

T R A N S M I S S I O N

# The Western Isles HVDC Link - Underground Mainland Cable Connection

Scottish & Southen

Information events

June 2025



ssen-transmission.co.uk/projects/project-map/western-isles/

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## The information event will take place on:

Tuesday 10 June, 12.30–3.30pm Dundonell hotel

Wednesday 11 June, 3.30–6.30pm Contin Village Hall

Thursday 12 June, 3–6.30pm Phipps Hall, Beauly



# 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 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 the National Grid Electricity 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.



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

### Western Isles HVDC Link - Underground Mainland cable events





### 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 network across our region which covers a quarter of the UK's land mass, 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 and overhead lines 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 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. The way we consult is also a two-way street. 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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# Western Isles HVDC Link -**Underground Mainland cable**

To support the continued growth in onshore and offshore renewables across the north of Scotland and the country's drive towards net zero, investment in our network, infrastructure is needed to transport from source to areas of demand across the country.

The Western Isles is home to some of Scotland's greatest renewable energy resources, particularly onshore and offshore wind. As the existing Western Isles electricity network is at full capacity, no new electricity generation can connect without significant network reinforcements.

## **Project Need**

There is a need for a significant increase in the capacity of the proposed High Voltage Direct Current (HVDC) link from the Western Isles to accommodate new sources of power generation, predominantly from the renewables sector. The HVDC cable will now connect into new high voltage AC/DC converter station and 400kV AC substation located at the Lewis Hub near Stornoway, and the Fanellan Hub near Beauly.

This booklet provides detail of our current underground cable alignment, and we invite residents and stakeholders to contact us with information that you feel we should consider as we finalise this aspect of the project.

The Western Isles HVDC Link is part of our wider set of projects we are calling our Pathway to 2030, and you can learn more about our role in delivering net zero by visiting our project webpage: www.ssen- transmission.co.uk/ projects/project-map/western-isles/

Find more information about our Pathway to 2030 projects here: ssen-transmission.co.uk/2030-need

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## The story so far

## 2004 - 2009



Future requirement realised for a Western Isles Connection from the mainland to the Isle of Lewis. Recommendation of a 400kV connection from Beauly - Garve - Ullapool with a subsea cable to Grabhair and associated network upgrades on the isles of Lewis and Harris.

## 2012 - 2015

Project on hold from 2009 - 2012 to re-establish project requirements due to increased capacity requirements from additional developer connection requests. Needs case submission to Ofgem with a 600MW link identified.

## 2015 - 2018

A high-level analysis of the potential environmental constraints was undertaken. During this period, HVAC & HVDC underground cable route options were considered. The optioneering report included issues such as designated sites, disturbance of peat, effects on landscape character/visual amenity, and effects on the water environment. 6 HVDC options were preferred due to the least cumulative adverse effects due to a narrower construction corridor.



Route options assessed and presented to Ofgem with preferred route selected as a 600MW underground link from Beauly to Little Loch Broom and Subsea cable to Arnish.

## 2022 - 2024

Scotwind & Holistic Network Design requirements announcement requires link to increase to a 1.8GW capacity to include the generation of several Offshore windfarms. Route rationalisation exercises were carried out with some small deviations from previous preferred route.

### Western Isles HVDC Link - Underground Mainland cable events

## Why we're here today

We have undertaken a constructability review of the approximate 83km length of underground cable route and carried out multiple engineering, ecological surveys and ground investigations. We have also consulted with key stakeholders such as landowners, tenants and statutory bodies.

As a result we are now proposing an alternative route which is mainly off-set by 10m to 100m from the A832 and A835 public roads, with approximately now only 4km of the route in the carriageway. This will significantly reduce disruption to road users and local communities.

We would now like to share this information with stakeholders and the wider communities and are presenting this underground cable route for information.

## **Permitted Development**

This underground HVDC cable will be installed under our Permitted Development rights. This means that it is deemed permission under the Town and Country Planning Order so a formal consultation process is not required. However, we still consider it important to offer all our stakeholders the opportunity to consider our plans and provide feedback.

Whilst the underground cable will be installed under our Permitted Development rights, some of the ancillary or temporary works such as access bellmouths off public classified roads (A,B or C roads) and public road improvements will require planning permission. Our Contract Partner RJ Macleod will submit the planning applications for these works.



# The proposed cable route

The onland Underground Mainland cable route spans from Dundonnell in Wester Ross to the proposed Fanellan Hub, near Beauly. We have split the route into Sections and the following Maps show these Sections.



### View large scale maps:

Visit our webpage at: ssen-transmission.co.uk/projects/project-map/western-isles/ or scan the QR code to access the large-scale maps of our cable alignments:

Map showing the proposed underground mainland cable connecting the Western Isles, from Dundonnell to the proposed Fanellan site.



## Fanellan



Sheet 01 - Fanellan to Contin









# **Environment & community considerations**

The proposed underground cable (UGC) moves through and in proximity to areas of designated and non-designated sensitive habitats and landscapes. These habitats are also home to a number of protected species. This has therefore been a key consideration in the development of the cable route to date.

Various surveys looking for the presence of protected species and sensitive habitats including bats, otters, water vole, birds, peatland and native woodland have been undertaken and where identified the project has tried to avoid or minimise its interaction.

Despite the project being able to avoid significant areas of environmental sensitivity, given the nature of some of these habitats and that they cover vast areas of land it makes it impossible to avoid all. It will be imperative that the project mitigates any impacts through construction methods and plans e.g. Construction Environmental Management Plan (CEMP).

A full voluntary Environmental Appraisal (EA) will be delivered for the route. It will identify all environmental sensitivities and risks and set out a plan of how to mitigate these, in consultation with key environmental agencies & groups. The EA will also assess landscape and visual, cultural heritage, noise and recreational impacts. This appraisal will then be the basis of the CEMP.

The nature of our cable installation means that although we will create some short-term disruption/impact the design and construction methodologies will aim to keep this to a minimum, enabling successful ground reinstatement. Where full reinstatement cannot be achieved e.g. through wooded areas, an offset will be delivered. SSEN is committed to offset all environmental impact caused by the works.

As we expand the transmission network in the North of Scotland, we have a responsibility to design and build our projects to protect and enhance the environment. Read more about how we minimise the potential impacts from our activities and achieve Biodiversity Net Gain (BNG) on our project webpage or by scanning this QR code.



Scan this QR code to read more about how we minimise impacts from our activities and achieve Biodiversity Net Gain.

#### ssen-transmission.co.uk/legacy-benefits



The interaction of our project with those who live, work and travel near it is embedded in our selection of our route and our approach to how we construct and operate the Underground Cable UGC.

Landscape Designations, the Landscape Character and the visual Amenity of the location within which the cable will route through are all factors in our assessment of where to site the cable, as well as how to construct it.

When assessing the visual aspect of the cable our focus is on the construction and reinstatement phase as the aim is to minimise above ground operational infrastructure.

We've taken account of settlements and residential properties, key transportation and recreational routes utilised by tourists and visitors to an area, as well as vantage points and tourist destinations from where views and landscape appreciation is important.

The proximity of the cable to those living along its route is taken account of and we aim to stay a distance away from dwellings as much as practically possible. Although the route is following the road in places, the routing has aimed to deviate round settlements when we encounter them.



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The land and how its utilised is another key factor we include in our routing assessment. For example, we've looked to the class of agricultural land and minimised routing on higher class land; we look at the location and extent of commercial forestry and aim to minimise felling requirements. Where we do fell e.g. between Garve and Contin, we will replace the trees lost with new planting.

Recreational uses including footpaths, cycle routes and sporting activities (fishing, stalking, shooting) are identified and factored into the route and its construction.

The cable will now run parallel with, or for short sections in, the carriageway from Silverbridge west to Dundonnell. A traffic management plan for the full route will be developed to detail how we will manage traffic and construction traffic during the works aiming to address disruption to traffic & recreation during the cable works.

All in we aim to balance the various sensitivities and constraints of this route with the practicalities and challenges of delivering this UGC.



# **Design considerations**

There are various engineering aspects to take into consideration when developing a cable route. Whilst there are different techniques to install cables there are still preferences to de-risk the installation, to minimise impact to the environment and to ensure a quality asset that will meet the intended lifespan.

Our ground investigation works give particularly good information for us to decide what method we choose and the route we take.

Below are some examples of technical challenges we take into consideration:

#### Cable bending radii

The cables have limited bending ability so sharp angles either on the horizontal or vertical axis can cause problems when installing and if the design parameters are exceeded, there is a risk to the cable integrity.

#### Thermal properties of soils

All electricity cables generate heat to some extent. If the soils around the cable do not allow the heat to dissipate then this can impact on the ability to run the cable at its intended capacity.

#### Ground conditions

The route is particularly challenging encountering rock, peat and steep terrain. If we encounter shallow rock for example, this means we will need to do more work to get the ducts and cables in the ground and certain parts of the project may seem slow progress.

#### Access

The project will require large vehicles to carry plant and the cable drums. Access into the cable site can be limiting so where possible we try to stay close to main roads where access can be easier achieved without causing issues on minor or single-track roads.





# **Working with** landowners, occupiers and other stakeholders

Throughout the corridor selection and route refinement journey we have had numerous discussions with landowners, tenants, residents and other stakeholders directly impacted. It remains important to have all our stakeholders up to date on our progress, to be engaged in our discussions and to understand any concerns or issues that they may have, allowing us the opportunity to address these issues in whatever way is appropriate. These ongoing discussions are key to us finding a route that is acceptable to all and allows voluntary agreements to be reached.



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More information on how we work with landowners is available at: ssen-transmission.co.uk/ landowners-and-occupiers or by scanning this QR code.

# **Horizontal Directional Drilling - (HDD)**

In some more technically challenging areas, we need to cross existing utility assets (e.g. trunk roads and railways) or environmentally sensitive habitats such as rivers or peatland. Where the standard trenching methodology described above is not feasible for these technically challenging crossings, an alternative trenchless method known as HDD (Horizontal Directional Drilling) will be utilised.

Where HDD is present, a drilling rig will be located within a hard standing compound called an entry pit. At the other end of the HDD there will be a smaller hard standing compound called an exit pit. The preparation of these hard standings will require the import of stone or other hard materials which will later be removed with a view to full reinstatement of the area again on completion of the works.

There are expected to be a significant number of HDDs along the mainland cable route, plus an HDD at each of the landfalls at Dundonnell and Arnish where the subsea cable comes ashore.

The HDD at Dundonnell is due to commence in January 2028 and be completed in January 2029. The drilling compound entry pit will be in the field immediately west of the Mountain Rescue centre. A typical landfall HDD drilling compound entry pit is shown in the photograph below.





The HDD process has 3 basic working steps which once commenced will require continuous working often 24hours.







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Reaming (hole enlargement) – the process of enlarging the hole to the size suitable for pullback of the pipe, can be in stages with progressively larger tools or a single pass. The reamer can be pushed or pulled

Pilot hole – the initial drilling

step using a steerable assembly which determines the final profile and alignment of the crossing

Pipe Installation – the final stage of the process is installing the product pipe or duct into the drilled borehole. This is usually pulled into the hole but can be pushed.

The process uses a lubricating material called Bentonite Clay suspended in fresh water, which the project is anticipating using in its Eco-Friendly, biodegradable format across the whole project to ensure any small releases will not have any impact on the local environment.



# **Early construction** works activities

## We are commencing early construction works in September 2025 to carry out essential tasks driven by seasonal and supply chain constraints.

These works comprise of the following activities:

- Establishment of temporary construction compounds at the following locations:
- Main compound Fodderty Way, Dingwall Industrial Estate
- East compound Kinellan, near Strathpeffer
- West compound Off layby on A835, circa 2.3km east of Braemore Junction
- Construction of essential Bellmouths off unclassified roads in the Beauly, Muir of Ord and Garve areas
- Public road improvements e.g. widening of bends to facilitate construction traffic in the Beauly and Muir of Ord areas
- Construction / upgrading of access tracks along the cable route between Beauly and Garve
- Movement / replacement of approximately 40 road drainage and watercourse pipes, known as culverts, away from the cable on the A832 between Fain Bridge and Dundonnell
- Establishment of Horizontal Directional Drill (HDD) entry and exit pits at Garbat Lodge, Inchbae and Allt Guibhais Mor
- Ecological mitigation works
- Tree felling along cable construction corridor

Where the works interface with other SSE Transmission project such as overhead line tower schemes we are co-ordinating with those projects to provide joint planning for access to both projects.





# Construction

The Mainland cable Civil construction works are expected to begin in September 2025 and aim be complete by 2030.

## **Construction methods**

The construction will be undertaken in stages. Prior to any cable installation, temporary accesses will be formed from public road as a temporary road, know as a haul road, of either stone or matting will be created allowing the cable trench to be excavated.

Approximately 4km of the cable route will be in the public road where there will be some advanced works to move road drainage and watercourse pipes, known as culverts, away from the cable.

Where works are planned on the public road it will be necessary at certain times to close a single lane and control traffic using temporary traffic lights. In exceptional circumstances it may be necessary to close the road for a period but if this is required, reasonable notice will be given.





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Once the cable trench is excavated 3 ducts (2 for the power cables and 1 for the communications cable) will be laid side by side and then surrounded in a robust backfill material to protect them from any external forces they may encounter. Following installation of the ducts, the surface of the ground is reinstated in accordance with landowner's requirements.

Along the route there will be areas where each of the cable sections will be jointed called joint bays. These will be approximately every 800m to 900m along the cable route. This is something that is subject to ongoing and detailed design, however in these areas there will be open excavations where each cable will enter the duct and be pulled via a winch to the next joint bay, where the cables are then jointed together.

Once cables have been jointed and the system has been tested, these joint bays will also be backfilled and reinstated.





## **Project timeline**

### March 2025

• Pre-Construction activities along the proposed route with surveys including fauna, flora and road/ground conditions

#### March 26 - 2029

• Construction works commence, installing & reinstating duct, HDD and joint bay excavation along the complete route





#### September 25 - March 2026

• Early Works activities along the proposed route with some key road drainage/culvert alterations, public road improvements accesses, haul roads, ecology protection and forestry clearance

#### April 2027

- Joint Bays final excavation,
- cable pulling and jointing commences

#### September 2029 • Offshore Marine cable installation commences





# If you have questions

If you would like to be kept informed about this project, please register using the "Register for Project updates" section on our project webpage.

Thank you for taking the time to read this information booklet. If you have any questions about the project or information that you believe would assist the planning and delivery of this project, then please email or write to either or both of the Community Liaison Managers.

The information in this booklet is correct at the time of printing. The details of this project are still being refined and there is a possibility that details may change between now and the commencement of construction activities.





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

## **Community Liaison Managers**

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## Additional information:



Find out more, register for project updates and get in touch by scanning the QR code or visit the project website at: ssen-transmission.co.uk/projects/ project-map/western-isles/

You can also follow us on social media:



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## Notes

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