Scottish & Southern Electricity Networks

TRANSMISSION

Powering change together

The time has come to further enhance Scotland's energy infrastructure, providing power for future generations as we move towards net zero.

The shift to a cleaner, more sustainable future is about more than climate change. It's about ensuring future generations have the same opportunities to thrive as we have all had.

Countries around the world are investing in their energy infrastructure to support the demands of modern economies, improve energy security and meet net zero targets. The UK is leading the way in building a modern, sustainable energy system for the future.

We all have a part to play

When it comes to net zero, we have to be in it together. The UK and Scottish Governments have ambitious net zero targets, and we're playing our part in meeting them.

We work closely with National Energy System Operator to connect vast renewable energy resources – harnessed by solar, wind, hydro and marine generation – to areas of demand across the country. Scotland is playing a big role in meeting this demand, exporting two-thirds of power generated in our network.

But there's more to be done. By 2050, the north of Scotland is predicted to contribute over 50GW of low carbon energy to help deliver net zero. Today, our region has around 9GW of renewable generation connected to the network.

At SSEN Transmission, it is our role to build the energy system of the future.

We're investing over £20 billion into our region's energy infrastructure this decade, with the potential for this to increase to over £30 billion. This investment will deliver a network capable of meeting 20% of the UK's Clean Power 2030 target and supporting up to 37,000 jobs, 17,500 of which will be here in Scotland.

Find out more

Scan the QR code with your smartphone to find out more about how these policies have been assessed and determined.

Who we are

We're responsible for maintaining and investing in the electricity transmission network in the north of Scotland. We're part of SSE plc, one of the world's leading energy companies with a rich heritage in Scotland that dates back more than 80 years. We are also 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.

What we do

We manage the electricity transmission network across our region which covers a quarter of the UK's landmass, crossing some of the country's most challenging terrain. We connect renewable energy sources to our network in the north of Scotland and then transport it to where it needs to be. From underground and subsea cables, overhead lines (OHLs) to electricity substations, our network keeps your lights on all year round.

Working with you

We understand that the work we do can have an impact on communities. So we're committed to minimising our impacts and maximising all the benefits that our local developments can bring to your area.

We're regularly assessed by global sustainability consultancy AccountAbility for how we engage with communities. That means we provide all the information you need to know about our plans and how they will impact communities like yours.

We want to hear people's views, concerns, or ideas and harness local knowledge so that our work benefits their communities: today and long into the future. You can share your views with us at:**ssen-transmission.co.uk/talk-to-us/contact-us**

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The Pathway to 2030

Building the energy system for the future will require delivery of significant infrastructure over the next few years. In partnership with the UK and Scottish governments, we're committed to meeting our obligation of connecting new, renewable energy to where it's needed by 2030.

Achieving net zero

By 2030, both the UK and Scottish governments are targeting an expansion in offshore wind generation of 50GW and 11GW respectively. The Scottish Government has also set ambitious targets for an additional 12GW of onshore wind by 2030.

Across Great Britain, including the north of Scotland, there needs to be a significant increase in the capacity of the onshore electricity transmission infrastructure to deliver these 2030 targets and a pathway to net zero.

Securing our energy future

And it's not just about net zero. It's also about building a homegrown energy system, so that geopolitical turmoil around the world doesn't severely impact the UK and push up energy prices.

The UK Government's British Energy Security Strategy further underlines the need for this infrastructure, setting out plans to accelerate homegrown power for greater energy independence.

The strategy aims to reduce the UK's dependence on and price exposure to global gas wholesale markets through the deployment of homegrown low carbon electricity generation supported by robust electricity network infrastructure.

Meeting our 2030 targets

In July 2022, the National Energy System Operator (NESO) published the Pathway to 2030 Holistic Network Design (HND). This set out the blueprint for the onshore and offshore transmission infrastructure that's required to support the forecasted growth in the UK's renewable electricity. It's an ambitious plan that will help the UK achieve net zero.

Future network investment requirements

To deliver energy security and net zero, further additional investment in new low carbon electricity generation and the enabling electricity transmission network infrastructure will be required across Great Britian, including the north of Scotland.

In March 2024, the independent National Energy System Operator's (NESO) published its 'Beyond 2030' report, which confirmed the need for several new, replacement and upgraded transmission infrastructure projects in the north of Scotland.

In December 2024, Ofgem approved the next phase of regulatory funding to take these projects through the development phase.

These additional investments will soon be subject to extensive public consultation and engagement to help inform their development, with early consultation and engagement expected to take place during 2025.

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Project overview – Tie-in

How does this project contribute to Pathway to 2030?

The north and north-east of Scotland will play a key role in meeting these goals. The expansion in offshore renewable generation requires a significant increase in the capacity of our onshore electricity transmission infrastructure. The HND confirmed the need to reinforce onshore connections between Beauly and Peterhead, Beauly and Caithness, and an offshore cable between Spittal and Peterhead. From Peterhead, the power will be transported to demand centres in England via subsea cable.

A strategic hub near Peterhead, called Netherton Hub, is proposed to collocate both AC and DC transmission infrastructure and strengthen the network by connecting these new onshore and offshore projects. The proposed tie-in project is necessary to make the connection between the Netherton Hub and the existing network.

Project requirements

We're leading on the delivery of critical infrastructure projects to power change in the UK and Scotland. To support the delivery of 2030 offshore wind targets set by the UK and Scottish governments, and to power local communities, we need to upgrade our existing network. In some key areas, we need to develop entirely new infrastructure.

The Netherton Hub is a strategic development proposed for a site located near Longside to the west of Peterhead.

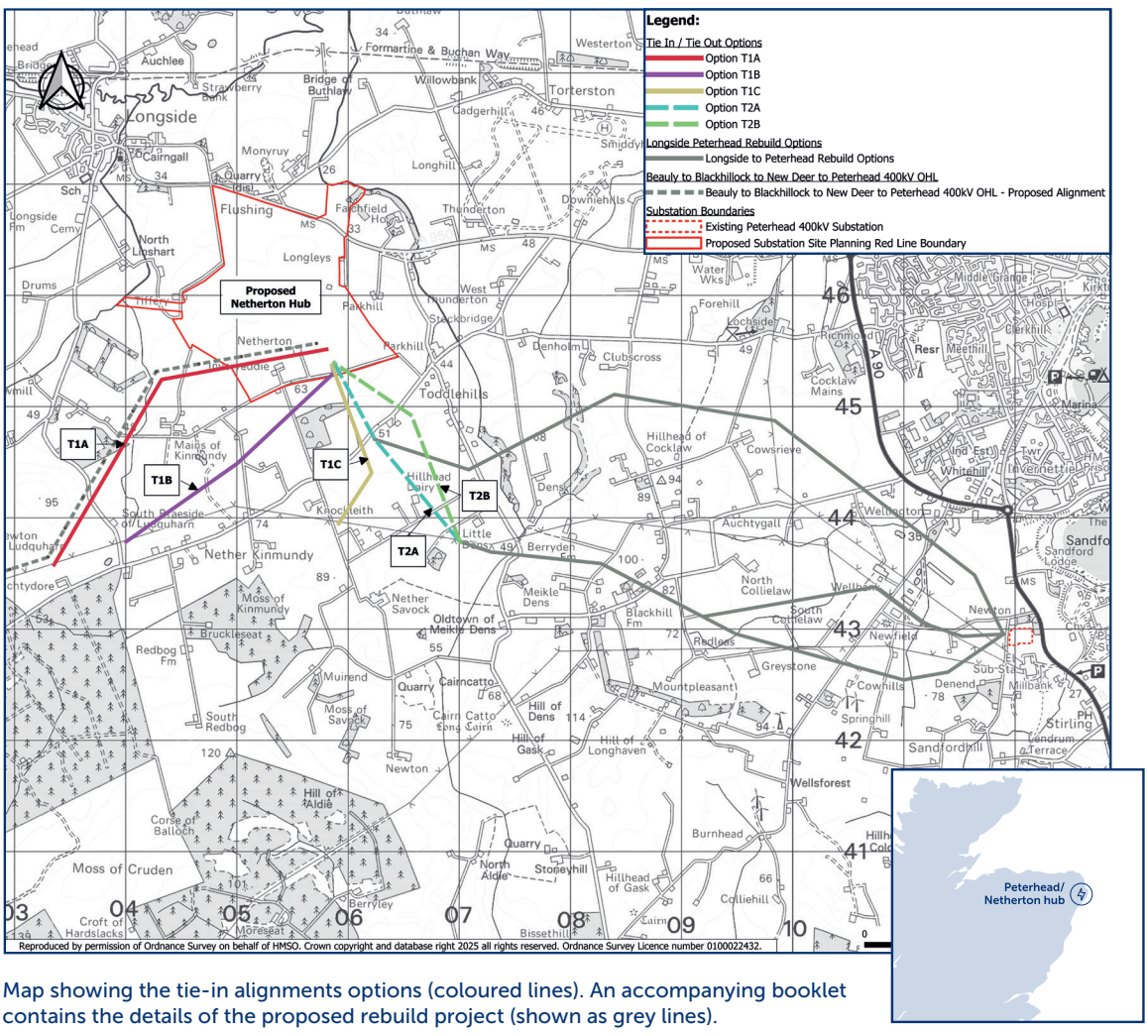
The tie-in connection of the existing New Deer-Peterhead 400kV overhead line into the hub is required to connect the proposed substation to the existing network.

This will maximise the transfer capability between Netherton Hub and the rest of our transmission network.

Project elements

The project comprises a permanent re-routing, known as a tie-in, of the existing New Deer-Peterhead 400kV overhead line into a new 400kV AC substation to be located within the proposed Netherton Hub. The components include:

- Re-routing the existing New Deer-Peterhead 400kV double circuit overhead line between Nether Kinmundy and Little Dens into Netherton Hub, to connect with the proposed 400kV substation. This will involve installing two sections of new overhead lines of approximately 1.6 to 3.4km in length between the existing New Deer-Peterhead line and the Netherton Hub.
- Installing two temporary overhead line circuits to facilitate the transfer from the existing New Deer-Peterhead 400kV overhead line to the proposed diverted lines.
- Removing around 4km of redundant overhead line towers along the existing New Deer-Peterhead overhead line between Nether Kinmundy and Little Dens.



Map showing the tie-in alignments options (coloured lines). An accompanying booklet contains the details of the proposed rebuild project (shown as grey lines).

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Overhead line key stages

For new overhead line projects, our process typically follows a number of stages, each iterative and increasing in detail, bringing cost, technical, environmental and social considerations together in a way that seeks the best balance.

The key stages are:

Stage 1: Strategic options assessment/routeing strategy
This stage is to establish the need for the project and to select the preferred strategic option to deliver it.

Stage 2: Corridor selection
Corridor selection seeks to identify possible corridors within which to locate a new overhead line. Corridors may be 1km wide or more. For this project, the Corridor stage was omitted due to the relatively short distances involved.

Stage 3: Route selection
Route selection stage seeks to find a suitable route within the corridor which balances physical, social, environmental, engineering and cost constraint. Routes are typically up to 1km in width. Due to the relatively short lengths of the proposed tie-in and the existing and planned overhead line infrastructure in the area, the Route stage was omitted for this project.

Stage 4: Alignment selection
Alignment selection stage seeks to identify potential alignments within the preferred route and start to define the access strategy which will be adopted in terms of, for example, the nature and extent of temporary and/or permanent access tracks and possible road improvements.
The alignment options will be influenced by engineering and cost factors as well as by local constraints, such as residential properties, their aspect, and amenity; ground suitability; habitats; and cultural heritage features and setting.

We are here

Stage 5: Final alignment
The final stage is the identification of a proposed overhead line alignment that is capable of being granted consent by Scottish Ministers under Section 37 of the Electricity Act 1989. A further pre-application consultation event will be held to present the final proposed alignment that has been refined in response to stakeholder feedback and assessment.

What happens next?

We are currently at Alignment Selection (Stage 4). Following engagement with the public, statutory bodies and landowners, we will finalise a proposed alignment to be taken forward to a final pre-application consultation stage, followed by formal environmental assessment and consent application.

Why we're here today

We are currently at the alignment selection stage of project development. We have developed these alignments by carrying out studies and assessments through engagement with landowners and wider stakeholders.

During this consultation we will present the potential alignment option. We welcome your feedback on all alignment options and will review all feedback received to inform the final design of the project.

Who we are consulting with

As well as communities, we are keen to hear feedback from a broad range of other stakeholders including but not limited to landowners, businesses, non-statutory consultees and statutory consultees such as local authorities, Energy Consents Unit (ECU), NatureScot, Scottish Environment Protection Agency (SEPA), Historic Environment Scotland (HES) and Scottish Forestry.

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Selecting an alignment

The consideration of alignment options and design solutions brings together work by four main disciplines:

Engineering Team

Who identify engineering constraints and where overhead lines and cables can be installed from a construction and operational perspective.

Key considerations include:

- Infrastructure crossings
- Environmental design
- Ground conditions
- Accessibility
- Proximity to existing infrastructure and properties

Communities Team

Who work with communities and make sure that their feedback during the consultation process is closely considered during project refinement.

Key considerations include:

- Community engagement
- Consultation responses review
- Recreational areas and areas of local interest

Environmental Team

Who identify key environmental constraints along the routes which the new infrastructure could impact upon.

Key considerations include:

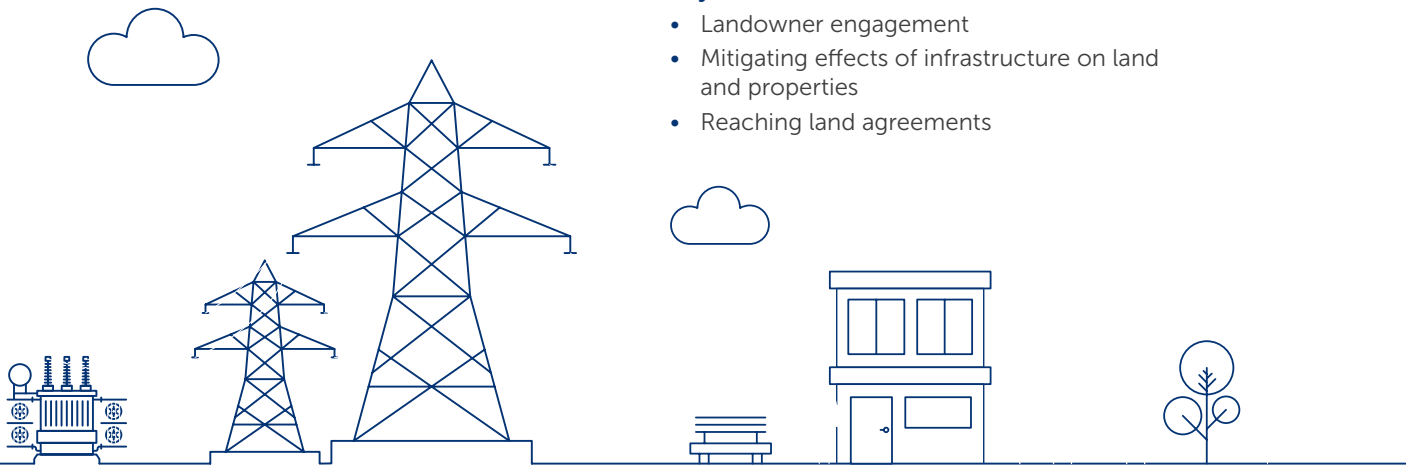
- Engagement with statutory consultees and planning authorities
- Results of specialist environmental archaeology, ornithology, ecology, geology and hydrology surveys
- Local environmental aspects like visual amenity and landscape character, Scheduled Monuments, Special Protected Areas, Specials Areas of Conservation and Sites of Special Scientific Interest
- Peat, ground conditions and the water environment
- Land use, including agriculture, forestry and recreation
- Proximity to residential properties and other sensitive receptors

Land Team

Who engage with landowners to identify key land use constraints.

Key considerations include:

- Landowner engagement
- Mitigating effects of infrastructure on land and properties
- Reaching land agreements



Striking a balance

When selecting an alignment, we need to carefully balance key considerations relating to engineering, environment and cost, in each section of the overhead line route. We then consider the likely effect and level of impact of each consideration, which will vary from section to section.

This can be based on how populated the area is, the outcomes of environmental and engineering surveys, stakeholder and community feedback, the presence of peat, the local water environment, if there is existing infrastructure we need to avoid, if the effects on land and property can be mitigated and if a constructable alignment can be identified. Ultimately, we need to balance a range of factors and present the solution we consider most viable, to then put forward for consultation. We have now identified a Potential Alignment which we are seeking your views on.

Our Alignment Selection Consultation Document describes the alignment options and comparative appraisal of each option in detail, and this can be downloaded from the project webpage or viewed during the consultation events.

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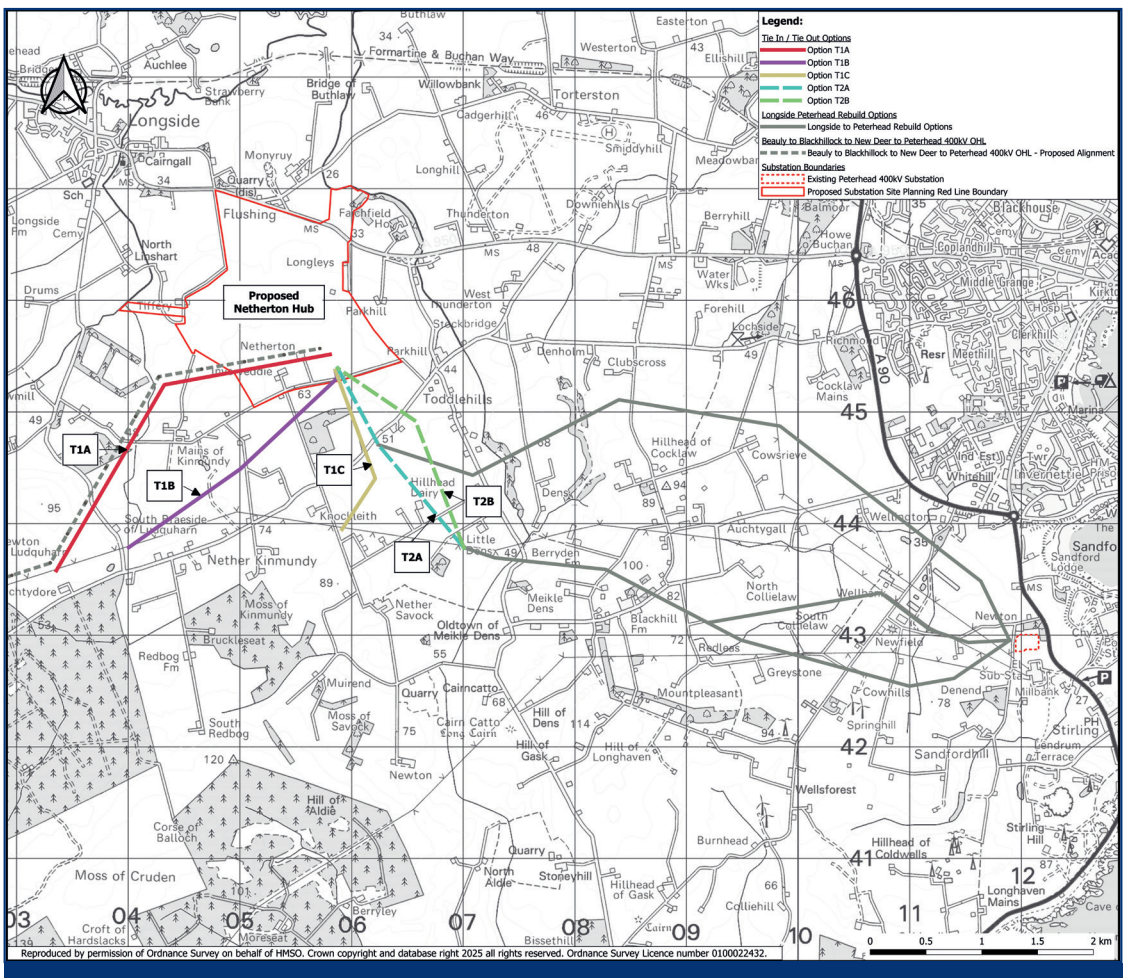
The alignment options – Tie-in

This map shows the tie-in alignment options that we are considering as part of this proposal. Of the options shown, our potential alignments are Option T1A and Option T2A shown below.



The tie-in options being considered, including our potential alignments, which are Option T1A for the turn in and Option T2A for the turn out.

The tie-in element of the overhead line was split into two sections to effectively assess the environmental and engineering constraints for each section.

'Inward' alignment options:

Three options have been identified as possible alignments for the inward section of the tie-in to Netherton Hub, ranging from 1.6km to 3.4km in length:

Option T1A

Option T1A diverts the existing overhead line approximately 3.4km to connect into the Netherton Hub from the west. This option follows the same path as the proposed Beauly to Peterhead 400kV overhead line.

Option T1B

Option T1B diverts the existing overhead line approximately 2.5km northeast, connecting into the south of Netherton Hub.

Option T1C

Option T1C diverts the existing overhead line approximately 1.6km north, connecting in the south of Netherton Hub.

'Outward' alignment options:

Two options (T2A and T2B) have been identified for the outward section of the tie-in to the south of Netherton Hub. Both options are approximately 2km in length.

Our potential alignments:

Our current potential alignments are T1A, to follow the Beauly-Peterhead overhead line, and T2A.

Should these be progressed as the final design, the existing overhead line will be removed from tower 65 to tower 76 once the new overhead lines are constructed.

Consult our maps

You can find a large scale version of our map on our project website at **ssen-transmission.co.uk/netherton-400kv-ohl-tie-in** or by scanning the QR code. Copies will be available at the consultation to take away with you.

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Key environmental considerations – Tie-in

Constraints between the existing Peterhead-New Deer 400kV overhead line and the Netherton Hub site include a number of residential receptors, however the alignment options presented have sought to achieve 170m separation from residences wherever possible.

Buchan Ness to Collieston Coast Special Protection Area (SPA) is located between approx. 5.5 – 9.0km southeast of the alignments, however the bird species associated with that designation are reliant upon the coastal habitat within and connected to the SPA, rather than the inland arable land which characterises these alignment options.

Similarly, Buchan Ness to Collieston Special Area of Conservation (SAC) is located approx. 5.5 – 9.0km from the alignments and is designated for vegetated sea cliffs which are not connected/functionally linked to the habitat along the Alignment options.

Loch of Strathbeg SPA and Ramsar (approx. 12km north of the Alignments), and Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Ramsar (approx. 12.5km south of the Alignments) qualifying interests include pink-footed goose.

The arable farmland within and surrounding the Alignment Options potentially provides suitable foraging habitat and is within the foraging range, therefore there is potential for effects through disturbance and displacement during construction and collision risk during operation.

No designated Ancient Woodland would be affected by any of the alignment options.

Badger and Otter are known to be active in the area, whilst various buildings and trees could offer roosting potential for bats. Potential effects may be mitigated and are unlikely to be significant.

Habitats are broadly similar across all Alignment Options and appear to comprise mainly modified or arable land. Coniferous woodland appears to be present in all 'in' legs. There are no areas of overlapping Class 1 or Class 2 peatland visible from the Carbon and Peatland 2016 Map.

There are unlikely to be any Annex I habitats within the Alignment Options.

There is limited presence of cultural heritage features in the vicinity. There are no World Heritage Sites, Gardens and Designed Landscapes (GDL) or Inventory Battlefields within the study areas. It is recognised that there is potential for unknown archaeological remains to exist within each alignment option.

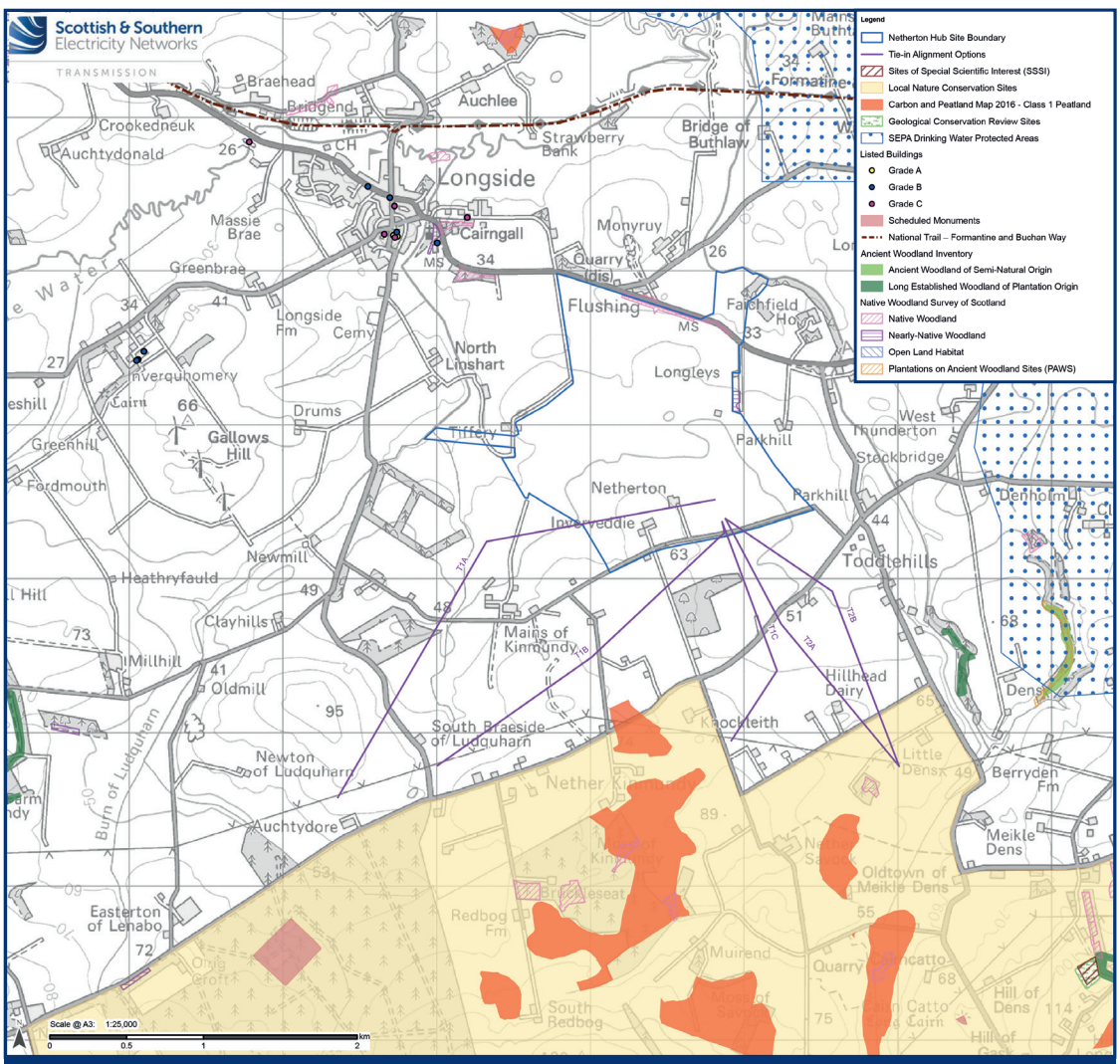
All options were considered to have low potential for significant effects on Cultural Heritage Designations. There are no Conservation Areas, or Non-Inventory Gardens and Designed Landscapes within the study areas for any Alignment Option. There is the potential for impacts through changes within the setting of Listed Buildings, but these impacts are not likely to lead to significant effects due to distance, and intervening buildings and vegetation.

The proposed alignments lie in excess of 10km from any national landscape designations or wild land areas. All of alignment options, when combined with the Beauly to Peterhead OHL, have the potential to compromise the landscape character of the LCT17 Coastal Agricultural Plain - Aberdeenshire at a local level in the vicinity of the Netherton Hub.

The consideration of the cumulative visual effects of this tie-in, along with the proposed rebuild of the Peterhead-New Deer OHL between Netherton and Peterhead and the proposed new Beauly to Peterhead OHL will be very important in establishing the most appropriate alignment option.

Alignments Options pass through Land Capability for Agriculture (LCA) of Class 3.1 and Class 3.2.

There is very limited potential for any of the options to impact upon commercial forestry and none are considered to be constrained by recreational land uses.



Environmental designations and constraints.
This figure shows some of the key environmental constraints which have been considered when assessing potential OHL alignment options.

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Potential Tie-in alignment

Our potential alignment for the tie-in between the existing New Deer-Peterhead OHL and Netherton Hub comprises alignment options T1A and T2A.

Evaluation of 'inward' alignment options: T1A, T1B and T1C

Alignment T1A is the overall environmental preference, primarily on landscape and visual grounds.

Alignment T1C is the engineering preference as it is least constrained, though there are advantages to Alignment T1A as it would present an opportunity to parallel with the proposed Beauly to Peterhead 400kV overhead line, which may provide both visual and access benefits.

Alignment T1C is also preferred from a Capital cost perspective, on the basis that it represents the most direct alignment into the substation. Alignment T1A as the longest of the three options has the highest associated costs, owing to additional construction requirements, making this the least preferred option when considering cost in isolation.

Differences between the options from an engineering perspective are marginal. While the economic appraisal clearly distinguishes a preference for T1C, all three options are relatively short. The differences from a cost perspective are therefore also considered to be marginal.

As such, greatest weight is given to the outcomes of the environmental appraisal and, on balance, Alignment T1A is considered to be the overall Proposed Alignment for the 'inward' option due to better alignment with the Holford Rules and lower potential for cumulative visual impacts. Option T1A would run in close parallel with the Beauly to Peterhead 400kV overhead line connection into Netherton Hub.

This allows for the creation of a distinct infrastructure corridor entering Netherton Hub from the west, and also has the benefit of removing the largest number of towers from the existing New Deer-Peterhead 400kV overhead line to the south, located on higher ground.

Other tie-in options would have a potentially greater visual impact by creating a more cluttered wirescape in the area to the south of Netherton Hub, with less potential for tower removal along the existing line.

Evaluation of 'outward' alignment options: T2A and T2B

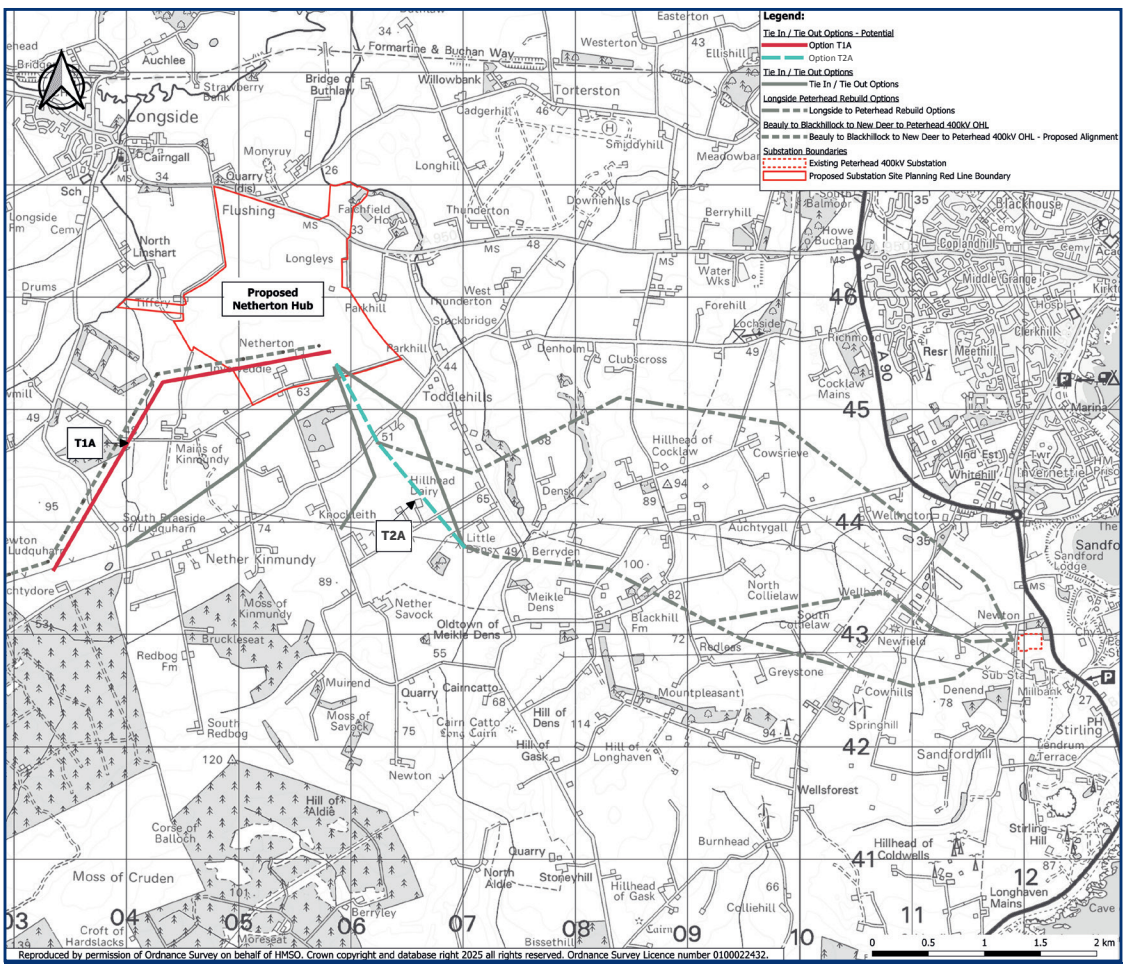
As the two 'outward' alignment options are both relatively short and close to each other, they are broadly similar in degree of environmental constraints. Largely on landscape and visual grounds, and to a lesser degree on the basis of the hydrogeology and cultural heritage appraisals, Alignment T2A is the overall environmental preference. This is due to the creation of a more distinct arrangement of OHLs into infrastructure corridors and reduced associated potential for adverse landscape and visual impacts. T2A is also slightly less constrained by Private Water Supplies and avoids any Sites and Monument Record entries.

Option T2B maintains 170m separation from all residential buildings, whereas Option T2A strays within 170m of an existing property, and is also within 100m of another property which appears to be abandoned farm sheds. Minor adjustment to alignment T2A may be possible to ensure improved separation.

While alignment T2B maintains separation from residential properties, it runs parallel with a road to the east that is lined with a large number of properties at Toddlehills, whereas T2A observes further separation from these. Alignment option T2B is considered less suitable based on interface with communication masts, urban development and distribution network crossings. On balance, Alignment T2A is less constrained in technical terms, and thus is the overall engineering preference.

From a Capital cost perspective, both alignments have similar costs. As alignment T2B is the slightly longer of the two options and therefore has a marginally higher associated construction cost, Alignment T2A is the proposed option from a capital costs perspective. To summarise, the environmental, engineering and economic appraisals have all identified Alignment T2A as the overall preference.

Given that the two 'Outward' alignment options are similar in terms of length and location, constraints are broadly similar. However, certain key considerations, particularly in relation to landscape and visual constraints and some technical aspects, result in Alignment T2A being identified as the proposed option.



Tie-in alignment options, showing the two potential alignments - T1A and T2A

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About the overhead line – Tie-in

The existing circuit between New Deer and Peterhead is a 400kV overhead line that was previously upgraded from 275kV in 2021/2022. Due to the close proximity between this existing line and the proposed 400kV substation within Netherton Hub, the tie-ins to the site will also be constructed as a 400kV HVAC (High Voltage Alternating Current) overhead line.

The overhead line would consist of steel lattice towers which would support six conductor bundles on six crossarms and an earth wire between the peaks for lightning protection.

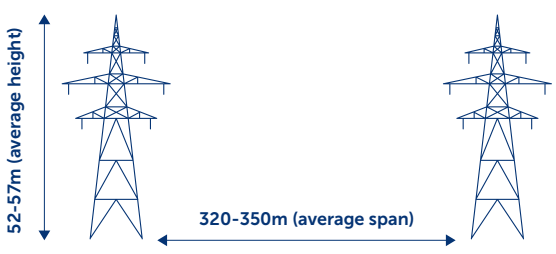
The 'inward' tie-in to Netherton from New Deer would use the same L8(c) towers as the existing line. These towers are expected to have an average height of approximately 52m.

The 'outward' tie-in from Netherton Hub would use the ASTI SSE400 tower design due to the requirement to support larger conductors to facilitate greater power transfer. These towers are expected to have an average height of approximately 57m.

The average distance between the towers is expected to be 320-350m for both the turn in and turn out.

Tower height and the distance between them will vary dependant on several factors such as altitude, climatic conditions and topography.

This is similar to the existing line that goes between New Deer and Peterhead. This line has 91 towers with an average height of 47m and average span length of 330m.



Please note, this graphic is an indicative representation of the standard height and not average height of each tower type. This is because the average height depends on the specific topography encountered by each overhead line.

400KV ASTI SSE400 D SUSPENSION TOWER

400KV OR 275KV NEW LINE L8(c) D SUSPENSION TOWER

275KV L3 D SUSPENSION TOWER

132KV PL16 D2 SUSPENSION TOWER

(Proposed towers for this project)

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Project timeline

2024

- In February and May 2024 at Netherton Hub consultation events, we shared the project need for the tie-in and rebuild to energise the proposed 400kV substation.

2025

- Public Consultation Event 1 (alignment selection) – March
- Ongoing discussions with landowners
- Public Consultation Event 2 (final alignment) - Summer 2025
- Undertake Environmental Impact Assessment or voluntary Environmental Appraisal, based on chosen alignment option.
- Application for Section 37 Consent submitted Autumn/Winter 2025.

2026

- Section 37 review ongoing.

2027

- Receive Section 37 Consent determination early 2027
- Prepare submissions to discharge any conditions attached to consent
- Construction starts, subject to receiving Section 37 Consent.

2028

- Construction ongoing.

2029

- Construction complete
- Commissioning.

Note: This timeline is indicative

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Have your say

We value community and stakeholder feedback. Without this, we would be unable to progress projects and reach a balanced proposal.

The feedback period

We will accept feedback from now until 16 April 2025.

How to provide feedback

Submit your feedback online by:

- Scanning the QR codes below to reach the feedback forms on our webpages
- Emailing the feedback form to the Community Liaison Manager, or;
- Write to us enclosing the feedback form in the booklets

We are pleased to present our alignment options and we believe the potential alignment strikes a balance between the various different considerations that we must take into account.

We intend to hold at least two pre-application consultation events prior to submitting the Section 37 Consent application.

This is the first of two events. At the next public event, we will provide feedback to members of the public in respect of comments that they have made in relation to the proposals in this document.

Recite me

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."

What we're seeking views on

Now that we have presented our alignment options and potential alignment, we want you to share your opinions on our plans, your suggestions for how we could make improvements, and any concerns about the impact of our work. If you live adjacent to the potential alignment, we want to work with you to discuss potential impacts and mitigation.

By telling us what you think, you will help shape our proposals. We want to harness your local knowledge so that we spot any unforeseen challenges early and maximise the potential benefits and opportunities for your communities. Ultimately, we want to work with you to ensure that the energy infrastructure we build will be the best it can possibly be.

Our Community Liaison Team

Each project has a dedicated Community Liaison Manager who works closely with community members to make sure they are well informed of our proposals and that their views, concerns, questions, or suggestions are put to our project teams.

Throughout the life of our projects, you will hear from us regularly. We aim to establish strong working relationships by being accessible to key local stakeholders such as community councils, residents' associations, and development trusts, and regularly engage with interested individuals.

Community Liaison Manager

Gillian Doig

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Additional information

The best way to keep up to date is to sign up to project updates via the project webpage: ssen-transmission.co.uk/netherton-400kv-ohl-rebuild

The best way to keep up to date is to sign up to project updates via the project webpage: ssen-transmission.co.uk/netherton-400kV-OHL-tie-in

You can also follow us on social media

@ssentransmission @SSETransmission

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