Hornsea 3
Offshore Wind Farm

Ørsted

Hornsea Project Three Offshore Wind Farm

Frequently Asked Questions (FAQs)

August 2018

www.hornseaproject3.co.uk

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Offshore Wind Farm

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Contents

Section 1 – General Project Questions

What is Hornsea Project Three?

Hornsea Project Three is a new offshore wind farm project Ørsted is proposing to develop in the North Sea, located approximately 121 kilometres northeast of the north Norfolk coast and 160 kilometres east of the Yorkshire coast. The proposed wind farm could be world's largest offshore wind farm, capable of generating enough power to meet the average daily needs of well over 2 million UK homes[1].

Who is the developer?

Hornsea Project Three is being developed by Ørsted (formerly DONG Energy). Headquartered in Denmark, Ørsted is the global leader in offshore wind power, with over 25 years of experience developing, constructing and operating offshore wind farms. Over the last decade, we have undergone a truly green transformation, halving our CO_2 emissions and focusing our activities on renewable sources of energy. We are committed to innovation and want to revolutionise the way we provide power to people by developing market leading green energy solutions that benefit the planet and our customers alike.

Why have you changed your name?

We have recently divested our oil and gas production business and by 2023, we will have replaced coal with sustainable biomass in our power stations across Northern Europe, reducing our carbon emissions by 96%. We've changed our name because DONG Energy, short for Danish Oil and Natural Gas, no longer reflects who we are.

Our name is inspired by Hans Christian Ørsted, one of Denmark's best-known scientists and innovators. Through his curiosity, dedication and interest in nature, he discovered electromagnetism in 1820, helping to lay the scientific foundations for how power is generated today. These qualities of Hans Christian Ørsted are just what we need to truly revolutionise the way we power people.

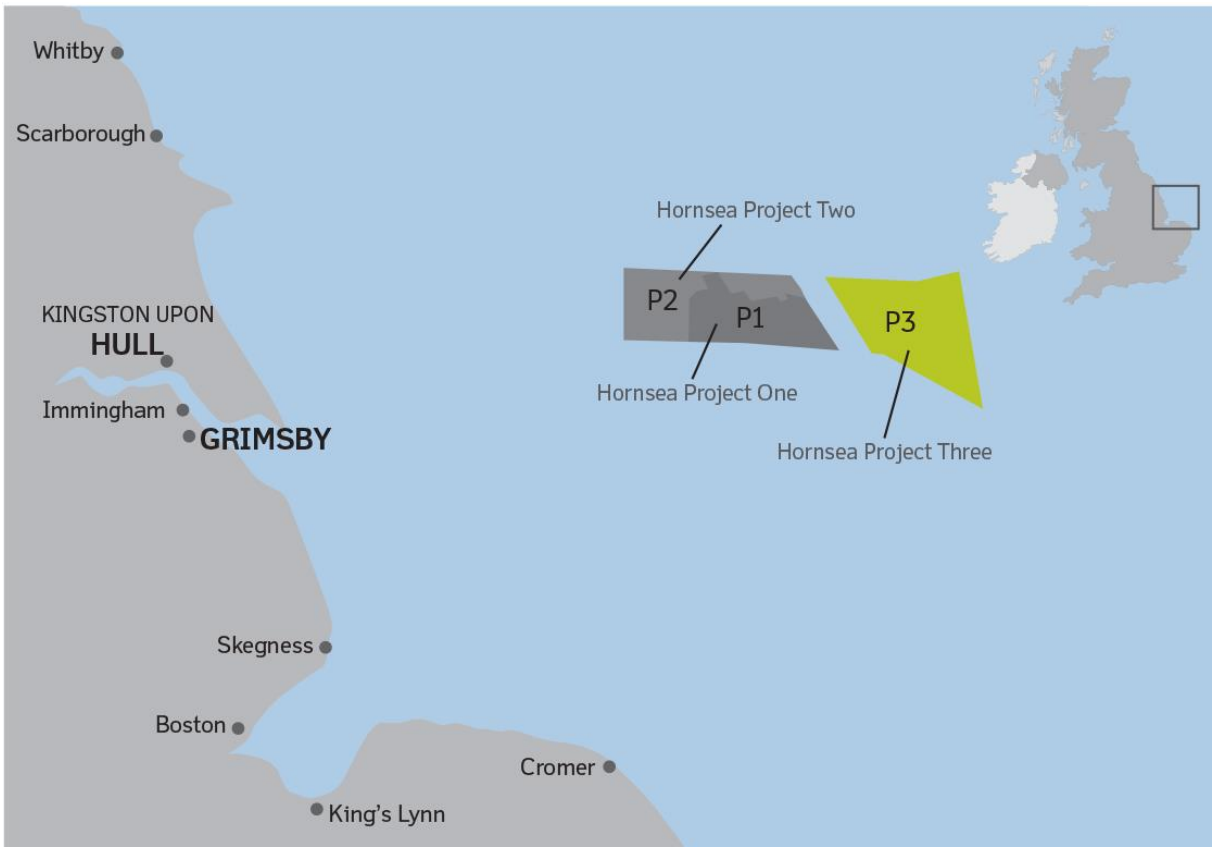
What is the Hornsea Zone?

In August 2015, we acquired the rights to develop the Hornsea Zone from SMart Wind Ltd, including SMart Wind Ltd itself, who was originally awarded the zone in The Crown Estate Round 3 bid process. The Zone has since been the divided into four offshore areas and the remaining areas returned to The Crown Estate. To date, we have obtained Development Consent Orders (DCOs) to develop Hornsea Project One and Hornsea Project Two and is now focusing on the third; Hornsea Project Three.

Where is Hornsea Project Three located?

The Hornsea Project Three array area (the area within which the offshore wind turbines will be located) is approximately 696 kilometres squared, over 17 times the size of Norwich and is located approximately 121 kilometres northeast of the Norfolk coast and 160 kilometres east of the Yorkshire coast (Figure 1).

Figure 1: Map showing the location of the array areas for Hornsea Project One, Hornsea Project Two and Hornsea Project Three.



[1] This figure assumes a load factor of 38.6% (the 5-year average for offshore wind) and a household consumption of 3.828 MWh per year (BEIS, 2018).

Why is the offshore wind farm crossing Norfolk?

The location of any onshore infrastructure is largely determined by the grid offer we discuss and agree with National Grid. This is assessed by both National Grid and the developer from an economic, efficient and strategic perspective, in relation to additional costs and investments required based on the capacity and timing of energy production sought by the developer. One key element of this assessment is the perceived costs that may be passed on to the end user (the public and businesses) and hence both parties seek to minimise this. Hornsea Project Three received the single offer of Norwich Main National Grid Substation and as such, we are proposing to connect into the grid at this point.

Why are you building another offshore wind farm?

The Climate Change Act 2008, legally committed the UK to reduce its greenhouse gas emissions by at least 80% by 2050, compared to the 1990 level[2]. Over the next couple of decades, many of the UK's existing generating plants are set to close and the UK urgently needs to replace large volumes of its existing electricity infrastructure with low carbon generation. As an island nation, with relatively shallow waters and high wind speeds, the UK has an abundant natural wind resource, and offshore wind power has the potential to contribute significantly towards the UK's low carbon transition.

The cost of offshore wind power has fallen significantly in recent years. This achievement is marked by our record low strike price[3] for our Hornsea Project Two Offshore Wind Farm, which at £57.50 per megawatt hour is 50% lower than the previous auction round just two years ago, and the lowest-ever price for offshore wind in the UK.

[2] Climate Change Act 2008. Available online: http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf
[3] The 'strike price' is a price for electricity which reflects the cost of investing in a particular low carbon technology. This is compared against the 'reference price' – a measure of the average market price for electricity in the GB market and the difference between the two is paid to the generator.

Section 2 – The Planning Process

What is the planning process for an offshore wind farm?

As the proposed generating capacity of Hornsea Project Three exceeds 100 megawatts (MW), the project is classified as a Nationally Significant Infrastructure Project (NSIP)[4], and must apply for a Development Consent Order (DCO) under the Planning Act 2008.

Who will you consult?

Under the Planning Act 2008, a developer is required to carry out consultation on their proposed application before submission, and must take any responses received into account, adjusting their project as appropriate. This consultation includes;

- Consultation with prescribed bodies such as Environment Agency and Natural England, host and neighbouring authorities and any landowners affected by the project (under Section 42);
- Consultation with the local community in the vicinity of the proposed project (under Section 47); and
- General public consultation on the project (under Section 48).

Pre-application consultation for Hornsea Three took place between March 2016 to April 2018. You can view the full Consultation Report on our website (see *Reports)* here: http://hornseaproject3.co.uk/en/Application-documents

Who decides whether to grant planning permission?

Hornsea Project Three submitted its DCO application to the Planning Inspectorate (PINS) in May 2018 and this was accepted in June 2018. PINS will now coordinate the examination of our application with an independent Examining Authority panel, who will in turn make a recommendation to the Secretary of State (SoS) for Business, Energy and Industrial Strategy (BEIS). Decisions on DCO applications will be made in accordance with the National Policy Statement (NPS) for energy (amongst others), which sets out the need for new energy infrastructure. The SoS will then review and comment on this before deciding on whether to grant a DCO.

More information on the planning process, including guidance notes can be found on the Planning Inspectorate's website: https://infrastructure.planninginspectorate.gov.uk/

What is an Environmental Impact Assessment?

In accordance with Regulation 10 of the Planning (Environmental Impact Assessment) Regulations 2009[5], we have undertaken an Environmental Impact Assessment (EIA) of the proposed offshore wind farm (including all onshore associated infrastructure), which forms part of our DCO application (see *Environmental Statement).*

An Environmental Impact Assessment (EIA) is an assessment of the likely positive or adverse impacts that a development may have on the environment.

It considers environmental, social and economic aspects, and includes the following steps:

1 Gathering environmental information about the current situation (known as the 'baseline');

2 Providing information about the development;

3 Assessing potentially significant environmental effects of the development; and

4 Proposing ways of **avoiding, minimising and restoring** any significant adverse effects.

What stage is the Project at now?

Hornsea Project Three has submitted its DCO application to the Planning Inspectorate, which has been accepted for examination. This marks the end of the pre-application period and the culmination of more than two and half years of planning and public consultation with local communities, host and neighbouring authorities, landowners and statutory bodies under the Planning Act 2008 (Figure 2). The Project is now in the examination phase, which is managed by PINS.

Key Project Milestones:

September 2016

We published our ***Statement of Community Consultation*** (SoCC), which set out how we planned to consult local communities on the proposed development: www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Statement-of-

[4] Any energy project over 100 MW.
[5] On 16 May 2017, the Infrastructure Planning (Environmental Impact Assessment) 2017 Regulations entered into force. As Hornsea Three sought a Scoping Opinion from the Planning Inspectorate in October 2016, the provisions of the 2009 EIA Regulations (as amended) remain applicable. Hornsea Three has however, considered the 2017 EIA Regulations where appropriate in the Environmental Statement.

Community-Consultation.ashx?la=en&hash=337D84C3C7EBB3B86F81F9C324B46FDAA81C24D1&hash=337D84C3C7EBB3B86F81F9C324B46FDAA81C24D1

Phase One

October 2016

We submitted our request for an EIA Scoping Opinion in the form of a ***Scoping Report*** (and request letter under Regulation 6 and Regulation 8 of the Planning Act 2008) to the Planning Inspectorate:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Environmental-Impact-Assessment_Scoping-Report.ashx?la=en&hash=10AE17CEC1A83CB80123542BE41A99F8B3B1107D&hash=10AE17CEC1A83CB80123542BE41A99F8B3B1107D

October/November 2016

We held our first round of community consultation events in locations across the Consultation Zone in Norfolk to present the early project information.

Phase 1 Consultation Event Overview:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_PhaseOne-Consultation-Event-Overview.ashx?la=en&hash=A000734CF255F9EEA46F89C24E1095B0FA8DE8BA&hash=A000734CF255F9EEA46F89C24E1095B0FA8DE8BA

Phase 1 Consultation Summary Report:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_PhaseOne-Consultation-Summary-Report.ashx?la=en&hash=17A83B4480DD05B73BF308205267C3CBB83385AE&hash=17A83B4480DD05B73BF308205267C3CBB83385AE

December 2016

We received a Scoping Opinion from the Planning Inspectorate:

www.infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/?ipcsection=docs

We consulted on our draft Habitat Regulations Assessment (HRA) Screening Report:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Habitat-Regulations-Assessment-Screening-Report.ashx?la=en&hash=3094446D9DEAD3663B7A0658949FADFCD13FB727&hash=3094446D9DEAD3663B7A0658949FADFCD13FB727

March 2017

We held a second round of consultation events (Phase 1.B) in locations along the refined onshore cable corridor within Norfolk, to present the latest project information and to seek feedback from members of the local community.

Phase 1.B Consultation Event Overview:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Phase1B-Consultation-Event-Overview.ashx?la=en&hash=33843FC4AB681784A9A1290772D81530EB61FF2C&hash=33843FC4AB681784A9A1290772D81530EB61FF2C

Phase 1.B Consultation Summary Report:

www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Phase1B-Consultation-Summary-Report.ashx?la=en&hash=3356B186A8F9B3A614B905E24A96AA4280AD5D94&hash=3356B186A8F9B3A614B905E24A96AA4280AD5D94

Phase Two

July to September 2017 (Phase 2.A)

We published and undertook our statutory (formal) consultation on the Preliminary Environmental Information Report (PEIR) in accordance with Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulation 2009 (as amended) (the EIA Regulations).

The PEIR (which is a draft version of the final Environment Statement[6]) presented the findings of initial surveys and assessments to help enable consultees to develop an informed view of the potential environmental effects.

Consultation on the PEIR commenced on 27 July and closed on **20 September 2017**.

September 2017

We held a third round of community consultation events in September 2017 in Norfolk, where detailed plans and the full PEIR were presented.

Phase 2 Consultation Overview:

www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/Community-Consultation-Overview-and-Summary/HOW3_Community-Consultation_Round-3_Event-Overview.ashx?la=en&hash=D68DB90138F189DBC2073E929E1190CE7BC39FA8&hash=D68DB90138F189DBC2073E929E1190CE7BC39FA8

[6] The final Environmental Statement can be viewed on our website here: http://hornseaproject3.co.uk/Application-documents

Phase 2 Consultation Summary Report:

www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/Community-Consultation-Overview-and-Summary/HOW3_Community-Consultation_Round-3_Feedback-Summary.ashx?la=en&hash=4EFB6C4EE77FA20B3564E7E402542F924E208070&hash=4EFB6C4EE77FA20B3564E7E402542F924E208070

November to December 2017 (Phase 2.B)

We undertook further statutory consultation on Hornsea Project Three. This further statutory consultation was focussed on new areas identified beyond the 200-metre-wide onshore cable corridor and the 1.5-kilometre-wide offshore cable corridor search area presented during the previous round of formal consultation. These areas were identified following consideration of responses from stakeholders (landowners, members of the public, councils, environmental organisations etc) to the previous round of statutory consultation (Phase 2.A) and through ongoing design refinement.

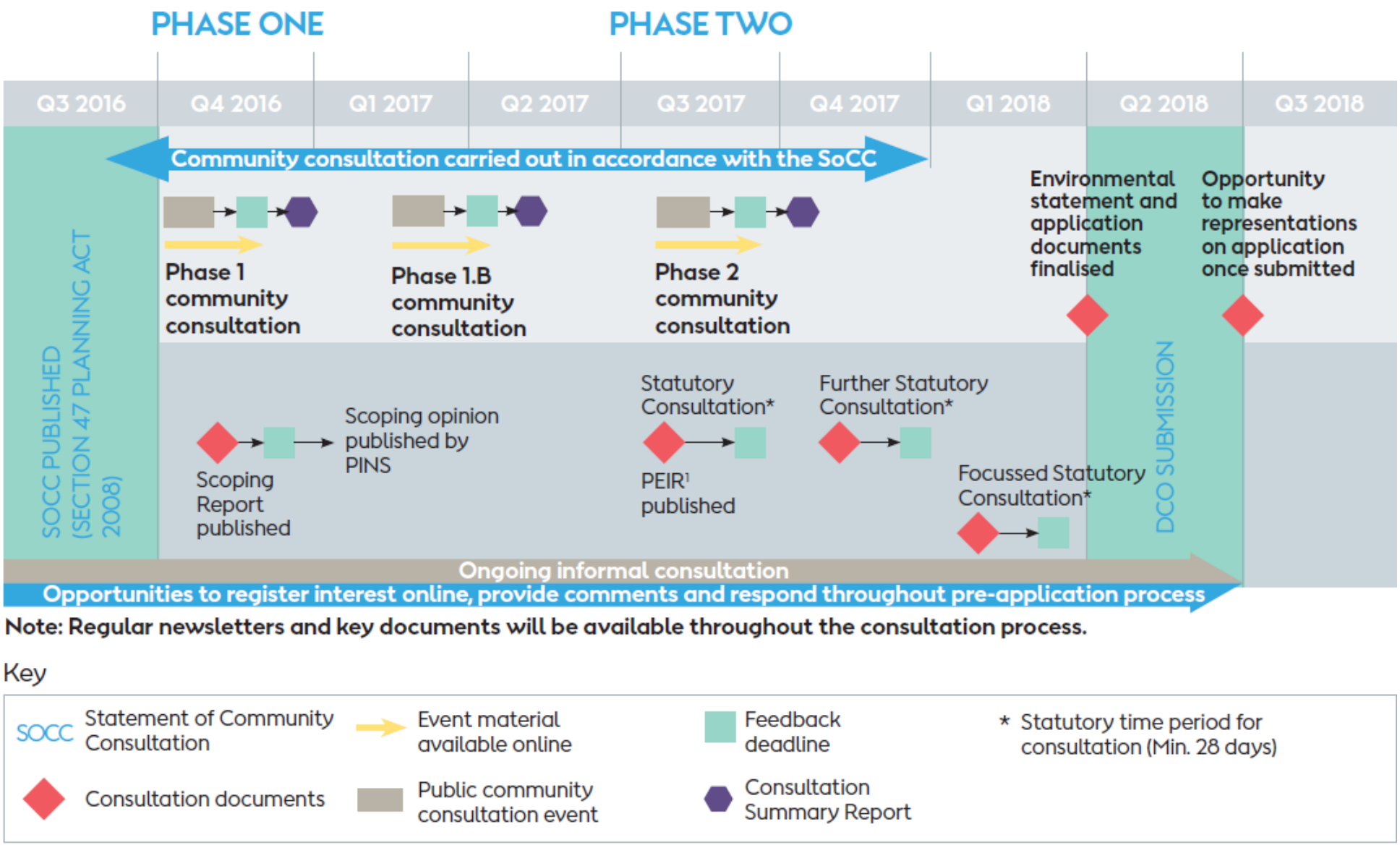
The further formal consultation on the new areas identified closed on **22 December 2017**.

March 2018 (Phase 2.C)

We undertook focussed statutory consultation on Hornsea Project Three. This focussed statutory consultation sought feedback on a small number of minor amendments to the onshore cable corridor, which were identified in response to feedback from the further statutory consultation (Phase 2.B) and ongoing design development.

The focussed formal consultation commenced on 1 March and closed on **30 March 2018**.

Figure 2: Illustrative diagram of the pre-application consultation programme for Hornsea Project Three.



Section 3 – Our Proposal

What are you proposing to build?

1. Electricity generated by up to 300 wind turbines[7] with a tip height of up to 325 metres, their foundations and up to 19 offshore platforms will be located in the offshore array area. The array area has a total area of 696 kilometres squared and is located approximately 121 kilometres northeast of the Norfolk coast and 160 kilometres east of the Yorkshire coast.
2. In the array area, a network of subsea array cables will connect the wind turbines, offshore substation(s), offshore converter stations and offshore accommodation platforms.
3. Electricity generated by Hornsea Project Three will transported via either a high voltage alternating current (HVAC) or high voltage direct current (HVDC) transmission system. The offshore platforms (depending on the final design) will accommodate up to 12 transformer substations and up to 3 accommodation platforms. In the HVDC transmission system there could also be up to 4 offshore HVDC converter stations.
4. Electricity be will be transmitted to shore by up to 6 subsea export cables within a corridor, 1.5 kilometres in width (via either a HVAC or HVDC electrical connection) running in a south westerly direction for approximately 155 kilometres from the south-western boundary of the array area to the proposed landfall.
5. Depending on the mode of transmission a HVAC booster station may be required onshore and/or offshore to ensure that the cables are able to carry all the power from the wind farm over such long distances and to mitigate against power losses between the offshore wind farm itself and connection point. For the offshore HVAC booster station, the closest it could be to shore would be 27 kilometres. The mode of transmission (HVAC / HVDC) will not be confirmed until post consent as the design matures.
6. At the landfall, the subsea export cables will cross underneath the beach and terminate at the onshore electrical cable transmission joint bays. Up to 6 of these joint bays will house the connections between the offshore subsea export cables and the onshore underground export cables. Along the route, there will be jointing pits (including linking boxes) which will ultimately connect the export cables to the new onshore substation (HVDC converter / HVAC substation).
7. Onshore export cables will be buried underground in up to 6 trenches, running in a south / south westerly direction from the proposed landfall area at Weybourne in north Norfolk for approximately 55 kilometres, before connecting into the national grid at the existing Norwich Main National Grid substation. The corridor will be approximately 80 metres in width, of which approximately 20 metres will be used for temporary working areas.
8. A new onshore substation (HVAC converter / HVAC substation) will be required near to the existing Norwich Main National Grid substation (Dunston / Mangreen). This substation will convert and connect the export cables that originated from the landfall at Weybourne to the National Grid connection point for distribution amongst the broader National Grid network.

Will the wind farm be visible?

The offshore wind turbines will be located within the offshore array area, which is approximately 121 kilometres offshore and will not be visible from the coast. All cables transporting the electricity from the offshore wind farm to the National Grid will be buried underground, except for cable or pipeline crossings or where the ground is unsuitable (here structures and their protection are likely to be raised slightly above the seabed). If an offshore HVAC booster station were constructed, this would only be seen on very clear days (where it would be seen as a very small feature on the horizon in conjunction with other, existing offshore wind farm infrastructure, and shipping and other vessels) and would not be visible at other times due to atmospheric conditions reducing visibility.

The new onshore substation (HVDC converter / HVAC substation) near to the existing Norwich Main National Grid substation and the onshore HVAC booster station (if required) will be visible from specific locations; however, Hornsea Project Three has sought to minimise these impacts through design including; minimising the heights of the structures, retaining existing trees and hedgerows to provide natural screening, where possible, and providing additional landscaping to filter views of the development as well as integrate them into the surrounding landscape.

Where exactly will the cables for Hornsea Three make landfall?

The cables transporting the electricity from Hornsea Three will make landfall on the North Norfolk coast close to the Muckleburgh Military Collection, near Weybourne. The landfall location has been identified based on a range of technical, environmental and engineering considerations, and was refined following feedback from stakeholders. View our Interactive Map to see the exact location here: http://hornseaproject3.co.uk/Interactive-Map

Where can I view the proposed onshore cable route?

The proposed onshore cable route has been informed by detailed assessment work and extensive consultation. The final cable route is presented in the plans that accompany our application (see *Plans & Drawings* - www.hornseaproject3.co.uk/application-documents) and via our Interactive Map here: http://hornseaproject3.co.uk/Interactive-Map

[7] We reduced the maximum number of turbines from 342 to 300 following comments received from stakeholders as part of our statutory consultation. This will reduce the impact on several receptors including birds and seabed habitats.

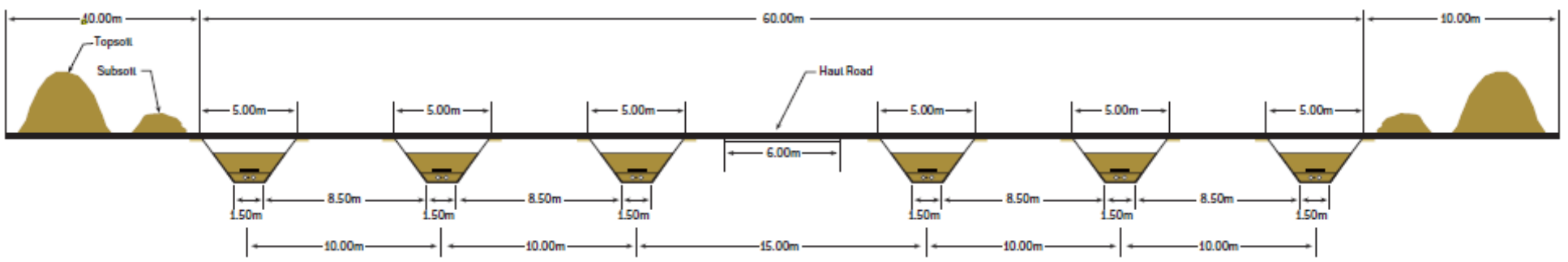
How wide will the final onshore cable corridor be?

The cables will be installed underground within an approximately 80-metre-wide corridor, which will include both the permanent installation area (approximately 60 metres) and the temporary working area (approximately 20 metres). The width of the permanent and/or temporary areas may change where obstacles are encountered, for example an ecological constraint such as a wood or a major infrastructure crossing.

Why do you require an 80-metre wide corridor to install the cables?

Up to 6 trenches will be required to accommodate up to 6 circuits, each containing individual cables and fibre optics to enable communication between the wind farm and the control system. Each trench could be up to 5 metres wide at the surface reducing to 1.5 metres at the bottom. The circuits must be spaced out to minimise the mutual heating effect. This spacing enables the cables to effectively carry the large power volumes required without overheating and damaging the cable. The final width and location of each specific trench will be determined closer to the construction phase (Figure 3).

Figure 3: Diagram showing an indicative example of how a typical HVAC layout could be positioned within the approximately 60-metre permanent easement.



What is HVAC technology, and what is HVDC technology?

HVAC stands for high voltage alternating current, whereas HVDC stands for high voltage direct current.

HVAC technology is the principle means of power transmission in all modern power systems. The vast majority of all electrical power is generated, transported and consumed as alternating current, where the voltage and current values oscillate over time at a specific frequency (50Hz in the UK, or 50 cycles per second). Transforming alternating current to higher voltages is relatively simple and enables power transmission over longer distances with reduced losses and fewer power lines than low voltage transmission.

HVDC technology is an alternative to HVAC for point-point power transmission and may be appropriate in some circumstances for bulk power transfer over long distances or between different grids. Because most electricity, including that in an offshore wind farm, is generated as alternating current it is necessary to 'convert' the alternating current to direct current (with constant voltage and current values) and 'invert' the direct current back to alternating current for onward transmission in the national grid at large converter stations using power electronics devices.

Why do you potentially need a HVAC booster station?

Electricity generated by Hornsea Project Three will be transported via either a HVAC or HVDC transmission system. Depending on the mode of transmission, a HVAC booster station may be required onshore and/or offshore to ensure that the cables can carry all the power from the wind farm over such long distances (210 kilometres for the full export cable route) and to mitigate against power losses between the offshore wind farm itself and the connection point. Without a HVAC booster station, HVAC transmission would simply not be practical over these distances.

Why do you potentially need an onshore HVAC booster station if you are proposing an offshore HVAC booster station as well?

Detailed design work is ongoing and as such the optimal location of the booster station (i.e. onshore or offshore) has not been determined; detailed and extensive studies of the power system will be necessary to inform this decision. It is noted that it may be necessary to construct both onshore and offshore HVAC booster stations to ensure that the power from the wind farm can be economically transmitted over such distances.

Will an HVAC booster station site be needed (offshore or onshore) if HVDC technology is chosen?

No. If HVDC technology is selected then neither an offshore or onshore HVAC booster station will be required. However, a HVDC scenario may result in the largest parameters of the main onshore substation (HVDC converter / HVAC substation) near to the existing Norwich Main National Grid substation being required. For example, current market information suggests that a HVDC scenario would require the larger building height (i.e. up to 25 metres).

Will the cable corridor diameter be reduced with HVDC technology?

HVDC cable circuits are typically able to transport more power than HVAC cable circuits therefore if using HVDC it is possible we may be able to use a reduced number of circuits (currently the maximum is six circuits) which could result in a narrower corridor being required. Given that a decision on HVDC or HVAC technology will not be made pre-application, the assessments presented in the Environmental Statement are based on a realistic worst-case scenario, which could be either HVAC or HVDC technology depending on the receptor.

Where is the proposed location for the onshore HVAC booster station and how did you identify this site?

Our proposed site for locating the onshore HVAC booster station is to the west of Little Barningham, just north of Corpusty in north Norfolk (previously referred to as option C in the March 2017 community consultation events). This site has been identified following extensive environmental surveys, technical and feasibility studies and ongoing consultation with landowners, statutory bodies and members of the local community.

To identify a potential site for locating the onshore HVAC booster station, we conducted a constraint mapping exercise. This exercise indicated the southern half of our original search area (approximately 10 kilometres from the coast) as least constrained and three potential sites were subsequently identified. In March 2017, we presented and sought feedback on the three sites and we have since further refined this to a preferred site based on the feedback received and other considerations.

More information on our site selection process can be found in the Environmental Statement, Volume 1, Chapter 4: Site Selection and Considerations of Alternatives. View the full application here: http://hornseaproject3.co.uk/application-documents

What could the onshore HVAC booster station look like?

The onshore HVAC booster station could require an area of up to 30,407 metres squared, which include landscaping at the site and could be up to 12.5 metres in height[8]. The equipment for the onshore HVAC booster station could be housed within a single or multiple buildings, in an open yard or a combination of these. The location has been determined based on a wide range of human, biological and physical constraints as well as technical and commercial considerations.

We have developed a landscaping strategy to minimise visual impacts from the onshore HVAC booster station. Visualisations of the onshore HVAC booster station, based on indicative layouts are provided in Environmental Statement Volume 6, annex 4.5: Photographic Panels, Wireframes and Photomontages. These show indicative visualisations of the onshore HVAC booster station at year 1 (when the landscape planting proposed as visual mitigation will not yet have matured), and at year 15 (when the landscape planting will have matured).

Why are you applying for both technologies?

At present, all UK offshore wind farms use HVAC technology and the technology, it's capabilities and limitations are well understood. To date, HVDC has more commonly been used to transmit electricity from one grid to another in the form of an interconnector and has yet to be applied to any UK offshore wind farms. Although there is some experience in Germany, the structure of this market is quite different to that in the UK (in that offshore transmission connections are centrally planned and delivered by the onshore utility) and the use of DC technology for offshore wind farms is still maturing. For an interconnector from one country to another, there is no marine infrastructure other than the cabling itself and therefore interfaces with other systems/marine platforms etc is absent (both ends of the interconnector are on dry land). However, use of DC for wind farms add additional complexity in terms of greater infrastructure interfaces offshore and in some instances technical issues, cost overruns and delays have been experienced. Furthermore, due to the increased complexity of offshore HVDC systems and limited experience, transmission reliability is lower meaning that over time, less offshore wind energy can be transmitted to the grid.

Aside from the technology maturity, there are very few suppliers in the world with the capability of producing and supplying HVDC transmission technology (for the cables and convertor stations) that would be needed for a wind farm of this size, and delivery lead times can be considerably longer than for equivalent HVAC systems. In light of the above, there are risks associated with only taking the DC option forward at this time and as the developer, we are responsible for ensuring the proposed development is feasible and can be realised within a reasonable timeframe.

We remain confident that HVDC technology will become more mature before Hornsea Project Three will connect, but there is currently **no certainty.** We have listened to feedback on the preference for DC technology within Norfolk and our technical team is working hard to see whether it is a viable option for this particular project. However, a decision will not be made until nearer to construction. We will continue to explore both potential transmission solutions as we look to mature the initial designs, and will continue to engage with suppliers to inform our ultimate decision.

Where is the proposed location for the onshore substation and how did you identify this site?

Hornsea Project Three will require a new onshore substation near to the existing National Grid substation at Dunston / Mangreen, just south of Norwich. Our proposed site for the onshore substation (HVDC converter / HVAC substation) is located just south of the A47 to the north east of Swardeston. This site was identified following extensive environmental surveys, technical and feasibility studies and ongoing consultation with landowners, statutory bodies and members of the local community.

To identify a suitable site for locating the onshore substation (HVDC converter / HVAC substation), we developed a set of guiding principles to establish a search area (approximately 3 kilometres from the existing Norwich Main substation). A constraints mapping exercise was then applied to this search area, which involved layering known constraints / sensitivities on top of one another to identify the potentially least constrained zones within this area.

[8] The final permanent land take requirements may be subject to change dependent on agreed requirements for visual mitigation and drainage.

The results of this exercise, in the form of heat map was presented at our March 2017 consultation events, where members of the local community were invited to highlight aspects that they would like us to take into consideration. At that time, we were still considering which sites were technically viable and hence were not able to present specific options as we could not confirm that these options would have been feasible. This feedback was considered by the Project alongside environmental, commercial and technical considerations in selecting the proposed site. The proposed site was then highlighted in the September 2017 consultation events and within the PEIR document which was formally consulted on under section 42 of the planning process.

More information on our site selection process can be found in Environmental Statement, Volume 1, Chapter 4: Site Selection and Considerations of Alternatives. View the full application here www.hornseaproject3.co.uk/application-documents

Is the proposed site for the onshore substation final / could it not be located next to the existing National Grid Substation?

Through the site selection process, we have considered various areas within our original 3-kilometre search area and this has been identified as the most suitable option. Due to the size of the land area required for the onshore substation, there was a limited number of options available and this was determined to be the most suitable following our site selection process.

Generally, we seek to site our substation as close as possible to the existing substation, taking account of other constraints such as available land, access and existing infrastructure. In summary, the proposed site is final and has been taken forward in the final application.

What could the onshore substation look like?

The onshore substation (HVDC converter / HVAC substation) could require an area of up to 149,302 metres squared, which provides for the permanent infrastructure (i.e. substation and associated access – roads, fencing and landscaping). The equipment for the onshore substation could be up to 25 metres in height and could be housed within a single or multiple buildings, in an open yard or a combination of these. The exact layout and orientation of the substation, as well as details of the landscaping, will be determined based upon a wide range of environmental as well as technical and commercial considerations.

We have developed a landscaping strategy to minimise visual impacts. Visualisations of the onshore substation based on indicative layouts are provided in Environmental Statement Volume 6, annex 4.5: Photographic Panels, Wireframes and Photomontages. These show indicative visualisations of the onshore substation at year 1 (when the landscape planting proposed as visual mitigation will not yet have matured), and at year 15 (when the landscape planting will have matured).

What is the visual impact of the onshore HVAC booster and onshore HVDC converter/HVAC substation?

We have undertaken a Landscape and Visual Impact Assessment (LVIA) for the onshore HVAC booster station and onshore HVDC converter/HVAC substation, which is contained within the Environmental Statement. Through design refinement, and informed by feedback from stakeholders in response to the formal consultation, mitigation has been identified to reduce the potential visual impact. For example, we have, at both sites, allocated space within our final boundary for natural visual screening (e.g. planting trees) at strategic locations. These are marked on the latest plans - see our Interactive Map here: http://hornseaproject3.co.uk/Interactive-Map

The LVIA is submitted as part of the Environmental Statement and includes wireline images, indicative photomontages (see *Volume 6, Annex 4.5)* and is supported by an outline Landscape Management Plan (see *Other Documents).* Further mitigation measures (e.g. substation colourations, material utilised etc.) will be discussed and agreed with the relevant Local Planning Authority post consent, during detailed design.

Will the new substation / converter station near the grid connection point at Norwich Main be a similar size / footprint with both HVAC and HVDC technologies?

The footprint for permanent land take and temporary land take for the onshore substation (HVDC converter/HVAC substation) under either technology is envisaged to be similar; however, the maximum height of the substation required under the HVDC technology could be larger (up to the 25-metre maximum building height) than a HVAC solution.

Will there be any noise from the onshore HVAC booster and onshore HVDC converter/HVAC substation?

In order to inform the noise assessment, we have undertaken site specific noise surveys to establish the baseline noise levels at locations with the greatest potential to be impacted by the onshore HVAC booster station and onshore substation. These locations were agreed with the Local Authorities (as appropriate). We have then undertaken a noise impact assessment for the onshore HVAC booster station and onshore HVDC converter/HVAC substation, which is contained within the Environmental Statement (see *Volume 3, Chapter 8).* The assessments are based on a worst-case scenario, and therefore assumed no mitigation with the loudest realistic equipment that we might use.

Based on these assessments, we have committed to a range of mitigation measures to reduce potential noise impacts. For example, the use of quieter alternative methods, plant and/or equipment; the use of site hoardings, enclosures, acoustic barriers, portable screens and/or screening nosier items of plant; and maintaining and operating all vehicles, plant and equipment in an appropriate manner, to ensure that extraneous sound from mechanical vibration, creaking and squeaking is kept to a minimum.

Further details of mitigation for the operational phase will be developed during the detailed design stage. We will consult on the proposed mitigation measures with the relevant local authority.

How will the proposed development impact traffic locally?

We have and will continue to work with the highways authorities and the Local Planning Authorities to minimise any impact on traffic locally during the construction period. We will be using a mixture of open cut trenching and Horizontal Directional Drilling (HDD) to install the onshore cables along the cable route and have committed to using trenchless technology for all public road crossings. Using this approach enables us to dig underneath roads without damaging the infrastructure above ground, thus avoiding road closures and minimising the potential impact on local road networks. Along the cable route we will also install a temporary haul road to access the cable corridor, which will provide vehicular access along the cable easement off the public highway, reducing potential interactions with the local road networks.

Prior to the commencement of traffic generating works, a detailed Construction Traffic Management Plan(s) will be agreed with the relevant Local Highway Authority in consultation with the Highways Agency. An outline Construction Traffic Management Plan has been prepared as part of the application (see *Other Documents).* This document establishes the principles that will be implemented by the principal contractors to minimise impacts associated with the transportation of materials to site during construction. This includes details of the proposed vehicle routing plans, abnormal loads, conditions surveys and any proposed highways works. This document should be treated as "live" and will continue to be updated. If consent is granted, this document will form the principles for all subsequent CTMPs to be developed in consultation with Norfolk County Council as the local Highway Authority prior to submission to Local Authority for approval.

Measures will also be implemented to minimise dust, mud and debris on the local road network associated with the movement of vehicles between the construction compounds and the route. The details of these measures are provided in an outline Code of Construction Practice which accompanies our application (see *Other Documents).* This document sets out the management measures that will be adopted and implemented for all construction activities associated with Hornsea Project Three. This includes measures for controlling and monitoring procedures to manage potential environmental impacts and measures for limiting disturbance.

When could Hornsea Project Three be built?

If granted planning permission, construction for Hornsea Project Three Offshore Wind Farm, could commence in late 2020, with the wind farm becoming operational from 2025[9].

Will the offshore wind farm be decommissioned?

For the EIA, we will assume that all onshore infrastructure is removed at the point of decommissioning the project, as this would represent a worst-case scenario for the impact assessment process. However, the requirements for decommissioning will be revisited nearer to the point of decommissioning the project and it is possible that some infrastructure (including the export cables) could be disconnected and left in situ. There would also be an opportunity to review the wind farm and seek an application for repowering if this was viable. In the repowering scenario, we would need to reapply.

At the end of the operational lifetime of Hornsea Project Three, it is anticipated that all structures above the seabed or ground level will be completely removed. The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. In due course, we will submit a Decommissioning Plan to the Secretary of State for Business, Energy and Industrial Strategy (as required by the Energy Act (2004)), a draft of which would be submitted prior to the construction of Hornsea Project Three. The Decommissioning Plan and programme will be updated during Hornsea Project Three's lifespan to take account of changing best practice and new technologies.

[9] All dates are indicative and subject to change.

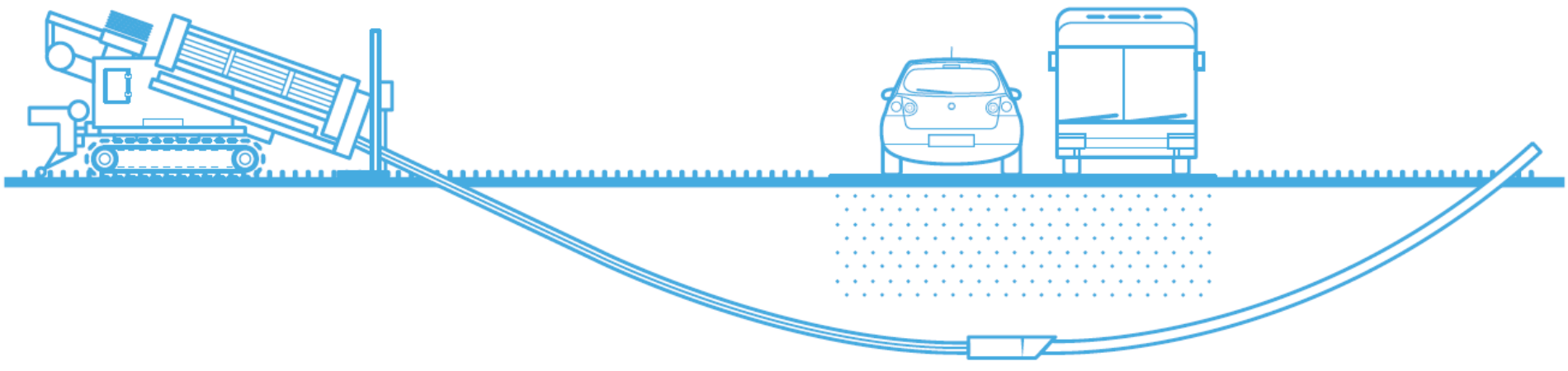
Section 4 – Construction Works

How will you install the cables?

Typically, the onshore cables will be installed using an open cut method. The trenches will be excavated using a mechanical excavator, and the export cables will be installed into the open trench from a cable drum delivered to the site via Heavy Goods Vehicles (HGVs). The cables are buried in a layer of stabilised backfill material that ensure a consistent structural and thermal environment for the cables. The remainder of the trench is then backfilled with the excavated material. Hard protective tiles, and marker tape are also installed in the cable trenches to ensure that the cable is not damaged by any third party. Once the trenches are installed and the trenches backfilled, the stored subsoil and topsoil will be replaced and the land reinstated back to its previous use.

We are also considering several different trenchless methods for installing the cables at certain points along the cable route. Horizontal Directional Drilling (HDD) is a steerable trenchless method of installing underground cables that enables you to install cables underground over short distances with minimal impact on the surface infrastructure and surrounding area (Figure 4). We have identified over 70 points along the onshore cable route where we are proposing to HDD, these points include public roads, main rivers and areas of woodland or habitats of ecological importance.

Figure 4: Diagram showing a cable being install using HDD underneath a road.



HDD is generally accomplished in three stages:

1. Directionally drilling a small diameter pilot hole along a designed directional path.
2. Enlarge the pilot hole to a diameter suitable for installing the cable.
3. Pull the cable through the enlarged hole[10].

How deep will you bury the cables?

Individual cables will be buried on land at a minimum depth of 1.2 metres depending on ground conditions. Where necessary, due to there being rock, concrete or other obstacles close to the surface, the cables may need to be laid at a shallower depth of no less than 0.7 metres. We have increased the minimum burial depth following feedback from farmers who had concerns about the potential interaction with land drains and any deep soil cultivations that they undertake.

How will you preserve the soil structure?

During construction of the cable trenches, the topsoil and subsoil will be stripped and stored on site within the temporary working corridor as construction of each linear section of the cable route advances. The topsoil and subsoil will be stored in separate stockpiles to allow this to preserve soil structure, and to prevent weed build-up and texture damage. Details of soil management are provided in the Outline Code of Construction Practice which forms part of the application (see *Other Documents)*, which includes a Biodiversity Protocol. We will also have a Soil Management Plan to protect soil resources affected by Hornsea Project Three.

[10] In some cases, ducts may be installed as a result of HDD activities that will then allow for the cables to be pulled through.

Will the land be reinstated once the cables have been installed?

Prior to construction commencing a Schedule of Condition of the land will be taken and we have an obligation to return the land in the same state. Once the cables are installed, we will reinstate the land and to ensure it is in no worse a condition than prior to construction. We understand the importance of assessing soil structure before, during and after construction to ensure that the field drainage is maintained and will appoint a Drainage Consultant who will assess and design the mitigation scheme. Further studies into drainage and soil types are required to ensure that this is done correctly and we welcome any input from landowners as we recognise that they know their land best. For example, we would be very keen to see copies of any drainage plans.

We have already spoken with and consulted with many landowners, and farmers' concerns have already fed into the cable route design. We will continue to engage with landowners and will appoint an Agricultural Liaison Officer during the construction period to advise and to deal with post-construction concerns to ensure the process is managed properly. More information can be found in ***Section 5: Landowner Specific Questions***.

How will you access the onshore cable corridor?

We have identified locations along the cable route where we will access the cable corridor or construction compounds during construction from the public road network, these are presented in the application (see *Plans and Drawings*). The access points will be set-up in advance of the cable laying. The route and design of these access roads will be agreed with the relevant landowners in advance of construction and where possible we have sought to use existing roads and tracks.

During construction, temporary haul roads will be installed within the approximately 80-metre-wide corridor to facilitate the movement of construction vehicles to the site and to allow trench excavation to take place. The haul road will also help minimise interactions with the local road networks. The topsoil will be stripped and stored before any required temporary roadways are created.

The access points will have different functionalities. Some will be required to access the proposed temporary haul road itself, whereas others will be required to enable access to HDD points so that the drill can be monitored as the works are undertaken. For the latter, it would be a 4x4 or people on foot rather than construction vehicles. Further information on proposed vehicles routes and how this will be managed is provided in Environmental Statement Volume 3, chapter 7: Traffic and Transport, as well as the outline Construction Traffic Management Plan which accompanies the application (see *Other Documents).*

Can anything go on top of the cable route once it's completed?

It would not be possible to place any type of construction (i.e. buildings) above the cables in case we needed to perform maintenance in the future. It would also not be possible to plant trees above the cables without prior consent to avoid damage from the roots. Hedgerows, as well as fencing and walls can remain/be restored. It will be possible to continue farming crops or grazing animals above the cables once construction has completed.

What are the temporary construction compounds used for and where could they be?

Construction compounds of various sizes will be required along the onshore export cable corridor for laydown and storage of materials, plants and staff, as well as space for small temporary offices, welfare facilities, security and parking.

A main construction compound will be required to support the construction of the onshore export cables. This would operate as a central base for the onshore construction works and would house the central offices, welfare facilities, and stores, as well as acting as a staging post and secure storage for equipment and component deliveries. We have confirmed the location for the main compound site as Oulton Airfield in Broadland, which already comprises hard standing suitable for the temporary placement of site facilities.

The principal contractor will also require a series of secondary construction compounds which have been located strategically along the Hornsea Project Three onshore cable corridor. These would operate as support bases for the onshore construction works as the cable work fronts pass through an area. It is envisaged that each secondary construction compound will be in place for periods of up to three months per construction phase.

All compounds will be removed and sites restored to their original condition when construction has been completed, unless it is considered necessary to retain some compounds during the commissioning stages of Hornsea Project Three. The location of each compound is shown on our Interactive Map on the project website here: http://hornseaproject3.co.uk/Interactive-Map

What movement/type of vehicles can we expect between these compounds and the route?

Access routes will be required from the nearby road network at various places along the onshore export cable route to access the construction works, as well as the various compounds along the route that may be set-up in advance of the cable laying. Vehicle movements will vary depending on their purpose but will include HGVs as well as abnormal indivisible loads[11].

Prior to the commencement of traffic generating works, a Construction Traffic Management Plan(s) will be agreed with the relevant Local Highway Authority in consultation with the Highways Agency. An outline Construction Traffic Management Plan also accompanies the application (see *Other Documents).* Measures will be also implemented to minimise dust, mud and debris associated with the movement of construction vehicles between the compounds and the route, the details of which are provided in an outline Code of Construction Practice (CoCP) which accompanies the application (see *Other Documents*).

[11] Loads or vehicles that exceed maximum vehicle weight, axle weight or dimensions as set out in the Road Vehicles (Construction and Use) Regulations 1986 as amended.

Where the cable route crosses woodland, how will this be managed?

The cable route has been designed to avoid areas of woodland where possible. Where we cross large sections of woodland, we will install the cable using Horizontal Direction Drilling (HDD). This will involve installing the cable using a drill which runs underneath the woodland, so that we can avoid having to remove or clear trees on the surface. We have identified over 70 points along the onshore cable route where we are proposing to HDD. Locations where we are proposing to HDD are marked on the latest plans – view our Interactive Map here: http://hornseaproject3.co.uk/Interactive-Map

Where the cable route crosses trees or hedgerows, how will this be managed?

The cable route has been designed to avoid hedgerows and trees where possible or drill underneath them using HDD. However, we will need to remove some trees permanently and temporarily remove some hedgerows along the cable route to allow for cable laying and to enable installation of temporary access tracks. We recognise that protection and sensitive restoration of hedgerows is important to minimise any negative impact on biodiversity or landscape resulting from loss or reduction in hedgerows, and in the few instances where a small section of the hedgerow needs to be temporarily removed, it will of course be handled sensitively.

The replacement of hedgerows at the end of the construction phase will ensure there is no net loss of hedgerow habitat as a result of Hornsea Project Three. Furthermore, restoration of hedgerows, currently in poor condition, provides an opportunity to achieve long term benefits for the biodiversity associated with this habitat type.

How long will it take to install the cables?

The export cables will be installed in sections of between 750 and 2,500 metres at a time, with each section of cable delivered on a cable drum from which it is spooled out as it is installed. The installation of the cable is expected to take up to 30 months in total; however, work is expected to progress along the route with a typical active construction works duration of three months at any particular location. Construction may be carried out by multiple teams at more than one location along the cable route at the same time.

How long will it take to construct the HVAC booster station & onshore substation?

Construction of the onshore HVAC booster station and onshore substation (HVDC converter / HVAC substation) could take up to 2 and 3 years respectively.

Will it all be built at once?

In our Preliminary Environmental Information Report (PEIR), which was published in July 2017, we explained that due to the scale of the proposed development and existing regulatory framework, it could be necessary for Hornsea Project Three to be built out in up to three phases. We received a considerable amount of feedback on this aspect as part of our statutory consultation and through detailed discussions with our technical and commercial teams, we are pleased to confirm that we have been able to **reduce the maximum number of phases** that Hornsea Project Three could be built out in **up to two phases**.

There are various possible reasons for phasing including constraints in the supply chain or requirements of the government's Contract for Difference subsidy regime, which offshore wind farms currently rely on to secure a price for the electricity produced by a project.

Where built in phases, these may overlap or have a gap between the completion of construction of one phase and the start of construction of another. The total durations for each component would not exceed those assessed.

Indicative construction programmes showing how the project could be built out in both a single and two-phased approach is included in the Environmental Statement which is submitted with the application (see *Volume 1, Chapter 3, section 3.8*). Reducing the maximum number of phases has also enabled us to **reduce the maximum duration over which the onshore construction works could take place**, from 11 years (previously presented) to 8 years.

Can you avoid constructing during the Summer?

At this early stage in the development process, we do not know the exact timings of works, however wherever possible to do so we would endeavour to avoid the most sensitive times of year within the construction programme.

What are the working hours?

Core working hours for the construction of the onshore elements of Hornsea Project Three are as follows:

- Monday to Friday: 07:00 - 18:00 hours;
- Saturday: 07:00 - 13:00 hours;

- Up to one hour before and after core working hours for mobilisation ("mobilisation period"), i.e. 06:00 to 19:00 weekdays and 06:00 to 14:00 Saturdays; and
- Maintenance period 13:00 to 17:00 Saturdays.

In certain cases, it may be beneficial to carry out several activities outside of the standard working hours to utilise periods such as abnormal loads/construction plant delivery, works within the highway/footpaths, or works affecting operational railways. As such, we may need to seek to acquire temporary abilities for 24-hour construction. Activities outside of the standard working hours will be agreed with the relevant local authority in consultation with relevant stakeholders (e.g. third-party asset owner) as required.

Section 5 – Landowner Specific Questions

What legislation covers these works?

As a Nationally Significant Infrastructure Project (NSIP), the project will be applying for a Development Consent Order (DCO). This process is governed by the Planning Act 2008 and governs the necessary planning and compulsory purchase powers for the project. For further information on the process, see **Section 2: The Planning Process**.

How will you engage with landowners along the route?

We start engagement with landowners at an early stage to seek their feedback on our plans and to enable us to feed their comments back into the design process. Throughout the development phase our Land Agent, Dalcour Maclaren, have offered face-to-face meetings with landowners along the route, attending over 100 to date. We have also visited landowners directly where they have requested it. At every meeting, the feedback given by landowners has been recorded and fed back into the design process, as can be seen by the numerous re-routes that have been proposed throughout the process.

In addition, we have also made ourselves available by:

- Inviting landowners to our community consultation events.
- Writing to landowners as part of our formal consultation. All landowners have received full written consultation formally and were invited to give their responses.
- Hosted/attendance at meetings with the National Farmers Union, Country Land Association and local land agents to provide an update on the scheme and seek feedback.

We'll continue our detailed conversations with landowners to discuss individuals' comments and concerns.

Will I receive any compensation for having the cables through my land?

Yes, we will compensate landowners who are directly affected by the cable through their land. Compensation is paid for the freehold depreciation of the land affected by the easement and for all reasonable and substantiated losses arising from construction of the project.

Will you pay for my Land Agent and Solicitor fees?

When we discuss the terms of any agreements we will compensate you for any reasonable land agent fees incurred. Where a solicitor's involvement is required to complete any legal agreements, we will also compensate you for their reasonable fees.

I am outside of the refined corridor but inside the original search area, could the route change or will my land definitely not be directly impacted?

The final 80-metre-wide cable route is presented in the plans and supporting documents that accompany our application (see *Plans and Drawings*). This route has been informed by environmental, technical and feasibility studies, as well as consultation with landowners and statutory bodies. We have no intentions at present to change the route as presented in our application and if we did, we would need to re-consult with landowners whose land has been incorporated in a route change.

When will you consult with me about the terms of any agreement?

Heads of Terms relating to option lease agreements have been sent to all relevant land agents and land owners for consideration. Hornsea Project Three will follow up to discuss the details of these terms with a view to formulating a final commercial agreement over the course of 2018.

I don't want to agree any terms with you, so what will you do then?

We would like to work with landowners as much as possible to resolve any concerns that you may have and reach an agreement by negotiation. However, where we cannot reach an agreement, we will be seeking compulsory acquisition powers within our DCO application so that we can acquire any necessary land rights for the project to be developed.

How will you mitigate damage to environmental schemes?

We have undertaken environmental surveys to identify sensitive habitats so that we can avoid these areas where it is reasonably possible to do so and identify appropriate mitigation measures. The impact on these schemes/areas will be reduced and mitigated where possible, however it would be the

landowner's responsibility to arrange for the relevant area of land that would be impacted by our installation work to be either removed or temporarily taken out of any relevant scheme.

What are your proposals for dealing with loss of Basic Payment Scheme (BPS) or similar entitlements?

We will reimburse farmers for any proven loss as a direct result of our work, loss of BPS entitlements will fall under this category.

Who should I be speaking to from Ørsted about my land and any questions that I have?

For any **landowner specific questions**, please contact our Land Agents, Dalcour Maclaren:

Email: HornseaProjectThree@dalcourmaclaren.com

Land Agent dedicated project phone line: 0333 2413 455

For non-landowner related queries please see contact details within **Section 6: Engaging in the Process** or on the project website (www.hornseaproject3.co.uk)

Section 6 – Engaging in the process

Where can I view your application?

You can view the most up to date information on our website here: www.hornseaproject3.co.uk.

Plans showing the nature and location of Hornsea Project Three are included as part of our application (see *Plans and Drawings)* and can be viewed on our website here: www.hornseaproject3.co.uk/application-documents. You can also view the final route by using our Interactive Map to zoom into areas of interest either manually, or by entering a known postcode here: www.http://hornseaproject3.co.uk/Interactive-Map.

As part of our application we have produced an Environmental Statement. This is a technical report which provides details of the project proposal and explains what effects we believe our proposals would have on the environment. It also provides details in terms of how we plan to minimise these effects where appropriate. The full Environmental Statement can be viewed/downloaded from our website here: www.hornseaproject3.co.uk/application-documents

Documents submitted to PINS and any that they seek consultation on can be accessed on their website here: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/.

How will you continue to keep local communities informed?

Following acceptance of our DCO application for examination, the formal examination process is now managed by PINS. You can visit the Planning Inspectorate's website for further information and updates here: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/

We recognise the importance of engaging with local communities before, during and after construction, to ensure that communities are kept informed throughout. Prior to commencing any works, we will prepare a Communications Plan for Hornsea Project Three. This will include distributing regular newsletters with project updates and organising events ahead of key construction milestones. During construction, a Community Liaison Officer (CLO) will be appointed who will act as the first point of contact for onshore related queries, ensuring communities have a direct link to the project team should they have any concerns.

You can view all our previous newsletters on our website in our Documents Library here: http://hornseaproject3.co.uk/Documents-library

You can sign up to receive our future newsletters on our website here: http://hornseaproject3.co.uk/Contact-us

Another offshore wind farm developer is planning to lay underground cables across Norfolk. How will you minimise any cumulative impacts associated with these projects?

Vattenfall is progressing the Norfolk Vanguard and Norfolk Boreas projects. Norfolk Vanguard is a project with its own technical and environmental characteristics and constraints, and is subject to a separate DCO process. Although both projects are in Norfolk, Norfolk Vanguard and Norfolk Boreas will make landfall near Bacton, many kilometres away from where the Hornsea Project Three cables will come ashore, and will connect into the National Grid at Necton. However, the potential cable routes do cross north-east of Reepham.

We are in close contact with Vattenfall at all levels of the project; we liaise on environmental consents, communications, stakeholder engagement, technical aspects etc., so it's not just one point of contact for both businesses. We are of course paying extra attention to where the proposed projects may cross in terms of the underground cables, as we recognise that, if both projects are built simultaneously, coordinating construction works will minimise disruption. An assessment of the potential cumulative effects which may arise as a result of both developments is provided in the relevant topic chapters of the Environmental Statement (see *Volume 2 and Volume 3*). You can view the Environmental Statement here: www.hornseaproject3.co.uk/application-documents

Want to contact us?

For any **general enquiries,** please contact our dedicated stakeholder team:

Email: HornseaProjectThree@orsted.co.uk

Please note our Freephone Consultation Line has now closed; however you can contact us by email or by post to (Hornsea Project Three Offshore Wind Farm, Ørsted, 5 Howick Place, London, SW1P 1WG) and a member of the team will get in touch.

Section 7 – Local engagement and benefits

What is the socioeconomic impact?

Over the past decade, the UK's offshore sector has grown significantly. Offshore wind already generates 5 per cent of the UK's electricity, and by 2021 to this will more than double to over 10 percent[12]. Hornsea Project Three could be the world's largest offshore wind farm, and has the potential to deliver significant benefits to Norfolk and beyond.

An assessment of the potential socio-economic benefits associated with Hornsea Project Three is provided in Volume 3, Chapter 10: Socioeconomics of the Environmental Statement, which can be found on our website here: http://hornseaproject3.co.uk/application-documents

Will there be local job opportunities?

We will work with the relevant Local Enterprise Partnerships (LEPs) and business groups to understand what can be supplied locally. Typically, we hold supply chain events nearer to the construction phase with principal contractors, and will advertise these events locally. Even at this early stage in the project development, members of the Project team and our contractors will be visiting the area frequently and using local businesses and facilities.

Will you be using ports in Norfolk?

We will certainly explore the ability to use port facilities along the East Coast. We are likely to use more than one port during construction, and cannot yet ascertain where we would site an operations and maintenance base. A decision on which port to use will not be made until detailed discussions have taken place with potential suppliers, at a stage when we have a greater understanding of where the various components will come from and port capabilities.

Will there be a Community Benefit Fund for Hornsea Project Three?

We have established voluntary Community Benefit Funds (CBFs) for a number of our projects, which are currently under construction. These funds can make a valuable contribution to the local area, by supporting projects such as community building improvements and recreation facilities, conservation and wildlife projects. Hornsea Project Three will review the interactions of the project, as the proposal is refined and consider an appropriate way to feed benefits back into the local community. Any decision to establish a CBF for Hornsea Project Three would be subject to us making a positive financial investment decision (FID).

[12] RenewableUK (October 2016). http://www.renewableuk.com/page/OWW16

Section 8 – Electro Magnetic Fields (EMF's)

What is EMF?

EMF in the context of electricity transmission stands for electric and magnetic fields. They are a part of the natural world, and generated wherever electricity is transmitted or used. Electric and magnetic fields are also generated wherever electricity is transmitted or used, for example household appliances or from sources in the built environment such as power lines.

Are there health concerns with EMF from electricity transmission?

Very extensive scientific research has been carried out to investigate potential for health risks from EMF. As a result, national and international health protection bodies have developed guidelines for public EMF exposure that are set to protect health. These guidelines are based on the lowest field strength at which there is a perceptible effect on the body, with a further precautionary margin applied.

How will EMF from the Hornsea Project Three Offshore Wind Farm grid connection be managed?

The underground cables and substation associated with the Hornsea Project Three Offshore Wind Farm grid connection will comply with the recommended EMF guidelines set to protect public health. A voluntary Code of Practice[13], that was developed by the UK Government, will be followed to provide evidence of this compliance in the DCO application for the development.

More information can be found in Environmental Statement, Volume 4, Annex 3.3 "Electro-Magnetic Fields (EMF) Compliance Statement" available online: www.http://hornseaproject3.co.uk/application-documents

Overhead vs Underground, and Substations

Both overhead power lines and underground cables generate electric and magnetic fields. A by-product of the design of high voltage underground cables is that the electric field is shielded and not measurable above ground level. The maximum magnetic field strength from an underground cable can be greater than from an overhead line (as the cables are closer to ground level), but also decreases more rapidly with distance away from it, mainly because the conductors of the cable are closer together and have a greater cancellation effect in the fields generated compared to an overhead line.

Substations will produce EMF, however the main source of EMF near them is typically the overhead lines or underground cables entering and exiting. Substations are designed not to exceed guideline EMF levels for public health protection at the outermost point where the public may be (i.e. the perimeter security fence or building wall).

Does EMF cause cancer?

Potential for low-frequency EMF to cause cancer has been extensively studied. No causal link with cancers, such as adult leukaemia, brain tumours and breast cancer, has been established. Some studies found evidence of a correlation between increased childhood leukaemia risk and low exposures to EMF from electricity transmission/use, although the evidence is mixed. Evidence for a causal relationship has not been established and no biologically plausible mechanism has been established. Furthermore, national and international health protection bodies generally do not consider this evidence strong enough to form the basis of public exposure guidelines.

Does EMF cause other health risks?

The view of health protection bodies, based on a wide-ranging health evidence base (including studies of reproductive and developmental effects, cardiovascular disease, neurodegenerative disorders, the immune system, and genotoxic effects), is that low-frequency EMF is not a cause of health risks and that the guideline exposure standards in place (based on well-established effects on the body) are appropriate to protect health.

Does EMF affect livestock or wildlife?

EMF from electricity transmission has not been shown to adversely affect livestock or onshore wildlife. Some marine species can sense EMF, and the potential effects of EMF on sensitive species (with mitigation if required) will be considered in the Environmental Impact Assessment where relevant.

What is the cumulative EMF of your cables and the cables for Ørsted's Hornsea Project Three project crossing?

In response to local concerns, Ørsted and Vattenfall have jointly commissioned an independent study and resulting report which explores the electric and magnetic fields (EMFs) that could occur to their maximum extent where power cables from three large wind farms cross one another. The report calculates this for the crossing of Ørsted's Hornsea Project Three and Vattenfall's Norfolk Vanguard and Norfolk Boreas offshore wind farms. The report

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/37447/1256-code-practice-emf-public-exp-guidelines.pdf

represents a conservative assessment of EMFs at this crossing, using worse case parameters, generated by a range of different possibilities, including which cables are on top or bottom, where they cross, and the angle of the crossing.

The calculated fields presented in the report, when compared against these worst-case parameters and for all the cable crossing scenarios irrespective of whether AC or DC cable connections are used, will be compliant with the UK exposure limits set to protect members of the public against electric and magnetic field exposure.

View the full report: here

More information on electro-magnetic fields in general is available from National's Grid's website at www.emfs.info or from the EMF helpline on 0845 702 3270 or emfhelpline@nationalgrid.com.