



Nautilus Interconnector

National Grid Ventures

Non-statutory consultation
September 2021

nationalgrid

Introducing Nautilus Interconnector

At National Grid Ventures (NGV), we are bringing forward plans for Nautilus, a new multi-purpose interconnector (MPI) that could supply enough electricity to power around 1.4 million UK homes.

Nautilus could connect up to 1.4 gigawatts (GW) of offshore wind to the transmission systems of Great Britain and Belgium through a subsea electricity cable called an interconnector. The 1.4 GW interconnector could connect up to 2.8 GW of offshore wind, given the import and export capability of the high voltage direct current (HVDC) cable to two demand centers (Great Britain and Belgium). The project would include underground cabling works and onshore infrastructure, located in East Suffolk.

We are seeking feedback on Nautilus as part of its development process, including options for the onshore infrastructure – namely, a cable route, landfall and converter station search areas. These emerging options are detailed in this leaflet on page 7. For the purposes of the development process, Nautilus has been classified as a Nationally Significant Infrastructure Project (NSIP) by the Secretary of State for Business, Energy and Industrial Strategy (BEIS). That means that we will be following the Development Consent Order (DCO) process and the final decision-maker for the project will be the Secretary of State.

Our consultation starts on **14 September** and will run for six weeks, closing on **26 October**. Details of how you can get involved and provide your feedback are provided on page 10.



National Grid Ventures

Proposals for Nautilus are being developed by NGV and our partner in Belgium, Elia. Elia is the Belgian National Transmission System Operator (TSO).

Elia and NGV have a track record of working together successfully during the development of Nemo Link. Operational since 2019, this interconnector connects the Belgium and Great Britain (GB) electricity networks providing both countries with access to electricity generation, improved grid reliability and access to cheaper electricity for consumers.

NGV is the competitive division of National Grid. It operates outside of National Grid's core regulated businesses in the UK and US where it develops and operates commercial energy projects, technologies and partnerships to make energy cleaner, more secure and more affordable for consumers.

There are three distinct electricity business entities under the umbrella of National Grid plc in the UK, as detailed in the diagram below, all with different roles and responsibilities. The separation between NGV, National Grid Electricity Transmission (NGET) and National GridESO stipulates that NGV is treated the same way as any other energy project promoter.

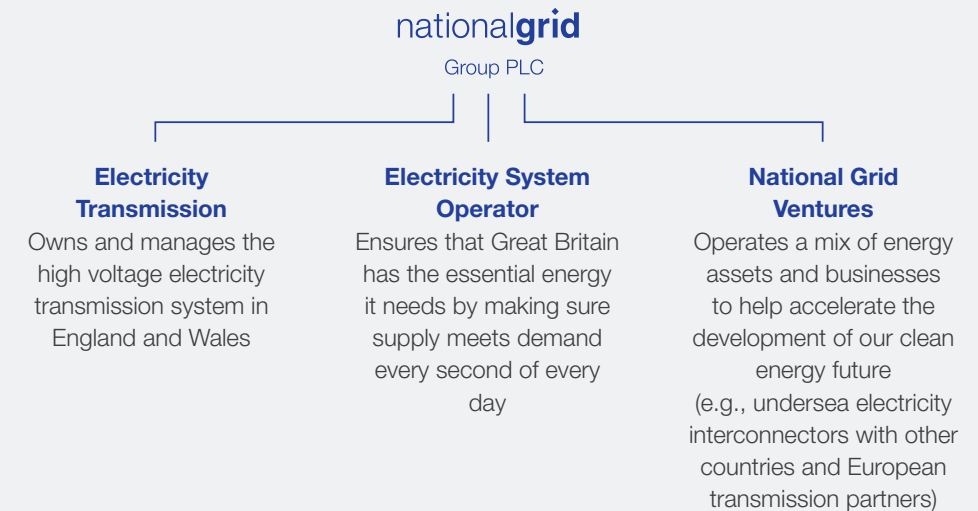


Figure 1: National Grid plc's electricity business entities in the UK

Our vision for Nautilus

Building upon our experience as a world leading developer and operator of interconnectors, we have been working closely with Elia, BEIS, Ofgem and numerous non-governmental organisations to develop the next generation of interconnector and wind connection technology – multi-purpose interconnectors (MPIs).

MPIs are subsea electricity cables which travel between two countries connecting offshore wind farm/s to both markets. This technology marks an evolution from point-to-point interconnection and radially connected wind.

By combining offshore wind generation with interconnector capacity between GB and Belgium, Nautilus will reduce the amount of infrastructure required both onshore and offshore. In doing so we will be able to reduce the impact on the affected community and environment as well as delivering a pathway towards a more integrated offshore network.

Since 2019 we have been engaging in the area with local councils, parish and town councils and community groups across East Suffolk to gain a better understanding of their interests and concerns. From this engagement it has been made clear that there is a need for greater coordination and cooperation between energy developers

in the region, in particular relating to connections to the electricity transmission network.

Developing Nautilus as a MPI rather than a traditional point-to-point interconnector is our first step in responding to this feedback. Going forward, throughout the consenting, development and construction process we intend to coordinate as far as possible with other developers in the area in order to best address the interests of the environment and local communities.

As a MPI Nautilus will help to:

- Support the UK to achieve its 40 GW of offshore wind by 2030 and net zero by 2050 climate targets.
- Reduce impacts on coastal communities and the environment by avoiding the need for every project to have its own separate connection infrastructure.
- Support the transition towards a cleaner energy system by providing 2.8 GW of flexible capacity between the GB and Belgian networks.
- Increase security of supply by ensuring energy flows from where it is being generated to where it is needed most.
- Promote more affordable energy bills in the UK by providing access to the lowest priced energy available between GB and Belgium.

What is Nautilus multi-purpose interconnector?

The onshore infrastructure for a MPI is no different to that of a point-to-point interconnector. As shown in Figure 2, Nautilus would connect offshore wind farm/s to an offshore converter station, potentially linking clusters of wind farms into a single connection point, before transporting this electricity to the onshore transmission systems of two connected countries through a subsea electricity cable.

These cables will come onshore at a point known as 'landfall' and will be buried underground. At the landfall very little will be visible once the works have been completed, although there may be some relatively small-scale equipment visible

above ground. A kiosk-type structure (similar to a telephone exchange) may be required at the landfall location to boost the signal for the subsea fibre optic communication system.

The cables will then be run underground connecting into an onshore converter station which will transform the electricity from high voltage direct current (HVDC) into high voltage alternating current (HVAC) so that it can be fed into the transmission network. From the converter station the cables will then again be buried underground before connecting to a NGET substation, which will provide access to the National Transmission System.

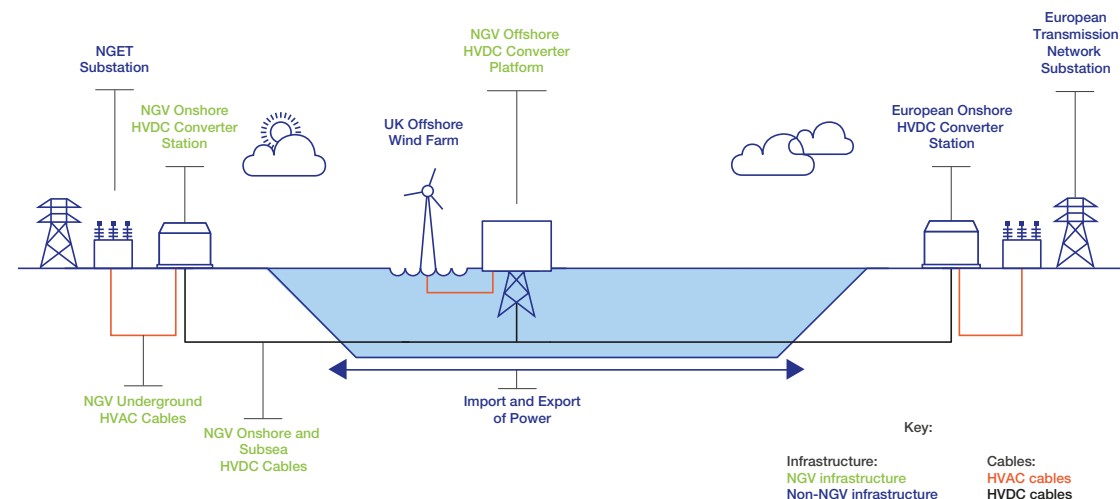


Figure 2: Indicative components of a MPI

Nautilus onshore

We began our site selection process with a desk-based initial site appraisal and have since been undertaking feasibility assessments on siting and routing options.

We began with a search area for potential converter station sites within five kilometres (km) of the proposed NGET substation in Friston. This work has been based on the reasonable assumption of a potential connection location at the Friston NGET substation as proposed by ScottishPower Renewables (SPR).

We recognise that the Friston substation has not yet been consented. We participated in the DCO Examinations for East Anglia One North and East Anglia Two as an Interested Party and continue to monitor the outcome. Parallel to our

siting and routing work, we are continuing to consider the potential coordination opportunities associated with our connection area.

MPIs present the opportunity for coordination of multiple projects. For Nautilus this means both providing a connection opportunity for new offshore wind farm/s (integration) and exploring the ability to co-locate with projects to reduce potential impacts both onshore and offshore (collaboration). Currently, our work involves exploring different scenarios for potential coordination.

Alongside our technical and environmental assessments, your consultation feedback will be used to inform the feasibility of our options and inform our early project development process.

Key

- Landfall location options
- Landfall E - least preferred onshore*
- Northern cable route corridor
- Southern cable route corridor
- Shared route for Northern and Southern corridor
- Central cable route corridor
- Landfall E cable route corridor
- Converter station search areas
- Friston substation
- Cable corridors for grid connection



Figure 3: Our siting and routing options

More detailed OS Maps will be available online and at our events

Converter station search areas

We have identified five shortlisted converter station search areas. A typical footprint for a converter station site covers an area of five hectares (12 acres). This includes space for construction lay down areas as well as the converter station building. The converter station will have a height of up to 24 metres. The exact size and height will depend upon the specific proposals for mitigation and construction.

* While Landfall E has not been discounted, it is heavily constrained from an onshore perspective and as such is not preferred. However, we need to consider this Landfall option from an offshore perspective in order to confirm that one or more of the landfall options that have been identified are achievable.

Cable route options

We have undertaken an initial screening of constraints to identify possible cable corridors between the emerging landfall options and converter station search areas, and between the converter station search areas to the proposed National Grid substation in Friston.

Landfall options

The landfall location is the point where our cables come ashore and typically requires a working area of two hectares during construction. The cables will be buried underground at the landfall site. We have identified five landfall location options within the search area.

Nautilus offshore

As well as developing our onshore proposals we are also progressing feasibility assessments of the project in the marine environment. Offshore components for Nautilus will include:

- A submarine High Voltage Direct Current (HVDC) interconnector
- An offshore converter station platform

There are a number of factors which will influence the infrastructure required in the marine environment including ongoing discussions with the supply chain, technical assessment and discussions with offshore wind farm developers.

Submarine HVDC interconnector

The interconnector will comprise of HVDC submarine cables. This will be installed between the two respective landfall locations in Belgium and East Suffolk and, where possible, will be buried within the seabed. Where it's not possible, it will be protected by non-burial protection such as the placement of rocks on top of the cable. Although the offshore interconnector route is yet to be defined, its total length between Belgium and East Suffolk will be approximately 200 km.

Offshore converter station platform

Offshore wind farm/s will be connected to the interconnector via an offshore HVDC converter station platform/s. The design and configuration of the offshore HVDC converter station platform is still in its early stages. The approximate maximum dimensions for an offshore HVDC converter station are 110 metres in length and 80 metres wide, with a height of 45 metres.

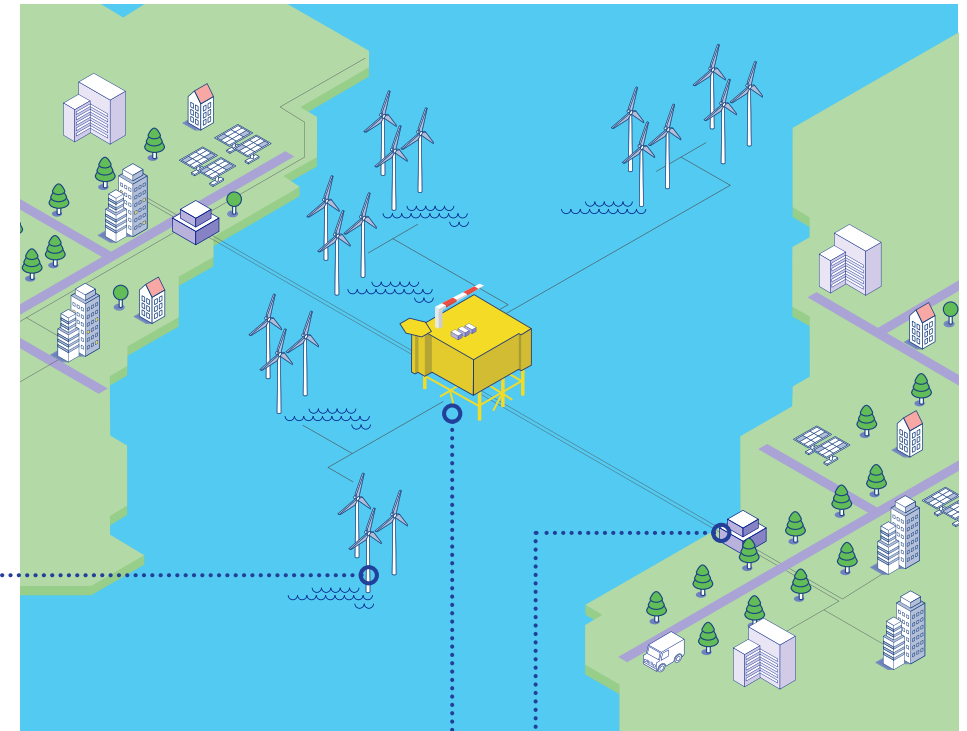
If Nautilus connects more than one offshore wind farm then it may be necessary to have two separate offshore converter platforms in order to reduce the length of cabling connecting the offshore wind farms. This would be subject to further engagement with stakeholders and relevant offshore wind farms.

Our engagement with engineering specialists is ongoing as we continue to discuss and refine what the detailed infrastructure requirements are in the offshore marine environment.

The location of the offshore platform will be informed by the alignment of the interconnector cables and the proposed location of the wind farm schemes.

Tomorrow: offshore wind and interconnectors in harmony

MPIs enable offshore wind and interconnection to work together as a combined asset.



• Wind farm/s connect to these offshore converter stations, potentially linking clusters of wind farms into a single connection point.

• Converter stations on land (one at each end of the connection) transform direct current into alternating current so that it can be fed into the high-voltage grid.

An offshore converter station transforms the alternating current into direct current, enabling it to pass through the HVDC cable.

Our consultation

Our consultation starts on **Tuesday 14 September** and will run for six weeks, closing on **Tuesday 26 October**. Our communication lines will still be open following this period and there will be more opportunities to comment on our proposals once these have been refined.

This consultation and our local information events are an important part of our pre-application consultation. Understanding what issues are most important for the local community is key, and the feedback gathered at these events will help us to shape our proposal going forward.



Community drop-in sessions

We are planning to hold public events at different locations across our consultation area. These events will complement our online consultation process and be a direct opportunity for you to view our plans, discuss them with members of the project team, and provide feedback on them.

Details of the local information events can be found below:

Tuesday 28 September - 4pm to 8pm - Leiston Community Centre, King George's Avenue, Leiston, Suffolk, IP16 4JX

Wednesday 29 September - 10am to 2pm - Friston Village Hall, Church Road, Friston, Suffolk, IP17 1PU

Thursday 30 September - 4pm to 8pm - Thorpeness Pavilion, Thorpe Road, Thorpeness, Suffolk, IP16 4FD

Friday 1 October - 10am to 2pm – Saxmundham Market Hall, High St, Saxmundham IP17 1AF



Community webinar events

We will also be holding community webinar events during our consultation period. They will be available to join by video call or by phone, for an opportunity to hear more from the project team and ask any questions you may have.

- **Thursday 7 October 2021** from 10am to 12pm
- **Tuesday 12 October 2021** from 6pm to 8pm

A detailed step-by-step guide for how to access our community webinars, along with webinar links and telephone dial-in details is available on our website: nationalgrid.com/group/about-us/what-we-do/interconnectors-connecting-cleaner-future/nautilus-interconnector



Virtual exhibition

For anyone unable to attend our consultation events, we have created a virtual version which is accessible through our project website and contains the same information: nationalgrid.com/group/about-us/what-we-do/interconnectors-connecting-cleaner-future/nautilus-interconnector



Have your say

You can access our consultation material and provide your views in the following ways:

- In person by attending one of our events
- Online via our project website
- By post by writing a letter or completing one of our feedback forms and posting it back to us free of charge to our Freepost address on the back page of this leaflet
- You can also email us, call us or write to us using the details on the back page of this leaflet

Contact us

Please don't hesitate to get in touch if you would like to find out more information about Nautilus Interconnector.

You can contact a member of our Community Relations Team to find out more by using the details below.



Write to us at:

Freepost Nautilus Interconnector



Email us at:

info@nautilusinterconnector.com



Call our Freephone information line:

08081 699 822



Visit our website at:

www.nationalgrid.com/group/about-us/what-we-do/interconnectors-connecting-cleaner-future/nautilus-interconnector

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