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 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 £20 billion into our region's energy infrastructure this decade, powering more than ten million UK homes and 20,000 jobs, 9,000 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.

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 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 our host 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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The Pathway to 2030

Building the energy system of the future will require a significant acceleration of work 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 a big 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

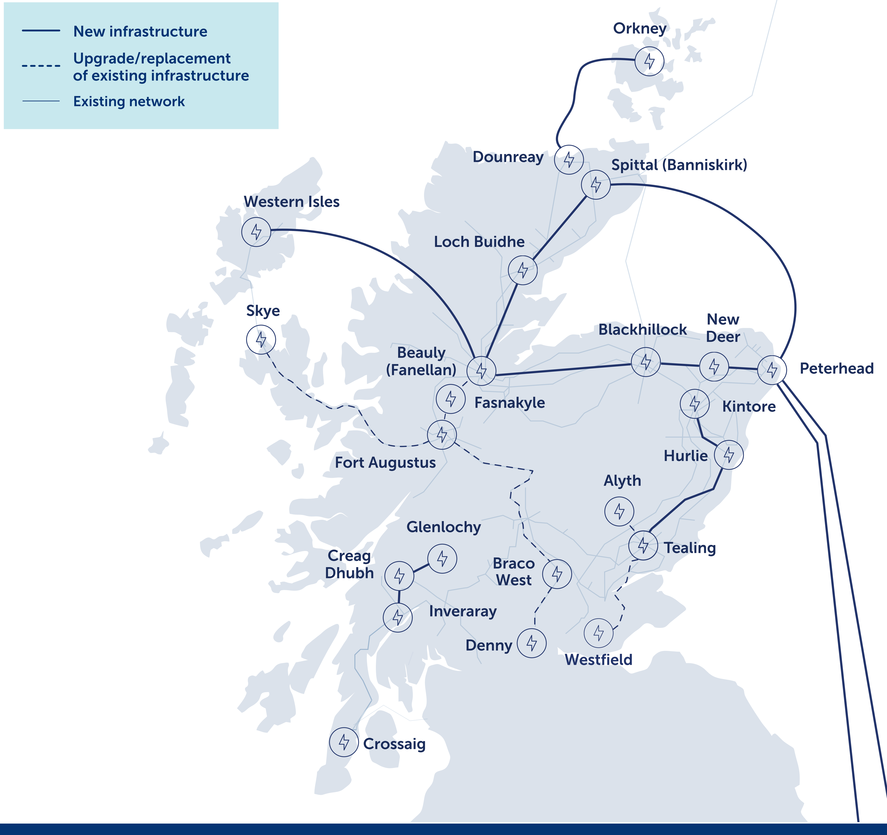
And it's not just about net zero. It's also about building a homegrown energy system, so that geopolitical turmoil around the world doesn't severely impact the UK and push up energy prices.

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, National Grid, the Electricity System Operator (ESO), 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.

Our 2030 targets are the first step on the transition to net zero. The UK Government has a target to decarbonise our electricity system by 2035 and fully decarbonise our economy by becoming net zero by 2050, with the Scottish Government committing to net zero five years earlier, by 2045.



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The Pathway to 2030

What this means for the Western Isles

Development history

The Western Isles does not currently have a transmission connection to the Scottish mainland and this highly anticipated project has been in the making for over 15 years, requiring Ofgem, the independent GB energy regulator's approval, before it could be fully progressed. Last year, the Holistic Network Design (HND) published by the independent Electricity System Operator (National Grid ESO) confirmed the need for a new 1.8GW HVDC link from the Western Isles, replacing the previously planned and historically consulted upon plans for a 600MW HVDC link. Ofgem then approved the need for this as part of their Accelerated Strategic Transmission Investment framework decision, meaning regulatory approval has now been secured. Please note that regulatory approval is separate to the planning approval process and following project development and associated public consultations, relevant planning permissions will be required.

Delivering a community benefit fund

We recognise the vital role local communities will play in hosting this critical infrastructure and are committed to delivering ambitious and transformational community benefit schemes that have the potential to changes lives and create a sustainable and positive legacy. We recently set out plans for our first ever Community Benefit Fund, and in September this year we will release initial funds which will be accessible to communities where in flight projects are taking place. A community benefit fund panel is currently being appointed and will be responsible for awarding funding to projects that deliver on three identified themes of:

- People focusing on skill training and employability
- Place emphasising the community and culture in the North of Scotland
- Alleviating fuel poverty

Greater security

This investment will play a critical role in improving network reliability and security of supply for homes and businesses across the Western Isles, reducing reliance on the back-up diesel-powered electricity generation station at Battery Point in Stornoway.

It will also support national efforts to deliver greater energy independence and energy security, reducing the country's dependence on volatile global wholesale energy markets.

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The Pathway to 2030

What this means for the Western Isles

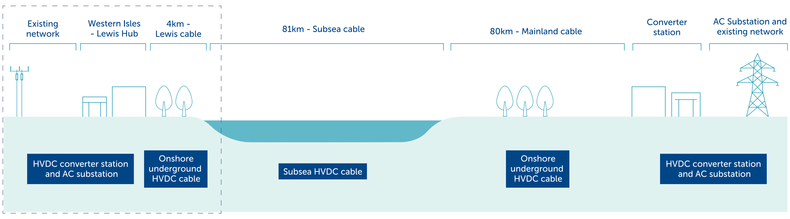
Maximising social and economic opportunities

We are committed to maximising the significant local economic opportunities and benefits these investments will unlock. Over and above a wide range of opportunities for the local supply chain, benefits may vary from project to project based on the type of works and local requirements during the construction process. We are working closely with Comhairle nan Eilean Siar and Western Isles renewable developers to explore collective opportunities to have a lasting legacy through maximising social and economic opportunities. We are committed to build on the learnings and local benefits from other projects, such as our ongoing Shetland HVDC link project.

Over £30 million local expenditure on Shetland

For some context on the potential extent of local expenditure the project could deliver, the Shetland 600MW HVDC Link project, which has a similar, yet smaller scope and level of investment to the Western Isles Connection, has passed the £30 million mark for direct local expenditure. From local vehicle and plant hire to the use of local civil engineering and catering contractors, Shetland's supply chain has played a vital role during the construction phase of the project.

The project is still to become fully operational, therefore this number will continue to grow on a daily basis. We are committed to build on the learning from the local benefits of the Shetland HVDC project for the Western Isles Connection project.



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Project overview

We're leading some exciting 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.

Lewis Hub - AC substation and HVDC converter station

The purpose of this booklet and public engagement event is to provide an update on the Lewis Hub.

The proposed new Lewis Hub is a strategic development which is required on the Western Isles to deliver a HVDC Converter Station and 400kV AC substation in a single location.

Providing this 1.8GW HVDC connection will allow large volumes of electricity generated by commercial and community-owned schemes to access the main GB electricity market, which local developers and Comhairle nan Eilean Siar have been calling for since 2005.

Project elements include:

- Lewis Hub High Voltage Direct Current (HVDC) converter station and an Alternating Current (AC) substation located near Stornoway.
- Circa 4km of underground HVDC cable from the new HVDC converter station and AC substation to the landfall at Arnish Point, Stornoway.
- 81km of HVDC subsea cable from Arnish Point, Stornoway to Dundonnell on the Scottish mainland. Circa 80km of onshore underground HVDC cable from Dundonnell to a mainland HVDC converter station near Beauly.
- A mainland HVDC converter station near Beauly.

A joint solution

Following extensive studies and assessments of alternative sites it was concluded that the optimum solution was to locate both new installations on a single larger site rather than two separate sites.

The advantages are the avoidance of lengthy AC (Alternating Current) connecting cables and reduced visual impact from co-locating this new infrastructure in one location.

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Lewis Hub

Lewis Hub (AC Substation and HVDC Converter)

What is the Lewis Hub?

An essential component in the energy network, The Lewis Hub is a multi-substation connect point for sources of generation, such as wind farms and power stations and export of power to the wider grid.

The Lewis Hub is comprised of two primary elements an AC substation and HVDC converter station which are directly linked together and share a platform area, along with wider connections to overhead and underground circuits.

The total platform size (base of the site) containing both installations will be approximately 570m x 310m.

This will be encompassed by a 4m high security fence and associated access roads, landscape and drainage. The sizes and locations off which are in refinement.

Key Functions

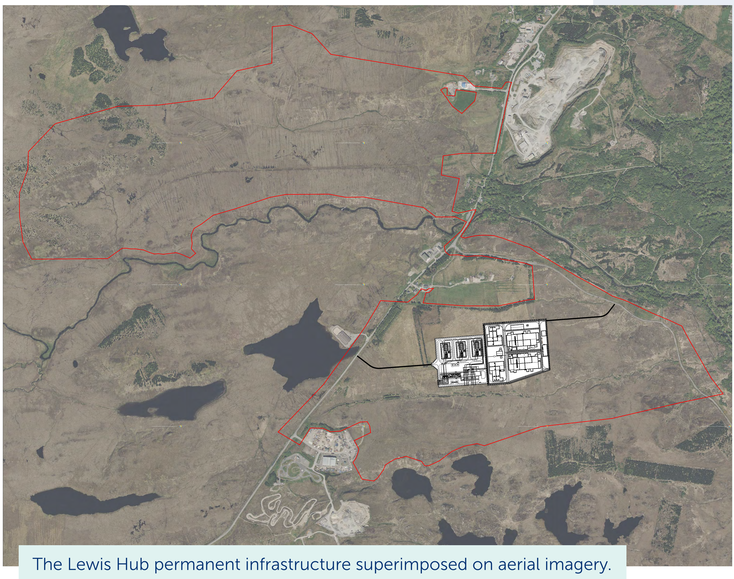
The Lewis Hub is a critical component in maintaining an efficient and healthy energy network, monitoring and reporting back to operators on statistics and events to provide live information on our network. The hub delivers the following key functions:

- Fault monitoring and identification which allows for isolation to protect the network and repairs.
- Redirection and disconnection of energy to allow for demand/maintenance works.
- Provide data such as voltage, current and power flow to enable efficient running and future predictions.
- Transform voltages to higher or lower ratings.

Access

Two new access points will be formed for the site for operational control and safety, one to the West from the A859 and one to the East from the Arnish Road.

The same access locations will be utilised during construction along with internal perimeter access tracks to reduce the volume and weight of traffic on the existing public road network.



The Lewis Hub permanent infrastructure superimposed on aerial imagery.

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Lewis Hub

Lewis Hub - DC converter station

What does a DC converter station do?

Converter stations change electricity from alternating current (AC) to direct current (DC), or vice versa. Alternating current is used in households, whereas direct current is used to efficiently transport electricity over long distances, such as via subsea cables, with fewer electrical losses.

HVDC project elements

The converter station has two poles this is reflected in its mirror image U-shaped configuration. On each north and south side of the building AC current passes through an AC Filter Hall and then into a DC reactor Hall before progressing into the DC Valves which complete the process of turning the current from AC into DC. In addition there are smaller ancillary and support buildings adjacent to the main building.

Lewis Hub - AC substation

What does the AC substation do?

The AC substation will connect the HVDC Link to the mainland and the AC network on Lewis facilitating the new proposed wind farm generation. AC Substations manage electricity flows within the network, which can include connection and disconnection of circuits to direct the flow, transform voltages to higher or lower ratings, manage the frequency of the electricity and increase efficiency and reliability of the power supply.

AC project elements

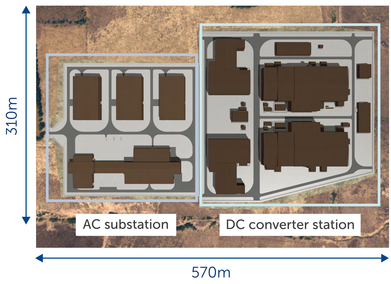
The AC equipment is housed internally within separate buildings for the air insulated and gas insulated switchgear and transformers.

The buildings range in height from 12m to 20m. With the three transformer halls to the North the tallest at 20m to the apex of the pitch.

Building layout and materials

The permanent Lewis Hub buildings will house all the HVDC and AC equipment within large metal cladded, climate-controlled buildings.
The buildings are likely to be rectangular in plan, consisting of suitably coloured steel cladding and pitched roofs.
The proposed main converter buildings are to be approximately 27.5m in height. This is due to the clearance distance required between the high voltage equipment and the building structure.

We are currently reviewing the design with our equipment suppliers, and building designers, with a view to reducing the larger building dimensions as much as possible.



In addition to the primary Hubbuildings the permanent infrastructure will include:

- 4km Underground cable from the Converter Station to the subsea cable landfall at Arnish Point.
- Access from the A859 and Arnish Road.
- Security fencing (note: the site is a dark sky site and lighting will only activate in an emergency situation or working hours).
- Permanent site drainage and SUDS ponds.
- Visual Mitigations, landscaping/bunding/ screening/planting.

Construction works and activities at the site, are anticipated to include:

- Early site set-up to clear the site and form level platform.
- Peatland restoration and/or reinstatement sites.
- Temporary construction compounds and laydown areas.
- Temporary site drainage.
- Delivery of plant, components and materials.
- Inspection, testing, and commissioning.

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How we've selected the Lewis Hub site

Our site selection process ensures that the design, consenting, construction and operation of our projects are undertaken in a balanced manner which causes the least disturbance to the local community and environment, ensuring the solution taken forward is economically and technically practical.

To do this we follow an internal process supported by specialist environmental consultants. This process considers technical environmental and cost aspects to find a balanced outcome, and also involves consulting with stakeholders and the local community.

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How we've selected the Lewis Hub site

Site selection process

Stage 1 site selection: initial options

Initially, a 5km study area was identified close to the proposed cable landfall at Arnish Point.

Five initial site options were identified, at Arnish Point, Arnish West, Creed Business Park, Stornoway GSP (adjacent to existing Stornoway Substation), and at Marybank.

An initial feasbility study found that the site at Arnish Point was not a sufficient size for the current development, and so Arnish Point was ruled out.

Stage 2 site selection: what happened next?

The four remaining sites were consulted on, with the site at Marybank being split out into two options: 5) Marybank; and 6) Creed North.

A second round of public consultation was undertaken in November – December 2023. At this time, Site 6 - Creed North was presented as the preferred site option. The decision to seek an alternative location was taken in direct response to feedback from the local community, demonstrating the value of our consultation process. We will continue to listen and work constructively with landowner groups, residents and stakeholders as we develop the project. This new site was then considered within the stage 2 assessment, using the same technical, environmental and cost criteria as other options.

In June 2024, this new site, Site 8 - Arnish Moor was announced as our preferred site option.

What has changed since we last consulted?

- At the previous public event, we presented Site 6 - Creed North, close to Marybank as our preferred site.
- Following feedback from the event, and from key stakeholders we evaluated previous sites and investigated further options.
- This resulted in further Landowner discussion and evaluation of the feedback to establish another site option.
- We are now presenting a new preferred site, Site 8 - Arnish Moor in proximity to Macaulay Farm and intend to apply for planning permission to develop this new site.

Why is this the best location for the Lewis Hub development?

Within our search area of 5km from the marine cable landfall connection at Arnish Point, this site performed best on balance with respect to environmental, technical and cost criteria for a number of reasons, including:

- Site 8 minimises the impact on natural blanket bog habitat. Providing an opportunity to minimise disturbance during construction earthworks.
- The site is "flatter" (less variation in elevation) compared to other site options, which helps us to achieve a cut fill balance.
- The proposed site allows the project to minimise the amount of disturbance to soils on undeveloped land in line with current planning policy.
- In terms of planning policy, all of the site options would need to have regard to the mitigation hierarchy described in NPF4 which recommends first avoiding and then minimising the amount of disturbance to soils on undeveloped land.

Our next steps include:

- Detailed design
- Ground investigation
- Peat probing
- Environmental surveys, including bird surveys and habitat surveys
- Background noise monitoring
- Appointment of contractor(s) to produce the design for the planning application
- Producing the Environmental Impact Assessment
- Reviewing feedback from this consultation event
- Continued engagement with the local community

Why we value your feedback

Design development of the Lewis Hub site is ongoing and we will continue to listen to feedback and comments from stakeholders and the local community, and implement these where feasible.

We will be holding further pre-application consultation events in November when we will share feedback from this consultation and any subsequent changes to design prior to submitting a planning application to Comhairle nan Eilean Siar in early 2025.

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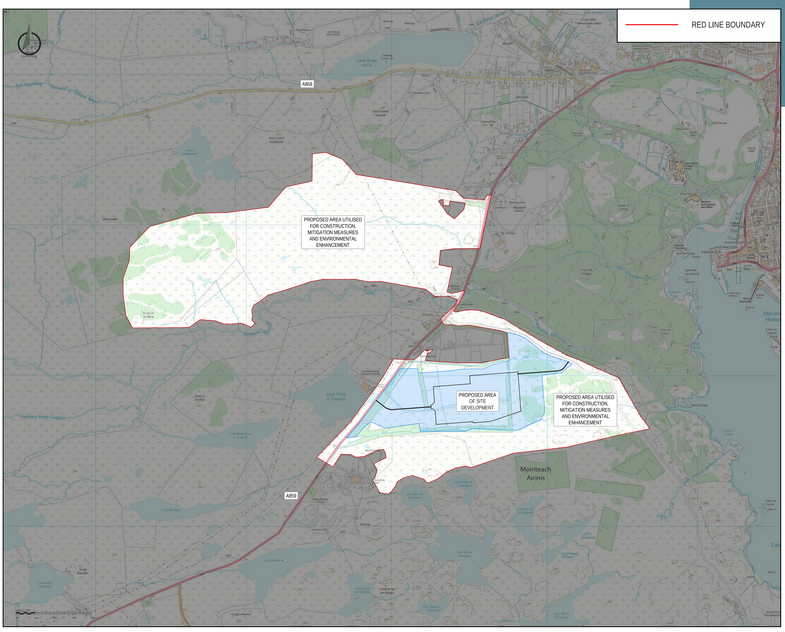
Development boundary map



Please note: The wider Red Line Boundary (RLB also includes areas which have been identified for environmental enhancement, which encompasses some of the moorland close to the previous potential converter station site at Creed North.

This has been included in the PAN as a potential site on which the projects commitments to improve and enhance the environmental impact of the site could be met.

The PAN boundary, therefore, does not represent the permanent footprint of the substation itself but indicates the full development area.

Although identified in blue hatch above is the permanent infrastructure area, encompassing access, platforms, buildings and drainage features.

Download a copy of the map by scanning the QR code or by visiting the following URL:

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3D visualisations

We understand that local stakeholders need to be able to visualise what the development may look like in their local area. We've commissioned 3D visualisations which model Lewis Hub into the local landscape to help understanding of the proposals in terms of the visual impact, distance and height.

Aerial View from south-west looking north-east over the substation and converter station with Stornoway Town in the background

'The layout and colour of our proposals may change based on feedback and further refinement of the design. If that happens, we'll update our model and video and share this on our webpage and with you at the next event.

These visualisations are shown without screening. We are currently working with a landscape architect to develop landscape forms and planting design to help to screen the substation and converter station from view.

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Development considerations

During our last consultation, we outlined many of the engineering, environmental and social considerations we take account of when establishing a practical site for the substation. Now that we have identified a proposed site, we are able to share further details regarding many of our development considerations.

Local wildlife

We recognise the need to understand the local environment and ensure that we put suitable measures in place during construction to protect wildlife from disturbance.

- **Bird Surveys:** Vantage point surveys started in Spring 2024 and we have also been engaging with NatureScot and the local Raptor Study Group
- **Habitat Survey:** river habitat surveys were carried out on the River Creed in July 2024. Detailed habitat site survey of the site is planned for September 2024
- **Protected Species Survey:** Otter surveys are to be carried out to inform the EIA and also prior to development commencing at the site.

Surveys will inform the ecological andornithological assessment in the Environmental Impact Assessment (EIA).

For all identified protected species the design will seek to avoid/minimise impacts wherever possible and where this is not possible, provide the appropriate levels and types of compensation. Where necessary, relevant species licences will be sought from NatureScot and construction will be undertaken in accordance with species specific management plans. This will ensure the careful management of protected species is undertaken by qualified ecologists.

Traffic

Two new access points to be proposed for the site for operational control and safety, one to the AC Substation from the A859 and one to the DC Converter from Arnish Road.

During the initial site works it is anticipated the primary access to the site will be from the Arnish Road to reduce the volume and heavier vehicles on the public road. The port facilities at Arnish and the Port will be utilised for delivery of construction materials and equipment.

Landscape and visual impact

The appearance of the substation within the landscape and where it will be seen from is being carefully considered. We have appointed an independent chartered Landscape Architect to assist us with the design. A landscape and Visual Impact Assessment (LVIA) is required as part of the Environmental Impact Assessment (EIA) process, to assess the impact of this substation and converter station on the landscape and visual amenity. Any impacts will be minimised and/or mitigated where possible.

Photomontages will be generated by the landscape architects, showing what the development will look like from these key viewpoints. This information will help inform the final design of the landscape forms to reduce the visual impact of the new substation as far as possible. The photomontages will be included as part of the EIA.

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Project timeline

2023
- Site selection public consultation event: Spring 2023.
- Cable route selection consultation and converter station site selection update: Autumn 2023.
- Ground Investigation and Environmental Surveys: Autumn/ Winter 2023.

2024
- Pre-application consultation 1: September 2024.
- Pre-application consultation 2: November 2024.
- Additional Ground Investigation and Environmental Surveys: Autumn 2024.
- Pre-application submission: Autumn 2024.

2025
- Anticipated planning decision: Summer 2025.
- Commence proposed discharge of Planning Conditions: Summer 2025.

2026
- Complete proposed discharge of Planning Conditions: Spring 2026.
- Proposed construction start: Spring 2026.
- Installation of onshore underground cable starts: Spring 2026.

2027
- Subsea route preparation: Spring 2027.
- Construction and installation continues: 2027.

2028
- AC/DC substation construction continues: 2028.
- Delivery and installation of key converter station equipment: 2028.
- Subsea cable installation starts: Spring 2028.

2029
- Onshore cable installation complete: Summer 2029.
- Proposed construction complete: Autumn 2029.
- Subsea cable installation complete: Winter 2029.

2030
- Test and Commissioning of HVDC Link: Spring/ Summer 2030.
- Connection: Winter 2030.

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