



Scottish & Southern  
Electricity Networks

TRANSMISSION

# Noss Head HVDC Switching Station Newsletter

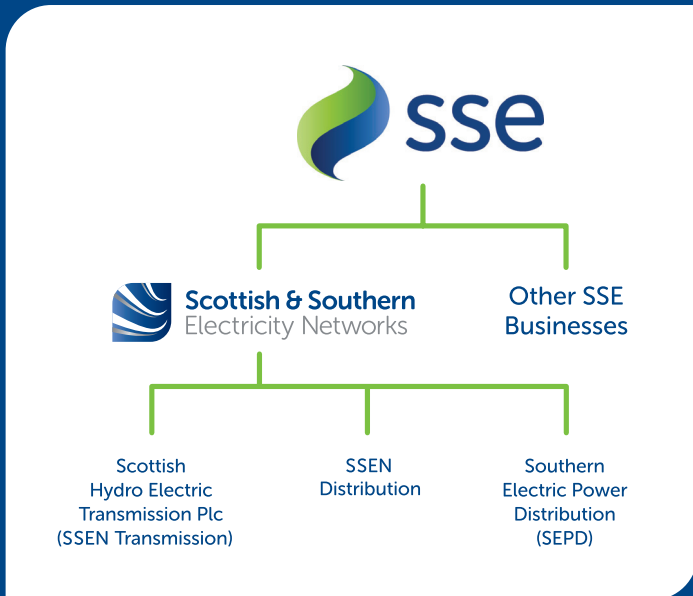
January 2022



[sssen-transmission.co.uk](https://sssen-transmission.co.uk)

# 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.

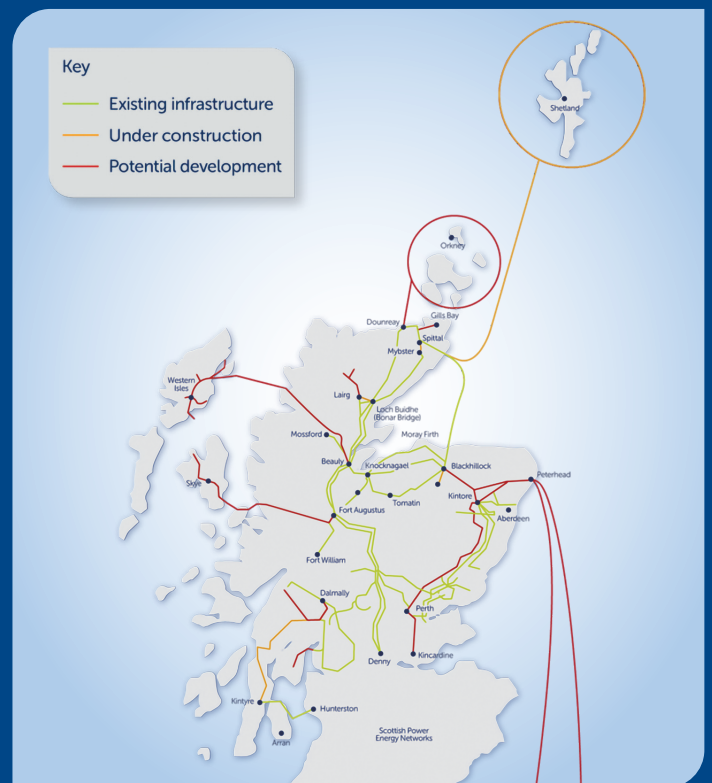
The landscape and environment that contribute to the challenges we face also give the area a rich resource for renewable energy generation. There is a high demand to connect from new wind, hydro and marine generators which rely on Scottish and Southern Electricity Networks to provide a physical link 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



# Noss Head DCSS Site Progress 2021

Since our last update, the switching station has been progressing well in accordance with our agreed timelines which was helped by an extended dry summer which allowed for the bulk of the earthworks and structure to be completed.



## Working with the community

Throughout the development of each element of the Shetland HVDC link project we have worked closely with the community, with the feedback received helping to shape the final design. We hope to continue working closely throughout the construction of the Noss Head site and the onshore cable works.

Sharon Powell is the Community Liaison Manager for the Shetland HVDC Link project. Sharon will be working closely with the local communities across all elements of the project including Noss Head and will be the main point of contact.





June 2021 - platform complete and foundations nearing completion.



August 2021 Main steel work complete.



September 2021 Precast cable trough installed.



October 2021 roof lining sheets installed with the insulation and top sheet commencing thereafter.

As 2021 nears to an end and as we are fast approaching the site closure for the Christmas and New year holidays, we reflect back on 2021 and the many milestones that have been achieved safely and on programme by our Principal Contractor and their subcontractors.

The prolonged mild weather has helped achieve all the earthworks in Q2 2021, with the foundation pads and control building basement walls completed thereafter. Over 2000m<sup>3</sup> of concrete was placed during the construction of the foundation pads. The steelwork for the main structure was also delivered to site in Q2 2021.

Over the summer months you could start to see the main structure of the building rise from the ground. The arched roof is the first of its kind to be built on an SSEN structure. In late summer the main structure of the switching hall and control building was completed.

The reinforcement and steel mesh were installed ready for the concrete to be placed for the switching hall floor slabs. We also took delivery of the precast cable troughs, and the cable ducts were also installed. 2000m<sup>3</sup> of concrete was poured for the floor slabs and just over 1100 tonnes of structural steelwork was erected in the construction of the building.

Q4 2021 saw the night's drawing in but this did not hinder the great team effort from everyone at Noss Head with the liner sheets being installed on the roofs and the external wall cladding being installed, ready to make the building wind and watertight before the cold and wet weather really set in. Local building services company G&A Barnie commenced installation of the mechanical and electrical containment in preparation for cables to be installed at the start of 2022. The partitions and drywall within the control building have commenced and the roof and wall cladding is progressing well.

## Highlights

- Safe completion of all major earthworks, concrete foundations and steel work erection were completed on schedule with no safety or environmental issues.

## Progress:

- The main Switching Hall roof liner sheets are now 100% complete with the insulation and top sheet progressing well. The main floor slab concrete pours are now complete with linking cable troughs also complete.
- The Control Building internal and external wall cladding has been completed.
- Inside the control Building internal stud partitions are also complete and dry wall boarding has commenced.



## Lookahead:

- Complete Wall Cladding works to ensure building is watertight end Q4 2021.
- Control Building: Complete Internal stud partitions Dec-21.
- M&E Building services: G&A Barnie complete 1st Fix and commence 2nd Fix.
- External ducting to commence in first months of 2022.
- HE (Hitachi Energy) attending site to install HVDC equipment in Q2 2022.

As we look back on 2021, everyone at SSEN Noss Head HVDC Switching Station would like to thank the local community for their patience and cooperation during the year. Also, thanks to our Principal Contractor BAM Nuttall, their main sub-contractor Global Infrastructure and all the other companies that have been employed by BAM Nuttall and Global Infrastructure to make the project a success thus far. There have been no lost days due to accidents or incidents. COVID has not impacted the project, Lateral Flow tests have been introduced meaning the site has remained fully operational and we will continue to remain vigilant. Appreciation also goes to the entire workforce without whom the safe completion of the works would not be possible.

Thank you

SSEN Noss Head Team.



Roof cladding underway, October 2021.



November 2021 reinforcement concrete floor slabs 80% complete.





# Subsea Cable Installation

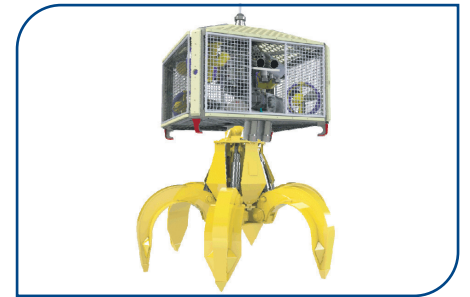
The Vessel Seawell.



NKT, on behalf of SSEN Transmission, have now commenced boulder relocation along the Shetland HDVC link cable route between Noss Head, North of Wick and a landfall in Weisdale Voe, Shetland utilising the vessel Seawell. So far, the Seawell is making steady progress and even managed to take on Storm Arwen successfully. The Vessel Seawell will utilise a grab, similar to the illustration below, pick identified boulders and relocate within the consented corridor so that sufficient clear seabed is created for the safe installation of the cable. The locations of boulders picked and the location they are placed will be recorded.

## Marine Stakeholder Forum

Forums took place in Wick and Shetland on Monday 15 November and Tuesday 23 November respectively. This was a good opportunity for the SSEN Transmission Team to meet the various Marine Stakeholder that attended and was a good opportunity to give updates on the project so far and to discuss some of the achievements to date. We look forward to further meetings and the opportunity to meet all of the Marine Stakeholders.



Boulder grab



NKT Victoria



# Spotlight on NKT

NKT are our Principal Contractor for the manufacture and installation of the Shetland HVDC Cable and associated accessories and equipment. Whilst NKT are a global company, the onshore project installation is managed by their UK based personnel, most of whom are based in the North of Scotland. NKT Victoria's capabilities are explained below.

## Carrying 9,000 tons of high-voltage cable and over 100 years' installation experience

The installation process is a critical phase of a turnkey solution for a high-voltage cable system. It takes a combination of deep know-how and reliable equipment to perform these complex projects. By utilising historical experience of high-voltage cable projects while also employing and investing in state-of-the-art equipment, NKT is able to ensure the highest quality from start to finish.

### Precision and accuracy

Superb precision and accuracy are two hallmarks of NKT Victoria. Both are achieved using dynamic positioning technology of the highest class (DP3), enabling stable and precise cable laying. An advanced system of sensors, monitoring hardware and software enables data to be sent to shore via a satellite link. This allows the onshore technical centers to remotely troubleshoot and support the vessel offshore, and together with advanced advisory software for motion monitoring, forecast and decision support, it also ensures cable integrity and crew safety. The Vessels beachable design, flat bottom and six-point mooring system enables operation in shallow waters near landfalls.

### Designed by industry leaders

Capturing NKT's extensive experience and expertise in submarine operations, the NKT Victoria is custom-built according to specifications. It comes equipped with all the features necessary to successfully perform even the most advanced installation procedures. The vessel has been developed by some of the most acknowledged industry leaders, including SALT Ship Design, MAATS, ABB Marine and Kleven, ensuring highest flexibility and accuracy in installation execution.



Deadweight:  
**12,000 tons**  
at 7.80 m draft

Beam:  
**30 meters**

Work deck area:  
**1,600 m<sup>2</sup>**

Accommodation:  
**100 people**  
in 76 cabins

Length:  
**140 meters**

Speed:  
**Min.12 knots**  
at max deadweight

**Purpose built for cable laying**  
NKT Victoria's innovative and beachable vessel design is the result of our extensive experience of offshore installation operations. The vessel is capable of simultaneous dual HVDC and fibre optic cable laying and deep-sea HVAC installation using a high-capacity tensioner system. These, and many more cutting edge features, contribute to higher efficiency and precision of the installation and service execution, while offering maximum safety for both crew and cables.

**Meeting safety requirements**  
As part of a turnkey solution, this custom-built vessel will improve flexibility and execution. The many features onboard enable optimised benefit of weather windows, which allows safe and efficient vessel operation in high sea states/waves. The offshore market's stringent safety requirements are met throughout the installation process thanks to sophisticated roll reduction technologies that mitigate the effects of harsh sea conditions. Fire and flooding containment systems protect essential systems, ensuring ongoing operations are not compromised. Advanced remotely operated vehicles (ROVs) equipped with cameras and sonar are used for subsea operations, while also contributing to increased safety.

**Energy efficient operations**  
The NKT Victoria uses a power-from-shore solution together with onboard technologies such as Azipod propulsion units, an energy storage system for marine applications and ABB Marine's Onboard DCC grid. This reduces fuel consumption significantly compared to other cable-laying vessels available on the market for any given project. The power-from-shore connection can be maintained while loading the cable onto the vessel – a unique advantage which results in a more environmentally-friendly operation. With the new cable laying vessel as part of NKT's portfolio, a turnkey solution will de-risk the installation operation by providing full control of everything from cable design and manufacturing to installation and service – the complete value chain from start to finish.

**Outstanding competence for complex projects**  
Excellent competence is key to successful installation and service projects. The teams manning the vessel and executing the installation of high-voltage cable systems are all highly experienced and skilled. NKT can therefore provide the right competence for these complex projects, ensuring that operation and equipment run efficiently. The vessel is designed to accommodate 100 people. It includes a gym, day-rooms, entertainment facilities, office space, a helicopter platform and a lounge – all to create a comfortable environment for the crew onboard.



## Land Cables

During the year we have completed the trenching and duct installation as well as the construction of the joint bays.

Manufacturing of the land cables was also completed. These were manufactured in Sweden by our contractor NKT, and have now been shipped to Wick Harbour where they will be stored until the installation scope commences.

The cable installation is currently planned to commence in February 2022 and completion is expected in August 2022.

In addition to our core scope we have also taken some time to conduct some resurfacing works on the Noss Road.

We would like to thank the local community for their support during the cable installation works so far.



Cable Drums, Wick

# Health and Safety

## Safety is our number one priority.

To date, our Health & Safety performance on the Shetland HVDC Link Project has been excellent. This is reflected in our annual Total Recordable Injury Rate of 0.00 which given the hundreds of thousands of hours worked, is a terrific achievement. A fantastic safety culture has been instilled across the project which should allow us to continue to work safely and go home safely. Our culture is underpinned in our day-to-day activities such as assessing risks, delivering toolbox talks, performing inspections and proactively identify safety observations. With over 1100 safety observations to date, it demonstrates that our teams are empowered to use their safety license; if it's not safe, we don't do it!

The nature of our construction work doesn't come without risk. From manual handling to heavy crane lifts. From slips and trips to falls from height. From power tools to forklift trucks, there are risks in everything that we do. That is why our dedicated Safety Teams work together with our Contract Partners to overcome challenges and continuously assess, mitigate, and monitor our risks to achieve zero harm to our teams.

As we enter Winter, our risk profile changes. Strong winds, heavy rain, ice and snow are only some of the elements which can make lifting activities, driving and even walking from A to B much more hazardous. Finally, the risk of COVID-19 hasn't gone away. We must remain vigilant and continue to follow Government guidance as well as our robust processes including frequent testing and health screening.

In summary: so far so good but still a long way to go.







Paula Moss Photography

# PROTECTING ECOLOGY

## Protected Species

Throughout the lifecycle of our project's, consideration is given to potential impacts on protected species. At the earliest stages of development, surveys are undertaken to assess the baseline so that projects can if possible be sited away from known sites where protected species are present. Between Weisdale Voe and Kergord Converter station Otters are the only European protected species of mammal present. Detailed surveys were undertaken prior to the start of works and the Environmental Clerk of Works for both the converter station and the cable route continue to monitor for otters throughout the duration of the works.

## Nesting Birds

During bird nesting season from April to August there is continual monitoring for birds to ensure that our works do not disturb any birds. All wild birds are protected from disturbance during the nesting season and some species are afforded greater levels of protection through the EU Birds Directive. It has been important throughout the course of our construction to monitor for nesting birds in the vicinity of our works. On several occasions during the 2021 nesting season works were ceased in certain locations to allow birds to complete their nesting cycle and for the chicks to fledge.

## Biodiversity Net Gain

Biodiversity worldwide is declining at an unprecedented rate. Human life and societies rely on a host of

ecosystem services such as food production, pollination, clean water, nutrient cycling, and carbon sequestration, all of which are dependent on biodiversity. Therefore, preventing biodiversity loss and restoring degraded habitats is critical for the path to sustainable development. SSEN Transmission aims to positively contribute to the UN and Scottish Government Biodiversity strategies by designing new infrastructure projects with the potential to achieve a no net loss (for project consented 2020) or a net gain (for projects consented 2025) in Biodiversity. Although Kergord was consented well before this target we are still assessing the potential to create biodiversity enhancements on the site.



Typical habitat found around the project.



# SSEN Transmission teams lend helping hand to Wick community

## Donated life-saving defibrillator equipment to local bowling club

Since our last newsletter SSEN Transmission teams working on the development of the new Noss Head Switching Station have been reaching out and providing a helping-hand to the community in Wick.

The SSEN Transmission project team, Principal Contractor BAM Nuttall and their Sub-Contractors have been working closely with the local community not just to keep them updated with progress on the substation development, but to make sure they give something back to the local area.

Project teams donated and arranged installation of a new defibrillator at the popular Rosebank Bowling club, providing potentially life-saving equipment should someone take ill.

The British Heart Foundation states that when someone goes into cardiac arrest, every minute that passes without CPR and defibrillation reduces their chance of survival by 10%, so having this vital equipment located at such a popular club in the community will hopefully give local residents peace of mind and has the potential to save lives.

SSEN Transmission Construction Manager Andrew Henderson said:

“As a responsible developer we’re keen to support the community in which we work as well as keep them informed as the project progresses.

We have a real opportunity to help deliver some positive community projects which would be a real benefit to the community at Wick – and we’re so pleased we’re able to help out and get involved”.



Rosebank Bowling Club Picture: Paul McQuade (left), BAM Site Foreman and Andrew Henderson (right), SSEN Transmission Construction Manager, presented the defibrillator to Sharon Rosie, the secretary of the Rosebank Bowling Club who accepted the defibrillator on behalf of all at Rosebank/Wick Youth Hub.

In early October, three members from sub-contractor Global Infrastructure worked to clear-up over 600m of overgrown path from the bridge at the bottom of Newton Hill to the top, providing a safer walking link for the community and helping to reconnect the popular link route around the outskirts of the town. Project teams had reached out to Wick Paths Group to identify where they could direct resource to help tidy up the area, and Global Project Manager Alan Chalmers arranged for a team to spring into action working through high winds and heavy rain to get the job done safely.

In addition, BAM have also kindly agreed to donate 80 tonne of type 1 stone for the group to utilise on upcoming projects. BAM were



more than delighted to donate the stone as it is part of their commitment to the local community and their long relationship that they have with the community over the years working on various local projects.

John Bogle, secretary of the Wick Paths Group said:

"We are delighted that teams from SSEN Transmission and sub-contractors Global Infrastructure were able to widen the path from the town boundary up to Newton Hill. This path is well used by residents of Newton Hill, but it also forms part of a popular walking and running route from the town. It has now been cleared back to its original width and can once again accommodate prams and people walking 2-abreast. These improvements will benefit a great many people.



Newton Hill Paths Clearance: Volunteers from Global Infrastructure and SSEN Transmission worked to clear over 600m of footpath at Newton Hill.

"The Paths Group is very grateful to our volunteers and also to the many local businesses who help us."

During the recent October school holidays, over 200 local children benefitted from an active-schools programme of activities which were funded by SSEN Transmission at Wick High School. Karate taster sessions, multi-sport days and football camps were all organised through Wick Active Schools, and the help from SSEN allowed the children to participate and attend the events for free.

Overall, the 5-day October camp was extremely well attended with in excess of 200 young people participating., with 133 pupils from Primary 1 to Primary 7 pupils attending Multi sports; 31 pupils from Primary 2 – Primary 3 attending the Wick Academy football club sessions and the 3 day Basketball camp attracting 36 attendees.

HLH (a charity registered in Scotland, formed by The Highland Council) was formed to develop and promote opportunities in culture, learning, sport, leisure, health and wellbeing across nine services throughout the whole of the Highlands, for both residents and visitors and facilitates "Getting Children, more active, more often within the Highlands"

An open day was held with the Caithness Tora Kai Karate Club with over 70 people taking part over 3 sessions. 40 new participants arrived at these taster sessions to take part in Karate for the first time.

As a lasting legacy, SSEN Transmission also donated new karate equipment to help ensure the local karate club and any new karate enthusiasts can keep training beyond these sessions. Subsequent to this, over 15 new members between the ages of 5 and 8 have joined the club.



Gary McDonald Wick Active Schools coordinator who works for High Life Highland (HLH) helped arrange the October Camp.



Gary McDonald Wick Active Schools coordinator who works for High Life Highland (HLH) helped arrange the October Camp.

Special thanks should go to Karen Center, Tesco Wick community champion for donating refreshments which helped keep the kids fuelled during the sessions.

Last month members of Wick and Sinclairs Bay Community Councils visited the site to see for themselves the progress being made at the development.

11 local mechanical and electrical apprentices also visited from Rolls Royce at Vulcan to see the construction of the new project.

SSEN Transmission's Andrew Henderson commented:

"Having some of the community council members down to visit the site was a great way for us to show them first-hand the huge amount of work which has gone into the project so far, and we look forward to welcoming them back along with members of Sinclair Bay Community Council and local councillors in the new year to show them how far work has progressed. We always want to support and encourage the next generation of engineers and construction workers, so it was great for us to host apprentices from the nearby Rolls Royce Vulcan site for a day and show them the work we've been carrying out so far, as well as give them an idea of what is to come.



The Rolls Royce Vulcan apprentices at the Switching Station development and were provided an update on the project progress.

SSEN Transmission is a stakeholder-led business and we deliver leading stakeholder engagement standards through our work with global consulting and standards firm, AccountAbility. AccountAbility works with organisations internationally to adopt responsible business practices and transform long-term performance and as committed to in its Stakeholder Engagement Strategy, SSEN Transmission works to achieve the externally accredited AA1000 Stakeholder Engagement Standard. This is considered the 'gold standard' in stakeholder engagement accreditation. As of December 2021, following our latest AA1000 Follow-up Consultation, SSEN Transmission has achieved a further uplift in stakeholder engagement performance, now operating at 76% within the 'Accomplished' level of AccountAbility's Stakeholder Engagement Maturity Ladder. We've increased our score overall by 14% since our initial 2019/20 review and we hope our strong performance provides stakeholders with confidence in the quality of our stakeholder engagement and our commitment to continuously improving.



The project team wish you a Happy New Year.

### Keeping in touch

In addition to the newsletter we will be sharing regular updates on the project website, where you can also register for updates and find contact details to get in touch with both project teams: [www.ssen-transmission.co.uk/projects/caithness-hvdc-switching-station](http://www.ssen-transmission.co.uk/projects/caithness-hvdc-switching-station)

Sharon Powell is the Community Liaison Manager for the Shetland HVDC Link project. Sharon will be working closely with the local communities across all elements of the project including Noss Head and will be the main point of contact.

If you would like to find out more about the project you can contact Sharon at: [sharon.powell@sse.com](mailto:sharon.powell@sse.com)