

nationalgrid

Welcome

National Grid Ventures



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, sharing energy with Belgium through cross border transfers. 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 centres (Great Britain and Belgium). The project would include underground cabling works and onshore infrastructure, located in East Suffolk.

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.

Further details on MPIs can be found on the ‘What is a multi-purpose interconnector?’ board.

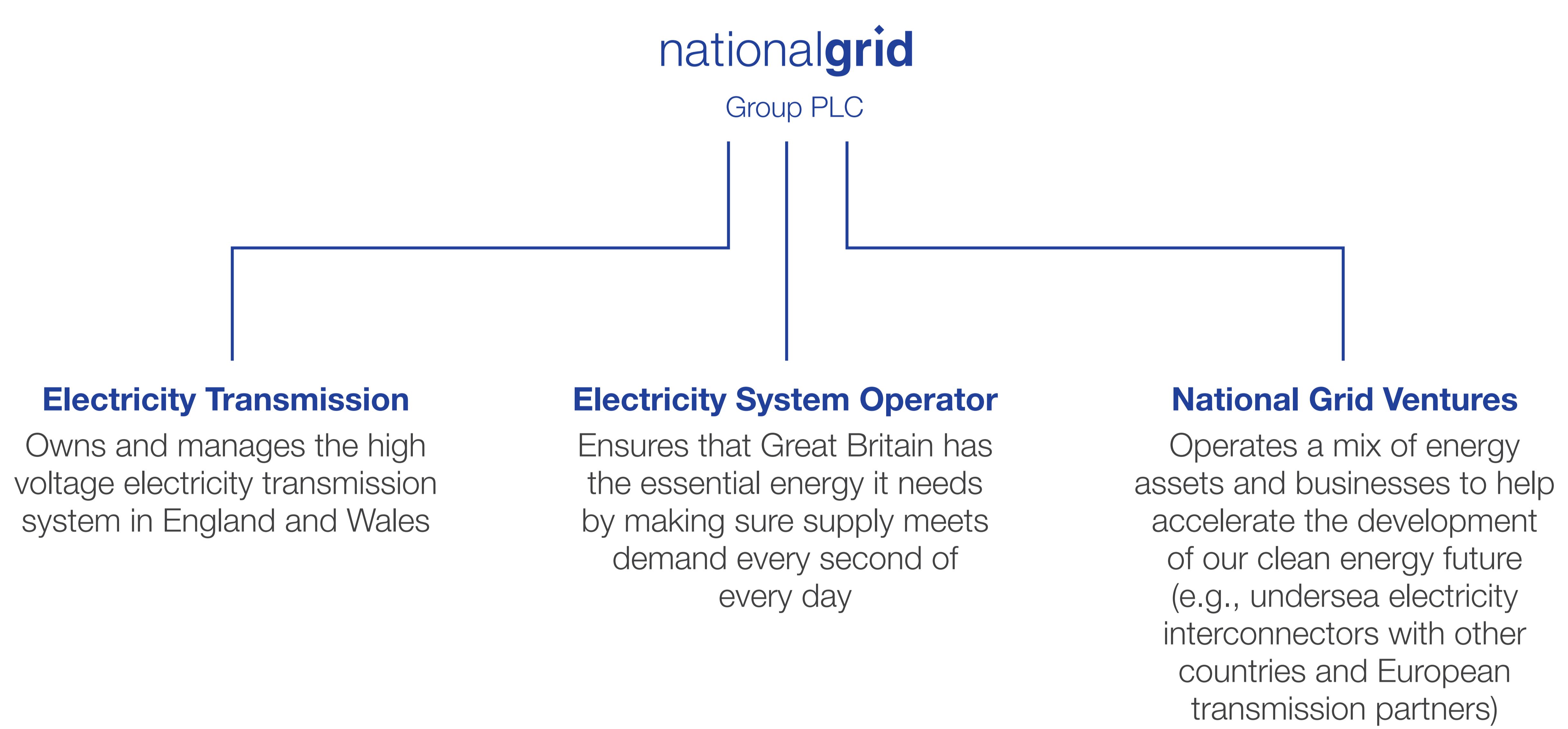


National Grid Ventures

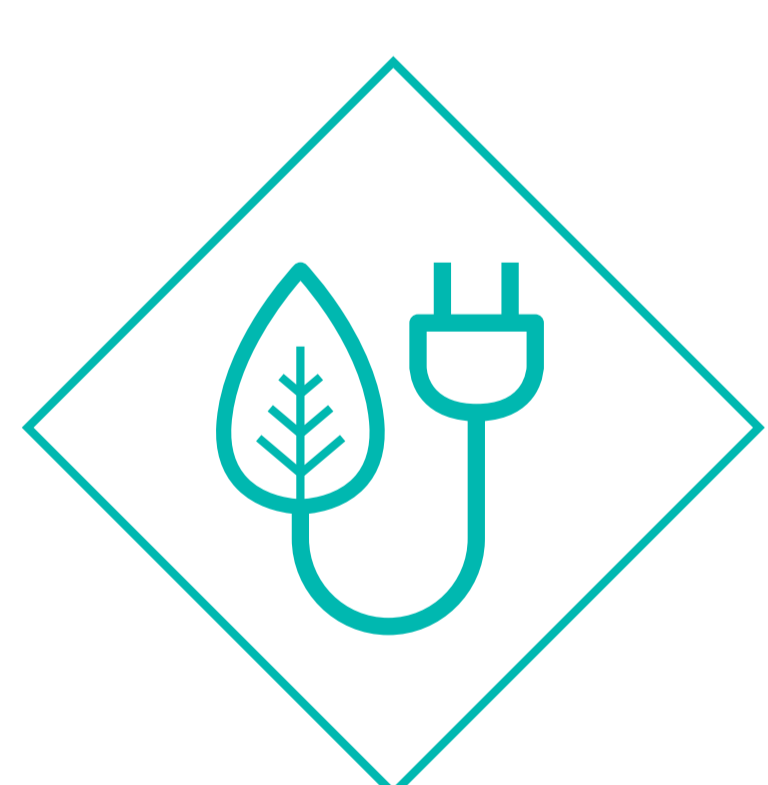
National Grid Ventures (NGV) is the competitive division of National Grid. It operates outside of National Grid's core regulated businesses in the UK and US where it develops and operates energy projects, technologies and partnerships to make energy cleaner, more secure and more affordable for consumers.

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.

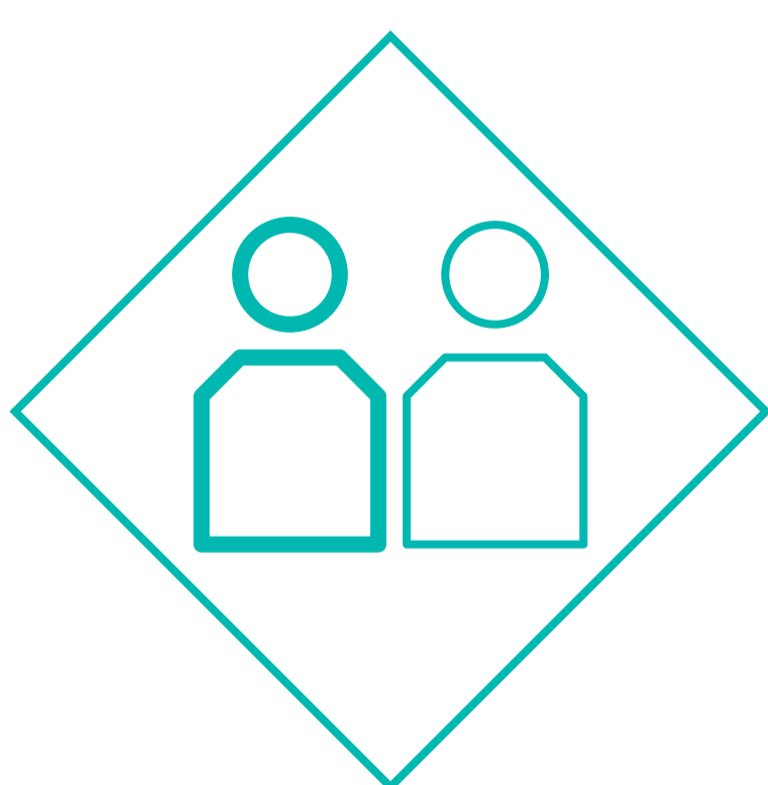
The graphic below provides a distinction of National Grid plc's electricity business entities in the UK.



Our vision is to be at the heart of a clean, fair and affordable energy future.



Clean, because we want to enable the energy transition for the communities we serve.



Fair, because we want to help shape an energy future where everyone shares in the benefits and no one gets left behind.



Affordable, because energy bills should not be a burden as a result of the transition, and families should be able to pay for all their basic energy needs.



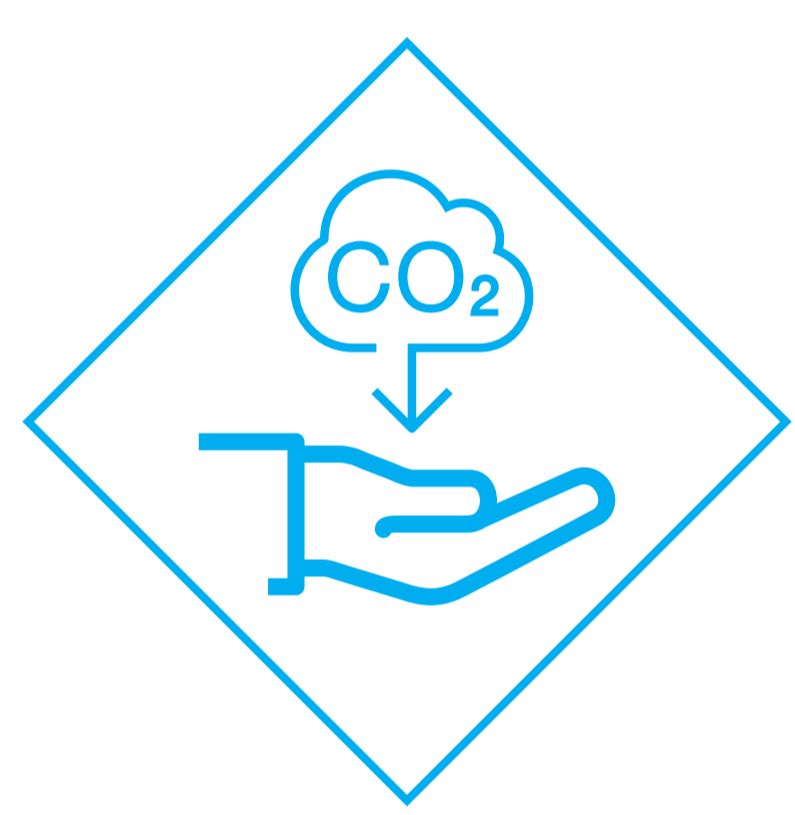
Proposals for Nautilus are being developed by NGV and our partner in Belgium, Elia. Elia is the Belgian National Transmission System Operator (TSO). Elia is building the transmission infrastructure of the future to integrate increasing volumes of renewable energy generated onshore and offshore into the European grid.

What is a multi-purpose interconnector?

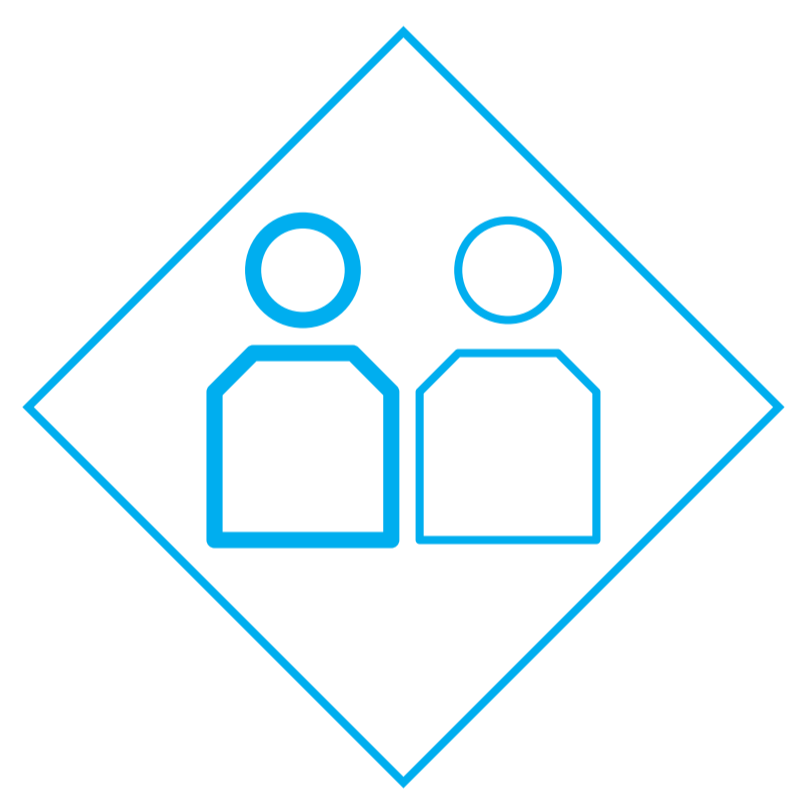
MPIs are subsea electricity cables which travel between two countries connecting offshore wind farms to both markets. This technology marks an evolution from point-to-point interconnection and radially connected wind.

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.

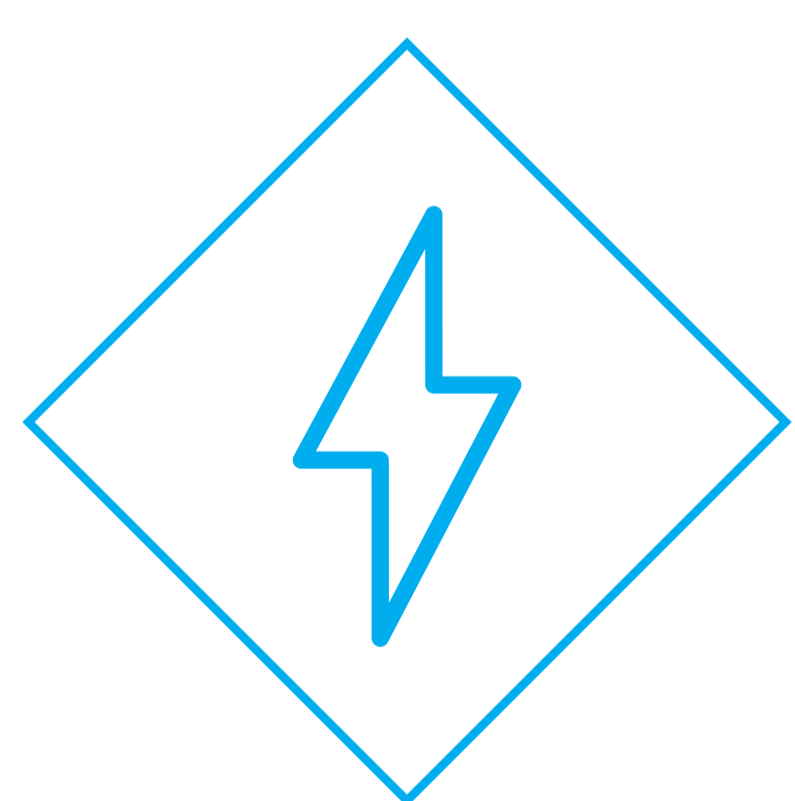
As a MPI Nautilus will help to:



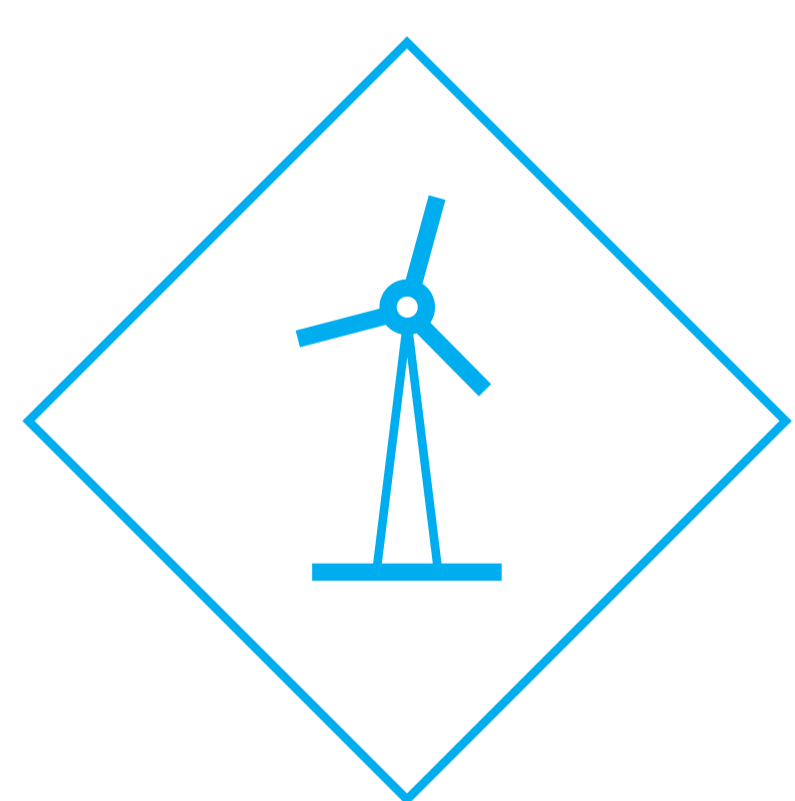
Support the UK to achieve its 40 GW of offshore wind by 2030 and net zero by 2050 climate targets.



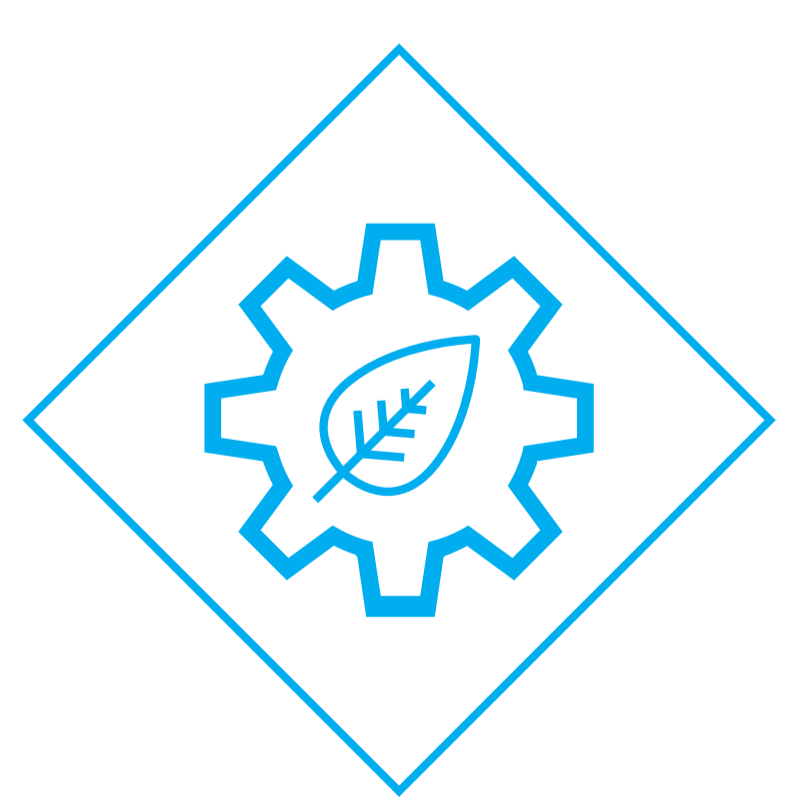
Reduce impacts on coastal communities and the environment by avoiding the need for every project to have its own separate connection infrastructure.



Support the transition towards a cleaner energy system by providing 2.8 GW of flexible capacity between the GB and Belgian networks.

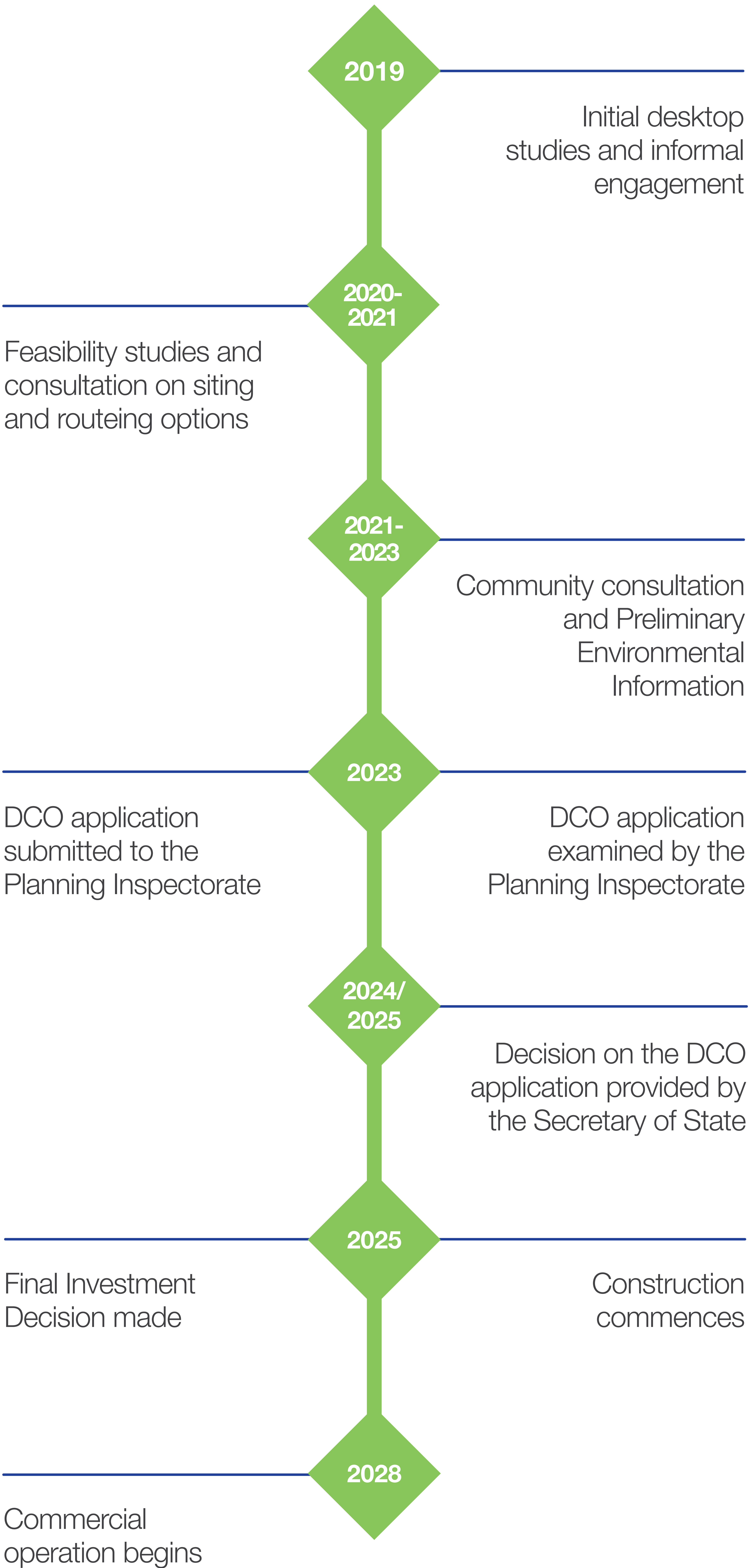


Increase security of supply by ensuring energy flows from where it is being generated to where it is needed most.



Promote more affordable energy bills in the UK by providing access to the lowest priced energy available between GB and Belgium.

Indicative project timeline



*Please note, all dates are indicative.

Being a responsible developer

We have a strong track record of delivering projects across the UK and working successfully in collaboration with other developers and communities.

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. 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. Coordination and cooperation is not limited to offshore wind integration however, with opportunities for collaboration, including co-location of infrastructure, also being investigated by Nautilus. Future network reinforcements and new network connections could be planned together to reduce the amount of cabling and connections required, benefitting the environment and coastal communities. We will seek to work with other developers in the area in order to best address the interests of the environment and local communities.

We are already working closely with the other promoters in the area including ScottishPower Renewables and EDF, as well as East Suffolk and Suffolk County Councils, and NGET. NGV regularly meet with all of the promoters in the area, alongside East Suffolk Council and Suffolk County Council, at the Suffolk Energy Forum.

We have also been engaging with the Department for Business, Energy and Industrial Strategy and the industry regulator, Ofgem, to provide our expertise into the emerging policy framework surrounding coordinated solutions for offshore transmission – including participating in the Offshore Transmission Network Review.



Nautilus offshore

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

- Offshore convertor station platform/s
- A submarine High Voltage Direct Current (HVDC) interconnector

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 burial within the seabed is not possible, additional cable protection may be required 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 kilometres (km).



Nautilus offshore

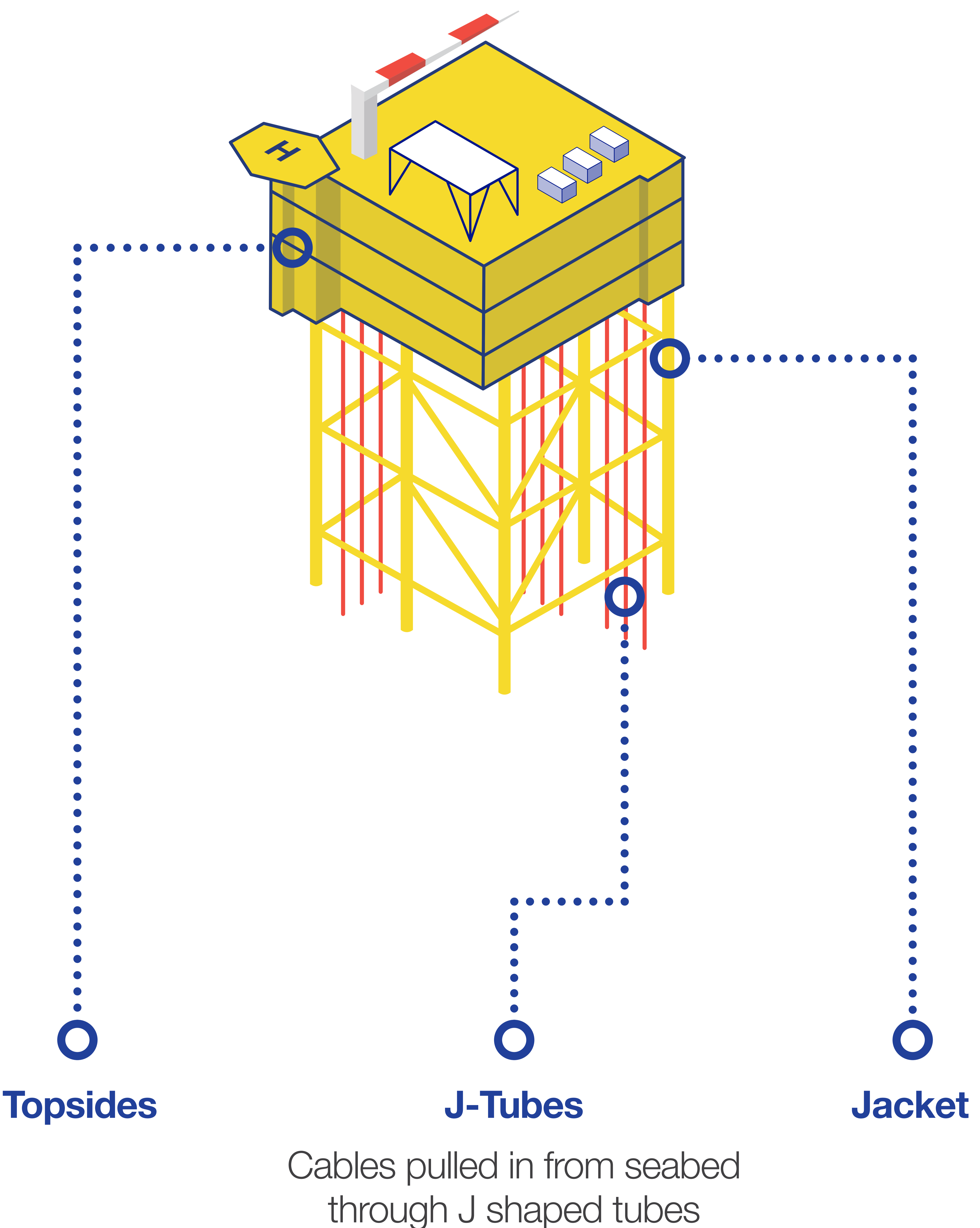
Offshore converter station platform

Offshore wind farm/s will be connected to the interconnector via 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 could be 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 farm/s. This would be subject to further engagement with stakeholders and relevant offshore wind farm/s.

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.



Nautilus offshore

Offshore routeing and siting

We are currently identifying potential cable route options and possible location options for the offshore HVDC converter station platform (and any additional infrastructure). As part of this process, we have mapped environmental, social and engineering information to gain a better understanding of the constraints and features that are present in the study area. Key criteria considered to identify routes and sites includes:

- Nature conservation designations and protected habitat areas
- Existing and planned infrastructure (cables, pipelines, wind farms), aggregate extraction areas and disposal sites
- Navigational features, anchorages, major shipping routes, commercial fishing grounds, wrecks
- Water depth, seabed sediment and other seabed features

Once we have identified potential options we will engage with relevant technical marine stakeholders and fisheries organisations to help inform the development and refinement of these options.

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.



Considering different scenarios

We recognise that the Friston substation has not yet been consented. We participated in the Development Consent Order (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 routeing work, we are continuing to consider the potential coordination opportunities associated with our connection area¹.

MPIs present the opportunity for coordination of multiple projects. For Nautilus this means both providing a connection opportunity for offshore wind farm (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.

This work ongoing and we are not able to share further details during this consultation. However, the feedback you provide now will help inform our work on this.

¹ Our connection agreement for Nautilus relates to a new National Grid Electricity Transmission (NGET) substation on the Sizewell 400 kilovolts (kV) network in the 'Leiston area'. The connection agreement therefore relates to an area rather than a specific location.

