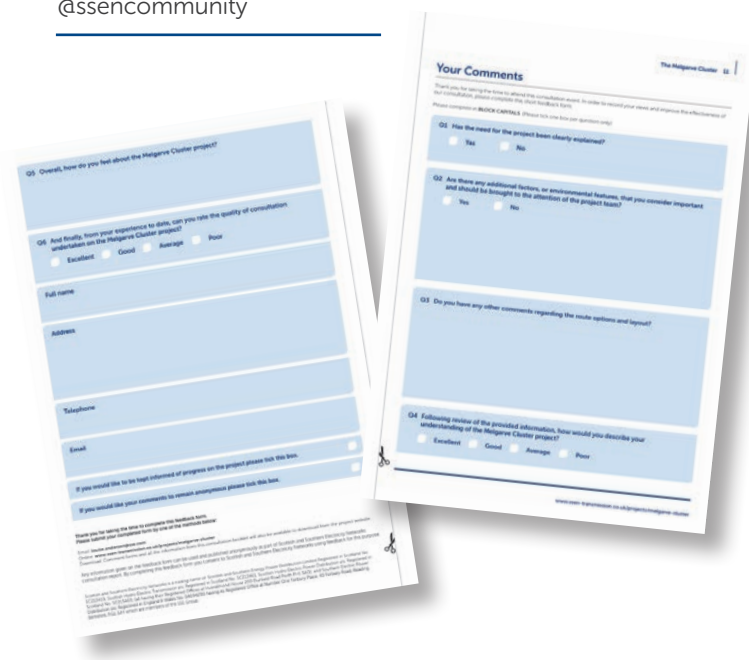
www.ssen-transmission.co.uk/projects/melgarve-cluster

Find us on Facebook:

SSEN Community

Follow us on Twitter:

@ssencommunity



Your Comments

Thank you for taking the time to attend this consultation event. 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 need for the project been clearly explained?

Yes

No

Q2 Are there any additional factors, or environmental features, that you consider important and should be brought to the attention of the project team?

Yes

No

Q3 Do you have any other comments regarding the route options and layout?

Q4 Following review of the provided information, how would you describe your understanding of the Melgarve Cluster project?

Excellent

Good

Average

Poor



Q5 Overall, how do you feel about the Melgarve Cluster project?

Q6 And finally, from your experience to date, can you rate the quality of consultation undertaken on the Melgarve Cluster project?

Excellent Good Average Poor

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:**

Email: louise.anderson@sse.com

Online: www.ssen-transmission.co.uk/projects/melgarve-cluster

Download: Comment forms and all the information from this consultation booklet will also be available to download from the project website.

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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