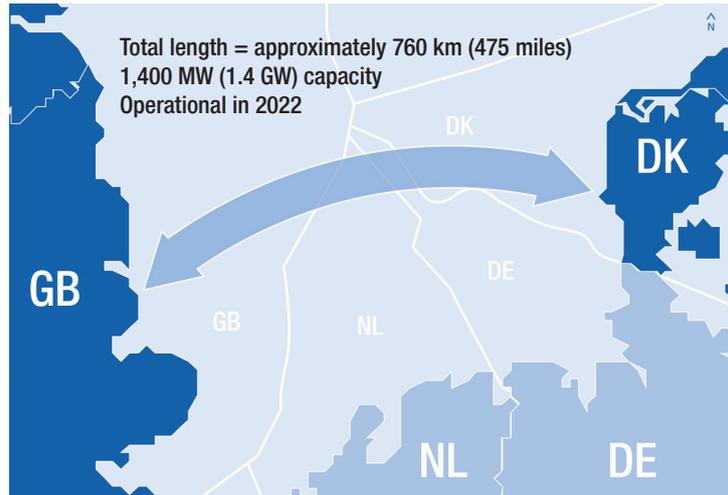


Welcome to Viking Link

Viking Link is a proposed 1,400 Mega Watt (MW) high voltage direct current (DC) electricity link between the British and Danish transmission systems connecting at Bicker Fen substation in Lincolnshire, Great Britain and Revsing in Southern Jutland, Denmark.

Viking Link will allow electricity to be exchanged between Great Britain and Denmark.



The project is being jointly developed between National Grid Viking Link Limited and Energinet.

National Grid Viking Link Limited (NGVL) is a wholly owned subsidiary of the National Grid Group and is legally separate from National Grid Electricity Transmission plc (NGET) which has the licence to own and operate the high voltage electricity transmission system in England and Wales.

Energinet is an independent public enterprise owned by the Danish state as represented by the Ministry of Energy, Utilities and Climate. It owns, operates and develops the Danish electricity and gas transmission systems.

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Why we are here

Thank you for coming to this Public Information Event about our proposals for the Viking Link UK Onshore Scheme. This is the final opportunity to view our draft proposals before we submit our planning applications to the local planning authorities (LPAs) during summer 2017.

Today, we would like to update you on the proposed cable route for the underground direct current (DC) cables between the proposed landfall site at Boygriff, East Lindsey and the proposed converter station site at North Ing Drove, South Holland.

You will also be able to see our plans for the proposed converter station and the proposed cable route for the alternating current (AC) cables which will run between the proposed converter station and the existing National Grid Electricity Transmission plc (NGET) substation at Bicker Fen.

Members of the project team are here today and are happy to discuss any queries or comments you may have.

We are not asking for feedback during these events. You will have an opportunity to comment on the Viking Link proposals during the LPA consultations held after we have submitted our planning applications.

The information panels you see here today can also be found on our website at www.viking-link.com.



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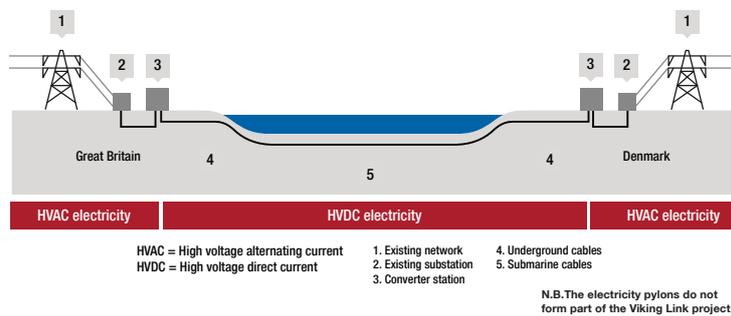


What is Viking Link?

Viking Link will involve the construction of two converter stations, one in Great Britain and one in Denmark. It will also include the installation of submarine and underground cables between the converter stations and underground cables between the converter station and substation in each country.

The cables will run for approximately 760 km (475 miles) between Great Britain and Denmark and will require the use of high voltage direct current (DC) technology. The electricity networks in Great Britain and Denmark both use high voltage alternating current (AC). Viking Link will use DC technology because it is more effective at transmitting large volumes of electricity over longer distances and provides more control over the power flow.

The diagram below shows the different parts of an interconnector:



The converter station in each country will change the electricity between DC and AC, which is what we use in our homes.

Each end of the link will be connected to an existing substation which will need to be developed to accommodate the new connection. In Great Britain, Viking Link will connect to the existing NGET 400 kV substation at Bicker Fen, Lincolnshire via AC cables. Connecting to the substations will enable the electricity to be delivered to homes and businesses.

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Viking Link and Brexit



Following the result of the European Union (EU) referendum last summer, we're aware that you may have questions on how the outcome will affect the Viking Link project.

The Project, which is jointly funded by National Grid Viking Link Limited (NGVL) and our partner Energinet, has been granted regulatory approval by the British regulator, Ofgem which closely scrutinises the costs and benefits of projects to ensure they deliver the right value to British consumers.

We continue to believe there is a strong business case for Viking Link post-Brexit. The UK Government recently reiterated its support for new electricity links between Great Britain and other countries to deliver a more secure, sustainable and affordable supply of electricity for consumers.

We believe energy should be a priority as the Government begins negotiations on Britain's exit from the EU.

As we leave the EU, we will be working closely with the Government and others in the energy sector to make sure we put the customers' needs first. That means making sure the right arrangements are put in place to ensure UK energy users continue to benefit from the free flow of secure, sustainable and affordable energy from abroad.

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Connecting to the network

Viking Link applied to National Grid Electricity Transmission plc (NGET) for a connection to the national electricity transmission network. NGET undertook a study of possible connection options and a number of different options were considered along the east of England. NGET together with Viking Link identified the existing NGET Bicker Fen substation as the most appropriate connection point.

Details of all the options identified and the assessments undertaken are included in the Viking Link Strategic Options Report.

Copies of relevant reports produced following our consultations are available at this event to review and online versions of these can be downloaded from the project website at www.viking-link.com/documents.



Bicker Fen substation

Connecting into the substation

NGET will carry out work within the substation at Bicker Fen to enable Viking Link to connect into the national electricity transmission system. We will need to install equipment into bays within the substation and route our AC cables to connect into these bays.

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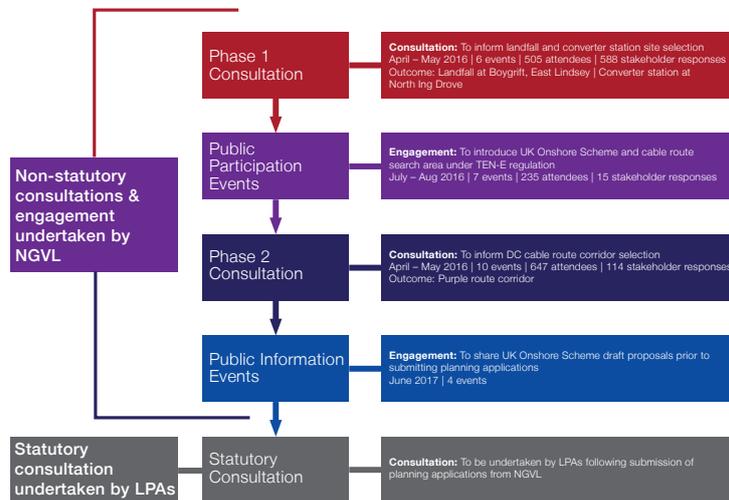


Who we've been speaking to

Since 2015, we have been engaging with various stakeholder groups to discuss our proposals, including:

- local planning authorities and statutory bodies;
- parish councils;
- landowners;
- local residents;
- district, borough and county councillors;
- Members of Parliament; and
- Members of European Parliament.

We adopted a phased approach to engagement to allow feedback from stakeholders to be fed into the decision-making process at points when it could influence the development of the UK Onshore Scheme.



Phase 1 outcome:
Preferred site selection



Public Participation Events: Cable route search area



Phase 2 outcome:
Preferred cable route corridor option selection



Public Information Events: Draft proposals

Thank you for providing feedback which has helped shape Viking Link.



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The proposed landfall

The proposed location to bring the two submarine cables ashore is at Boygrift, adjacent to Sandilands golf course in East Lindsey.

More information on how we selected this site can be found in our UK Onshore Scheme: Preferred Sites Selection Report.

Bringing the cables ashore

The submarine cables will be brought ashore from a specialist vessel. The cables will then be installed under the sea defences using a trenchless installation method. They will then be connected to the onshore cables within a transition joint pit (TJP).

We are proposing to build a temporary haul road directly off the A52 to provide access to the landfall site and the underground DC cable route away from it. We are also proposing to have a temporary construction compound close to the landfall to facilitate the work required.

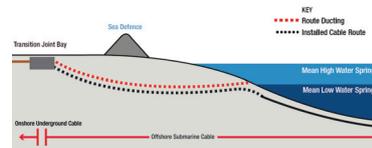
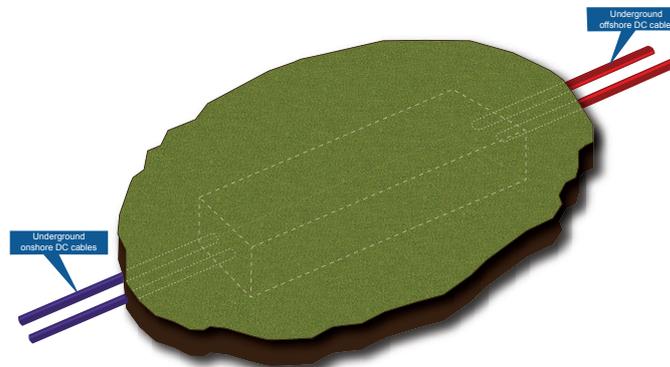


Diagram to show how the cables will be installed under the sea bed

Transition joint pit

There will be no permanent above ground infrastructure at the landfall for the Viking Link project.



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The proposed underground DC cable route

The direct current (DC) cables will be installed for approximately 68 km (42 miles) between the proposed landfall and the proposed converter station sites.

More information on how we selected the purple route corridor is available in our UK Onshore Scheme: Preferred Route Corridor Report.

The proposed route has been developed through an iterative process. We initially identified a 1 km (3/8 mile) wide corridor which has been reduced to 200 m (660 ft) through further assessments and stakeholder engagement.

We have been carrying out further assessments to identify a cable route within the reduced corridor for our underground cables as well as identifying suitable access points to the highway network and locations for temporary construction areas.

Detailed maps which show the proposed route and proposed temporary construction areas are available to view here today.

DC cable construction area

We will need a permanent easement width of approximately 15 m (50 ft) for the DC cable route and this may be wider at crossing points, such as for major drains or roads. The temporary construction 'working width' will be approximately 30 m (100 ft) wide. It will be wider at crossing points and/or where trenchless crossing techniques are required, due to the space needed for this type of operation.

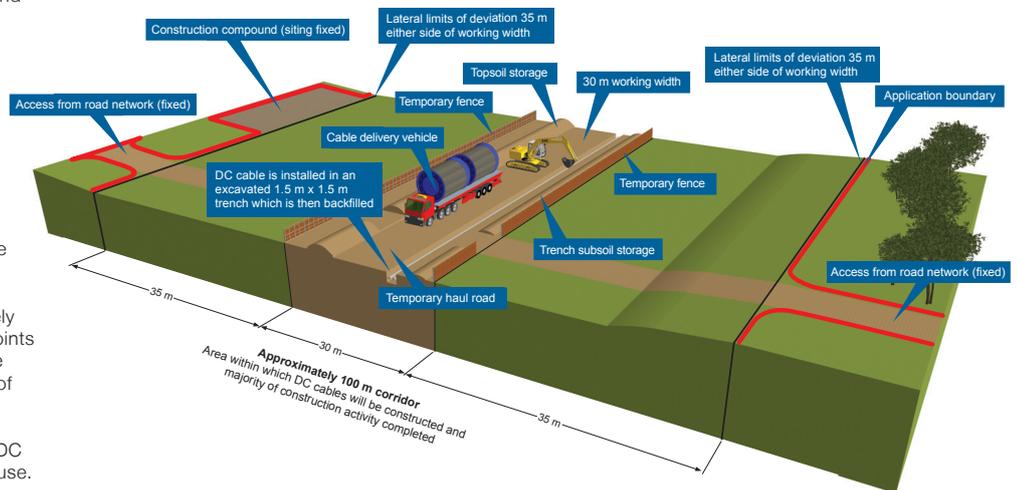
Once we have completed the installation of the DC cables, we will reinstate the land to its previous use.



Cables are transported to site on special low loader vehicles



Example of working width



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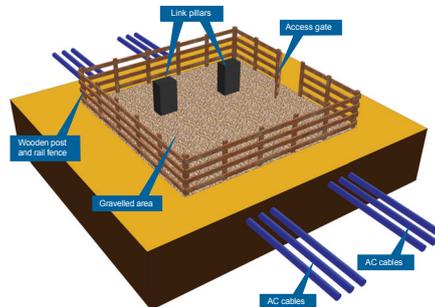
The proposed underground AC cable route corridor

The alternating current (AC) cables will run for less than 2 km (1 ¼ miles) between the proposed converter station site and NGET's Bicker Fen substation. There will be six AC cables in total, which will be installed in two trenches.

Link pillars

AC cables are installed in sections which meet in joint bays, where we will need to install link pillars (small above ground boxes) for inspection and maintenance purposes. An example is shown right.

The link pillars will be required at approximately 750 m (½ mile) intervals and will be within fenced areas. Where possible, we will locate them close to field boundaries.

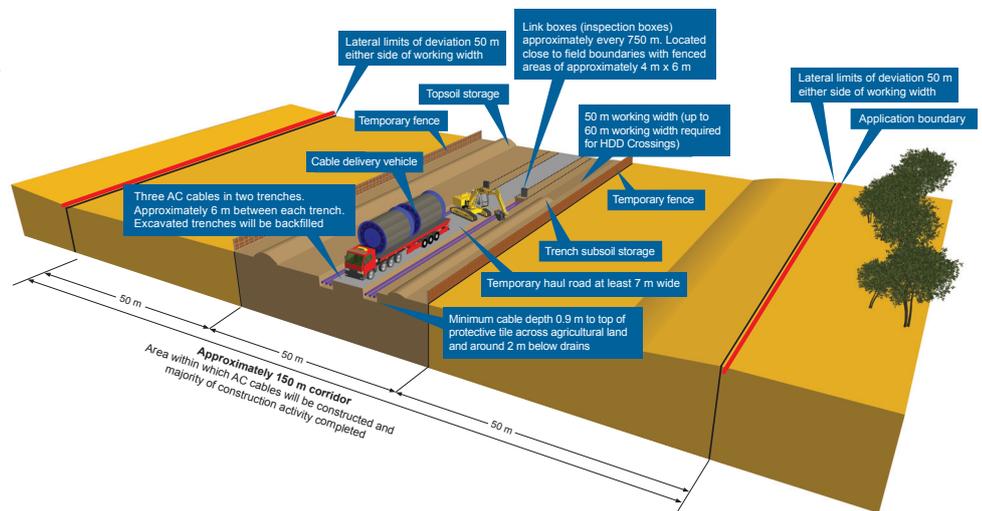


Schematic of link pillars

AC construction area

We will need a permanent easement width of approximately 25 m (80 ft) for the AC cable route and this may be wider at crossing points, such as for major drains or roads where trenchless crossing techniques are required, due to the space needed for this type of operation. The temporary construction 'working width' will be approximately 50 m (165 ft) wide.

Once we have completed the installation of the AC cables, we will reinstate the land to its previous use.



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Cable installation

The exact method of cable installation will depend on the constraints and obstacles encountered but will typically involve a combination of:

- open cut or direct burial. This is where the cables are installed in an excavated trench which is then backfilled
- trenchless methods such as horizontal directional drilling (HDD) or pipe-jacking (auger bore or micro bore).

Standard trenching techniques will be used for excavation.

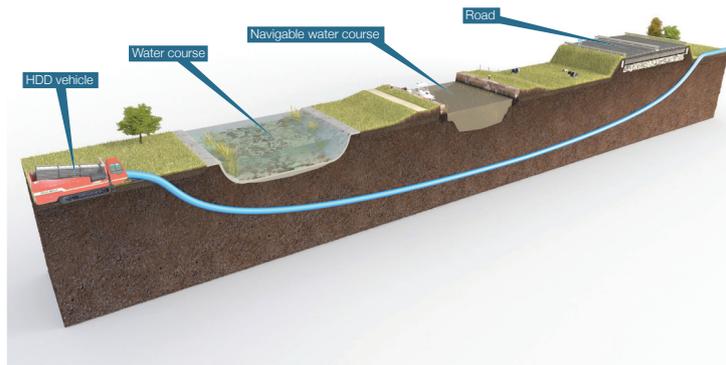


Image courtesy of R&I Pinguin Associates

Cable protection tiles will be installed 150 mm (6 inches) above the top of each cable and plastic warning tape will be laid above these. The material excavated from the trench (if suitable) will be used to complete backfilling of the trench after the cables have been installed. Any excess subsoil will be used on site and any remaining material will be removed from site to an appropriately licensed facility.

We will work with local communities to help minimise disruption during construction.

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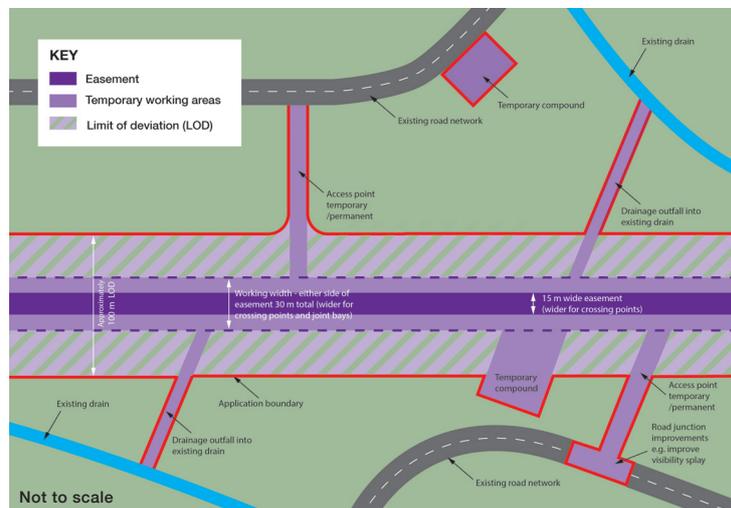
Land interests

We are committed to forming and maintaining successful working relationships with all landowners and occupiers who may be affected by our project.

Before we can install and maintain any equipment on private land, we will need to agree appropriate rights and interests with the owner and occupier of that land, and preferably reach a voluntary agreement by negotiation.

We will try to keep any disturbance and inconvenience to a minimum and will work closely with landowners, tenants, occupiers and other persons with an interest in the land throughout the development of the project by:

- engaging with landowners to agree access to their land to deliver our survey programme
- consulting with key landowner advisory bodies to mitigate landowner concerns
- appointing a specialist land drainage consultant.



Land reinstatement after cable laying

Next steps

To agree the land rights required for the Project with landowners.



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The proposed converter station site

The proposed site for the converter station is at North Ing Drove, near Donington (South Holland District). We selected the site after carefully considering all the information provided by local people during our Phase 1 consultation in spring 2016, along with environmental and technical information.

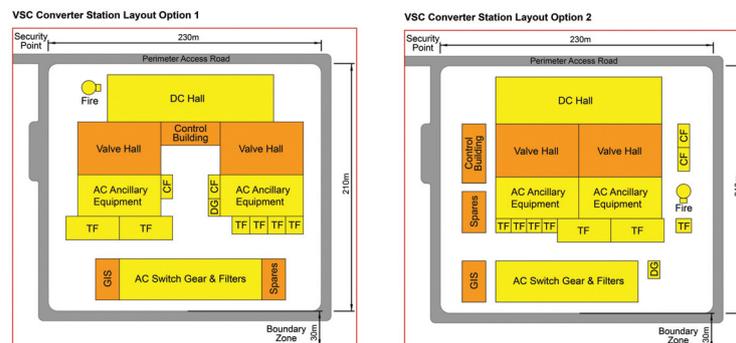
More information on how we selected these sites can be found in our UK Onshore Scheme: Preferred Sites Selection Report.

What is a converter station?

A converter station converts electricity between direct current (DC), which is used for transporting the electricity between Great Britain and Denmark, and alternating current (AC) which we use in our homes and businesses. We need to transport the electricity as DC because it is more efficient over very long distances. Using DC will also mean we only need two cables.

A typical converter station includes a range of specialist equipment, some of which must be located indoors in a series of large buildings, which will be up to 24 m (79 ft) tall. The site will include a control room, transformers, equipment similar to a typical substation, and technology to convert between DC and AC electricity and vice versa.

The diagram below illustrates the main elements of a converter station and how they may be arranged within the proposed site. Yellow and orange has been used to distinguish between equipment that must be indoors (orange) and equipment that can, subject to design, be outdoors (yellow).



Key

- Site Boundary
- Enclosed Buildings
- Essential Equipment Enclosures
- Perimeter Access Road
- Site Boundary Area: 7.83 hectares / 19.34 Acres

The VSC Converter Station layout options are indicative, and do not include site elevation, car parking, ancillary equipment, or surface water drainage infrastructure.

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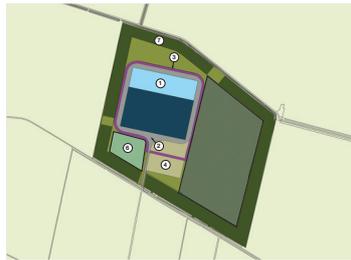
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The proposed converter station site

The proposed converter station site is located on a 30 hectare (74 acre) field on North Ing Drive.

We need about 4 to 5 hectares (9 to 12 acres) of land for the operational area and additional land for landscape treatment and drainage. The plans show the basic layout for which we will be seeking planning permission and next to this is an indicative detailed layout showing how the site could be developed.



- Key**
- (1) Building and outdoor electrical equipment zone
 - (2) Perimeter road zone
 - (3) Security zone
 - (4) Additional hardstanding zone
 - (5) Reinstated zone
 - (6) Attenuation zone
 - (7) Landscape planting zone



- Key**
- (1) Converter station buildings
 - (2) Converter station outdoor electrical equipment
 - (3) Hardstanding areas (roads, parking, storage)
 - (4) Security Fencing
 - (5) Reinstated land
 - (6) Attenuation pond
 - (7) Landscape planting

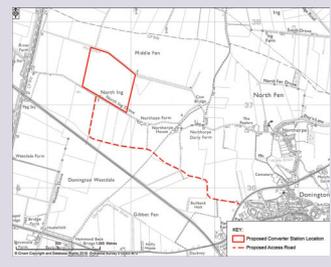
Converter station design

During our Phase 2 consultation, we asked for people's views on design style options for the proposed converter station. The feedback received during the consultation is being used to develop a design code for the building in conjunction with South Holland District Council based on the functional style. This code will be used to finalise the design and appearance of buildings.



Access

We are proposing to construct a permanent access road from the A52 to the proposed converter station site which will be approximately 2.8 km (1.7 miles) long. We plan to build this first so that we can use it during construction and keep our construction traffic away from local roads as much as possible.



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Submarine cable route

The submarine cables are a major part of the Viking Link project. They will run for approximately 620 km (385 miles) between the British and Danish coasts, crossing the North Sea and the Exclusive Economic Zones of Denmark, Germany, the Netherlands and the United Kingdom.

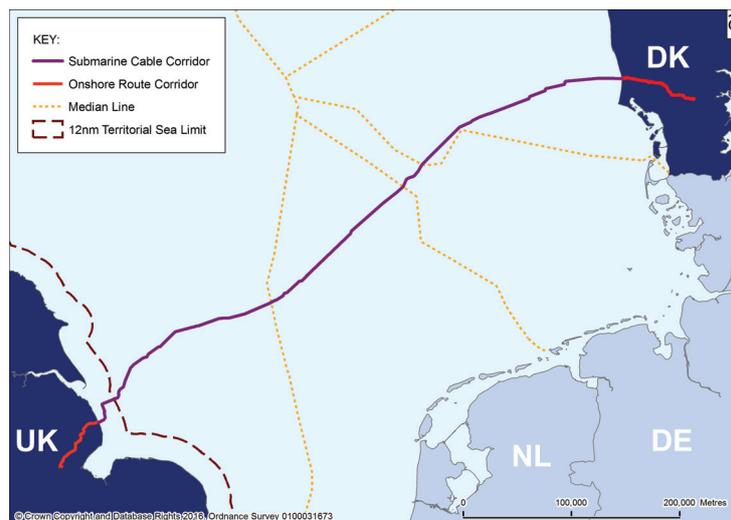
We carried out desktop surveys to identify constraints, such as environmental designations and important navigational routes. Several route options were reviewed, including two cable route corridors for the submarine cables in British waters. The northern cable route corridor through British waters was selected, following consultation with the relevant marine authorities, stakeholder workshops and risk reviews as well as discussions with relevant stakeholders.

A full marine survey was carried out along the proposed cable route corridor and all relevant information and samples were gathered to help us in our assessments on viable routing and cable burial as well as in the study of the environmental impacts on the marine environment.

Submarine cabling

Submarine cables are installed using specialist vessels which are able to transport and lay long sections of cables. The cables will be buried in the seabed or alternatively protected where burial is not possible.

A separate marine licence application will cover the Viking Link Offshore Scheme.



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Project timeline

2014	<ul style="list-style-type: none"> ▪ Cooperation agreement between National Grid and Energinet ▪ NGVL granted interconnector licence 		
2015	<ul style="list-style-type: none"> ▪ Ofgem 'cap and floor' regulatory regime confirmed ▪ Project of Common Interest status confirmation 		
2016	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Spring</p> <ul style="list-style-type: none"> ▪ First stage consultation ▪ Marine surveys start </td> <td style="width: 50%; vertical-align: top;"> <p>Summer</p> <ul style="list-style-type: none"> ▪ Energinet hold similar consultation events in Denmark ▪ Consultations in Germany and the Netherlands ▪ Second stage consultation ▪ Environmental surveys start </td> </tr> </table>	<p>Spring</p> <ul style="list-style-type: none"> ▪ First stage consultation ▪ Marine surveys start 	<p>Summer</p> <ul style="list-style-type: none"> ▪ Energinet hold similar consultation events in Denmark ▪ Consultations in Germany and the Netherlands ▪ Second stage consultation ▪ Environmental surveys start
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2017	<p>Consent applications</p> <ul style="list-style-type: none"> ▪ UK: Onshore to four local planning authorities (LPAs); offshore to Marine Management Organisation ▪ NL: Application to Ministry of Economic Affairs for offshore permit / licence ▪ DE: Application to BNetzA for offshore permit / licence ▪ DK: Onshore to Agency for Environmental Protection; offshore to the Danish Energy Agency 		
2018	<ul style="list-style-type: none"> ▪ Financial Investment Decision ▪ Construction Contracts Awarded 		
2019	<ul style="list-style-type: none"> ▪ Completion of detailed design ▪ DC cable manufacture starts ▪ Converter station manufacture starts ▪ Commence construction 		
2022	<ul style="list-style-type: none"> ▪ Testing, commissioning and operating 		



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Next steps

Viking Link remains committed to working closely with local communities, parish councils and landowners and aims to minimise any disruption when carrying out relevant works within the local communities.



Planning applications for the Viking Link UK Onshore Scheme will be submitted during summer 2017.

We have carried out a full Environmental Impact Assessment (EIA) to understand any potential impacts of our proposals. This will be presented in an Environmental Statement (ES) and submitted as part of our planning applications.

We will also submit an Outline Construction Environmental Management Plan and a Traffic Management Plan which will set out how we manage and mitigate impacts during construction.

The following local planning authorities (LPAs) will be involved in the planning applications:

- East Lindsey District Council
- Boston Borough Council
- North Kesteven District Council
- South Holland District Council.

After we have submitted our planning applications, you will have an opportunity to comment on the Viking Link proposals during the LPA consultations.

Thank you for taking the time to attend this event. We hope you have found it useful.

Contact us



You can find out more information by:



Calling our freephone number:
0800 731 0561

Phone line is operational between 9.00 am and 5.30 pm, Mondays to Fridays (excluding bank holidays).



Sending an email to:
vikinglink@communityrelations.co.uk



Writing to our freepost address at:
FREEPOST VIKING LINK

An answer phone is available outside of these times to leave a message. Any messages left will be picked up on the next available working day.



Visiting our website at:
www.viking-link.com

If you, or someone you know, would like information in Braille, audio, large print or another language, please call us on the freephone number above.



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