



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.

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:

SSEN Transmission Community Liaison Manager Sharon.Powell@sse.com / 07918 305099

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/

Cover photo: Bod of Nesbister
– Image by Dave Donaldson

VIKING ENERGY WIND FARM

CONSTRUCTION UPDATE

Site works entered a new phase in September with the creation of the first bases for the 103 wind turbines. By the end of the month, five bases had been concreted successfully in the most advanced section of the wind farm along the Mid Kame ridge.



An all-day concrete pouring operation on the base of turbine K81 on the Mid Kame ridge.

Building of the network of access tracks continues apace with 55 kilometres of the required 70km laid down and in use by the end of September. All going well, main contractor RJ McLeod should have the last section of track in place early in the new year with further capping required before completion.

Meanwhile, new contractor Siemens BAM is ramping up its activities to build the wind farm's AC substation, to be situated behind SSEN Transmission's HVDC Converter Station at Upper Kergord.

Between the wind farm and the sub-station, the workforce on SSE Renewables' projects is expected to reach 300 next spring.

Viking has been taking delivery of shiploads of electrical cabling through Lerwick which will carry the renewable electricity generated by the turbines to Upper Kergord for onward distribution and/or transmission.

Several hundred drums of cable will be stored onsite ready for laying into the ground between the 16 different wind turbine arrays, starting early next year.

ATTENTIONS TURN TO STEEL AND CONCRETE

All but one of the 11 turbine bases along Mid Kame have had their steel platform completed by specialist contractor Murform. Its teams of skilled steel fixers have to work outside on the hilltops in sometimes hostile weather, patiently hand-tying the 107 tonnes of steel that goes into each turbine base.



One of the first turbines to have its intricate steel base made ready for concreting.

The process of concreting each turbine base requires a full day of ready-mix lorry deliveries from the twin batching plants at the North Compound, south of Voe. It takes 700 cubic metres of concrete to fill the steel frame and the central turret around the large bolts where the turbine tower fixes on. The turbines won't start going up until 2023.



Pouring and smoothing off each concrete base is an intense and lengthy process for work teams.

These major concrete pours are due to take place several times a week over the coming months so drivers on the public roads are asked to be prepared for meeting slow-moving lorries joining and leaving the main A970 as they ferry back and forth to the batching plants.

VEWF has not been greatly affected by the national shortage of cement although sea freight restrictions to Shetland can lead to slight hold-ups with supplies.



A revealing shot of the expanding wind farm track network on a clear day in early July, courtesy of the Shetland Space Centre. RJ McLeod has advanced things considerably since then.

THE ROADS ARE ROLLING ON

The biggest bridge construction on the wind farm site is nearing completion on the new Sandwater Road. Construction traffic should start rolling over the new structure across Petta Water Burn during October. Elsewhere on site, smaller bridges are being built for installation, including one being made by Lerwick Engineering & Fabrication (LEF).

The access tracks are reaching ever closer to the extremities of the wind farm site, built mainly with stone extracted from the five borrow pits currently in use.

With the access tracks becoming well-established, it has become possible for a limited number of site tours to be conducted. SSER has established a Community Hub building in the Main Compound near Sandwater which is used for small events, presentations and safety inductions.



Severely eroded peat being encountered in the north-eastern part of Nesting above Grunnafirth.



Careful road construction and high-quality verge reinstatement makes for a neat job which should knit into the landscape in the years to come.



Shetland News and The Shetland Times being briefed by SSER head of onshore projects Derek Hastings and stakeholder manager Aaron Priest.

MEET THE TEAM

Anyone wanting to meet members of the Viking Energy Wind Farm team can now visit the offices at Stewart Building on Lerwick's Esplanade. The public opening hours are Tuesday to Friday 10am to 3pm. Contact vikingwindfarm@sse.com to arrange an appointment.

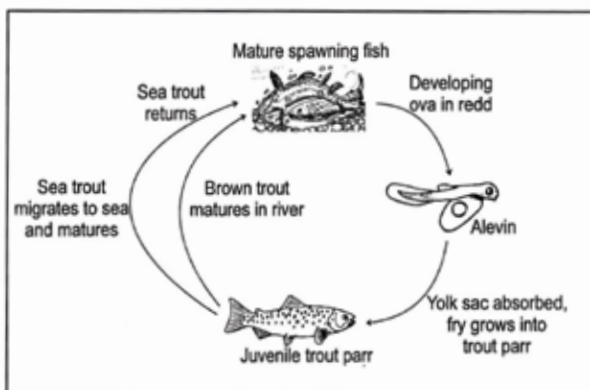
FISH MONITORING

As an integral part of the Viking Energy Wind Farm (VEWF) project, there is an ongoing commitment to monitor the potential impact of activities on fish populations. A series of pre-construction surveys were carried out to establish baseline records of fish populations at twenty-five sites and six unaffected 'control' sites. Assessments of hydrochemistry and freshwater invertebrates are also undertaken at these sites. Having established the baseline, yearly fish surveys will continue throughout the construction phase.

Compared with mainland Scotland, Shetland supports a limited range of freshwater fish which includes European eel, Atlantic salmon, Brown/Sea trout, Arctic charr, Three-spined Stickleback, Nine-spined Stickleback and Flounder. Of these, trout and salmon are the primary focus of monitoring as they are an indicator of good environmental quality.

Trout and salmon spawn in autumn and early winter, depositing eggs in clean gravel and pebbles. Eggs are often deposited in areas of accelerating flows, such as the tails of pools and glides. A constant supply of oxygen is essential for egg development and this requires a flow of water through the gravel. The number of eggs initially laid in the gravel is determined by the abundance of spawning adults, while egg survival may be affected by water quality, substrate stability, siltation or loss of eggs due to scouring during periods of fast and heavy flow.

Surviving eggs hatch in the spring and, after spending some time in the gravel absorbing the remaining yolk sac, the young fry emerge to set up territories which they defend from other fish. Trout fry favour slower flowing habitats, often in stream margins, while salmon fry favour fast riffles. Older juveniles (parr) prefer deeper water than fry and trout parr particularly like overhead cover and are often found alongside the stream bank in undercut or among roots and marginal vegetation.

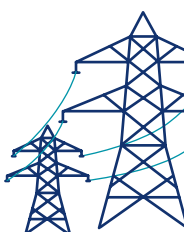


The presence of suitable conditions for spawning and juvenile production are paramount to the success of both trout and salmon, and the VEWF team aims to ensure that wind farm operations do not have a direct impact on fish habitats or critical aspects of water quality. The annual surveys, conducted in summer or early autumn, focus on the juvenile stages as an indicator of spawning success in the previous season and survival in the current year.

Pre-construction surveys carried out between 2008 and 2019 showed substantial between-year fluctuations in the abundance of trout and salmon. This is normal in the kinds of small streams that typify Shetland. Annual fish monitoring allows any observed changes in abundance to be assessed in the light of water quality and freshwater invertebrate data (invertebrates are excellent indicators of environmental quality). The study design also allows for comparison of changes in fish numbers between potentially impacted and non-impacted watercourses as well as over time. The overall aim is to allow any potential impacts from construction to be distinguished from normal 'background' fluctuations.

Monitoring and interpretation of fish population data will continue throughout construction, and beyond. The most recent survey was carried out during August and September 2021. Early results suggest that trout have fared well over the past year and that fry numbers in most streams (potentially impacted streams as well as control streams) have remained stable or increased slightly compared with the full 2019 baseline. Juvenile salmon have increased in some streams and declined in others, consistent with baseline data showing patchy presence and abundance. The initial results, along with those from invertebrate surveys, suggest that monitored fauna have not been negatively impacted by construction to date.

Monitoring will continue with recommendations and consultation presented where additional input might be required.



NEW GUYS ON THE BLOCK...

The principal contractor for the construction of the VEVF Substation is a joint venture between Siemens and BAM. The VEVF Substation is being developed just to the north of SSEN Transmission’s site at Upper Kergord.

The SBam JV project journey started in July 2021 when an approximate 200m by 92m sized platform was handed over by the earthworks contractor. The Substation consists of six buildings – a 33kV switchgear building, four 33/132kV grid transformer buildings and an operations building.

SBam will be delivering works such as the erection, finishing and fit out of all the buildings listed above; drainage; earthing; ducting; pre-cast foundations; in-situ foundations; troughing; and internal road works. These works will require a variety of materials which will be sourced locally wherever possible.



Work is now beginning on the wind farm AC substation on the Upper Kergord platform.

The current site staff project team has many years’ experience in the installation of substations throughout Scotland and in a variety of challenging environments. The experienced staff and the introduction of a few new faces will bring knowledge and a sense of innovation together, to finalise the most efficient installation and delivery of the project.

SBam care about the future of engineering and the legacy created by the long-standing joint venture between both companies. In doing so they frequently carry out events which benefit the local communities they work in, whether that be STEM events which involve career fairs; creating engineering related projects such as Bridges to Schools; offering site visits and carrying out career talks.

The utilisation of VEVF’s community hub will help facilitate a basic introductory session to the project, the team involved and our many goals in completing this new and impressive project.



EXPLORING SHETLAND'S PAST

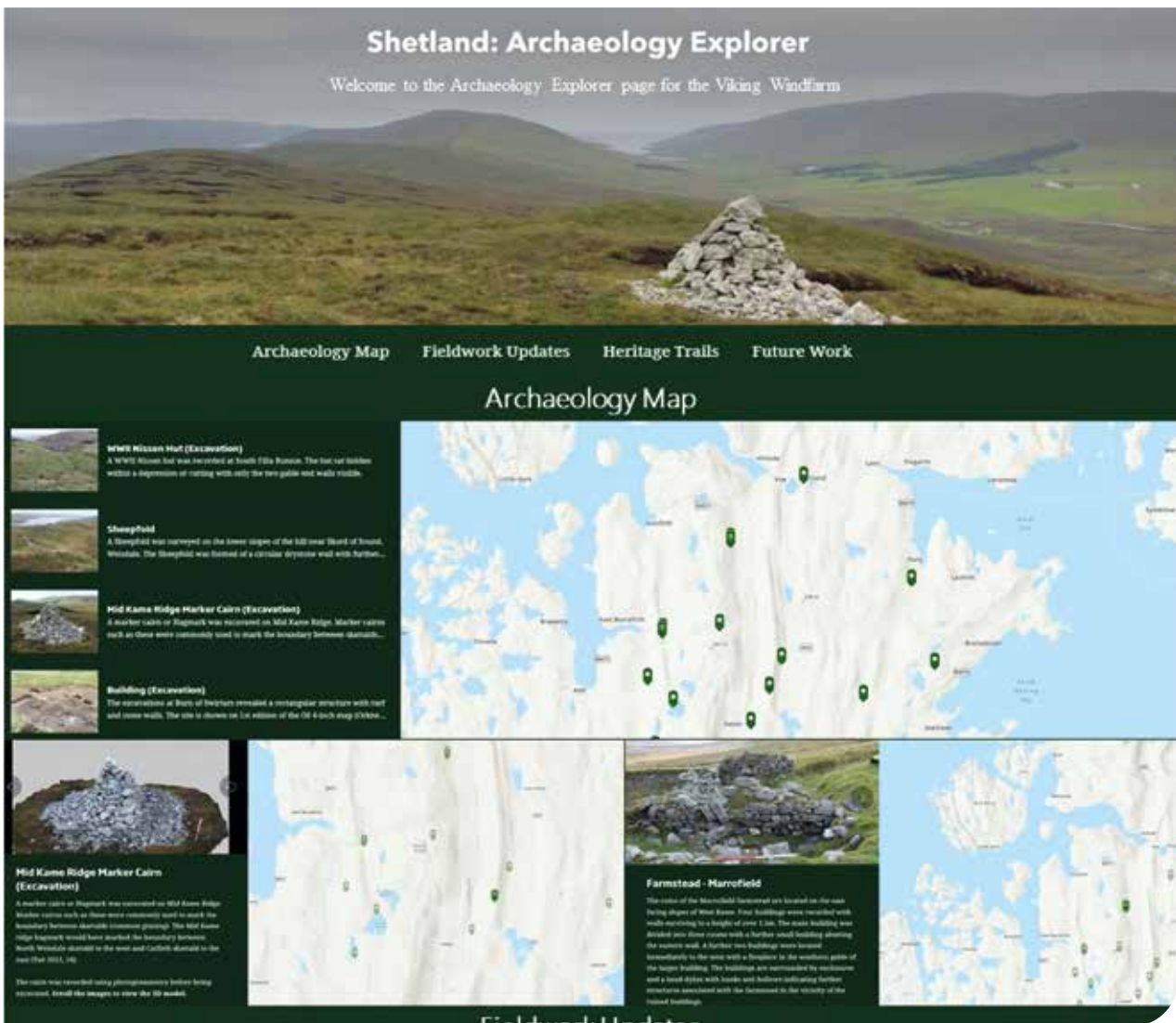
ARCHAEOLOGICAL INTERACTIVE MAP LAUNCH

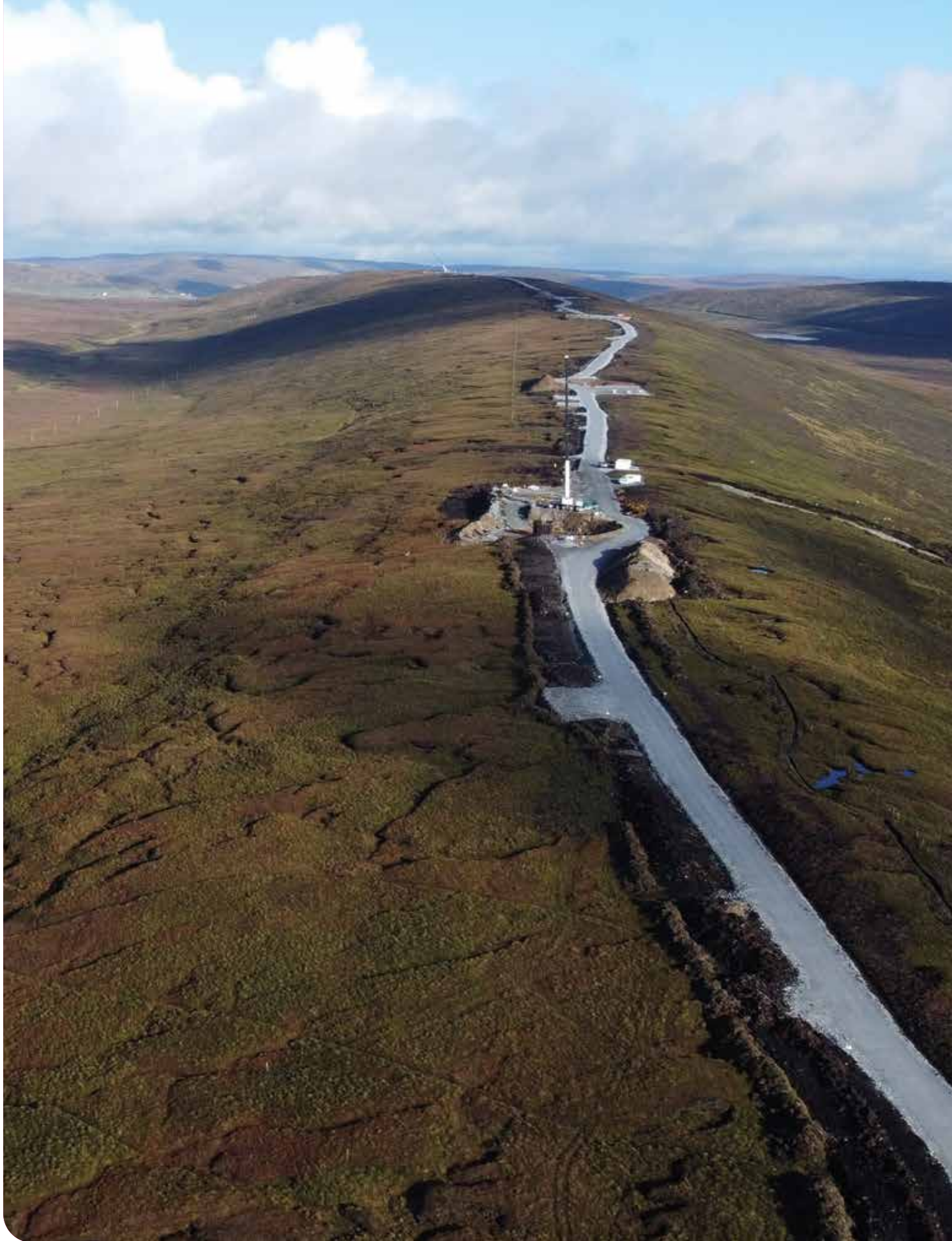
Headland Archaeology (UK) Ltd has been conducting archaeological works prior to and throughout the wind farm construction. These activities have collected a wealth of archaeological data charting changes in Shetland life from prehistory to the more recent past. The Heritage Strategy, developed in consultation with Shetland Amenity Trust, aims to make the information gathered through the archaeological works accessible to members of the local community, visitors and the wider public.

Headland is excited to announce that the first part of the Heritage Strategy, the interactive map, will be going live on the 8th of October 2021! Using the map, you can

explore sites in the wind farm area with descriptions, photographs, and 3D models such as of the Mid Kame Ridge Marker Cairn. Fieldwork updates will also allow you to dig into more detail about the excavated sites including the Nissen Hut near Voe. The page will be updated throughout the project with further sites and excavation details. Details of future research and projects you can be involved in will also be added along with information on longer-term outputs including heritage trails.

The interactive maps can be accessed online. Watch this space for further social media announcements as the map goes live!





This photo by our local site supervisor Stuart Smith shows the access track snaking along the Mid Kame ridge, past the site of the 2015 peat slide (still visible to the right). The right side of the track has been carefully reinstated whereas the left side awaits the laying of cables to carry the electricity generated by the turbines before it too is reinstated.



WHITEDALE NETS THE CASH

In late September Andy McAlpine of Viking Energy was pleased to meet with representatives of Whitedale Junior Football club to hand over a cheque for £2,500. The money is earmarked to buy a set of wheeled goals that the club need. SSER/VEWF were keen to support the local club as they are neighbours to the construction area of the wind farm and have a huge membership which offers a fantastic opportunity for young people in the area to get involved and keep fit.



VIKING COMMUNITY HUB

Over the last couple of months, a number of invited visitors have been made welcome at the VEWf main compound as we opened the doors to our new community hub. Recent visitors have included the local media and crews from UK and foreign national networks. Representatives of the Viking Community Liaison Group had their own tour and even some families of SSE Renewables employees are coming for a look to see what their parents are up to.

A wide range of information provided by staff members and consultants can be found on display, while a big screen TV shows timelapse footage of the build progressing. It is hoped that many more groups of people will enjoy a visit and get to learn a bit more about not just Viking Energy Wind Farm but also about Shetland's culture, heritage, ecology and environment.

VIKING COMMUNITY FUND

Grants totalling over £200,000 have been approved by Shetland Community Benefit Fund since its grant scheme started in February.

Most recent recipients include Dogs Against Drugs which has been awarded a total of £25,000 by most of the local community councils for its educational work and the Classic Car Show has received £4,600 towards its costs. The South Mainland Community Association got a grant of £500 towards their new picnic tables at the Dunrossness Playing Field and Pavilion while the South Mainland Amateur Swimming Club was awarded £1,500 towards its Covid recovery wellbeing programme.

Among other grants awarded are £1,250 to the Hillswick Public Hall for new PA equipment and £1,500 for Sandwick Youth and Community Centre to carry out a survey of its building.

Two grants were awarded to help look after local war memorials – The Quarff War Memorial will be



Sustaining & developing Shetland communities

repositioned with the help of a £4,760 grant towards the costs and the Burra War Memorial will see maintenance work carried out thanks to a £2,520 grant.

The community benefit fund's grant scheme will remain open until 2024 and local community councils recently received a further allocation of £340,000 for projects that they support. After 2024, VEFW's main community fund is expected to begin and will run for 25 years. The overall value of community benefit funds, with indexation, stands at some £72 million over the lifetime of the wind farm.



The South Mainland Community Association's new picnic tables at Dunrossness Playing Field and Pavilion.



CELEBRATING A YEAR OF **PROGRESS** AT **KERGORD HVDC**

It's hard to believe we've now been in construction for over a year as our teams and contractors continue to make excellent progress, with the site at Kergord really starting to take shape and the project overall remaining on track for completion in 2024.

The picture above shows an aerial view taken on 5 October, a year since we broke ground; and to the right, progress with the HVDC Reactor Hall, Spare parts, Valve and DC halls.

The HVDC buildings are nearly finalised in terms of structural steelwork with cladding underway on the roof and walls. Floor slabs are ongoing inside the buildings along. M&E fitout shall commence shortly and the HVDC Contractor Hitachi ABB will start to mobilise in the coming months along with cables contractor NKT.



Kergord HVDC site one year on from starting in Sept 2020.

NOSS HEAD SWITCHING STATION

We also continue to make excellent progress at Noss Head in Caithness in the north of Scotland mainland, where the High Voltage Direct Current (HVDC) subsea cable will connect Shetland to the GB transmission system.

The Noss Head Switching Station is well underway, with steelwork completed in August 2021. Cladding has commenced on the roof, with the concrete floor works started in September 2021. The excavations around the

site to form bunds were finalised in early summer, in addition to the stormwater retention SUDS (sustainable urban drainage system) pond. During autumn the wall cladding will commence, along with Mechanical and Electrical fitout of the building.

The picture below shows an aerial view taken on 16 September 2021, nine months after breaking ground on the main Noss Head site.



Noss Head aerial drone footage Sept 2021.

CABLE INSTALLATION WORKS

Our principal contractor for the subsea and land cable works, NKT, and its subcontractor, Shetland based Tulloch Developments, continue to make good progress with the onshore cable duct installation works, with approximately 5,000m of 8,037m now complete. This includes the section of ducting from the Kergord Converter Station all the way to the A971 at Stenswell, which is close to completion.

The works in the A971 are also progressing from the Scord of Sound towards Stenswell. The first two sections (each 300m long) are now complete, and work is continuing in the third highway section, of which there are eight in total. Duct installation works will continue in the A971 through to the spring of 2022.

Once the above section is complete, the works will then move on to the section of ducting from the

A971 at the Scord of Sound down across the Cott Road towards the landfall at Weisdale Voe. A new site access will be constructed off the Cott Road to provide access to the landfall. Work on this section is anticipated to commence in October 2021 and run through to the spring of 2022.

The haul road along the cable corridor running parallel with the B9075 from Stenswell to Setters corner is now also complete and we would like to thank the Shetland community for their patience during the construction of the haul road and associated HGV vehicle movements required to support this.

Finally, the land cable manufacturing is now complete and has successfully passed all factory acceptance testing at our contractor's facility in Sweden. This is due to be delivered towards the end of this year, for installation in the spring and summer of 2022.



Duct installation works on the hillside parallel to the B9075.



Duct installation works in the A971 carriageway.



In advance of the first cable lay campaigns by the NKT Victoria, another vessel will be mobilised towards the end of the year to conduct boulder clearance operations.



Noordhoek Pathfinder vessel.

PREPARING FOR THE SUBSEA CABLE INSTALLATION WORKS

Surveying the seabed

Using specialist vessel, the Noordhoek Pathfinder, we have now completed a survey of the 260km subsea cable route, looking for any hazards, including potential unexploded ordnances (UXO), so that the cable installation corridor is clear in advance of the subsea cable lay commencing next year.

We are pleased to confirm the survey was a success, with no UXO found, leaving the cable route clear in advance of the boulder clearance.

We are now preparing to start our boulder clearance campaigns which will commence at the end of this year. The boulder clearance works are expected to take around 45 days and will involve relocating boulders identified during the previous surveys that currently lie in the cable corridor.



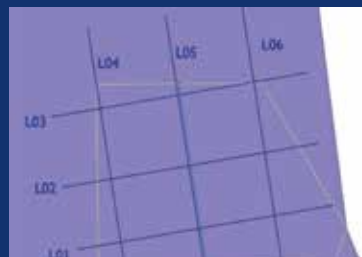
SMT ROV Geotechnical Activity

Preparing to come onshore

To prepare the onshore subsea cable landing point, a site investigation was carried out at Weisdale Voe by DAM Geotechnical Services on behalf of our principal contractor NKT.

As some of these survey lines extended onto the beach at Weisdale Voe, the survey data acquisition had to be arranged around high and low tides to provide a detailed picture of the coastal ground conditions.

Using two geophysical methods to get a better understanding of the subsurface geology, the aim of this investigation was to characterise the ground conditions at the landfall site, which will influence the cable installation and burial methods which are now being assessed.



Weisdale Voe Cable Landfill Geophysics Exploratory Plan.



Satellite image of the investigation area at Weisdale Voe.



DAM Geotechnical Geophysicist acquiring seismic refraction data.



Setting up the electrical resistivity method on L01.

SUPPORTING SHETLAND'S ECONOMY

As the project continues to progress so does SSEN Transmission's commitment to support Shetland's economy. 50% of SSEN Transmission staff on site are Shetland based (5 of 10), with approximately 25% of BAM Nuttall Contractors at Kergord also local (30 of 120).

We continue to support local businesses and suppliers across all areas of the project, including EMN Plant, Buildbase, Highland Fuels, GTS, Ness Engineering, Garriock Bros Ltd, Shetland Flyer, Streamline, Northwards and Tulloch Developments.

We expect there to be further opportunities coming

up in 2022 for the local supply chain and details of these will follow as the project continues to progress.

We are also pleased that Loganair has been able to maintain regular flights to and from Shetland throughout the coronavirus pandemic, supported by our and Viking Energy Wind Farm's works. This has allowed our works to continue seamlessly throughout the pandemic and we are most grateful to Loganair, and Northlink Ferries, with both transport providers providing a critical role in helping support the movement of workers and infrastructure associated with the project.

SUPPORTING SHETLAND'S YOUTH

We are delighted to be joined by Johnny Hunter, a local school leaver, who joined the project after our Principal Contractor for all civils works, BAM Nuttall, ran a "day in the life of an engineer" taster day.

The event resulted in BAM Nuttall developing a new partnership with the University of the Highlands and Islands (UHI) at Inverness, who are now supporting BAM Nuttall's apprenticeship programme.

Johnny is now in full time employment on the project and will attend Inverness UHI on block release as he balances on the job experience with studying to achieve a formal qualification.

"I am really enjoying my apprenticeship, it's really good meeting new people who have a similar interest in construction to me. Already it has taught me a lot of skills that are useful in all walks of life. I also like the responsibility I have in a team setting making sure I do my bit to help the overall team make the job come to fruition. The construction site I am on at the moment is really attention grabbing as it is so dynamic and changes every day as new dates come up and new workers come to site."



Johnny on site at Kergord.



Ashley preparing for her next delivery to site.

SUPPORTING SHETLAND'S LOCAL SUPPLY CHAIN

We're also pleased to announce that EMN Plant have employed two young people as a result of them being awarded a contract to supply ready mixed concrete to BAM Nuttall.

19-year-old Ashley Thomason from Yell has been busy driving EMN's new mixer truck, delivering concrete to Kergord. Ashley passed both of her heavy goods tests when she was just 18 in Orkney and is already putting her formal qualification to good use, providing a key role on the project.

17-year-old Dean Johnson, also from Yell, has been kept busy in our quarry making aggregates for concrete production as well as feeding our batching plant when we are supplying concrete.

To support their employment and grow their capabilities, EMN have plans to send both Ashley and John to the CITB college in Bircham Newton, to allow them to receive formal training and associated qualifications in operating heavy plant, delivering a lasting legacy to support their future careers.



Dean ready to get 'stuck in' to concrete production.

SHETLAND FLYER



Shetland Flyer Aerial Media provides aerial video, photography and time lapse services to monitor progress of construction works at Kergord. The weekly visits capture drone footage of the construction progress, as well as interactive 360° panoramas of the site and surrounding area, displayed on a secure web application.

The ongoing trial of a 5G network at the Kergord site now means video, stills and panorama material can be accessed live, providing instant updates to help inform reviews of progress on site on what is a fast and dynamic construction process.

For Shetland Flyer, this means guaranteed regular work with the main challenges being, as, expected, the Shetland weather!

As well as videos and still photos of the site a 360 orbit video is also being created – a hyper lapse, which started in January showing basic ground works underway and will continue until the site is complete. Shetland Flyer uses a small DJI Mavick 2 Pro for stills and video and for the 5G a DJI Matrice 21032 (photo right).



The Shetland Flyer team.

© Shetland Flyer Aerial Media



NOSS HEAD COMMUNITY EVENTS

Wick Community Councillors recently visited Noss Head to receive an update on progress and to find out more about the advanced technology being used on the project and the environmental enhancements being planned, with Community Council Vice-Chair, Allan Farquhar, commenting that the site "is something we should be immensely proud of."

The Noss Head site team also organised a site visit for 11 Rolls Royce apprentice engineers and two of their tutors, with the group looking forward to returning to site for a further update in the spring.

Commenting on the visits, Construction Manager, Andy Henderson, said: "It was great to have both the Community Council and local Apprentices attend site



and for them to see how we're progressing the project here in Wick. We would like to thank both groups for taking the time to visit us and we really appreciate them expressing an interest in what we're doing here and asking us some fantastic questions!"

MARINE STAKEHOLDER FORUM

With works in the marine environment set to ramp up with the boulder clearance works and subsequent subsea cable installation works it is vital our teams continue to work closely with marine stakeholders to help mitigate and reduce any impacts associated with our works.

Building on a series of virtual engagements, we are delighted our team is now preparing to hold our first face to face Marine Stakeholders Forum.

This event will allow marine stakeholders to discuss our planned subsea works with our Lead Project Manager and Lead Marine Consents Manager, who will be able to provide an update on the project and answer questions

The events will take place in Wick on Monday 15 November 2022 between 3pm and 7pm at the Pulteney Centre, 6 Huddart Street KW1 5BA and in Shetland on Tuesday 23 November between 3pm and 7pm at the Shetland Museum, Garthspool ZE1 0NY.



COMING UP IN THE NEXT EDITION: FOCUS ON THE ENVIRONMENT

With Shetland home to a substantial array of stunning wildlife, as well as some fascinating archaeological features, we are committed to ensure our works do no harm and where possible, leave a lasting legacy by protecting and enhancing Shetland's environment in line with our commitment to work towards biodiversity

net gain on all our major transmission projects. In the next edition of this newsletter we will provide an overview of the works we are undertaking to protect and enhance Shetland's environment and its stunning wildlife, such as the otter above who recently paid our project a late night visit!

THREE MONTH LOOKAHEAD (OCTOBER 2021 TO JAN 2022)

As the nights start to draw in as winter fast approaches, work on the project shows no sign of slowing down, with significant progress expected in the coming months. A snapshot of planned works is provided below:

- Kergord HVDC and Noss Head DCSS buildings steelwork to be finalised allowing wall and roof cladding to be finished, with concrete floor pours to continue to completion
- Kergord AC Substation site steelwork to be completed and cladding to commence
- HVDC subsea contractor begins mobilisation to site before the end of the year
- Kergord fitout commencing in November 2021 which will see an increase in staff numbers on site to over 150 from Jan 2022 onwards
- Noss Head fitout to commence in October 2021, ramping up staff on site over the winter period



Model of HVDC end of October 2021 (projected).