





TRANSMISSION

# BUILDING Shetland's Energy future



### **About SSE Renewables**

SSE Renewables is a developer and operator of renewable energy across the UK and Ireland, with a portfolio of around 4GW of onshore wind, offshore wind and hydro. Part of the FTSE-listed SSE plc, its strategy is to drive the transition to a net zero future through the world class development, construction and operation of renewable energy assets.

SSE Renewables owns nearly 2GW of operational onshore wind capacity with over 1GW under development. SSE Renewables also has the largest offshore wind development pipeline in the UK and Ireland at over 6GW, of which around 3GW is in construction or consented.



#### **About Viking Wind Farm**

Viking Energy Wind Farm (VEWF) is a 103-turbine onshore wind farm set around the central Mainland of Shetland. The £580m project is owned by SSE Renewables and construction began last year.



TRANSMISSION

## **About SSEN Transmission**

SSEN Transmission, operating under licence as Scottish Hydro Electric Transmission, owns, operates and develops the high voltage electricity transmission network in the north of Scotland. Its network consists of underground and subsea cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass crossing some of its most challenging terrain.

SSEN Transmission powers the communities its network serves by providing a safe and reliable supply of electricity, taking the electricity from generators and transporting it at high voltages over long distances through the transmission network for onwards distribution to homes and businesses in villages, towns and cities.

We are committed to inclusive stakeholder engagement, and conduct this at an 'Accomplished' level as assessed by AccountAbility, the international consulting and standards firm.

#### Keeping in touch

We are keen to hear your feedback, so if you have any questions about the newsletter or the works currently underway please contact:

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Viking Wind Farm Community Engagement Manager Julie.Graham2@sse.com / 07586 282236

To find out more about the projects and to register for updates please visit: www.ssen-transmission.co.uk/projects/Shetland/ www.vikingenergy.co.uk/

Please let us know if you require information in an adapted format such as paper copy, large print or braille and we will work with you to accommodate your preferences.

Cover: "Simmer Dim" – photo by Dave Donaldson



## Liam MacDonald 1998 to 2022

Our workmate and colleague, Liam MacDonald (23), from Tain, tragically died on Viking Energy Wind Farm's (VEWF's) substation site at Upper Kergord on Sunday 5 June 2022.

Liam's death came as devastating news to everyone connected with constructing the wind farm, and the Shetland HVDC link where Liam had previously worked.

Our foremost thoughts continue to be with Liam's family, friends and colleagues whom we will continue to support in any way we can.

We would like to thank the wider Shetland community for the many messages of condolence and sorrow following Liam's tragic death.





## THANKS TO RJ MCLEOD FOR EMPLOYING LOCAL PEOPLE AND CONTRACTORS

Staff constructing the Viking Energy Wind Farm (VEWF) were given a significant boost earlier in the year when local pensioner Tommy Mouat sent in a letter of heartfelt support and encouragement.

Everyone on the site was so moved by Mr Mouat's kindness and good wishes that VEWF felt it only right to invite him to the site to witness the ongoing work, the environmental disciplines being applied to construction and the huge progress being made. Special attention was made to seeing some of the heavy construction plant in action. Mr. Mouat is happy for VEWF to share his letter more widely.

Tommy Mouat was brought up in North Lochside, Lerwick and went to school in Lerwick before moving to Ronas Voe where he has spent most of his life. He lived through WW2 in Lerwick and has seen many ups and downs in the local economy since. He cares passionately about large projects in Shetland recognising the skills and capacity available from local people and contractors and felt moved to call out RJ McLeod's demonstrated commitment to local workers and the local supply chain.

Tommy J Mouat Northmavine

This letter is mainly to the principal contractor Messrs RJ McLeod to thank you for employing local people and contractors on the Viking project and the people who compose the newsletter which to me is wonderful and cherished and will be saved, otherwise I would never have seen "All" the construction of this massive job. What a difference to the Sullom Voe and Gas Plant constructions which sometimes barely seemed to be mentioned.

I am 84 years old and have no connection with Viking, or any contractors, just an interest in heavy construction plant. Perhaps you could show photographs of the large plant in the newsletter with their drivers.

Thanks to you all again and wish you all everything that's good in 2022.





Tommy Mouat enjoyed watching a concrete pour during his recent visit to the VEWF site



# RED-THROATED DIVER BREEDING PROTECTION

The Viking Wind Farm's environmental and habitat management plans set out the requirements to preserve the natural habitat of native breeding birds. Legislative requirements set out in the Birds Directive & Wildlife & Countryside Act 1981 were established to protect all wild birds, their nests and their eggs. To knowingly disturb a nesting bird, destroy its nest or remove its eggs is a criminal offence.

As per the 2021 breeding season, our ECoW and his team of experienced ornithologists carry out surveys ahead of progressing works to identify nest sites. Once identified, nesting locations are recorded on confidential sensitivity maps and compared with the construction programme so that mitigation measures against disturbance can be adopted. Mitigation measure options include:

- Establishment of disturbance buffer zones to minimise or exclude work within the zone where disturbance is possible.
- Construction of visual disturbance screens between the work site and the nesting birds.
- Halting of works in the nesting area and diversion of operations elsewhere until the fledglings have left the nest.

Where a nest site poses a constraint to progress, it is the protection of the bird that is given precedence in all considerations.

The extents of the wind farm infrastructure were reached prior to the onset of the breeding season. To date we have noted that many species have elected to nest away from potential disturbances, likely due to awareness. Passive deterrents are also deployed to allow the birds to choose breeding zones away from potential disturbance areas so increasing their chance of breeding success. Moorland species can be selective in their chosen breeding sites; however, waterfowl have less flexibility.

Although turbine locations were selected to avoid flight paths of waterfowl between lochans and the open sea, the construction team appreciate the potential disturbance that construction activities may have on some species. Red-throated divers, which can be highly sensitive to human movement even at some distance, utilise various lochans within the wind farm boundary. Significant use of local plant during cabling work on Mid Kame



# GREAT PROGRESS CONTINUES

In just six months' time (January 2023), the first wind turbine components will start arriving at the Greenhead base in Lerwick. This will herald another major milestone in Shetland's path towards decarbonisation and the achievement of net zero locally. In the run-in to January 2023, one-to-one engagement has been ongoing between VEWF's turbine supplier, Vestas, and the Shetland supply chain. This follows on the heels of a successful virtual "meet the buyer" event organised by HIE Shetland back in March of this year. The construction phase of VEWF has been a major success in engaging local suppliers, and Vestas are equally keen to maximise local input during the twenty-five-year operational phase of the wind farm. Direct construction spend in the local community now stands at well over £20m with over fifty-five local contractors and businesses engaged.

As predicted when the last, winter, edition of this newsletter was published, the full ca 70km extent of the wind farm track network is now completed. The permanent bridge on the new Sandwater Road is open to works traffic, with the temporary construction bridge now long gone. Landscaping and verge reinstatement continue through the road cuttings at Sandwater and Hamaragrind, and all along the length of the new Sandwater Road. The ongoing landscaping and reinstatement work, all around the VEWF site, reflects the skill and determination of all involved to deliver on the environmental disciplines stipulated in VEWF's consents and to leave exemplary work behind them which will stand the test of time. Also, the longterm peat restoration initiatives under the Habitat Management Plan continue to take shape, aimed at leaving another long term positive environmental legacy. All the peat excavated in construction of the wind farm is being retained for use in reinstatement or restoration work.

The development of the VEWF site continues at pace with all the different contributing work streams being progressed in parallel. Cabling work to connect the sixteen different turbine arrays back to the VEWF substation at Upper Kergord has begun in earnest. Once the cables are deployed, final landscaping/verge reinstatement, road capping and permanent drainage



can be finalised. When this happens, it will reduce the movement of heavy plant over the related tracks, allowing them to have their final running surfaces put in place to ensure that everything is ready for the turbine components to be delivered throughout 2023.

At the time of writing, approaching 57 out of 103 turbine bases have had concrete poured with around a further 20 having steelwork being readied and shuttered for further pours. Backfilling of completed turbine bases also continues at pace, allowing the cabling work connecting the different arrays to follow on.

102 of the 103 turbine bases and 102 of the crane hard standings are now developed to different stages of completion.

RJ McLeod have about 200 workers on site. When SSE staff, supervisory contractors and workers building the wind farm substation at Upper Kergord are added to these, the total number of staff sits at around 300. Of these, roughly 100 are local (or locally based) and 200 are travelling rotationally.

VEWF's first two grid transformers have arrived via Lerwick with the remaining two expected in August. Careful planning is in place to minimise disruption to other road users and to ensure a smooth and successful



transfer of these substantial bits of kit.

VEWF now sits roughly halfway through its build timeline on the road to completion and first export of electricity in the autumn of 2024. It essentially sits, as things stand, on time and on budget. All involved in constructing VEWF look forward over these next six months to seeing all the different strands of ground reinstatement coming together to leave a tidy job behind that the construction teams, SSE Renewables and the wider Shetland community can be proud of.



# THE GEOLOGY OF SHETLAND AND THE VIKING WIND FARM

The geology of Shetland is fascinating. As a result of plate tectonics, Shetland has been part of a land mass whose journey started close to the south pole and which has slowly migrated north through the equator to its current location over a period of hundreds of millions of years.

The rocks found in the islands represent the eroded roots of the Caledonian Mountain range that stretches over two continents from Norway, Greenland through Shetland into the Highlands of Scotland, Ireland and across the Atlantic Ocean to the Appalachians of North America. This mountain range once soared to Himalayan heights as a result of colliding continents that closed an ancient ocean (Iapetus) around 420 million years ago. As a result, the rocks that underlie the main islands of Shetland are buckled and fractured.

The wind farm site is underlain by Dalradian Schist rocks that made up the Caledonian Mountains, dating from 540 – 1000 Million years old (of Precambrian age). These rocks were originally a mix of ancient sediments that accumulated on the floor of the major but long disappeared (lapetus) ocean, mentioned above. The rocks, originally sandstones, siltstones, mudstones, with lesser limestones were subjected to low grade metamorphism to produce, respectively, psammite/ quartzites, semipelite, pelite and meta limestones that are being observed during construction. There is none of the original sedimentary structure remaining in the sedimentary rocks, other than the compositional banding. Of note, is that the topographically low valleys of Kergord and Pettadale correspond to thicker bands of metalimestones, the carbonate composition of limestone rocks making them more susceptible to weathering. These ancient metasediments were subsequently intruded by igneous rocks (granites, granodiorites, felsites, and similar) emplaced during the Silurian to Devonian periods (398 – 488 Million Years ago) as the ocean finally closed.





The metasediments observed on site have been folded into a mostly subvertical structure, with a north-south or locally north east-south west 'strike' (i.e. a dominant aligning of the rocks in a north-south orientation). The metasediments across the site become progressively younger towards the east.

Two major geological faults run through, or adjacent to the site boundary, which are also orientated in a northsouth direction: The Walls Boundary fault to the west of Kergord, and The Nesting Fault, running through the east of South Nesting. Both faults are generally accepted to be extensions to the Great Glen Fault system of the Highlands of Scotland. This fault system is largely inactive, although occasional moderate tremors have been recorded over the last 150 years. There are also a number of minor faults (NE-SW or East-west orientations) intersecting the wind farm development area, particularly north of Kergord

Whereas the wider Viking Wind Farm planning boundary is around 7000 hectares, the area actually disturbed during construction is some 96 hectares, with the borrow pits accounting for an expected area of around 12.5 hectares within that. The excavations for the turbine bases have encountered peat, with varying amounts of 'mineral' soils, mostly of glacial origin formed during the Quaternary period, before founding on the underlying rock. All of the materials excavated on site are re-used for a variety of engineering purposes, landscaping and in some instances peatland restoration. The rock in particular is extensively used in constructing the access tracks, hardstandings and upfilling beneath, and backfilling above, the turbine bases.





# KEEPING THE TURBINES' FIRMLY FIXED TO THE GROUND

Putting up a wind turbine can sometimes be compared to constructing a high-rise building, considering the factors that go into the design and construction process. The wind turbines on the Viking Energy Wind Farm (VEWF) are substantial by any standards, standing at 96.5 metres tall (just over 150 metres if you include the tip height of the blades!) therefore, like a tall building, the first and most important consideration in the design process, is the foundation.

The first consideration is the effect of the loading on the tower structure such as wind load, operational loads, the dead load, dynamic loads and the various combinations of each. The bigger the turbine, the bigger the loading. Here at VEWF we are using a Vestas V117 model with an output of up to 4.3MW per turbine and these machines will be amongst the most productive onshore turbines in the UK, given the sheer scale of Shetland's wind resource. Shetland is statistically the windiest place in the UK and, to enable the safe operation of these machines, the foundation must be robust yet efficient.

We employed a civil and structural engineering designer

(Tony Gee and Partners) to design our wind turbine foundations and, using information from Vestas on the loading, they calculated an Ultimate Limit State (ULS) and a Serviceability Limit State (SLS). The ULS is, basically, the mathematics that you must do to ensure that the structure will be stable and strong enough for the required period and the SLS represents the maximum load that a structure can experience without failing – failure being things like deformation, cracking and vibration. This formed part of the design checks to ensure the structure would not overturn or slide during its thirty-year design lifetime.

Next, we must consider the ground conditions and geological constraints. Is the turbine going to be founded on hard bed rock? Will there be soft granular material? How deep is the peat at the location? All these questions, and more, were asked and answered at the ground investigation (GI) stage. GI consisted of a series of boreholes and trial pits and analysis to determine the extent of the strata and sub-strata and provides the structural engineer the key parameters to define the conditions at the various locations we have been constructing at on site.



Trial pits and boreholes were central to VEWF's ground investigation process. Helicopters were used to transport staff and materials to remote locations.



A freshly completed turbine base with the concrete shutters still in place. The bases are backfilled to ground level, so only the top of the central parapet and the anchor bolts remain visible.

# VIKING SUPPORTS INTERCOUNTY NETBALL TOURNAMENT

Viking Energy Wind Farm supported the Shetland intercounty netball team as they competed in their annual competition against Orkney.

This was a return to competitive netball after the two-year hiatus due to the covid pandemic. The cash sum helped with travel, umpire fees and training costs.

Haydn Jamieson from Viking Energy presented the cheque and said: "We know how much the intercounty, and the opportunity to take part in competitive sport once more, means to everyone in the community. Viking Energy Wind Farm is pleased to have been able to help".









## SHETLAND SCHOOLS EXPERIENCE VIRTUAL REALITY AS PART OF VIKING WIND FARM STEM PROGRAMME

Pupils from Brae, Anderson, Whalsay and Sandwick high schools recently took part in three days of Science, Technology, Engineering and Mathematics (STEM) events held at Lerwick College/UHI and funded by SSE Renewables and Viking Energy Wind Farm.

The 41 students visited the campus, where they experienced a course delivered by Manchester based 3D design company, 3DW.

During the event the young people used virtual reality software to design a wind farm and were able to visualize 360-degree designs of wind farms using a VR headset. The groups were also taught how to manage costs for their infrastructure and delivered presentations about their projects.

To build on this success, further dates have been secured in early November at Shetland College, involving Sandwick and Whalsay High Schools.

Also, local primary schools are also being given STEM opportunities through a virtual package, customized for Shetland schools, by a Scottish provider called We Are Futures. This is expected to be rolled out to all primary schools in Shetland after the summer, following initial delivery in May.

Andy Dennison who delivered the secondary school courses with his colleague Naomi McFarlane said: "It was great to see the pupils work with real enthusiasm across the 3 days. Whilst the focus was on developing their STEM skills, the programme incorporates teamwork, communication and presentation skills to help build confidence and develop employability skills which are transferable to any job in any industry".

Kevin Briggs, Depute Principal Shetland UHI, said: "We were delighted to be able to host this event for the pupils and to offer the opportunity for some of our Skills for Work students also.

"It was a great mix of students from different subject areas and gave them the opportunity to apply the technology to a real situation.



"They also had to develop their team working and presentation skills and the students seemed really engaged. We look forward to working in partnership with Viking Energy Wind Farm, 3DW and DYW in the near future."

Developing the Young Workforce (DYP) Shetland's School Coordinator at Brae High School, Emily van Tonder, coordinated the school's attendance. She said:

"DYW is all about linking school pupils and employers together to offer work relevant education. "Both SSE Renewables and the team from 3DW were great to work with, enthusiastic about engaging with our young people and teaching transferable skills for the workplace. It was a great event which both pupils and attending teachers enjoyed."

Julie Graham, Community Engagement Manager for the Viking Energy Wind Farm project said: "We sponsored this interactive event so that young people in Shetland could get a better understanding of the processes involved in designing wind farms and as part of our ongoing commitment to working with schools.

"Working in partnership with DYW was essential to the events' success as they coordinated with the schools to ensure maximum participation. The three days were really engaging and a lot of fun. Due to how well they were received we are hoping to do it again in November."



Auld Skule Recycling Centre in Aith has had substantial Community Fund donation towards energy efficiency improvements

## VIKING Community fund

At the time of writing, the total value of grant funding approved is £436,359, with 204 applications funded throughout Shetland and a further 28 awaiting consideration.

The largest grant from the Advanced Grant Scheme is £44,581 awarded to the Skeld Community Hall for a new 6kw wind turbine to replace an old machine that hasn't worked for a number of years. The new turbine will be installed by local contractors Nordri.

The new turbine will allow the hall committee to once again benefit with income from the feed-in tariff that will run until 2031.

A project at Auld Skule Recycling Unit in Aith will see a new air-source heating system together with new doors and windows with the Viking Community Fund contributing £22,287 towards the total cost.

Also in Aith, the junior high school parent council has received £7,670 to purchase 26 iPads to help pupils access remote learning and other on-line programmes. Among



Sustaining & developing Shetland communities

other projects that have benefitted are the Shetland Cattle Herd Book Society with an award of £13,225, £10,000 towards the cost of a new wind turbine at the Isbister Hall on Whalsay, £18,133 for the Shetland Care Attendants Scheme; £10,000 to the Shetland Gymnastics Club and £3,400 to the Compass Centre towards building improvements.

Sporting groups in Unst, Sandwick and Dunrossness have also been awarded grants.

A full list of the grants awarded under the scheme and how to apply for a grant are available at **www.scbf.org.uk/ags** 



# A TROWIE KNOWE?

VEWF's construction continues to be supported by archaeology specialist Headland Archaeology. Headland's remit has been to identify features of possible archaeological interest, to monitor ongoing works to ensure any features that might be disturbed are properly recorded and to preserve any nearby features of future interest.

Ahead of the installation of cabling linking the North Nesting turbine arrays to the wind farm's substation at Upper Kergord, a mound of note was identified for further study and preservation and was subsequently roped off to avoid its disturbance. Further investigations will shed light on the historical credentials of this mound.





workers have suggested that it may be a "trowie knowe", the home of a trow hoping to "persuade" travelling musicians to make music for an upcoming trowie wedding up in the hills! If you look closely you might see a Trow.



# KERGORD

Since our last update in March, the team working at Kergord HVDC Converter Substation have continued to make considerable progress with the project. The focus has been the ongoing fitout of the HVDC building internally, including the Low-Voltage mechanical and electrical services, internal and external door installation, windows, decorating and floor finishes.

Most of the finishing works have been within the Service Building area of the Converter Station. The Service Building is the operating and control centre for the converter station, the high voltage equipment areas are linked to the service building through a network of power and signals cabling. The Service Building is fitted out with control panels which monitor the performance and operational aspects of the buildings through its Building Management System (BMS) and controls, monitors and regulates the process of the conversion from Alternating Current (AC) to Direct Current (DC).

As well as controlling the functional aspects of the Converter Station, the Service Building is also equipped with the necessary facilities for the operation and maintenance of the site, including workshops, meeting room and welfare facilities.

The Service building has three floors; a basement which houses the cabling, the ground floor which contains plant and equipment for the operational asset and the first-floor administration area where the Operators Control room, welfare and meeting rooms are situated.





Inside the Converter station the land cable has been installed and terminated. All four of the large converter transformers have been shipped to site.

#### Lookahead

- Completion of the internal fit-out of buildings ahead of the final HVDC equipment installation
- Completion of the below ground services and foundation to allow the final reinstatement to commence around the perimeter of the site including the security fencing and permanent roads.
- HVDC equipment installation from Summer 2022 onwards
- External finishes watercourses, roads, landscaping etc.





# HITACHI TRANSFORMER MOVEMENTS

The project to connect Shetland to the GB transmission network has stepped up a gear as the team welcomed the arrival of the four transformer units to their new location at Kergord substation.

Hitachi Energy arrived on site in February 2022 to begin their construction activities at Kergord HVDC Converter Station in conjunction with subcontractor Kirby Group Engineering. The team have been working hard in preparation for the arrival of the huge transformers which will play a key role in the Shetland HVDC link project. The first two transformers arrived in Lerwick Harbour from Sweden via specialist vessel MV Eemslift Ellen at the end of April. The third transformer arrived on the 15th June and the fourth on the 22nd June. The transformers were loaded onto a multi-axle vehicle which specialist haulier, Allelys, used to transport the units from Lerwick to their final location at Kergord substation.

The transformer units – weighing approx. 168 tonnes each – are key components in the operation of Kergord substation and will play a vital role in the Shetland HVDC link. Once complete, the link will enable the connection of renewable electricity generation and help Shetland's future security of supply.

Converter transformers are a major component in HVDC systems. These transformers connect the AC grid to the Power Electronics that convert AC to DC and are necessary for adjusting the high voltage. At Kergord Converter station, a total of three-single phase transformers plus one spare unit will be housed.

### The MV Eemslift Ellen with the transformers on board





### Offloading of the transformers onto the harbour



The transformers journey from Lerwick to Kergord





## Spotlight on: Shetland Flyer Aerial Media

The transformer aerial images were captured by Rory Gillies of Shetland Flyer Aerial Media. Shetland Flyer's highly experienced team provide aerial video, photography, time lapse video and aerial surveys for monitoring progress of BAM Nuttall's construction site at SSEN Transmission's HVDC project at Upper Kergord, Shetland. The weekly visits capture drone footage of the construction progress, interactive 360° panoramas as well as survey data including site maps and stockpile analysis.



udwall Taping Installation



# AC SUBSTATION

The AC Gas Insulated Switchgear Substation at Kergord will provide the connection to the main Transmission system for Shetland and will connect Viking Energy Wind Farm, Gremista Grid Supply Point substation, Mossy Hill Windfarm and provide for future connections for developments on Yell or elsewhere in Shetland.

The AC substation is continuing to make great strides with further construction works moving forwards in the project's development. Since our last newsletter, all

# NOSS HEAD UPDATE

The HVDC Switching Station in Caithness is making good progress, with major milestones on the horizon for the project. The team is nearing its civil completion stage of works with the final mechanical and engineering installation, commissioning and final external work set for completion by the end July.

Hitachi Energy and their subcontractors are now on site with the HVDC installation due to begin soon, which will play a major role in the project.

The lookahead for next three months; July 2022 – August 2022

- Completion of mechanical & electrical (M&E) equipment installation/commissioning Works
- Completion of external civil works security fencing and CCTV systems
- Final landscaping work. The design for the landscaping includes native tree planting, shrubs and extensive wildflower meadows to help support pollinator species including the Great Yellow Bumblebee. The landscape bunds have been designed to have an undulating appearance in order to blend into the wider landscape.
- High Voltage DC Equipment install Hitachi Energy M&E installation works will include the installation

Insulated Switchgear underwent robust testing at Siemens facilities in Berlin on 22nd June 2022. The operational tests carried on the switchgear passed with no issues. This is a fantastic milestone for the project as this type of Blue GIS (Clean Air GIS) will be the first of its kind in the UK. The use of SF<sub>6</sub> has been completely removed from the 132kV GIS Substation which removes the risks associated with SF<sub>6</sub>.

the cladding has been installed and made watertight,

the internal fitout has begun along with the blockwork

and plasterboard installation. The 132kV Clean Air Gas



of switchgear in the DC Hall and the fit out of the control building with equipment including LVAC board, battery, control and protection panels, air handling units, telecoms panels and cabling.

 Start of High Voltage DC equipment commissioning. Once the M&E installation works are complete, Hitachi Energy will start subsystem testing through to the start of the outage on the Caithness-Moray HVDC Link planned to commence in February 2023. System testing, including power transfer testing between Blackhillock and Spittal converter stations through Noss Head DC switching station, is planned at the start of April 2023 and will finish the middle of April when the Caithness-Moray HVDC Link will return to commercial operation.



# SUBSEA WORKS

The MV Sima, an anchor handler, has completed the final boulder clearance which was suspended in February due to weather conditions. She also carried out route clearance in advance of the cable lay in the summer. The MV Sima also performed a Pre-Lay Grapnel Run (PLGR) on the first 100km from Noss Head, with the PLGR for the rest of the route, starting at Weisdale Voe, scheduled for February 2023. All lessons learned from the most recent campaign will be carried forward as the same vessel will be used.

The MV Sima also cleared the route of Out of Service (OOS) cables during the recent campaign, which involved working closely with the out of service cable owners to agree that we could cut and secure the cables to clear the route. This means there will be no risk to other sea-users during the next stages of the project.

In Shetland, landfall preparations have been deferred to August 2022, to align with other activities and ensure teams are prepared to begin the full programme of work. The main cable installation is due to be carried out in early 2023. A High-Density Polyethylene (HDPE) Pipe will be installed in preparation to receive the cable in 2023. The cables will then be installed from a purpose-built cable laying vessel (Victoria) at the Weisdale Voe landfall via the HDPE duct to the transition joint bay. Following the installation of the cables, they will be trenched and backfilled where possible and protected by a rock berm where trenching cannot be achieved.

Teams from SSEN Transmission held a Marine Stakeholder forum in Lerwick on Tuesday 28 June at the Lerwick Museum where all were invited to come along to ask questions, meet the project team and get an update on the latest plan.







# LAND CABLE

The landfall temporary compound at Weisdale Voe was completed in the spring in preparation for the landfall duct installation at the foreshore as detailed in the Subsea Works section below which is due to begin this summer.

The eight cable joint bays, including the transition joint bay and the two in the A971, were completed in April. A joint bay is a concrete slab buried below the ground where the sections of cable are joined together by specialist teams of cable jointers working inside a jointing container. The joint bays in Shetland are spaced 1.1km apart, which is determined by the practical size a cable drum can be easily transported without the requirement for an abnormal load.

Cable installation works began in February and are currently 70% complete, with all cables in the A971 section now installed. The cables are pulled through the ducts using winches and then merged at the joint bay locations as described above. Cable jointing works started in May and are due to be complete in August 2022. The cable jointing works in the A971 section are now complete, backfilled and the existing surface reinstated.

The cables have also been pulled in to the Kergord Converter Station, and the termination works (the connection to the specialist HVDC equipment) completed. All cable installation works, are planned to be complete by August 2022.

After the land cable installation is complete, the full width of the northbound carriageway of the A971 from Scord of Sound to Stenswell will be resurfaced, which is currently planned for August and September 2022. Traffic management will be in place during the resurfacing works to keep road users as well as construction teams safe during this phase of the project.

The team and contractors would like to thank the Shetland community for their continued support and patience during the installation works to date.



Cable installation on the A971 section



Cable installation on the A971 section



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# SHETLAND RENEWABLE CONNECTIONS

### **Ground Investigation works**

Teams continue to make good progress with the ongoing ground investigation works for the proposed 132kV circuits from Kergord to Gremista and from Kergord to Yell.

Teams are working closely with specialists including local ecologists and archaeologists who are surveying the area ahead of and during the ground investigations to ensure nothing is overlooked.

The remaining works around Cul Ness have been temporarily paused to take into account the number of breeding birds and otter holts within the agreed work exclusion zones. This has impacted on the few remaining bore holes which need to be completed and the project team are working with NatureScot and BAM Ritchies to find an appropriate time window and to secure the relevant licencing that needed to allow work to progress in sensitive areas without detriment to protected interests.

The ground investigations involve borehole drilling, of up to 15m below ground level and mechanical excavation of trial pits of up to 3m below existing ground level.

In order to minimise SSEN Transmission's footprint on Shetland, engineers are utilising methods which minimise environmental impact, including the use of all-terrain vehicles known as Hagglunds, and wide-spread 7-tonne excavators. Local plant hire company, EMN Plant, have supplied the vehicles for the project.

## **Planning update**

Teams are progressing with the detail of the plans to finalise the alignment for the future planned development of the overhead lines between Kergord and the proposed landfall at Cul Ness which will facilitate the connection





between the Shetland mainland and Yell, which follows on from a public consultation held in September 2021.

The connection to Yell will include the installation of a subsea cable between Cul Ness and Burravoe and a land connection between Burravoe and a switching station in South Yell.

There is a forthcoming marine Pre-Application Consultation event in Shetland in October 2022, which will relate to the subsea cable aspect of this development and further information will be released around this as plans develop.



The new Grid Supply Point (GSP) at Gremista will see Shetland's local electricity network connected to the main GB grid for the first time – delivering a safe, resilient, and responsive network and accelerating the islands' progress towards a Net Zero world. It will also mean the islands are less reliant on fossil fuels, supporting the country's drive to net zero by delivering a dramatic drop in carbon emissions.

Electricity is currently distributed on Shetland via SSEN Distribution's 33kV distribution network, with the power derived from a mixture of sources – Lerwick Power Station (50% of total), Sullom Voe (30%) and renewables (20%).

Once Shetland is connected to mainland GB network via the new High Voltage Direct Current (HVDC) subsea cable and infrastructure currently under construction by SSEN Transmission, the distribution and transmission networks will need to be connected at a new substation – this is what is known as a Grid Supply Point (GSP).

Lerwick Power Station, which currently operates 24/7, will move over to 'standby' mode and will be used to supply power in the short term when outages are scheduled for maintenance on the transmission network.



## **ENVIRONMENT**

All wild birds in Great Britain are protected under the Wildlife and Countryside Act 1981 (as amended). This includes even common species like pigeons and blackbirds. Further protection is given to some rarer species and to species vulnerable to disturbance and/ or persecution. This is done through various schedules attached to the Act.

If any nesting birds are identified on or near to projects, then mitigation needs to be put in place to ensure that no disturbance occurs. This usually means setting up an exclusion zone of a suitable size to ensure that the nest is not subject to any disturbance, as well as ensuring that all workers are briefed on the law with regards to wild birds. During construction to date various species have nested on the project, including oystercatchers, starlings and meadow pipits, all of which have been identified, recorded, and protected throughout the entire nesting and fledging period to ensure successful outcomes.







# MEET THE TEAM

We're shining the spotlight on team members working to help power change on Shetland. This month we caught up with Thea Groat.

Name: Thea Groat.

Job Title: Project Administrator.

Number of years working for SSEN Transmission: Almost one year.

## How did you get started in your career – what did you do before joining SSEN Transmission? I left college with a HNC in Business and went into a full-time admin position, still unsure of what I really wanted to do but keen to learn and start to gain experience. I have had various admin roles throughout the years in different sectors.

## What inspired you to join SSEN

**Transmission?** This is the biggest project in Shetland right now and has never been experienced here before. Being local I was keen to get involved and saw it as a great opportunity for my career. I have never worked in construction before meaning this is all completely new to me! It's a great time for SSE and I look forward to seeing where it takes me in the future.



What qualifications do you need for your role? Good communication skills, the ability to work using my own initiative, experience in an admin role.

## Talk us through a brief typical day in

your job: My main role is to provide administrative support to the Project Team on site at Kergord, liaising with visitors and attending meetings via Microsoft Teams. As well as my usual tasks, I'm also given opportunities to take on work out with my role to improve my skills and gain more knowledge of the project, which is extremely valuable.

## What is the best part of your role? I

really enjoy working on site with the team, they are a great bunch with lots of skills and experience behind them and I learn something new every day engaging with them. I also enjoy having the opportunity to go out on site and see first-hand the different phases of a construction project.

## What is your proudest achievement so far at SSEN Transmission? I am

proud to have been part of the project from the beginning, getting to experience the different stages leading towards completion of the first multi-terminal HVDC system in Europe.

## How do you help power change?

Being part of SSEN Transmission we are playing a crucial role in the transition to a low carbon future by delivering renewable energy to the National Grid and connecting Shetland to the National Grid for the first time.

Why is it important that we create a network for net zero? A Network for net zero sets out a pathway for the north of Scotland who are playing a key role in keeping global temperature increases below 1.5 degrees. This is consistent with what is required to prevent the worst effects of global warming.

## Kergord Teams Raise almost £2,000 for Cancer Research

Teams working in Kergord have raised almost £2,000 for Cancer Research through a bake sale and an ongoing weekly cleaning challenge.

The bake sale was held to raise funds to add to for two teams on behalf of staff members getting involved in the Cancer Research Relay for Life which took place at the end of May in Lerwick.

Relay For Life is a family festival celebrating the power of community fundraising in the fight to beat cancer. Teams fundraise for



life-saving cancer research then unite at a weekend-long festival to honour everyone who has been affected by cancer. The festival is focused around a 24-hour relay where team members take it in turns to walk around a track to show that together we will beat cancer.

The cakes were baked and donated by multiple teams from across the project - from administrators to cleaners to security guards – who all got involved to support. Along with the bake sale and support for the relay the team have been participating in a weekly challenge known as 'Clean for Cancer' every Wednesday at 12pm. Teams stop all works for 15 minutes allowing everyone to undertake a clean-up of their working area and make a contribution to the ongoing donation tally for Cancer Research. So far, they have raised over £1,170!







TRANSMISSION

"Tammie Norie" by Dave Donaldson.

To find out more about the projects and to register for updates please visit: www.ssen-transmission.co.uk/projects/Shetland/ www.vikingenergy.co.uk/