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HOW03 Progress Report Onshore Converter Station

July 2024

12/07/2024

Onshore Converter Station

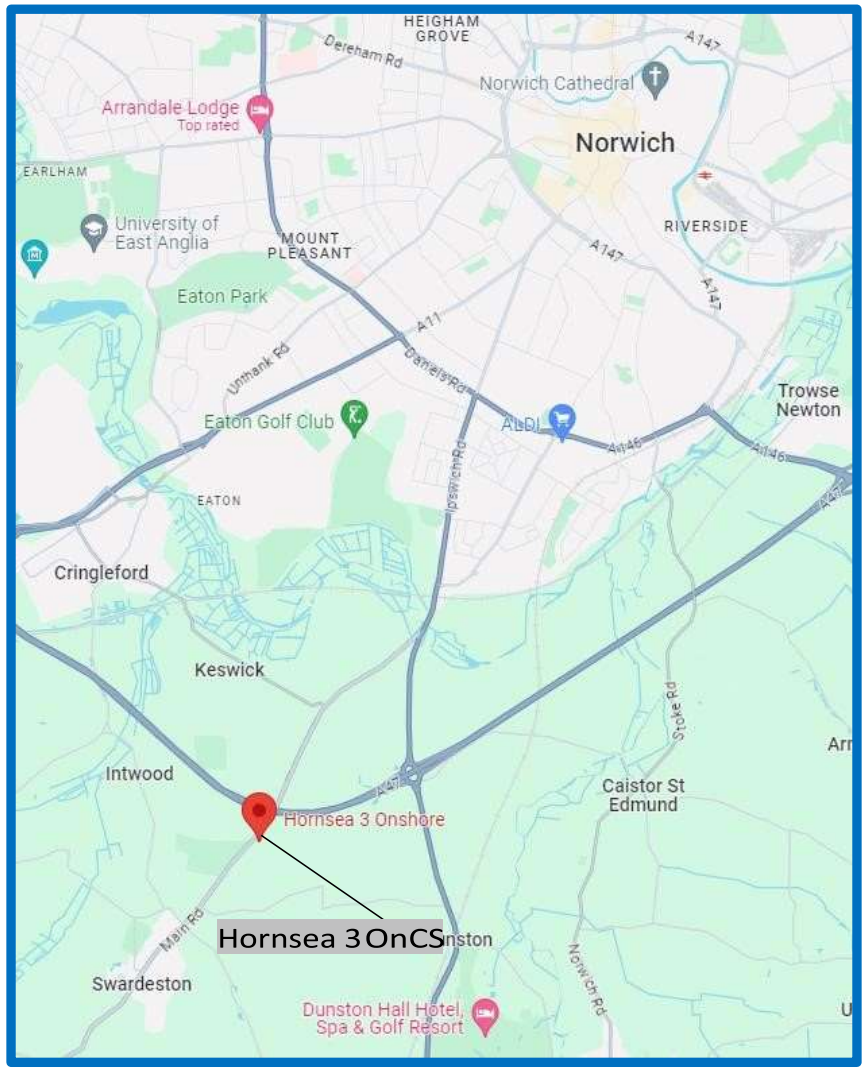
This progress report presents an overview of the main activities undertaken to date and upcoming works as part of the installation of the Onshore Converter Station (OnCS) for the Hornsea 3 Offshore Wind Farm (the Project).

This is the first of a series of progress reports which will be provided on a quarterly basis through to Project completion, scheduled for winter 2027/28.

The OnCS site is located south of the A47 on the B1113 and north of Swardeston, covering 0.13km^2 of land. It will house the converter station infrastructure, temporary welfare facilities, offices and a car park.

Due to the nature of our activities all dates included within this pack are subject to change.

Descriptions of information presented are provided in the glossary at the end.



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Location of the Hornsea 3 OnCS

Conceptual Design

Conceptual design of the Hornsea 3 OnCS and Energy Balancing Infrastructure

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Site Entrance and Overview

Overview

Access to the OnCS site is via a newly built asphalt bell mouth (site entrance) adjacent to the B1113. Temporary security huts and gate guards have been installed.

This bell mouth is connected to all work areas, including the offices and welfare facilities, via a temporary asphalt haul road running through the site. The bell mouth was completed in August 2023.

Two temporary ponds have been utilised to hold rainwater collected by a temporary drainage system across the site. The water collected is then transported off the site to local water treatment facility by tankers.

OnCS site entrance as completed

Period of use

March 2023 – Q4 2027*

*Please note that these timings are subject to change.

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Welfare Facilities and Car Park

Overview

The OnCS welfare facilities and car park are temporary structures installed in June 2024.

These structures are fairly substantial to provide adequate facilities for the site staff and workers who will be involved in the installation of the Project.

These facilities are located to the east of the main construction area.

OnCS Car Park

*Please note that these timings are subject to change.

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Once the installation of the Project is complete, these facilities will be removed and the land returned to its original arable state, with some landscaping and planting undertaken at this stage.

Period of installation August 2023 – June 2024 **Period of use**

August 2023 – Q4 2027*

OnCS Machinery

Storage Area

Link 1

Overview

Link 1 is the point where the onshore cable from the wind farm connects into the OnCS.

As part of our reinforced concrete (RC) works on Link 1, we are in the process of installing six pits for the 400kV AC cable, which will be connected – using AC cables – to the Norwich main substation near Dunston where the electricity is then passed to the National Grid.

Excavation works will be followed by the installation of underground elements of the cabling which provide the necessary connections to the site's electrical components.

*Please note that these timings are subject to change.

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As part of this, duct installation works will be undertaken – the ducting AC Cable Pits and Duct Installation acts as a protective casing through which the cabling will be pulled later in the project.

Implementation and construction of the foundations and walls for two Relay Buildings have now been completed. We are waiting for the steel structure to now be erected.

The Transformer Yard reinforcement works are ongoing; we are preparing a house for our 400kV Transformers.

Timings

December 2023 – December 2024*

Transformer Yard and Relay Building

Link 2

Overview

Link 2 is the location at the OnCS where the cables run from the site to the Norwich substation.

At Link 2, the RC works for our Service Building and Relay Buildings will be followed by the installation of a drainage system.

Recently, we completed the installation and cropping of piles for the site's Transformer Yard, and we can now begin the installation of reinforcing materials.

Link 2 Service Building

*Please note that these timings are subject to change.

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Timings

March 2024 – March 2025*

Transformer Yard and Relay Building

Steel Erection

Overview

We are installing steel portal frames for the Valve and Directional Current (DC) Hall and Service Building, for Link 1.

We are progressing with the development of the steel structure (pictured, right) for the Valve and DC Hall, which will house our converter modules.

These modules will be used for the conversion of DC into AC.
Further information in this process can be found in the Glossary.

The installation of the steel required for the site's service building will be followed by decking and reinforced concrete

*Please note that these timings are subject to change.

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works. Together, this will act as the centre of the OnCS's operations.

Service Building for Link 1

Timings

March 2024 – August 2024*

Valve and DC Hall

*Please note that these timings are subject to change.

Glossary

Links 1 and 2

The electricity generated by the offshore wind turbines is Alternating Current (AC), which when transmitted, loses more power than Direct Current (DC).

To avoid this loss the AC is converted into DC to be transmitted along the length of the cable.

At the OnCS, the Links will then convert the 320kV of DC electricity from the onshore cable into 400kV of AC electricity required to connect to the grid.

This 400kV AC electricity will be carried to the Norwich Main substation through a separate underground cable.

Valve and DC Hall

The Valve and DC Hall houses our converter modules. These modules will be used in the conversion of DC into AC.

Duct Installation

Duct installation works consist of trench excavations where ducting will be laid. The ducting acts as a protective casing through which the cabling will be pulled later in the project. Upon completion of installing the ducting, the trench will be reinstated with subsoil.

A specialist insulating material is used to surround the ducting, to help reduce the risk of the cables overheating.

A team of groundworkers use excavator machines to complete the digging and backfilling of the trenches.

Glossary

Bell mouths

To access land plots for our works, new gated construction traffic access points (bell mouths) need to be installed at highway entrance/exit points. The bell mouths provide access to the work area for plant, machinery, materials and anything else required to ensure the project is delivered on time.

Drainage

Pre-construction drainage is installed where necessary to keep soils effectively drained during our works. Postconstruction drainage will then be installed to help the land return to its former use.

Relay Buildings

The buildings in which we monitor the current and voltage of the electricity generated and look for abnormal operating conditions.

Transformer Yard

The yard in which the power transformer changes AC electricity into DC electricity.

Service Building

The service building allows the site team to monitor, maintain and regulate the converter station.

How to get in touch

Project enquiries
Community Liaison Officers
Telephone: 0800 158 2354
Email: community@hornsea3.co.uk
Community Relations Team

We aim to provide a full response to all enquiries within 10 working days.

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