Scottish & Southern Electricity Networks

TRANSMISSION

Noss Head HVDC Switching Station Newsletter

March 2021

ssen-transmission.co.uk

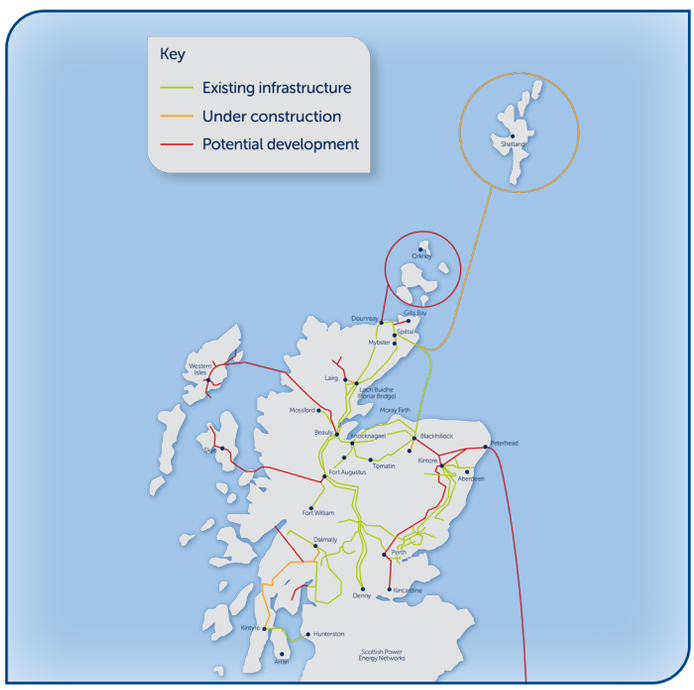
Who we are

We are Scottish and Southern Electricity Networks Transmission (SSEN Transmission), part of the SSE Group, responsible for the electricity transmission network in the north of Scotland.

We operate under the name of Scottish and Southern Electricity Networks, together with our sister companies, Scottish Hydro Electric Power Distribution (SHEPD) and Southern Electric Power Distribution (SEPD), who operate the lower voltage distribution networks in the north of Scotland and central southern England.

As the Transmission Owner (TO) we maintain and invest in the high voltage 132kV, 220kV, 275kV and 400kV electricity transmission network in the north of Scotland. Our 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.

We power our communities by providing a safe and reliable supply of electricity. We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for onwards distribution to homes and businesses in villages, towns and cities.



About this newsletter

Through this newsletter we will be sharing updates of the Noss Head HVDC Switching Station works for the Shetland High Voltage Direct Current (HVDC) transmission link. This first edition provides background of the project, progress so far and the timeline for future construction activities.

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.

If you would like to find out more about the project you can contact Sharon at: **sharon.powell@sse.com**

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/

What is the Shetland HVDC Link?

What the project involves

Following years of development, the Shetland HVDC transmission link received final approval from Ofgem in July 2020. The 600MW transmission link will connect Shetland to the main GB power system for the first time, facilitating the connection of renewables and a whole system solution to meet Shetland future energy needs, supporting a secure supply of clean power for Shetland.

Kergord HVDC Converter Station

Work on site started in September 2020 as the team commenced earthworks to form the site compound and platform for both the AC132kV Gas Insulated Switchgear (GIS) substation and HVDC Converter Station.

The 600MW HVDC Converter Station at Kergord will connect to the new Kergord AC Substation. This is a highly specialist type of infrastructure which converts the energy from Alternating Current to Direct Current so it can be transported efficiently along the 260km subsea and land cable to connect to the GB transmission system.

NKT Victoria Cable Laying Vessel

HVDC Land/Subsea Cable

Installation of the 600MW HVDC cable will be a combination of land and subsea cables between the HVDC Converter Station at Kergord and the HVDC Switching Station at Noss Head. This will consist of 10km of land cables in Shetland, 250km of subsea cables and 2.5km of land cables at Noss Head.

CM Cable Tie-ins

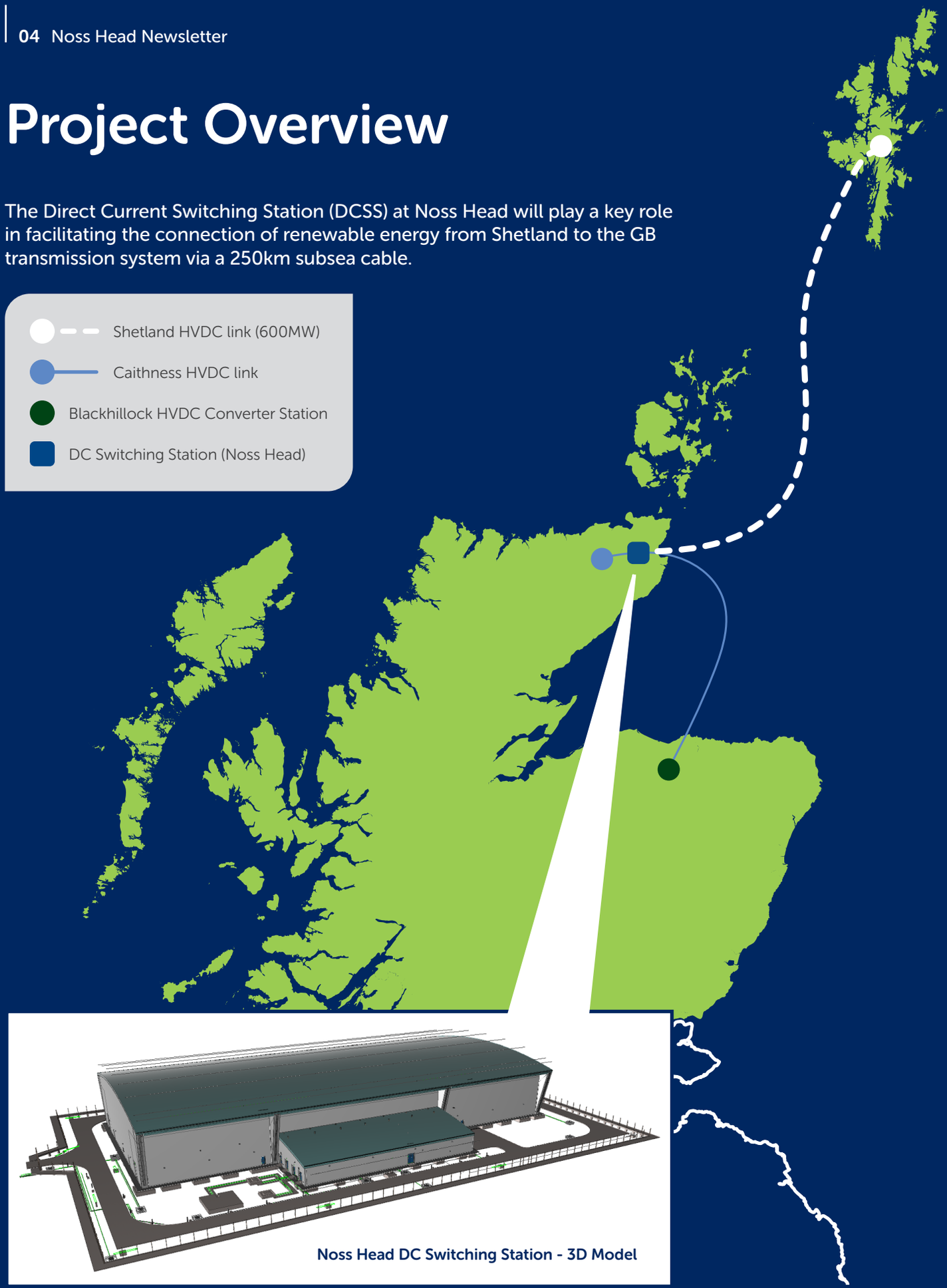
This part of the project will see the connection of the Shetland link to the existing Caithness Moray circuit by connecting a new 1200MW cable from the HVDC Switching Station at Noss Head to the existing 1200MW Caithness Moray subsea cable.

HVDC Switching Station

An HVDC Switching Station will be constructed at Noss Head in Caithness close to where the subsea cable makes ground. A world first outside of China, this will act as a junction point, collecting energy from Shetland and Spittal HVDC circuits and then transporting that energy via subsea and land cables to Blackhillock in Moray to allow further transmission to areas of demand across GB.

Project Overview

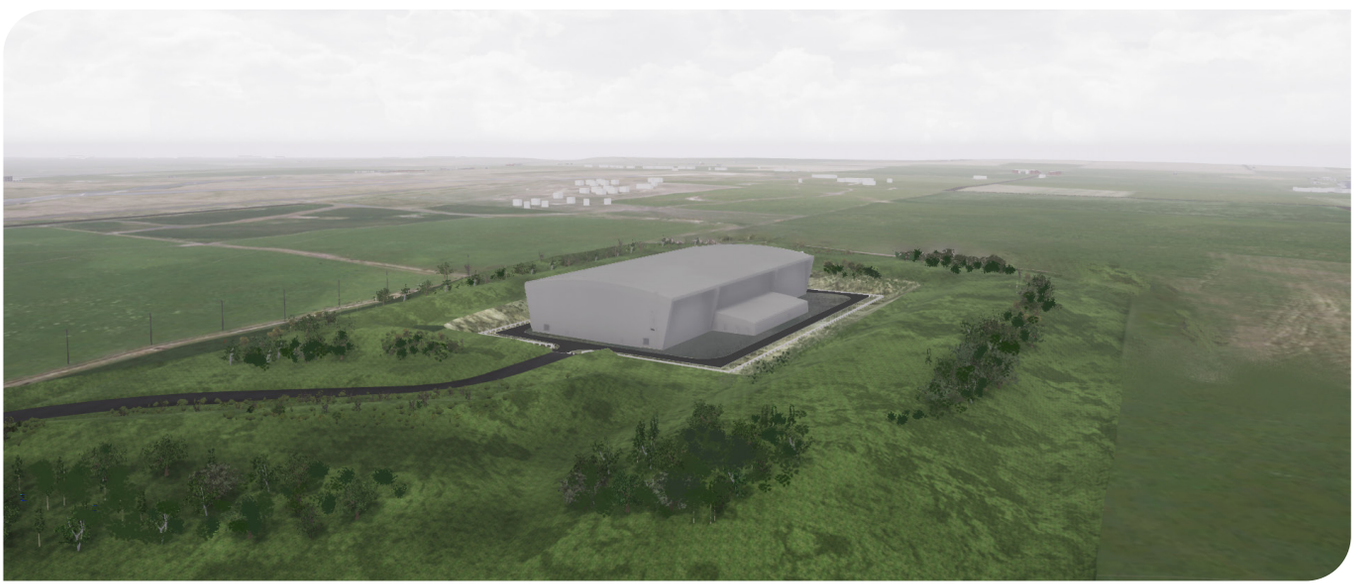
The Direct Current Switching Station (DCSS) at Noss Head will play a key role in facilitating the connection of renewable energy from Shetland to the GB transmission system via a 250km subsea cable.



Noss Head DC Switching Station - 3D Model

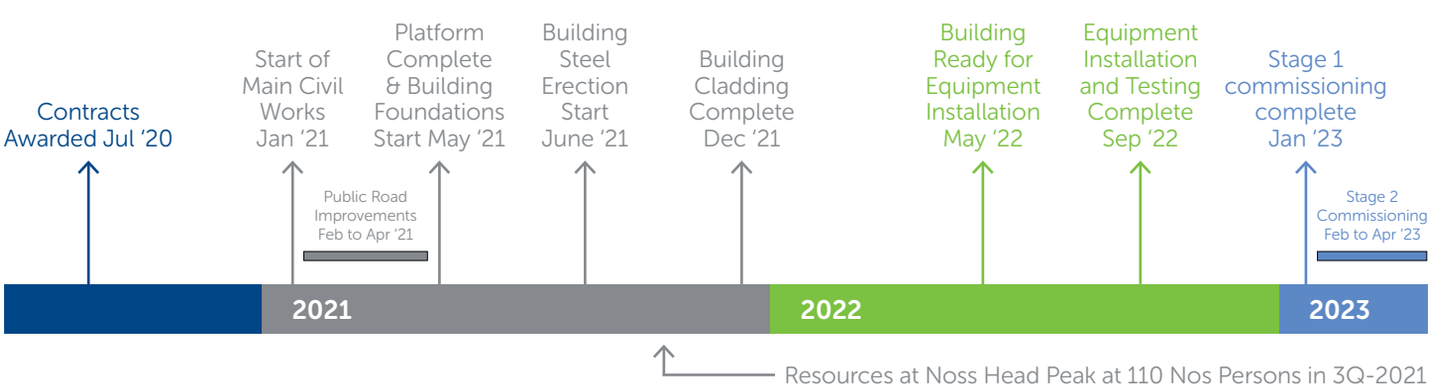
The DCSS at Noss Head will allow the flow of electricity to be managed between three underground HVDC circuits - one from a converter station at Spittal in Caithness, one from the new Shetland Link at Kergord Shetland and one to a converter station at Blackhillock in Moray. Making it possible to take the energy from where it is generated to where it is needed.

The DCSS at Noss Head is the first of its kind to be built in Europe. This is the second time within the last 5 years that Caithness has been at the forefront of HVDC technology and distribution, following the successful completion of the Spittal HVDC converter station, completed in December 2018.



The works at Noss Head DCSS comprise earthworks, platform construction, HVDC switching building, all foundations for equipment, mechanical & electrical building services, roads, service corridors, drainage, fencing and landscaping.

Construction Timeline - Noss Head DCSS, Caithness



Milestone - Breaking first ground

The project hit its first major milestone in November 2020 as it broke first ground. Since then the team have been focusing on the initial civil engineering which will involve the creation of a new access tracks and a haul road to the site, as well as setting up a temporary site compound and welfare facilities.

The diversion of an existing 11kV Overhead Line including the replacement with an underground cable, was completed in February 2021.

Our team

As an experienced and responsible developer, we bring to this project a highly skilled team, many of which have come from working on the successful Caithness to Moray project which connected renewable generation from Caithness to Moray via a HVDC subsea link. This has been operational since January 2019 and continues to provide highly reliable and efficient transmission of renewable electricity from the north of Scotland to areas of demand.

Our Caithness team

- Fionán Doonan – Lead Project Manager
- David Williams – Project Manager
- Andrew Henderson – Construction Manager
- Jennifer Powell – Health & Safety Advisor

Supporting our site team is a multi-disciplinary team including Engineering, Commercial & Procurement, Environmental, Land Management and Legal who are all working remotely.

Principal Contractor

The contract for the design and construction of the DCSS at Noss Head was awarded to BAM Nuttall at the end July 2020.

BAM Nuttall are experts in their field, delivering in excess of 12 new substations for SSEN Transmission in Moray and the west of Scotland. BAM Nuttall also bring with them local experience, refurbishing the Thomas Telford building in Wick Harbour to create the Operation & Maintenance base to support the Beatrice Wind Farm.

bam nuttall

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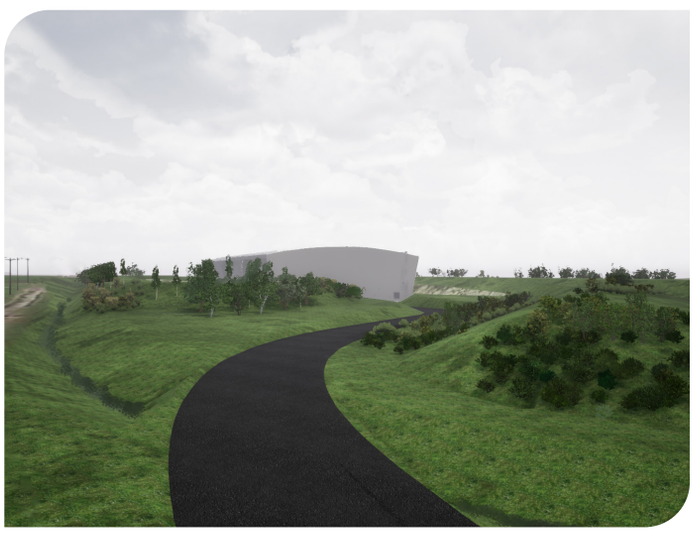
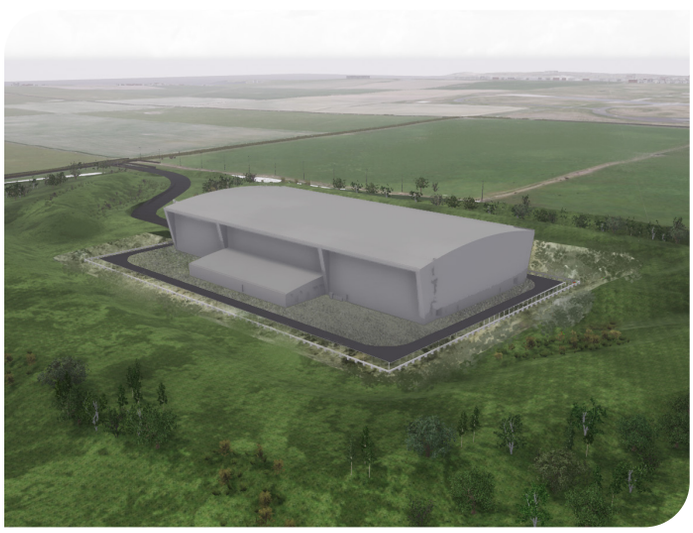
ABB

Environmental

SSEN Transmission, across their newly consented sites, is committed to achieving no net loss in biodiversity by 2020 and a net gain in biodiversity across their construction sites by 2025. At Noss Head we are seeking to maximise the landscaping potential and habitat creation e.g. ponds or other water features on the site. Together with BAM Nuttall, we will aim to build on any opportunities during construction and reinstatement to maximise biodiversity gains.

- The site at Noss Head was selected as the optimum location to best conceal the DCSS building. The Switching Station is located in a low-lying area which will be further excavated to conceal the building and will also be surrounded by earth landscaped bunds which will further contribute to reducing visual impact.
- The building has a higher level of architectural design and landscaping than many of others of its type have seen, as visual impact was a key concern.
- The earth landscape bunds will be planted with scrub woodland, rich wildflower meadow mix seeding with a security fence inside of the bunded area thereby further minimising visibility from the site boundary.
- All necessary environmental protection measures during construction are being implemented to minimise any impact on the environment and to control surface water runoff e.g. temporary drainage swales, check dams, silt/sedimentation mitigation measures etc.
- The boundary of the site will retain existing Caithness flag walling and drystone walling.
- An approved Pollution Prevention Plan and Construction Site Licence are in place.
- Ahead of construction, Archaeology, Environmental and Unexploded Ordinates (UXO) surveys have been completed.





What is next - What will be happening in the next 3/6 months

It is set to be a busy couple of months for the team as they continue with the enabling works to get the site ready for the main construction of the DC Switching Station.

In addition to the construction of a temporary haul road which was completed in February 2021, the earthworks and site drainage works that started before Christmas will continue over the next 6 months. All the excavated earth will be retained on site and used to create the landscaped earth bunds which help screen the site. Between March and May, the site compound will start to take shape, the site offices will arrive, which will be the teams home over the next 3-4 years. The foundation works for the main switching station are scheduled to start in May 2021.

February will also see the start of road improvement works to improve visibility and safety around the junction of the A99 / Ackergill Road. Similar improvements will also be completed at the junction between Ackergill Road / Ackergill Farm Access Road and additional passing places will be constructed on Ackergill Road. These works are expected to be completed by April-2021.

Over the next few months the site will be taking delivery of plant & equipment for the main site works including articulated dump trucks, often referred to as a Moxy, excavators, rollers etc. We will be importing stone and cement from a local quarry - Bowers, which will be used for the foundation works.

There will also be the potential start of Horizontal Directional Drilling works (HDD) to the east of Noss Head Road where the HVDC cable from Shetland will make landfall.

During the course of the project various Community Events will be arranged. It is anticipated that the first event will be held within the next 3 months.

Haul Road


Drainage Channels


Early Earthworks

Temporary Site Compound

Commencement of Road Improvements at Ackergill Road / Ackergill Farm Access

SUDS Ponds (Sustainable Urban Drainage System)

Earthworks & SUDS Ponds (Sustainable Urban Drainage System)

Delivering opportunities locally

Ahead of construction along with our contractors we have been working to engage with the local supply chain about upcoming opportunities that could be available throughout construction. These opportunities range from construction services and machine hire, to transport and accommodation, as well as direct employment opportunities on a variety of construction and support roles.

To support the early site mobilisation works local company Gunns have supplied the site with asphalt. We hope this will be the first of many contracts, over the coming weeks and months we will be seeking to fill contracts for plant hire, accommodation and welfare services.

If you would be interested in finding out more about potential supply chain opportunities visit:
www.o4b-highlandsandislands.com

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