

Norfolk Vanguard Offshore Wind Farm

Consultation Report

Appendix 12.8 Phase II Non-Statutory Public Exhibition Materials

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Author: BECG

Photo: Kentish Flats Offshore Wind Farm



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WELCOME

Thank you for coming today to find out more about the **Norfolk Vanguard** and **Norfolk Boreas Offshore Wind Farm Projects** and to share your views

- We have a series of information boards explaining our early thinking for two offshore wind farms - Norfolk Vanguard and Norfolk Boreas. Each will provide green energy for 1.3M homes per year¹.
- They are separate projects, but aspects are shared. We think people interested in one project will have an interest in both, so today we'll present information about Norfolk Vanguard and Boreas, and gather your feedback.
- The Norfolk Vanguard project is one year ahead of the Norfolk Boreas project. This means proposals are more refined and we have defined the scope and methods underpinning our Environmental Impact Assessment (EIA). There are still very many decisions to be made so please take the opportunity today to help shape the best possible project.
- This is the first opportunity to comment directly on Norfolk Boreas. Where appropriate, the research and assessments undertaken, and feedback received regarding the Norfolk Vanguard project is also helping to shape Norfolk Boreas.

Working with local communities

Involving local communities is important to us. When we are designing our projects, communities have the opportunity to get involved and influence plans before final proposal are put forward.

If you attended an October 2016 drop-in or have responded to material presented on our website, you may already have helped us refine our plans for the Norfolk Vanguard project. Key concerns and aspirations identified by participants were:

- Potential impacts on nature – offshore and onshore
- Visual and noise impacts relating to the siting of onshore infrastructure
- Potential impacts on historic features, and opportunities to discover and record new archaeological finds
- Potential impacts on lives and livelihoods (e.g. tourism, fishing, farming), particularly during construction
- Placing Norfolk at the forefront of renewable energy development
- Opportunities for skills, jobs and supply chain growth

Today, we'll show you how we have responded to your input.

How can I provide feedback?

- Talk to the project team. We are here to answer your questions and to listen to your ideas, concerns and feedback.
- Is today your first drop-in? Please talk to us, the project team are here to help.
- We want to understand the issues that are important to you, in your own words – please use the questionnaire.
- The display and questionnaire will also be available on our website. Please also encourage others to participate.



www.vattenfall.co.uk

[@VattenfallUK](https://twitter.com/VattenfallUK)

[#NorfolkVanguard](https://twitter.com/NorfolkVanguard)

[#NorfolkBoreas](https://twitter.com/NorfolkBoreas)

¹Number of homes equivalent: This is calculated using the most recent statistics from the Department of Energy and Climate Change showing that annual UK average domestic household consumption is 4,115kWh: <http://www.renewableuk.com/en/renewable-energy/wind-energy/uk-wind-energy-database/figures-explained.cfm>

ABOUT VATTENFALL IN NORFOLK

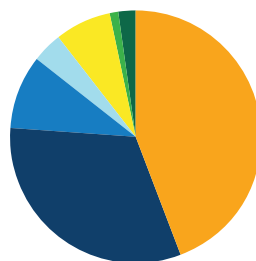
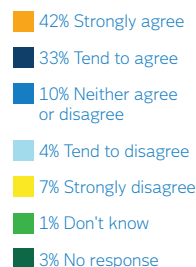
Sustainable energy production

Vattenfall is the second largest player in the global offshore wind sector. Wind power is one of the fastest growing energy sources in the world and will play a key role in meeting global and UK climate targets. Vattenfall has invested over £3bn in renewable energy projects in the UK since 2008. We will have nearly 1 Gigawatt (GW) of power in operation onshore and offshore in the UK by the end of 2017 and have targeted a tripling of our generating capacity across Europe to 7 GW by 2025.

Why offshore wind works for Norfolk?

- There is plenty of wind offshore
- The waters are shallow, which makes it easier and cheaper to construct offshore wind farms in the southern North Sea
- There are suitable port facilities along the Norfolk coast

It is important to develop the southern North Sea, to grow industries like renewable energy that bring local and national benefits



75% of those who responded at/ following the October 2016 Drop-ins agree it's important to develop the Southern North Sea for renewable energy production.

"Helps bring jobs, money etc into the area."

For more local views, please review our Summary and Full Reports of the October 2016 Drop-ins.

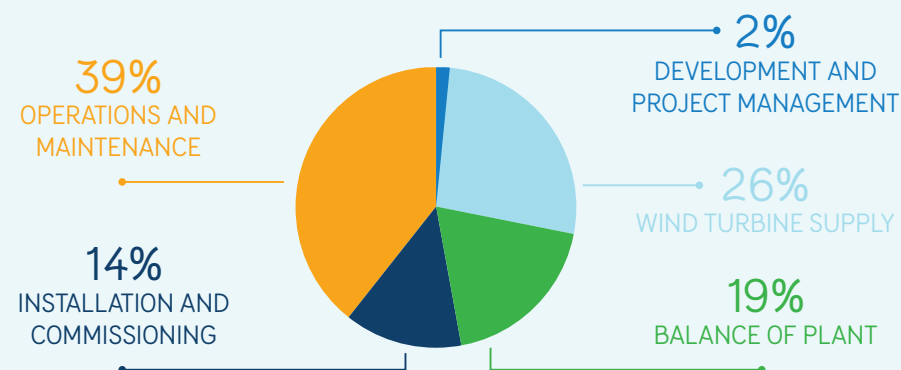
Why two projects?

Together, Norfolk Vanguard and Norfolk Boreas will have a combined installed capacity of 3.6GW. This represents 10% of UK household demand² and is three times greater than the planned power production of Sizewell B.

In our experience, developing adjacent or clustered projects in sequence aids the delivery of low cost renewable energy for the consumer, through:

- Shared infrastructure
- Improved knowledge of constructing and operating in the area
- Phased deployment of innovative, best-in-class technology

Typical offshore wind farm lifetime cost breakdown



The pie-chart highlights how important it is to combine elements of the operations and maintenance, and the supporting components and systems other than the wind turbine generators themselves (balance of plant) in helping to bring down the cost of renewables, and therefore the cost of energy. <http://offshorewind.works/>

Developing projects together helps the local workforce and supply chain realise opportunities.

Developing projects together allows for an efficient consultation process, helping communities and other stakeholders input into the best possible project designs.

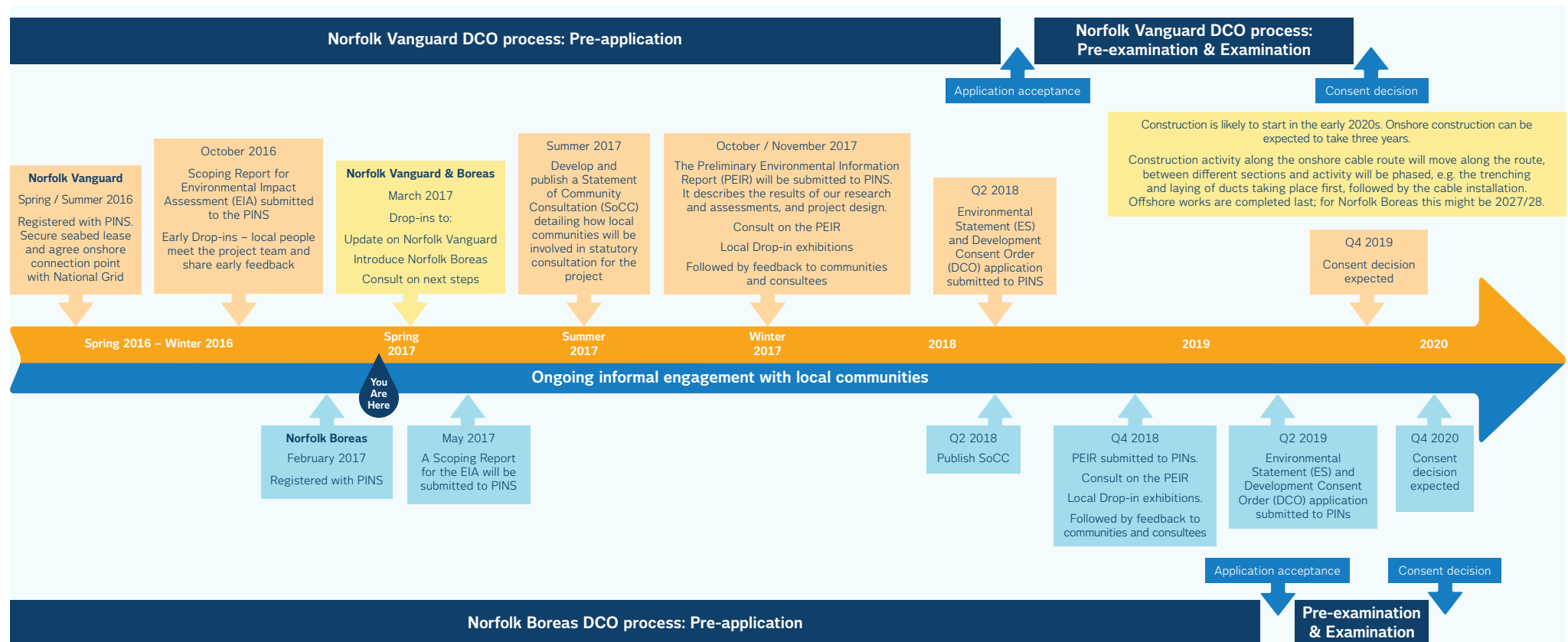
²The projects together will provide the energy requirements of 2.6 million households. There were 26.4 million households in the UK in 2013. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/bulletins/familiesandhouseholds/2013-10-31>



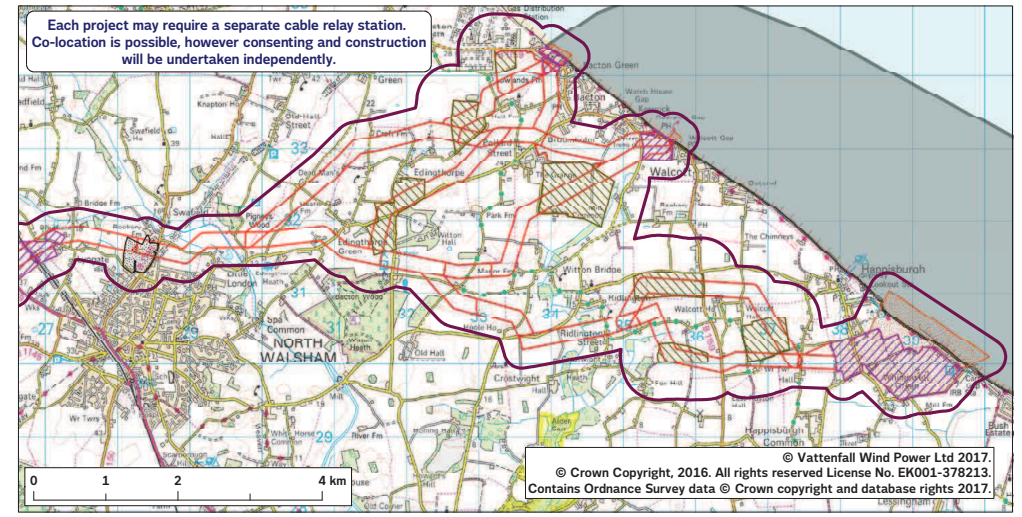
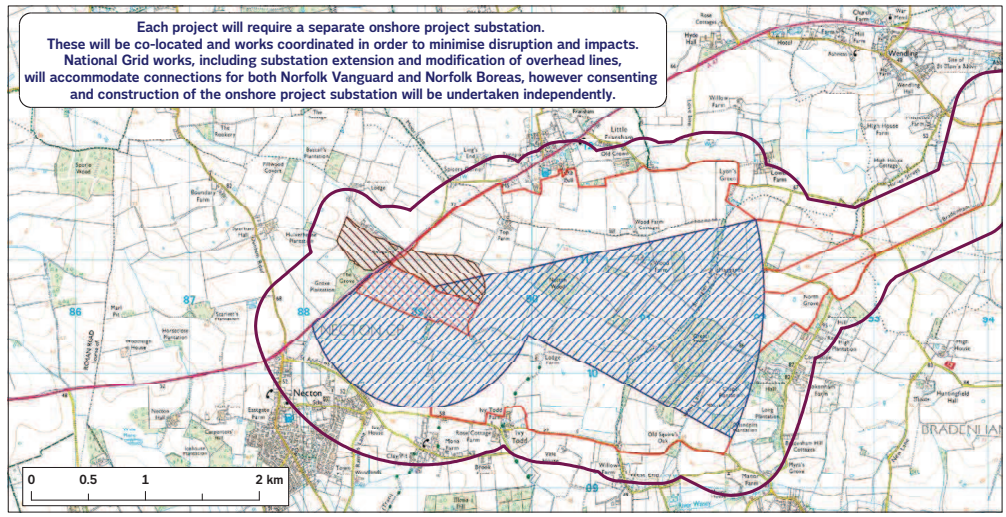
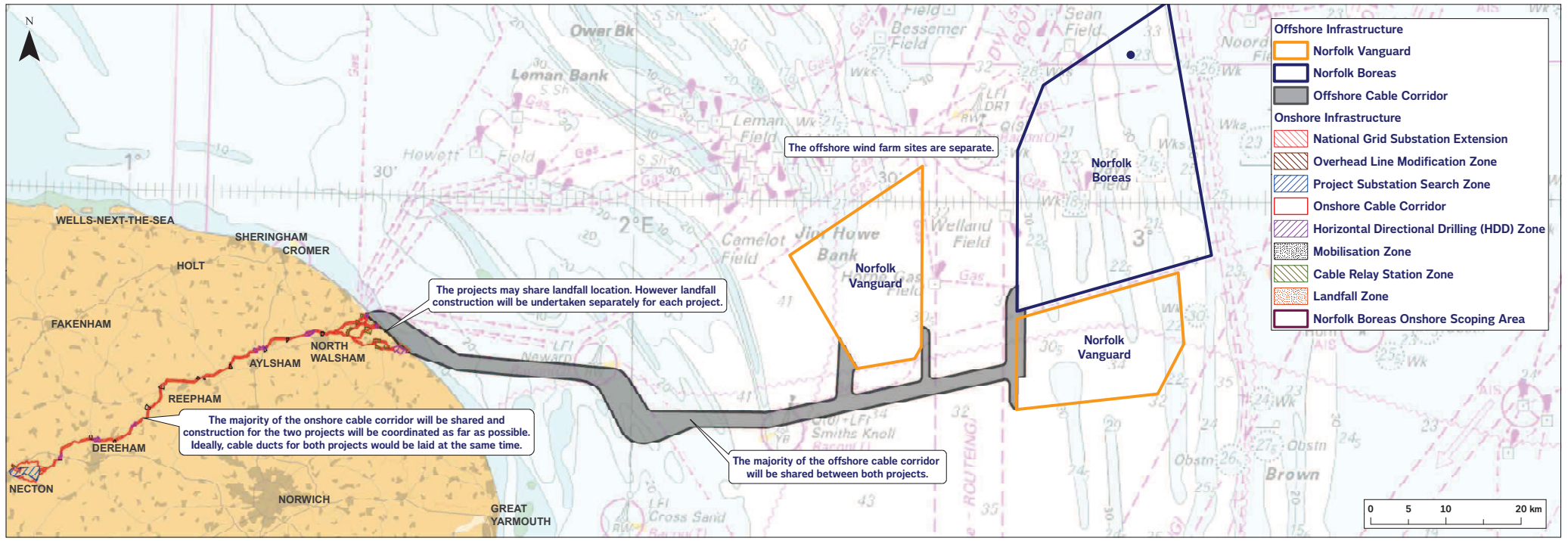
NORFOLK VANGUARD AND NORFOLK BOREAS ~ TWO SEPARATE NATIONALLY SIGNIFICANT INFRASTRUCTURE PROJECTS

Norfolk Vanguard and Norfolk Boreas are both classified as Nationally Significant Infrastructure Projects (NSIPs) under the Planning Act 2008. They will both need to submit separate applications for a Development Consent Order (DCO) to the Planning Inspectorate (PINS) in order to be built and operated.

Even though Norfolk Vanguard and Norfolk Boreas are subject to separate DCO applications, the projects are being developed together in order to reduce overall impacts and maximise local benefits. As part of the strategic approach for development, we are looking to optimise shared locations of infrastructure where practical, which is a key consideration of the site selection process.



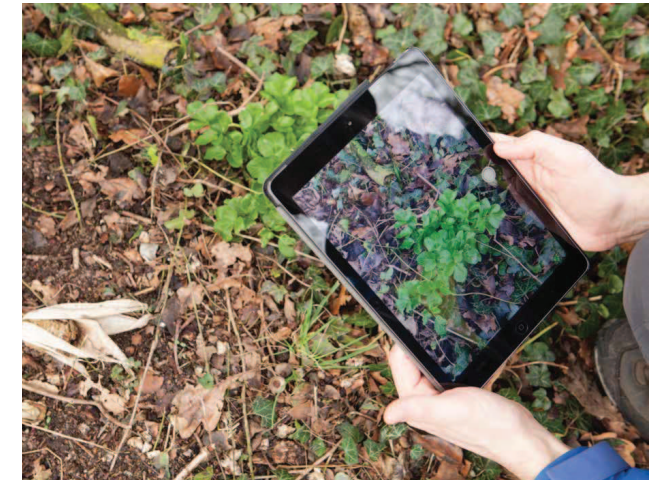
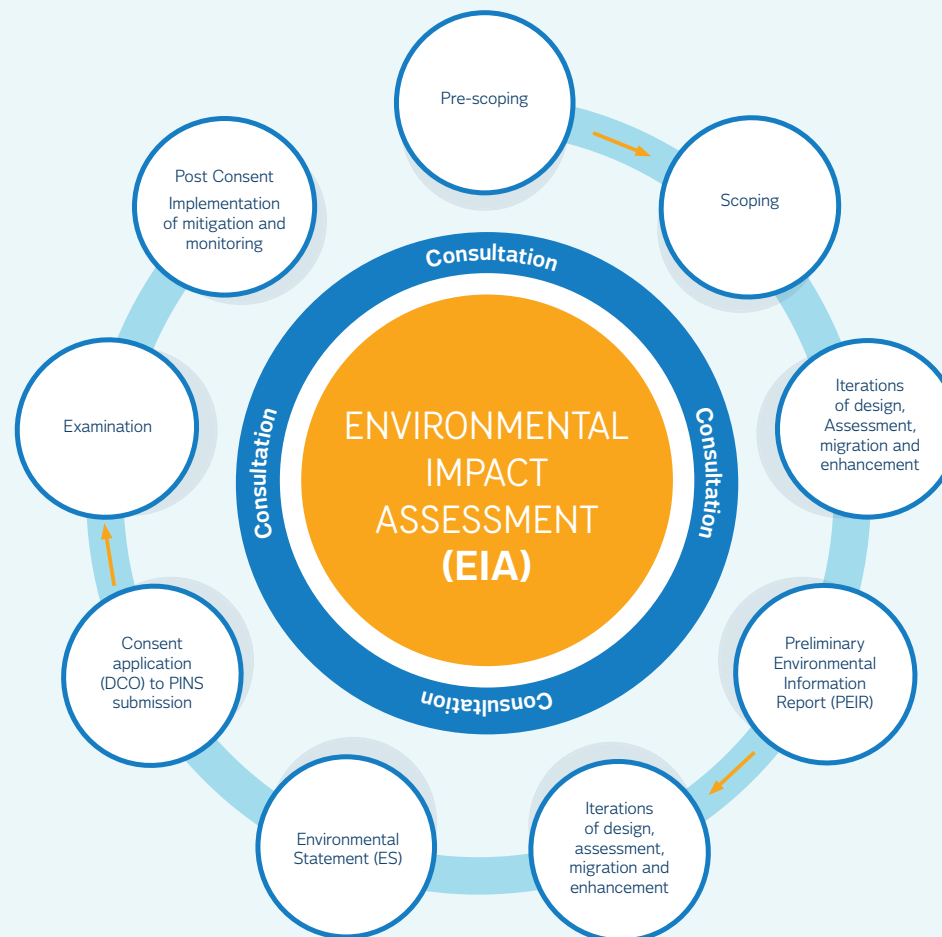
HOW THE PROJECTS WORK TOGETHER



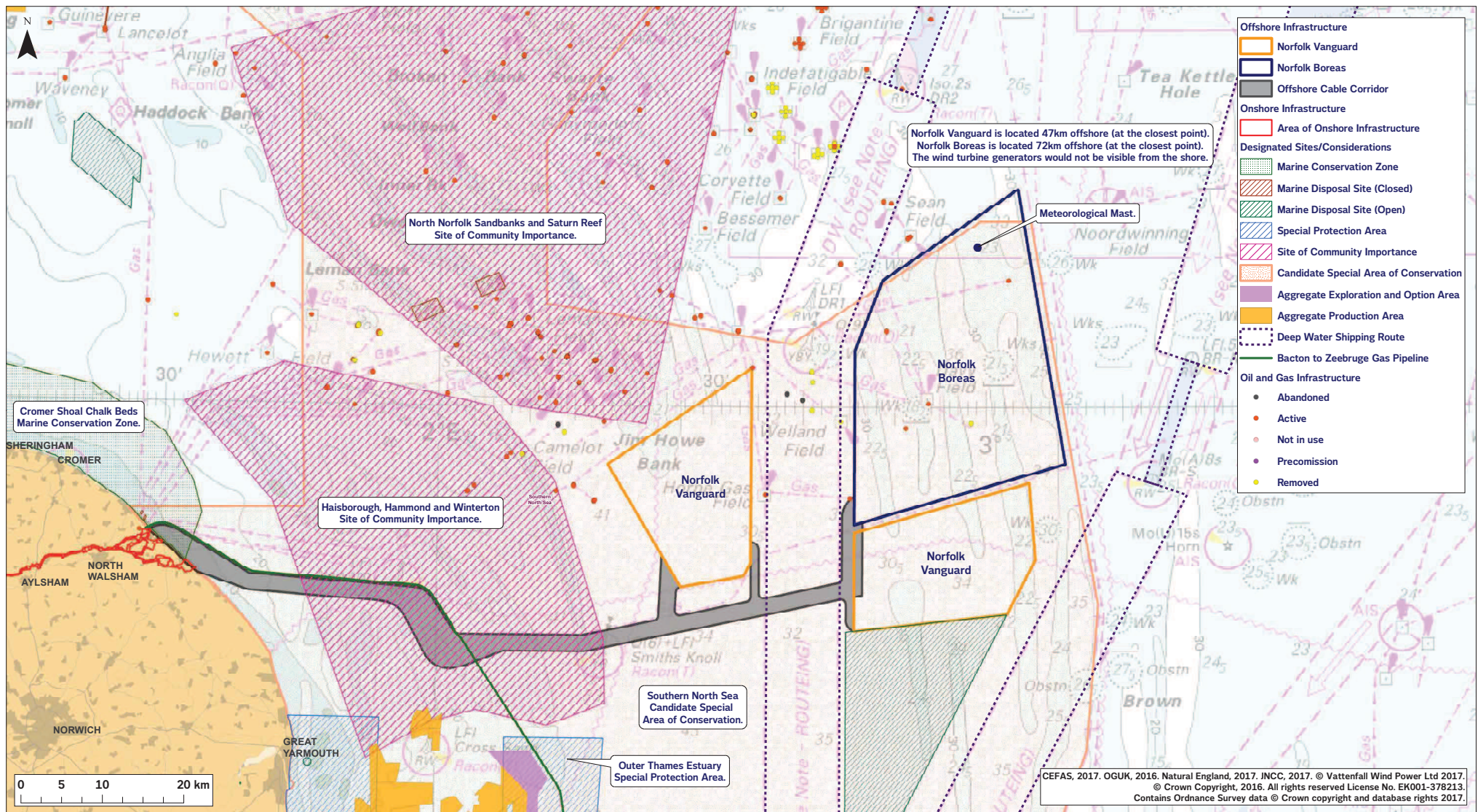
WHAT PART DOES ENVIRONMENTAL IMPACT ASSESSMENT PLAY IN DELIVERING THE BEST POSSIBLE PROJECTS?

The Environmental Impact Assessment (EIA) is a systematic process, which ensures the project considers all environmental sensitivities and stakeholder feedback. The EIA aims to ensure the design of the projects consider the following:

- Avoiding negative impacts
- Minimising potential impacts
- Maximising benefits
- Identifying further areas for opportunities
- Meeting the requirements of the Planning Act 2008 and associated EIA Regulations



WHERE ARE NORFOLK VANGUARD AND NORFOLK BOREAS OFFSHORE WIND FARMS?



OFFSHORE ~ HOW ARE WE ENHANCING OUR UNDERSTANDING?

And what is considered in our Environmental Impact Assessments.

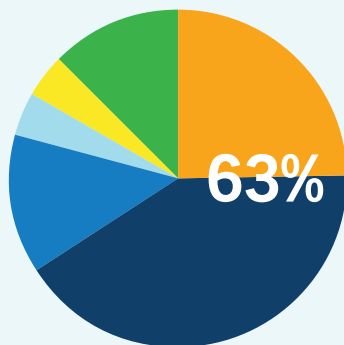
We have run 7,700 km of geophysical surveys over Norfolk Vanguard, taking 163 days. Similar work will be commissioned to enhance our understanding of the Norfolk Boreas site, starting in summer 2017.

The data from Norfolk Vanguard surveys will be available when we publish the Preliminary Environmental Impact Report towards the end of 2017.

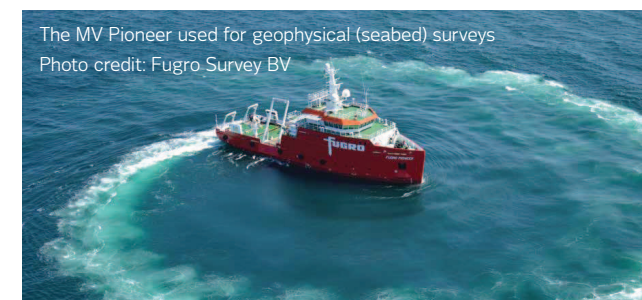
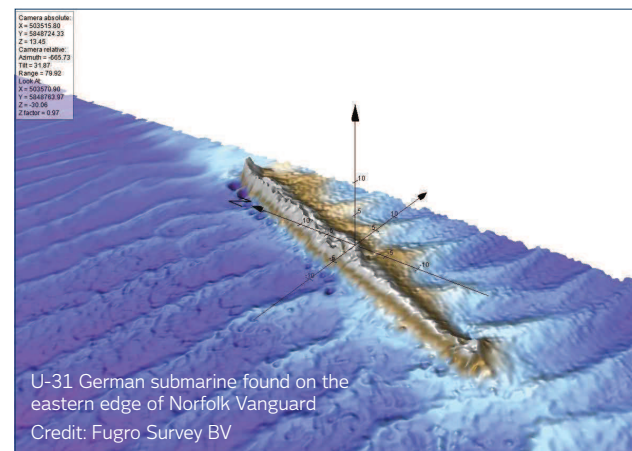
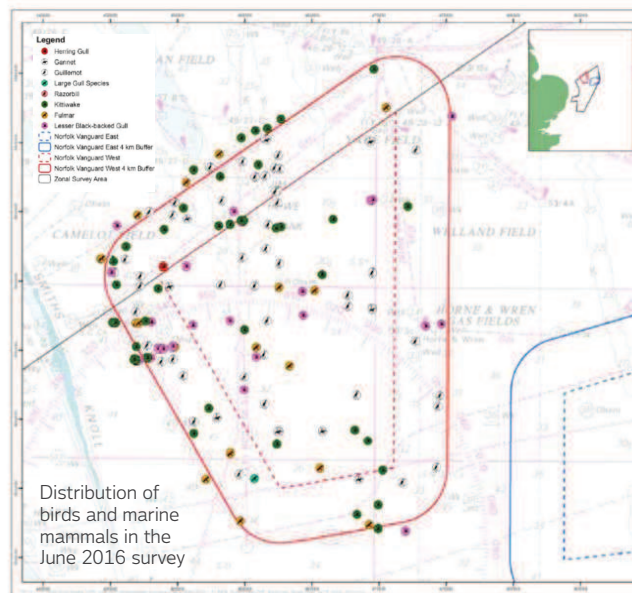
At the October 2016 Drop-ins **60%** and **63%** of those who responded felt that the correct combination of environmental, physical, technical, commercial and social factors are considered in the **onshore** and **offshore** site selection process respectively.

The correct combination of environmental, physical, technical, commercial and social factors are considered in the offshore site selection process

- 25% Strongly agree
- 38% Tend to agree
- 15% Neither agree or disagree
- 4% Tend to disagree
- 4% Strongly disagree
- 14% No response



Let us know today what more we can do to improve your understanding of the site selection process.



We are undertaking a range of environmental surveys offshore:

- Geophysical survey to understand the nature of the seabed
- Collection of core samples to access site geology. This data will also be used to identify archaeological material in the sites
- Collection of grab samples and underwater video to provide information on seabed habitats
- Shipping surveys to map traffic routes
- Aerial bird and marine mammals surveys

ONSHORE WORKS ~ HOW OUR PLANS ARE EVOLVING

We have refined our onshore search areas for the landfall location, cable relay station location, onshore cable corridor and onshore project substation location, based on feedback from statutory consultees and communities, desk-based research, technical, commercial and environmental considerations.

Our site selection process for all onshore infrastructure is guided by the following key criteria:

- Residential properties and sensitive areas (e.g. schools)
- Designated sites and protected species
- Important habitat, trees, ponds, agricultural ditches and hedgerows
- Landscape setting and viewpoints
- Utilisation of open agricultural land in flat terrain, and along field boundaries
- Existing land use
- Flood risk
- Archaeology and heritage assets
- Engineering requirements and feasibility
- Highway access
- Local services, roads and footpaths
- Crossings, e.g. road, river and rail
- Underground services e.g. gas pipelines / utilities
- Consultation and feedback

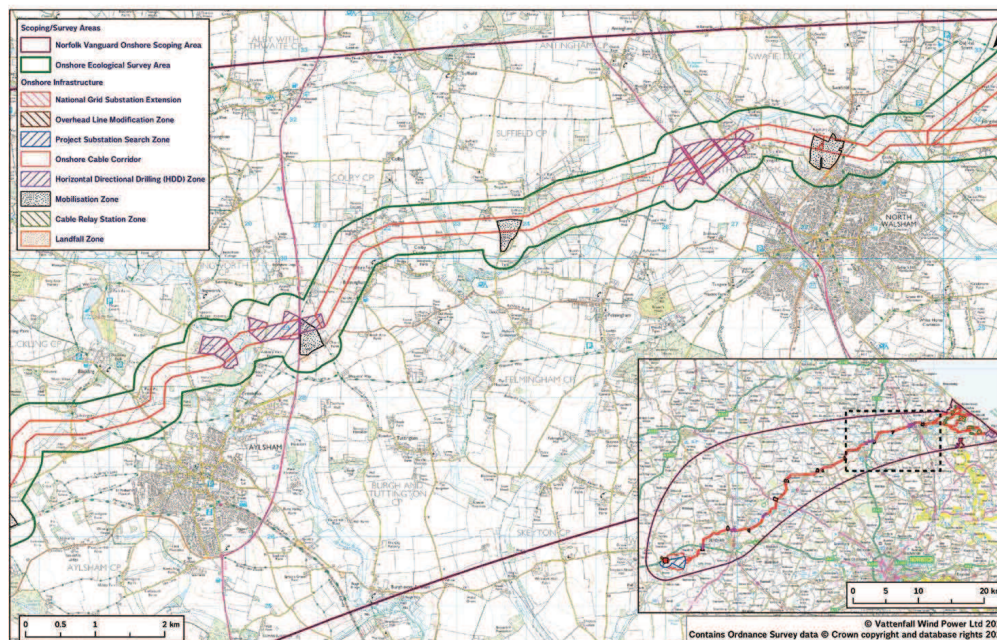
What comes next

Today you will see on various maps and models illustrating how our thinking is evolving and how we have taken community input into account. For example, an annotated map points to key factors influencing the siting of the 200m wide cable corridor we show today.

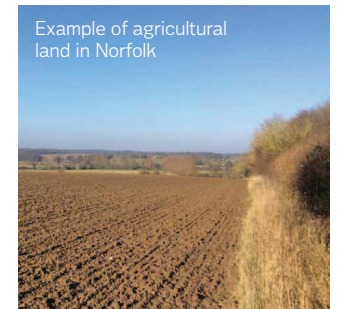
This width of corridor still allows scope for micro-siting around features identified during environmental survey work and consultation with landowners.

Onshore environmental surveys are ongoing. You may see ecologists noting habitats and species within the 700m ecological survey area during the next few months.

Your input is important in helping to define the best siting of onshore infrastructure required by Norfolk Vanguard and Norfolk Boreas.



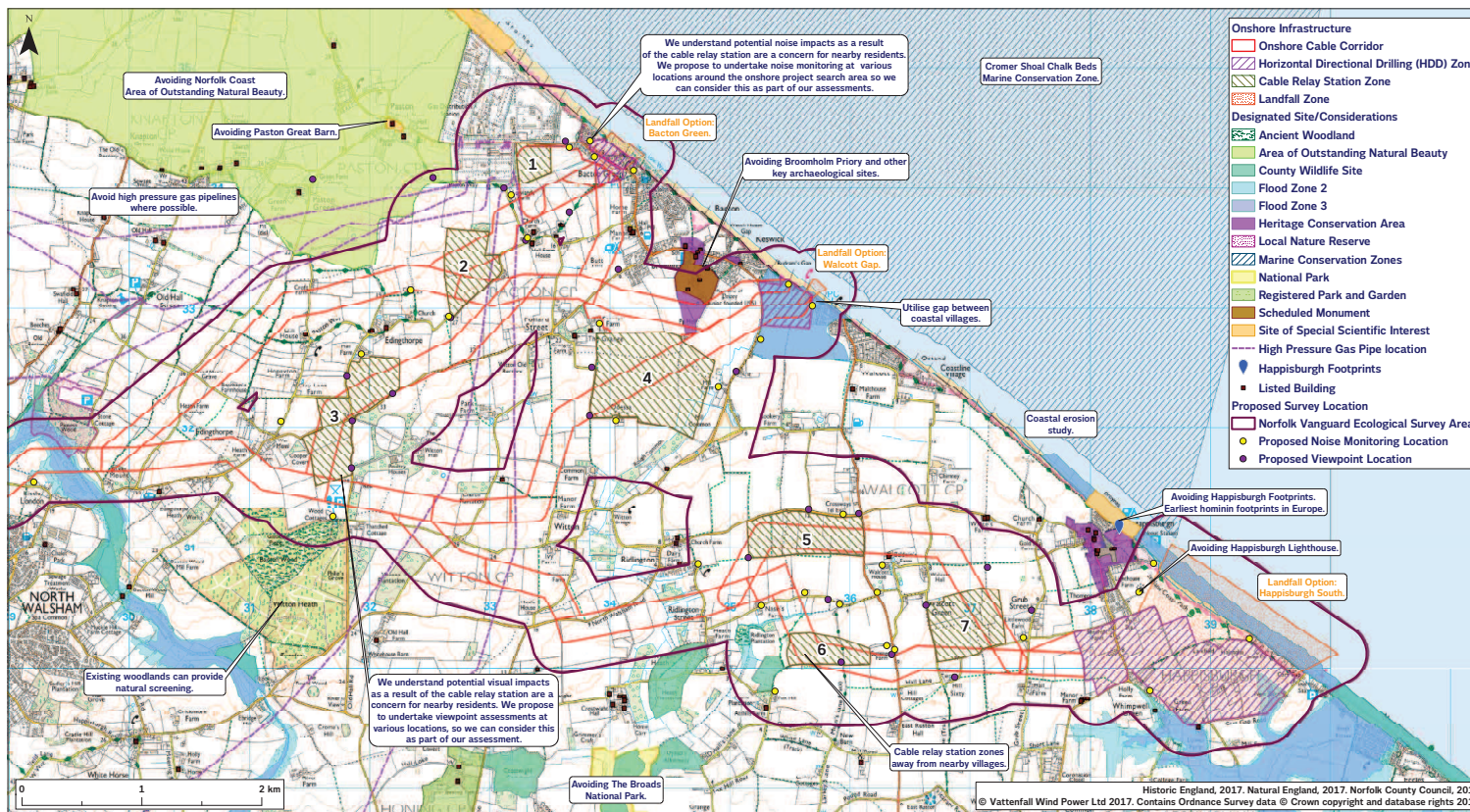
Example of agricultural land in Norfolk



Great crested newt

LANDFALL AND CABLE RELAY STATION LOCATIONS ~ HONING OUR UNDERSTANDING

Following the feedback received at the drop-in exhibitions in October 2016, we have revised the landfall and cable relay station search areas to the zones shown on the map below.



Please use the questionnaire to highlight any features you consider relevant within the refined landfall and cable relay station search areas.

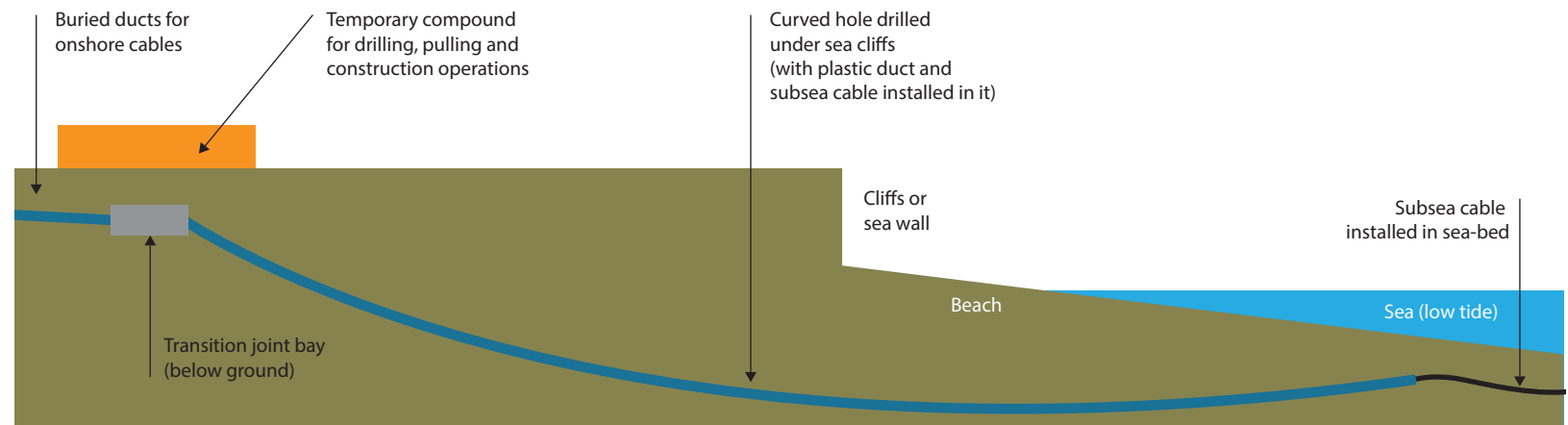
Next steps

We are undertaking studies and discussions with stakeholders to determine the best locations for the landfall and cable relay stations. In response to your feedback we are:

- Undertaking a coastal erosion study to understand the risks associated with this dynamic coastline
- Engaging with Natural England over potential impacts of bringing cables ashore in the Marine Conservation Zone (MCZ)
- Holding early discussions with the Natural History Museum and the British Museum to learn more about the likelihood and impact of unearthing local archaeological finds
- Engaging with landowners, including Bacton Gas Terminal operators to discuss infrastructure siting
- In the spring / summer we will be undertaking surveys - collecting data on background noise, taking photos from sensitive viewpoints and undertaking more ecological surveys
- Undertaking ecology surveys, noise monitoring, view point assessments, traffic studies, and other surveys to help identify the best location for the cable relay stations.

BRINGING POWER ASHORE AT LANDFALL ~ HOW IS THIS ACHIEVED?

At the landfall, we will use a trenchless method – known as Horizontal Directional Drilling (HDD) – to install a series of cable ducts in the ground below the beach and the sea wall or cliffs. This will involve setting up a temporary compound where the drilling operations will take place. Drilling operations will be completed within two to nine months, depending on the technology we deploy (HVAC or HVDC) to transmit power.



Sequence of operations:

1	2	3	4	5	6	7
Establish temporary compound onshore	Drill pilot hole under cliffs, then enlarge to required diameter	Pull plastic duct into hole (from seaward end)	Install or construct transition joint bay (TJB)	Clear temporary compound; reinstate land	Pull end of subsea cable through duct, to TJB	Join sub-sea cable to land cables within transition joint bay



Horizontal directional drilling unit (HDD), showing the drill rig and drilling pipes.



Horizontal directional drilling outfall. The image shows preparations on the beach to excavate the HDD exit.

These images show HDD significantly closer to the shoreline than we consider appropriate for Norfolk Vanguard and Norfolk Boreas.



Transition joint bay. This is the onshore cable running up to the transition joint bay (concrete floor). The next step will be pulling the offshore cable into this location for the joint to be made. This arrangement is a concrete floor only design, with temporary shuttering to the sides. The alternative is a fully concreted box with concrete sides.

LAYOUT & DIMENSIONS OF A CABLE RELAY STATION

The cable relay station will comprise a fenced compound containing electrical plant (reactors and switchgear). There will also be a control building next to the compound.

- The compound dimensions are expected to be 135m x 75m.
- The maximum height of the equipment is expected to be 8m.

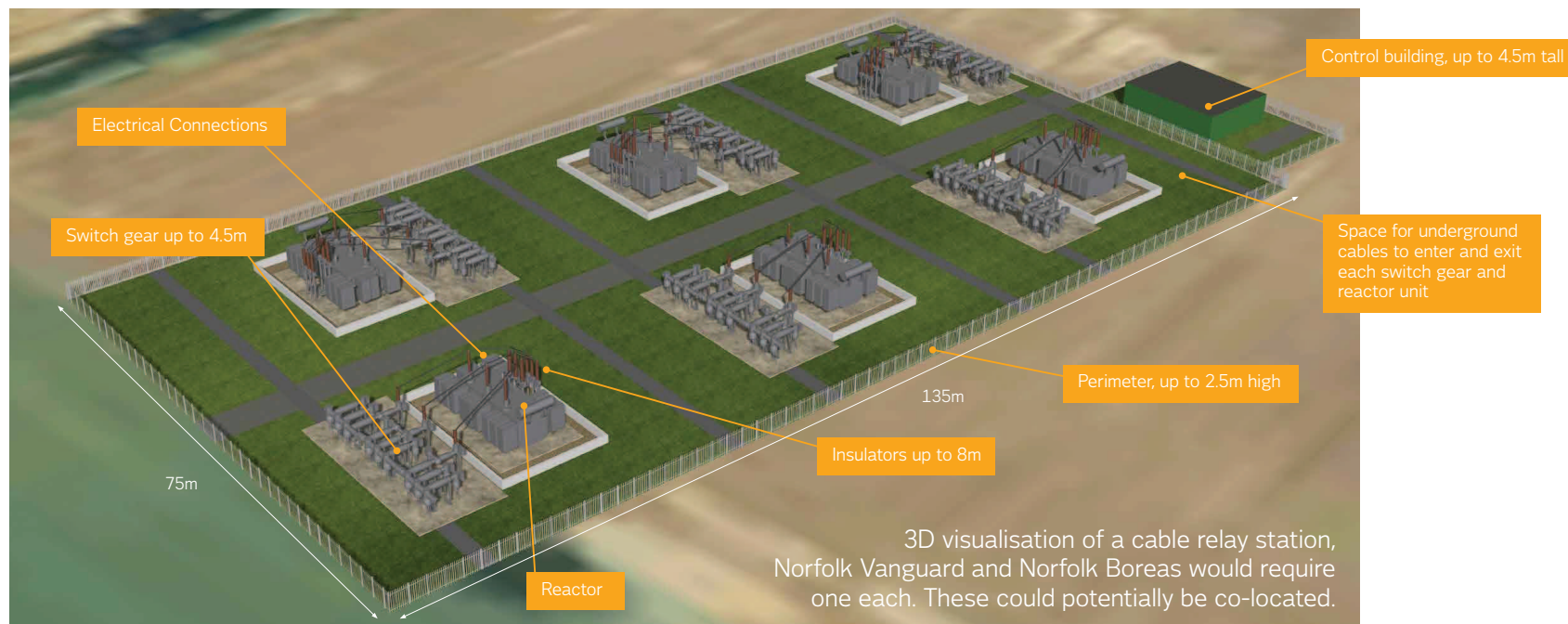
The cable relay station needs to be located on the onshore underground cable route, within a few kilometers of landfall. We are planning to select

a preferred site in the next few months, after talking and listening to local residents, landowners and other stakeholders. To provide some focus for these discussions, we have already identified a number of alternative 'search zones'.

Construction of the cable relay station will involve groundworks to clear and prepare the site, and to establish suitable foundations for the electrical plant and the control building. These groundworks, together with the construction of the building and the perimeter fence, will take around 12 months.

The electrical plant will be delivered and installed at the site in two or three stages, at intervals of 12 months or so. On each occasion, there will be a short period of activity at the site, to bring the new equipment into commission. This activity is expected to last for 2-3 months on each occasion.

During operation, the site will normally be unstaffed. Occasional visits will be made to carry out inspection and maintenance activities.



THE UNDERGROUND CABLE CORRIDOR

We have revised the cable corridor search area shown during the October drop-ins, to a 200m wide cable corridor. The general design criteria for identification of the onshore cable route is to avoid features such as properties, woodland and environmentally designated sites, to minimise the number of crossings of linear features and to minimise the overall route length.

Two hundred metres is more than sufficient to accommodate cables for both projects. It also allows for micro-siting around sensitive features identified during surveys and consultation.

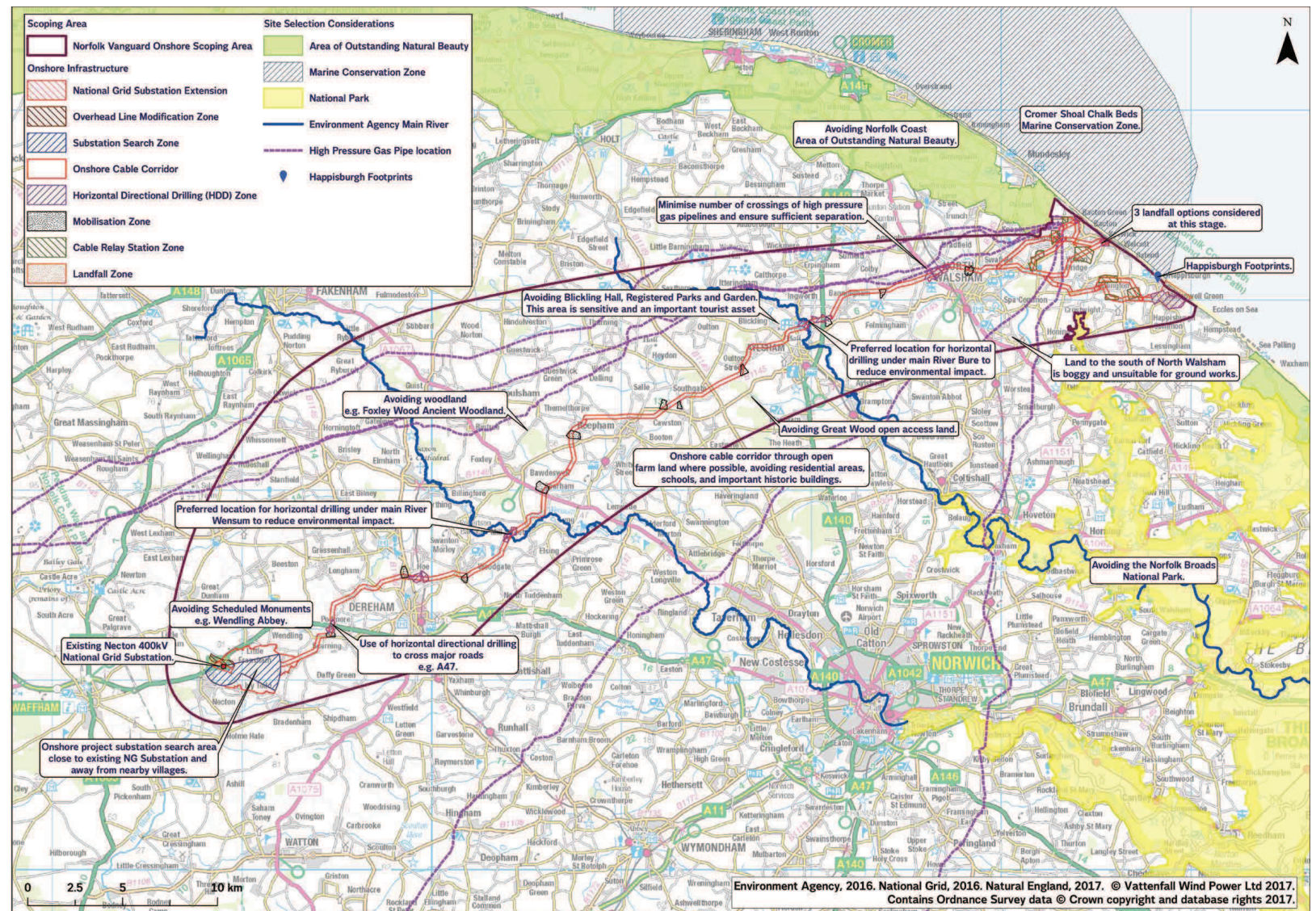
Ongoing site investigations and your feedback today will help us refine the cable corridor further, prior to the development consent order (DCO) application for Norfolk Vanguard in 2018.

Next steps

We will be talking to land owners.

Over the coming months we will be undertaking environmental surveys.

Please highlight any features you consider relevant within the refined cable corridor.



THE UNDERGROUND CABLE CORRIDOR

The onshore cable route will extend from the landfill site to the onshore substation, close to Necton. The proposed route is roughly 60km in length, and is largely on agricultural land.

The cables will be installed in plastic ducts, which will be buried to a depth of roughly 1.2m. Installation of the ducts will generally be an open-cut trenching method. As such, this process will involve a temporary disruption to normal agricultural activities. However, the land will be reinstated and returned to normal use once the ducts are installed. We will deploy horizontal directional drilling to avoid sensitive aspects such as rivers

We want to minimise the long-term impact of the installation process on the affected land.

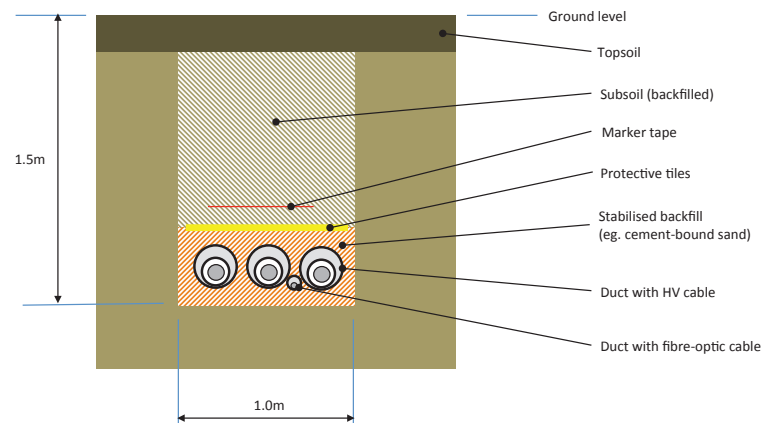
This will be achieved through careful planning and management of the installation works, together with close attention to issues such as drainage and soil management.

We will be engaging with landowners and other interested parties over the next few months, to discuss our proposed construction methods and how it might be improved.

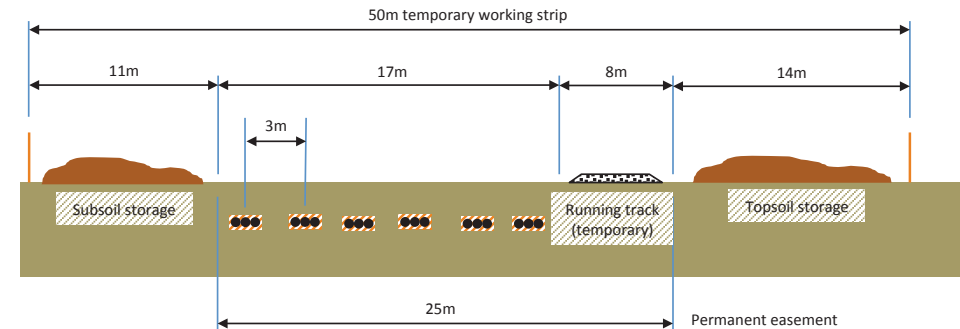
After all of the cable ducts are installed, the cables will be delivered to site on reels, in lengths of 800-1000m. The cables will be pulled into the ducts from openings (joint pits) at selected locations along the cable route. Vehicle access to these locations will be needed, together with a small working area at each location (the openings will normally be located at field boundaries or other suitable points).

Aside from these requirements, the cable pulling operations will not require further access to or disruption of the land.

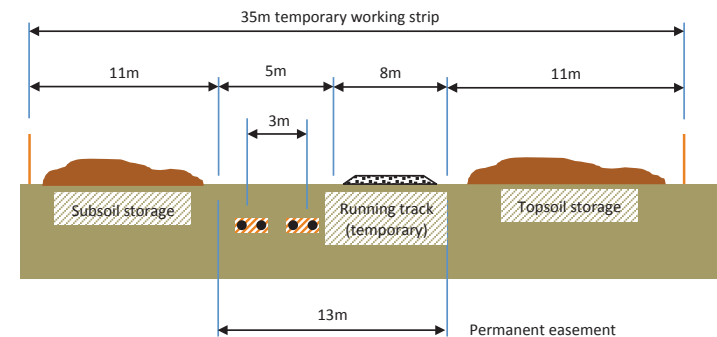
Section of single cable trench (HVAC)



Cable easement (Norfolk Vanguard only) – HVAC solution



Cable easement (Norfolk Vanguard only) – HVDC solution



IDENTIFYING THE BEST SUBSTATION LOCATION

We have revised the substation zone from the 3km circle around the existing 400kV National Grid Necton substation, to the 'keyhole' area. This revised zone encompasses a number of potential footprints large enough to accommodate the onshore project substation infrastructure for both Norfolk Vanguard and Norfolk Boreas. The feedback we received during the drop-in exhibitions in October 2016 provided a strong steer:

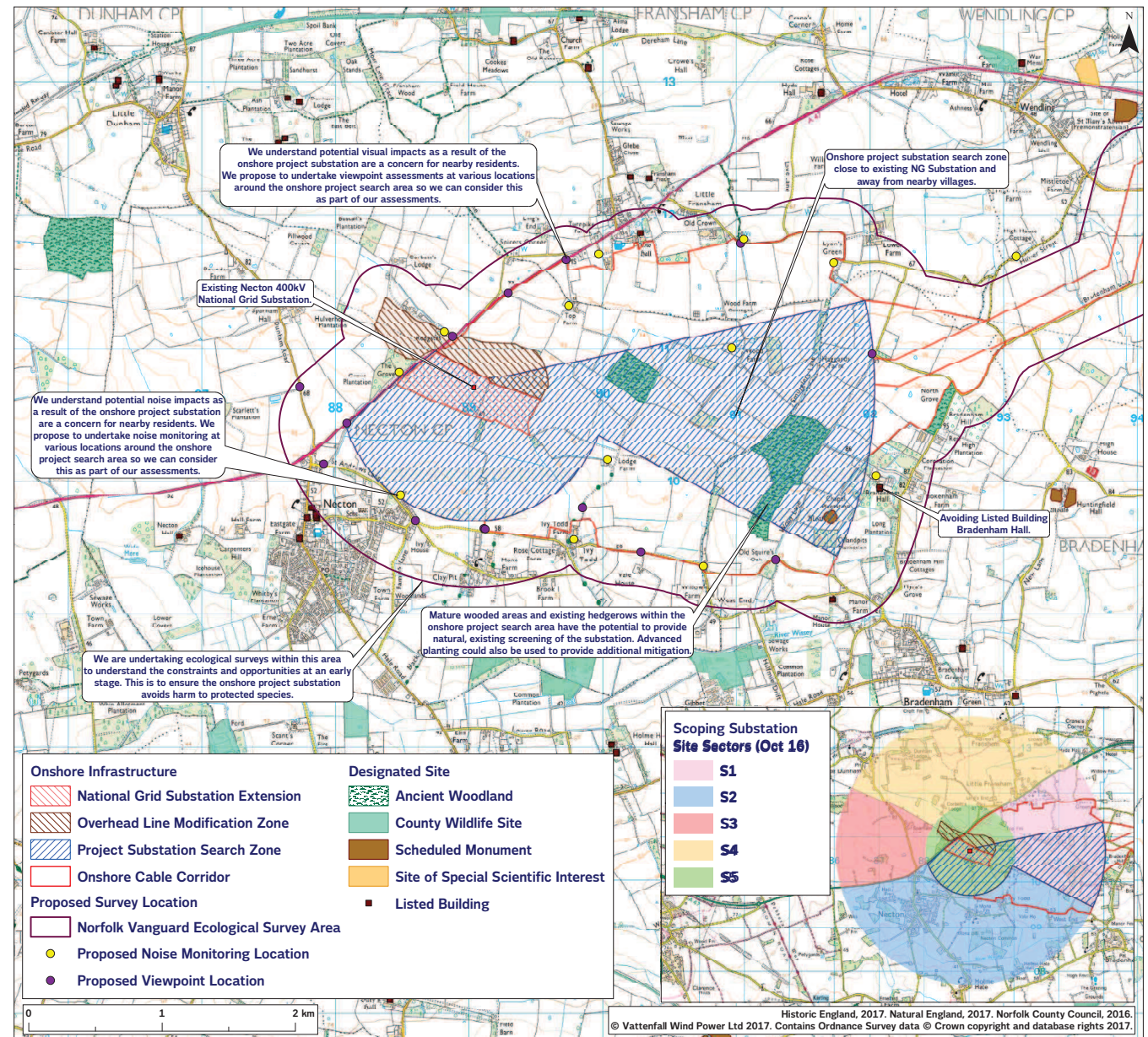
- To locate the project substations as close to the existing 400kV Necton substation, with the advantage of keeping industrial infrastructure together
- To locate the project substations towards the east, with existing wooded areas providing natural screening

Next steps

We are in discussion with landowners and stakeholders and undertaking site surveys to help determine the best location for the Norfolk Vanguard and Norfolk Boreas substations.

During the next few weeks we will be collecting data on background noise, taking photos from sensitive viewpoints and undertaking more ecological surveys to consider as part of our site selection and EIA. We will also look at access and traffic.

Please share your local knowledge with us, using the questionnaire so that we can identify the most appropriate site for the project substations.



PROJECT SUBSTATIONS

Project Substations will comprise a large, fenced compound containing high-voltage electrical plant and buildings.

- Each compound dimension is expected to be 300m x 250m.
- The maximum height of the buildings is expected to be 10m for the HVAC option, or up to 25m for the HVDC option.

The physical appearance of the substation will depend on the final choice of technology for the offshore transmission system.

In the case of an HVAC solution the compound area will mostly be occupied by outdoor equipment such as transformers and reactors.

In the case of a HVDC solution the substation will comprise two similar HVDC converter stations. Each converter station will have an outdoor AC switchyard and a large converter building.

Construction of the substation will involve groundworks to clear and prepare the site, and to establish suitable foundations for the electrical plant and the control building. These groundworks, together with the construction of the building and the perimeter fence, will take around 24 months.

The electrical plant will be delivered and installed at the site in two or three stages, at intervals of 12 months or so.

On each occasion, there will be a short period of activity at the site, to bring the new equipment into commission. This activity is expected last for 2-3 months on each occasion.

During operation, the site will normally be unstaffed. Occasional visits will be made to carry out inspection and maintenance activities.

3D visualisation of project substation (HVAC option)



3D visualisation of project substation (HVDC option)



LAND AND LANDOWNER CONTACT

Following feedback received since we published the Norfolk Vanguard Scoping Report, and our October 2016 drop-ins, we have refined our cable corridor and landfall, cable relay station, and onshore project substation zones, as displayed on previous boards.

Chartered Surveyors Ardent, are writing to those identified as holding an interest in land within these refined areas on Vattenfall's behalf. The purpose is to:

- Help with Land Referencing, and our understanding of land ownership and occupation
- Ensure all parties with an interest in the preferred cable corridor and other onshore infrastructure zones can be included in consultation and discussions
- Ensure relevant information can be noted in a Book of Reference, to be submitted as part of our Development Consent Applications.

Already, local land agent – Bob McCarthy of Consent Solutions Ltd – has made early contact with some landowners to discuss environmental survey access and to begin early discussions on site specific interests and requirements.

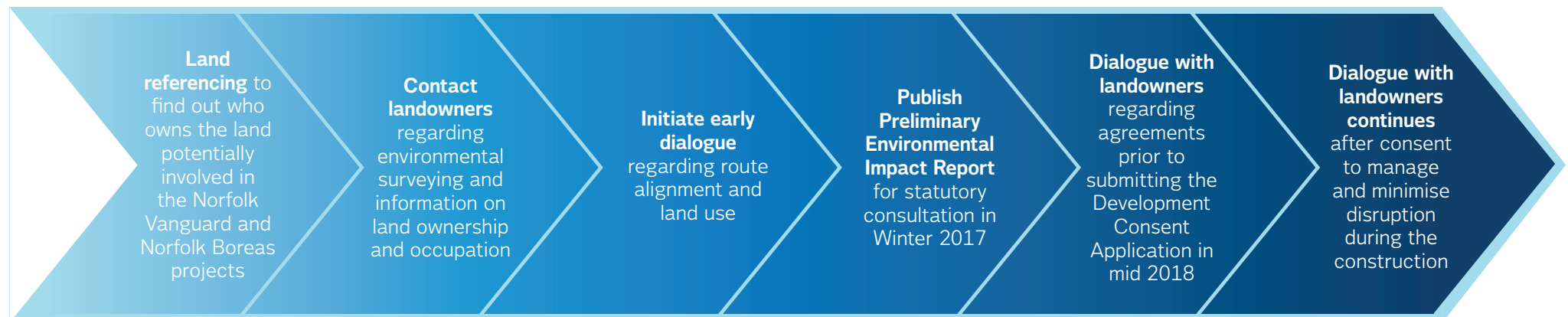
Ongoing dialogue and consultation with landowners regarding route alignment and land use continues through this year and beyond. We will be holding introductory events for landowners in April/May to start our dialogue with you, but please contact Bob McCarthy if you would like a meeting on site to discuss.

Key Landowner contact:
Bob McCarthy
M: 07787 783517
T: 01223 859221
E: vattenfallinnorfolk@consentsolutions.com



Section of cable easement with topsoil stripped prior to trenching operations during construction of Vattenfall's Ray wind farm, Northumberland.
Note: topsoil storage mound (on left) to safeguard soil quality and temporary fencing to delineate working area.

Timeline for dialogue with Landowners



WHAT KIND OF LOCAL OPPORTUNITIES & BENEFITS ARE IMPORTANT TO YOU?

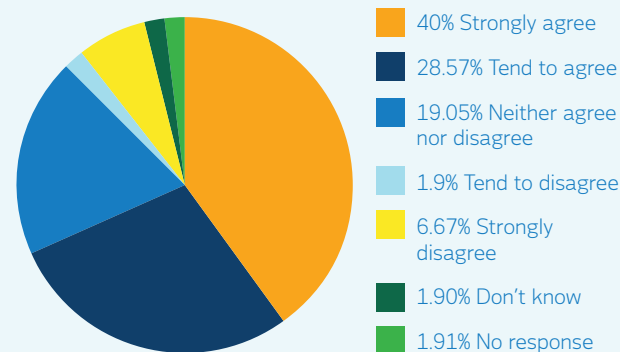
During the October 2016 drop-ins we asked what local opportunities you were keen to explore in relation to Vattenfall's investment in Norfolk.

The answers we received were varied, and included suggestions that could perhaps be undertaken alongside onshore works, like improving local communications, access or road upgrades, enhancing archaeological understanding, and contributing to the resilience of coastal communities. Many expressed hopes around opportunities for business, jobs, up-skilling and education. Below, are examples of the comments we received:

- "Opportunity to understand archaeological remains along the whole route"
- "Possibility of coastal protection at Happisburgh"
- "There is every likelihood that the project will cross national and local trails and public rights of way (and permissive paths). This is an opportunity for Vattenfall, local communities and the Trails Department of County Council to work together to provide improvements."
- "If there was a way to improve coverage of highspeed broadband in area E and SE of North Walsham, it would be widely welcomed as this area has very poor coverage/speed"
- "Apprenticeships and training opportunities – will the company be working with local colleges to inform and enhance training for the future for local people to engage in the industry"
- "Some maintenance jobs will remain after construction"
- "All parts made in UK"

Of those who replied to our questionnaire, over 70% of those who responded agreed that placing Norfolk at the heart of the UK's transition to the low carbon economy is important to Norfolk and East Anglia.

Placing Norfolk at the heart of the UK's transition to low-carbon economy is important for Norfolk and East Anglia:



"I see the UK becoming a world leader on offshore renewables. I also envisage that offshore renewables will replace much of the oil and gas industry."



Next Steps

Over the coming months and years, we'd like to work with you to develop local opportunities. Some ideas you raised, we're looking into already.

For example, we envisage that both Norfolk Vanguard and Norfolk Boreas would each require up to 75 skilled operations and maintenance team members, and approximately five to ten site managers per project over their 20 plus years operating life.

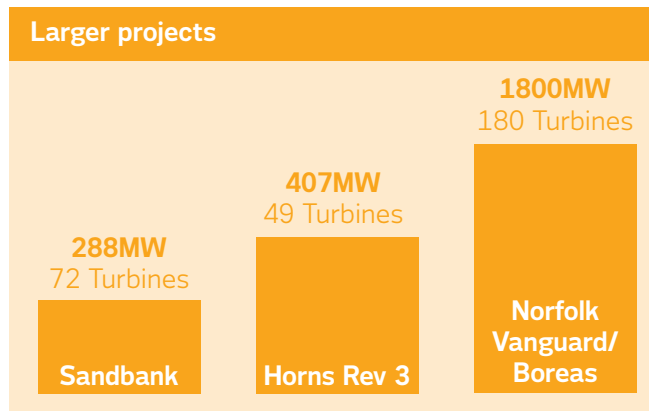
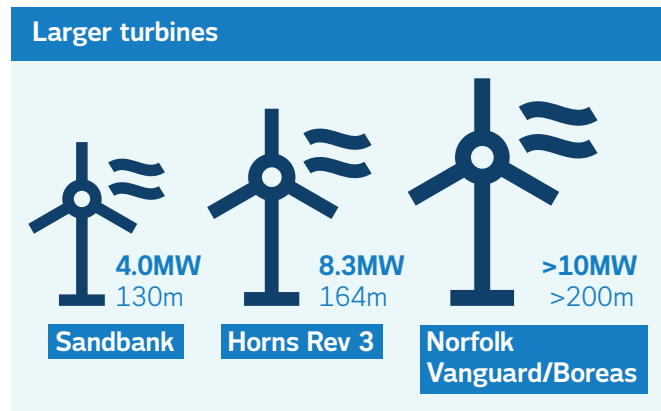
There is more information on the following boards. **Please talk to staff today, and join this conversation by adding new ideas, opportunities and benefits or expanding on ideas already mentioned.**

OFFSHORE WIND: AN INDUSTRY THAT'S DEVELOPING FAST

The wind industry is a truly international industry that relies on a high degree of collaboration between organisations and individuals. Things are evolving quickly, spurred on by the digital revolution and big data, but also technical innovation.

 The European offshore deployment centre is a pioneering wind test and demo facility developed by Vattenfall. Visit; <https://corporate.vattenfall.co.uk/projects/wind-energy-projects/european-offshore-wind-deployment-centre/>

The cost of offshore wind is coming down – drivers include:



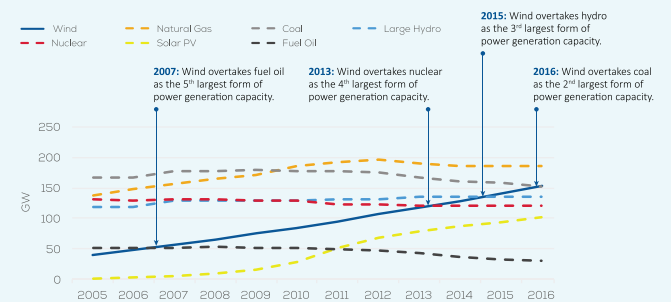
An effective supply of home-grown, low-carbon energy

Offshore wind is a major growth area with the potential to support the UK's move to reducing carbon emissions. The UK has more installed offshore wind capacity than anywhere in the world, and levels of offshore compared to onshore wind production here are high. Our relatively shallow waters, high wind speeds and leadership with respect to offshore wind deployment mean we are well placed to continue this growth and support a sustainable supply chain.

You can see how much wind power contributes to the UK and other countries' daily energy requirements here: <https://windeurope.org/about-wind/daily-wind/>

Europe installed 12.5 GW of gross additional wind capacity in 2016. With a total installed capacity of 153.7 GW, wind energy now overtakes coal as the second largest form of power generation capacity in Europe.

Cumulative power capacity in the European Union 2005-2016



SKILLS AND JOBS FOR THE FUTURE

Participants at the October 2016 drop-ins highlighted local interest in the work and skills opportunities associated with investments like Norfolk Vanguard and Norfolk Boreas.

In response we provide a little more information on the types of opportunities that local young people, workers and companies can pursue.

Varied Roles

Career opportunities within offshore wind development, construction and operation are highly varied and include

- Project managers for each phase of the project
- Civil engineers
- HSE administrators
- Electrical package managers
- Wind turbine service technicians
- Electrical engineers
- Contracts managers
- Media and communications officers
- Commercial managers, lawyers, etc.



Explore working with Vattenfall
<http://bit.ly/vattenfallcareers>



Meet an archaeologist who has worked on one of our projects
<http://bit.ly/vfarchaeology>

When you add in the supply chain businesses that contribute to the development of a wind farm, the opportunities are even more diverse, for your example:

- Ecologists
- Archaeologists
- Land owner liaison officers
- Onshore civil engineers and contractors
- Service vessel crews and skippers
- Accommodation providers.....



Students & graduate opportunities



Fancy an insight into Vattenfall's management? Meet Andreas Regnell and Magnus Hall here.

Vattenfall International Trainee Programme offers enthusiastic graduates a broad experience of Vattenfall across the countries it operates in. The graduate then focuses in on their area of interest – with support.



Margot and Stefan tell you more about their experiences here.

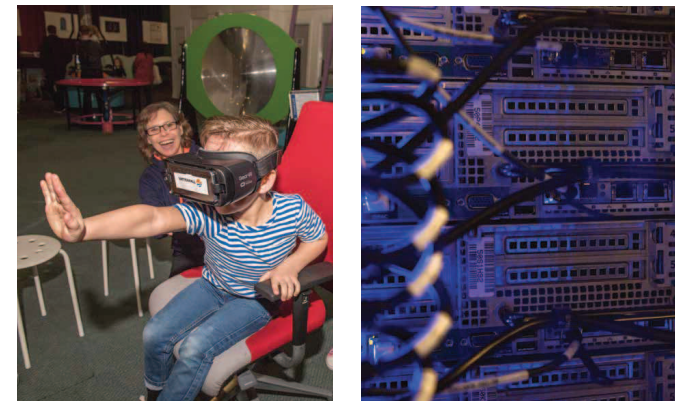
In addition to the graduate programme there are internships, thesis project opportunities and schools programmes.

Education and Schools

Young people and schools have an opportunity to get involved with all of our projects.



<http://bit.ly/vfworkingwithschools>





NEXT STEPS

Thank you for coming today and sharing your feedback.

Your input will help make Norfolk Vanguard and Norfolk Boreas the best projects they can be and ensure opportunities to create local benefits are recognised and realised.






We hope today has been useful and informative. We will now review all the feedback we've received from you alongside the feedback we will get from technical and local stakeholders, landowners and others.

This information will be used to refine the project designs of both Norfolk Vanguard and Norfolk Boreas, and inform our decision making on the onshore works.

Please leave contact details as we will write to you with a summary of all the feedback we've received and will keep you up to date as the projects progress.

The next drop-in exhibitions on this scale will be the Norfolk Vanguard statutory consultation events, towards the end of this year.



You can get in touch in a number of ways:

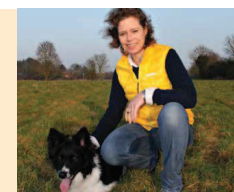
-  Give us your feedback today on the questionnaire.
-  You can write to us at **Norfolk Vanguard and Norfolk Boreas, The Union Building, 51-59 Rose Lane, Norwich, Norfolk, NR1 1BY**
-  All of the information here today is available on our website. You can register your interest in the project via **norfolkvanguard.vattenfall.co.uk** to receive project news.
-  Email us **info@norfolkvanguard.co.uk**
-  Phone us: **01603 567995**

By signing up you will receive the interim consultation report from these events and other project news

All responses will feed into the consultation and design process for both Norfolk Vanguard and Norfolk Boreas projects.

Contact our Local Liaison Officer and Skills & Training Champion:

-  Email Sue: **susan.falch-lovesey@vattenfall.com**
-  Phone Sue: **07817 544235**



The Project Substations

This revised zone encompasses a number of potential footprints large enough to accommodate the onshore project substation infrastructure for both Norfolk Vanguard and Norfolk Boreas.

Following the October drop-in events, the feedback encouraged us to seek to locate the project substations either:

- as close to the existing 400kV Necton NG substation as possible, or
- towards the east, with existing wooded areas affording natural screening.

Q6 What aspects or features, do you think need to be taken into account when choosing the best location for project substations? Do you wish to highlight any factor(s) that should influence decision making above other considerations?

What kind of local opportunities and benefits are important to you?

During the October 2016 drop-ins we asked what local opportunities you were keen to explore in relation to Vattenfall's investment in Norfolk. The answers received were varied, and included suggestions that could perhaps be undertaken alongside onshore works, like improving local communications, access or road upgrades, enhancing archaeological understanding, and contributing to the resilience of coastal communities.

Many expressed hopes around opportunities for business, jobs, up-skilling and education.

Q7a What ideas do you have, and why are they important?

Q7b What groups or organisations do you think we should include in future discussions on these themes?

Q8 Any other comments, ideas or questions about Norfolk Vanguard and / or Norfolk Boreas?

Thank you

Thank you for completing this form, and for your attendance at the Drop-in Exhibition. If you want to write more, please ask for a continuation sheet. If you have provided contact details, we will send you a summary report of these events. A full report will be published on our website in due course.

We look forward to more contact with you in the future.

Telephone: 01603 567 990

Email: info@norfolkvanguard.co.uk

Address: Norfolk Vanguard,
The Union Building, 51-59 Rose Lane,
Norwich NR11BY

NORFOLK VANGUARD AND NORFOLK BOREAS OFFSHORE WIND FARM PROJECTS

What is covered?

	Board
About Vattenfall in Norfolk _____	2
Norfolk Vanguard and Norfolk Boreas – two separate Nationally Significant Infrastructure Projects _____	3a
How the projects work together _____	3b
What part does Environmental Impact Assessment play in delivering the best projects? _____	3c
Where are Norfolk Vanguard and Norfolk Boreas Offshore wind farms? _____	4a
Offshore – how we are enhancing our understanding _____	4b
Onshore – how our plans are evolving _____	5
Landfall and cable relay station locations _____	6a-c
The underground cable corridor _____	7a-b
Identifying the best substation location and Project substations _____	8a-b
Land and landowner contact _____	9
What local opportunities and benefits are important to you? _____	10a-c
Next steps _____	11

Inform our early decisions

Our thinking is still at an early stage, but already feedback following the October drop-ins has shaped some decisions. For both Norfolk Vanguard and Norfolk Boreas, we shall be refining our plans with respect to onshore works further in the coming months. Please take this opportunity to raise questions, provide information you think we need to consider and share any concerns with us. You can do so by:

- Speaking to the team, and
- Use this questionnaire, to feed back to us – in your own words, what you think is relevant and important

If further thoughts occur to you and you want to tell us more after today, this questionnaire is available to complete online, or download*.

Data protection

Any personal information you give to us will be processed in accordance with the UK Data Protection Act 1998. The information provided will be utilised by Vattenfall and associated companies (e.g. Norfolk Vanguard Ltd and Norfolk Boreas Ltd) for the purposes of understanding public and community perceptions of project proposals, influencing project development and as evidence of the consultation process in accordance with the Planning Act 2008. All information provided will be held and processed by the Remarkable Group Ltd; no identifying information will be passed on to any third parties. We will use your contact details to provide you with information about the project, including a feedback report from this round of drop-in events and future project updates.

A little about you

This section is optional, but by providing some detail you help us:

- understand your perspective a little better
- see how well we've done (or not), at encouraging people to have an early influence on the project; and consider how to involve more people who may have an interest in the project.

If you provide your contact details here and do not opt-out of receiving communications from us, then we will ensure you are kept informed, and updated with summary reports.

Did you complete a questionnaire following the October drop-in? Yes No

Name	Postcode
Address	E-mail

Male Female

Age (please tick)

Under 18 18-25 26-35 36-50 50-65 66-75 75+

How did you hear about today?

Newsletter (direct delivery) Newspaper advert Letter, or via Parish Council Website

Word of mouth Other (e.g. Facebook adverts.) Please specify _____

Please tick if you want to **opt-out** of project updates and relevant reports

Helping us make the most of your contribution

Please explain your answers as fully as possible and write in complete sentences.

This way we will understand your perspective better.

Some of the questions relate to maps displayed on the boards, and online.

About Vattenfall in Norfolk

Q1 (tick ✓ one box for each statement)

Had you heard of Vattenfall before today? Yes No Not sure

a) If yes, please say how or in what context you heard about us?

About the projects, the Development Consent Orders & Environmental Impact Assessment

Q2 Please indicate to what extent you agree or disagree with each of the following statements and provide any further information or details about your response in the comments section below. (tick ✓ one box for each statement)

The material presented explains clearly that Norfolk Vanguard and Norfolk Boreas are subject to separate Development Consent Order processes

Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree

Don't know

It makes sense to co-locate infrastructure for both projects where possible, in order to reduce potential impacts, maximise opportunities and help reduce energy costs

Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree

Don't know

I understand how my comments will help to inform the development of both projects

Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree

Don't know

I am reassured the Environmental Impact Assessments process, including consultation, will lead to the best possible environmental solutions for Norfolk Vanguard and Norfolk Boreas

Strongly agree Tend to agree Neither agree nor disagree Tend to disagree Strongly disagree

Don't know

Comments

Onshore Works: Landfall

– please view the map on board 6a, or the interactive mapping tool

Constrained by the features and guided by the principles listed on board 5, including local feedback, we have refined the landfall search area down to three options: Bacton Green, Walcott Gap, Happisburgh South. Landfall at Bacton Green and Walcott South would enable cable relay stations to be located next to existing industrial infrastructure. However, it would require offshore cabling through the Marine Conservation Zone. We are currently reviewing new geophysical and benthic (seabed) survey data to understand whether this is feasible.

Data on coastal erosion is being reviewed to understand the feasibility of a landfall at Happisburgh South.

Q3 What [additional] aspects or features, do you think need to be taken into account when choosing the landfall location? Do you wish to highlight any factor(s) that should influence decision making above other considerations?

Cable Relay Station Location

Constrained by the features and guided by the principles listed on board 5, including local feedback, the cable relay station search area has been refined to seven cable relay station search zones, relatively close to possible landfall locations and in areas of flat open land.

Q4 Tell us what you think about the cable relay station options (you may wish to refer to the numbering on the map).

For example, you might highlight aspects or features, you think need to be taken into account when choosing a cable relay station location? Do you wish to highlight any factor(s) that from your perspective are more important than other considerations?

The Underground Cable Corridor

The two hundred metre wide cable corridor is able to accommodate cables for both projects and allow for micro-siting around sensitive features identified during surveys and consultation.

Q5 Please tell us about any features (and if relevant their location) within the cable corridor you'd like to be considered as the plans are refined?