

# Hornsea Project Three Offshore Wind Farm



## Frequently Asked Questions (FAQs)

February 2018

[www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk)

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## Section 1 – General Project Questions

### What is Hornsea Project Three?

Hornsea Project Three is a new offshore wind farm project Ørsted (formerly DONG Energy) is proposing to develop in the North Sea, approximately 120 km off the north Norfolk coast. The offshore wind farm will be capable of generating up to 2,400 megawatts (MW), and could produce enough green electricity to meet the average daily needs of well over 2 million UK homes<sup>1</sup>.

### 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<sub>2</sub> 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.

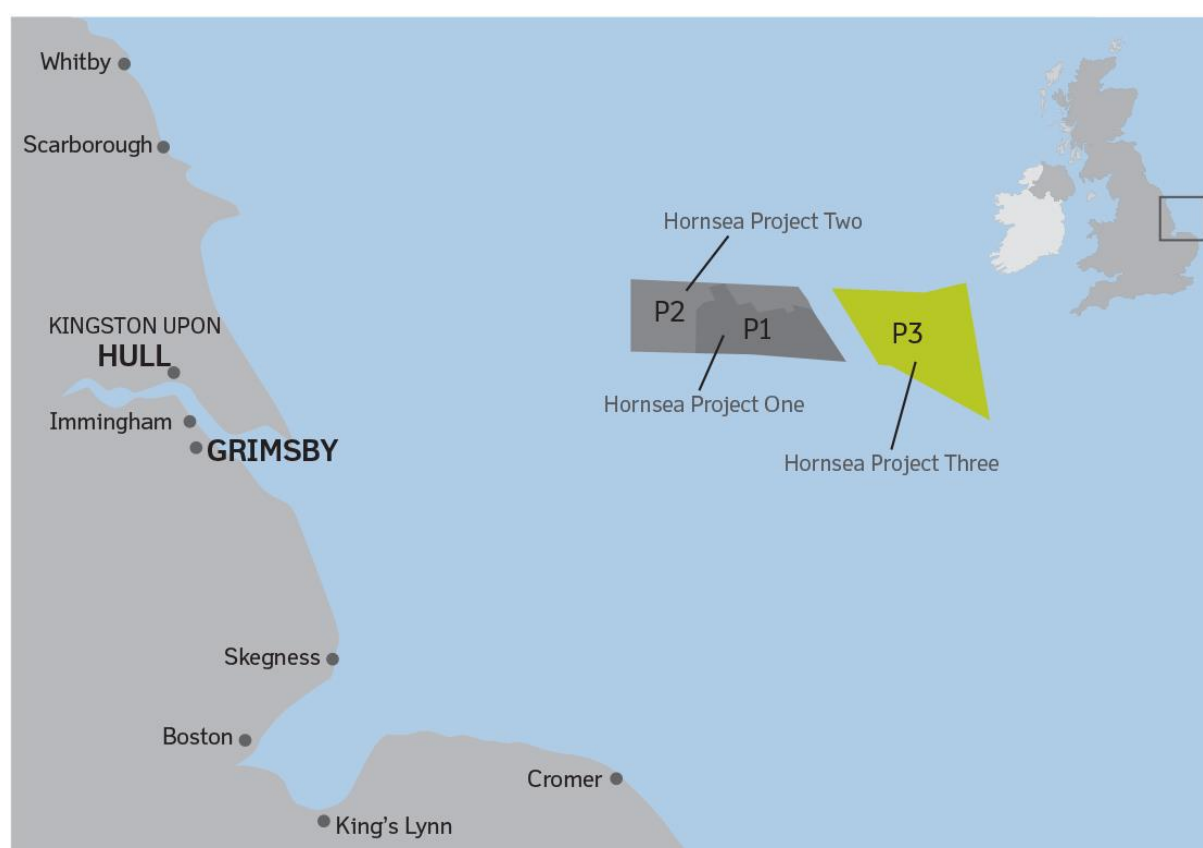
### What is the Hornsea Zone?

In August 2015, Ørsted 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 divided into four offshore areas and the remaining areas returned to The Crown Estate. To date, Ørsted has 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 in which the offshore wind turbines will be located) is approximately 696 km<sup>2</sup>, over 17 times the size of Norwich and is located approximately 121 km northeast of the Norfolk coast and 160 km 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.**



<sup>1</sup> This figure assumes a load factor of 42% and a household consumption of 4.1MWh per year (DECC, July 2015).

## Why 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 currently investigating the potential 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<sup>2</sup>. Over the next couple of decades, much 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 this 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<sup>3</sup> 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.

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<sup>2</sup> Climate Change Act 2008. Available online: [http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf)

<sup>3</sup> 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

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### 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)<sup>4</sup>, 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).

### Who decides whether to grant planning permission?

If the DCO application is accepted, the Planning Inspectorate (PINS) will then 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:

[www.https://infrastructure.planninginspectorate.gov.uk/](http://www.https://infrastructure.planninginspectorate.gov.uk/)

### What is an Environmental Impact Assessment?

In accordance with Regulation 10 of the Planning (Environmental Impact Assessment) Regulations 2009, we are also undertaking an Environmental Impact Assessment (EIA) of the proposed offshore wind farm (including all onshore associated infrastructure), which will be submitted alongside our DCO application.

An Environmental Impact Assessment (EIA) is an assessment of the likely positive or negative 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
- 2 Providing information about the development
- 3 Assessing significant environmental effects of the project
- 4 Proposing ways of **reducing, avoiding and mitigating** any significant adverse effects.

### What stage is the Project at now?

Hornsea Project Three is currently in the pre-application phase for a DCO, with a consent application expected to be submitted in the second quarter of 2018. Prior to submitting our DCO application, we will undertake pre-application consultation with local communities, host and neighbouring authorities, landowners and statutory bodies under the Planning Act 2008 (Figure 2).

#### **Key Project Milestones:**

September 2016

We published our **Statement of Community Consultation** (SoCC), which sets out how we plan 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-Community-Consultation.ashx?la=en&hash=337D84C3C7EBB3B86F81F9C324B46FDAA81C24D1&hash=337D84C3C7EBB3B86F81F9C324B46FDAA81C24D1](http://www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/General-Documents/HOW3_Statement-of-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:

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<sup>4</sup> Any energy project over 100 MW.

[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](http://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 series 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](http://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](http://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](http://www.infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/?ipcsection=docs)

The Project consulted on its 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](http://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](http://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](http://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 - September 2017

We published and undertook its 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) 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](http://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)

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](http://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)

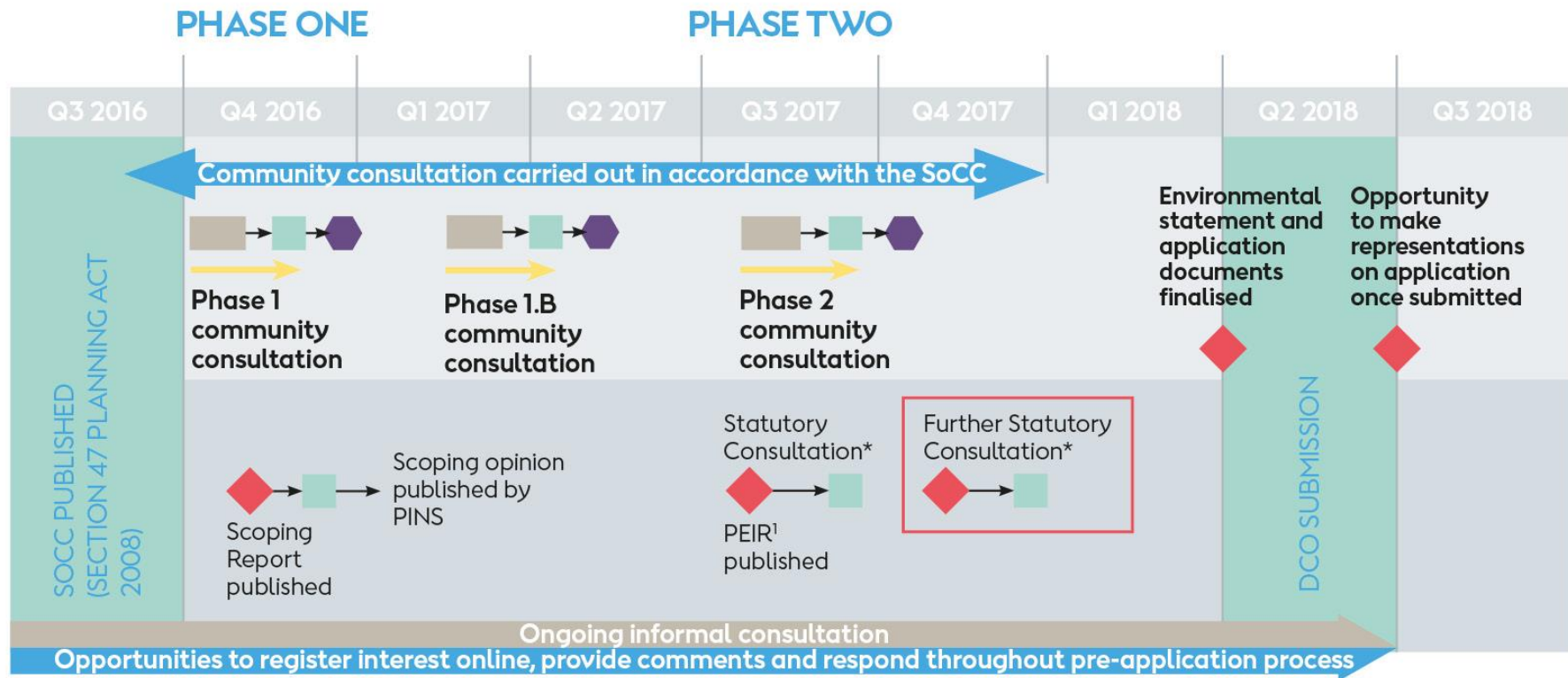
#### November 2017

We undertook further formal consultation on Hornsea Project Three. This further formal consultation was focused 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 formal consultation and through ongoing design refinement.



Further formal consultation on the new areas identified closed on **22 December 2017**<sup>5</sup>.

**Figure 2: Illustrative timeline of the consultation programme for Hornsea Project Three.**



**Note: Regular newsletters and key documents will be available throughout the consultation process.**

**Key**

SOCC	Statement of Community Consultation		Event material available online		Feedback deadline	* Statutory time period for consultation (Min. 28 days)
	Consultation documents		Public community consultation event		Consultation Summary Report	

<sup>1</sup> Preliminary Environmental Information Report

\* This diagram has been updated since it first featured in our Statement of Community Consultation (September, 2017).

<sup>5</sup> The deadline for providing comments on the offshore alternative routes was extended from 22 December 2017 to 7 January 2018, as the Project was informed that some of the statutory letters were missing the offshore document.



## Section 3 – Our Proposal

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### What are you proposing to build?

1. Electricity generated by up to 300 wind turbines<sup>6</sup> 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 km<sup>2</sup> and is located approximately 120 km northeast of the Norfolk coast and 160 km 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 be 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 will be transmitted to shore by up to 6 subsea export cables within a corridor 1.5 km in width (via either a HVAC or HVDC electrical connection) running in a south westerly direction for approximately 155 km 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 km. 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 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 km, before connecting into the national grid. The final corridor will be 80 m in width, of which 20 m 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 km 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 not be visible from the coast due to its distance offshore. The only infrastructure that might be visible would be the Onshore Substation near to the existing National Grid Substation (Norwich Main) and the onshore HVAC booster station (if required); however, we will seek to minimise this impact.

### 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. View our Interactive Map to see the exact location, as well as planned access points. The landfall location has been refined following feedback from stakeholders.

### Where can I view the proposed onshore cable route?

Following extensive consultation and detailed assessment work, we have refined our original onshore search area and published our onshore cable route that we will submit as part of our DCO application later this year. View our Interactive Map on the Project website ([www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk)). More detailed plans will accompany our application.

### How wide will the final onshore cable corridor be?

The cables will be installed underground within an 80-metre-wide corridor, which will include both the permanent installation area (60 metres) and the temporary working area (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.

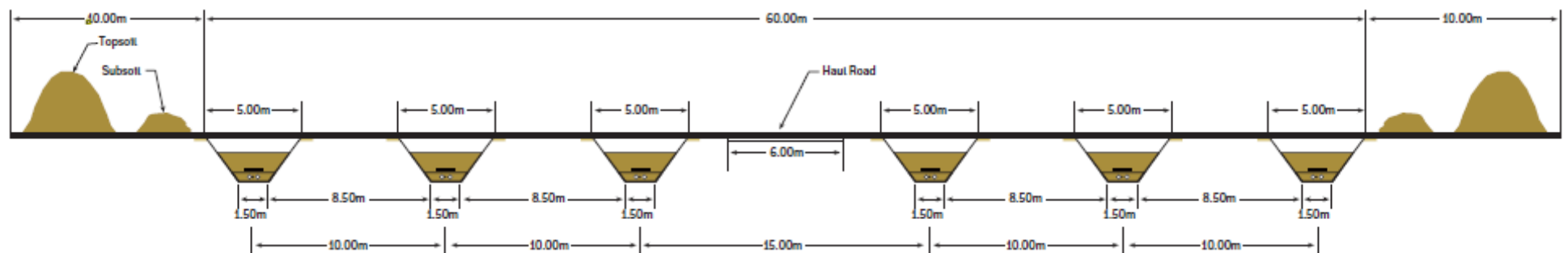
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<sup>6</sup> We reduced the maximum number of turbines from 342 to 300 following comments received from stakeholders as part of our statutory consultation. This will reduce the impact on several receptors including birds and seabed habitats.

### Why do you require 80 metres for the onshore cable corridor?

Up to six trenches will be required to accommodate up to six 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 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?

We have not yet completed a detailed design and therefore the optimal location of the booster station has not been determined; detailed and extensive studies of the power system will be necessary to decide this, and it may be necessary to construct both onshore AND offshore booster stations to ensure that the power from the wind farm can be economically transmitted over such distances.

### Will the 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/converter station near Norwich Main being required. Current market information suggests a HVDC scenario would require the larger building height.

### 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. We will conduct our assessments based on a realistic worst-case scenario, which could be either HVDC 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.

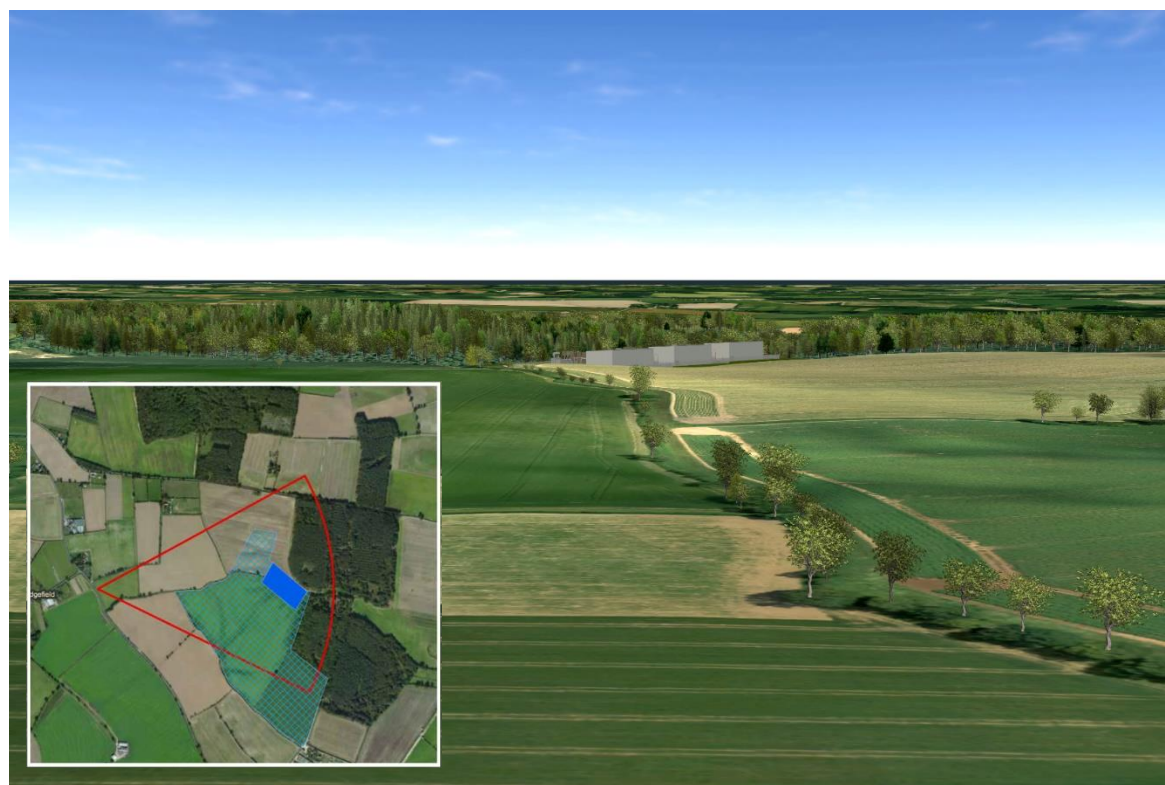
To identify a potential site for locating the onshore HVAC booster station, we conducted a constraint mapping exercise. This exercise indicated the southern half of our original search area (approximately 10 km from the coast) as least constrained and three potential sites were subsequently identified. 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 our PEIR, Volume 1, Chapter 4: Site Selection and Considerations of Alternatives: [www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/HOW03\\_PEIR\\_Volume-1-Chapter-4\\_Site-Selection-and-Alternatives.ashx?la=en&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B](http://www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/HOW03_PEIR_Volume-1-Chapter-4_Site-Selection-and-Alternatives.ashx?la=en&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B).

This will be updated within the final Environmental Statement (ES) submitted as part of the application in quarter 2 2018.

## What could the onshore HVAC booster station look like?

The onshore HVAC booster station could require an area of up to 25,000 m<sup>2</sup> and could be up to 12.5 m in height<sup>7</sup>. 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 exact location, as well as requirements for landscaping, will be determined based upon a wide range of human, biological and physical constraints as well as technical and commercial considerations. We prepared an indicative visualisation of what the booster station based on the maximum dimensions stated above for the September 2017 Community Consultation Events to give members of the local community a sense of what it could potentially look like (Figure 4). This does not include any visual mitigation. More detailed designs will feed into the Environmental Impact Assessment and will be available in the final application.

**Figure 4: Viewpoint taken at a height of 40 m looking East from the edge of Edgefield**



Please note, the above visualisation is indicative only and was produced to inform the September 2017 Community Consultation Events with no added visual mitigation based on maximum parameters e.g. building height. It should be noted that the onshore substation design will only be finalised post consent, but will be within the parameters assessed in the final application.

## 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. We will conduct our assessments based on a realistic worst-case scenario, which could be either HVDC or HVDC technology depending on the receptor.

It should be noted that although it may be possible to reduce the number of cable circuits with HVDC technology (if this becomes a feasible and viable option for the Project), that a HVDC onshore substation solution is anticipated to lead to utilisation of the larger height of the proposed new onshore substation that would need to be built.

<sup>7</sup> The final permanent land take requirements may be subject to change dependent on agreed requirements for visual mitigation and drainage.



## Why can't you commit to using DC technology?

At present, all UK offshore wind farms use HVAC technology and the technology, its 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 the UK (in that offshore transmission connections are centrally planned and delivered by the onshore utility) and the use of DC technology for the 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 converter 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.

There is a certain level of confidence in the UK wind industry that HVDC technology will become more mature before Hornsea Project Three will connect, but there is currently no certainty. Therefore, committing to solely HVDC now could restrict or even prevent the development of the project in the future if we do not see the necessary developments in the market. We may well eventually choose to opt for HVDC transmission technology; however, it is considered that to only seek a consent (planning permission) for such a technology (and excluding HVAC) at this time could make the eventual Project unbuildable and/or unprofitable.

Due to current uncertainty, a decision on which transmission system to adopt will not be made until post consent after extensive engagement with potential systems suppliers has taken place.

## Is cost the only reason you are not committing to HVDC?

No, cost is not the main reason for not committing to HVDC technology, as it is not clear which technology will represent the lowest cost until quotations are received from potential suppliers. As mentioned previously, system reliability, market availability and lead times are also major considerations when selecting a final transmission technology.

## 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 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 suitable site for locating the onshore substation, we developed a set of guiding principles to establish a search area (approximately 3 km 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.

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 our PEIR, Volume 1, Chapter 4: Site Selection and Considerations of Alternatives: [www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/HOW03\\_PEIR\\_Volume-1-Chapter-4\\_Site-Selection-and-Alternatives.ashx?la=en&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B](http://www.hornseaproject3.co.uk/-/media/Hornsea-Project-Three/HOW03_PEIR_Volume-1-Chapter-4_Site-Selection-and-Alternatives.ashx?la=en&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B&hash=16471A4C713C92D917551F5AEC4CA085F14BE34B).

This will be updated within the final Environmental Statement (ES) submitted as part of the application in quarter 2 2018.

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

In short, the proposed site is final and will be carried forward into the final application, albeit the boundaries of the site and refinement of this area are being reviewed as part of the ongoing development of our proposals. Through the site selection process, we have considered various areas within our original 3 km 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 are very limited options available and this was determined to be the most suitable following our site selection process.

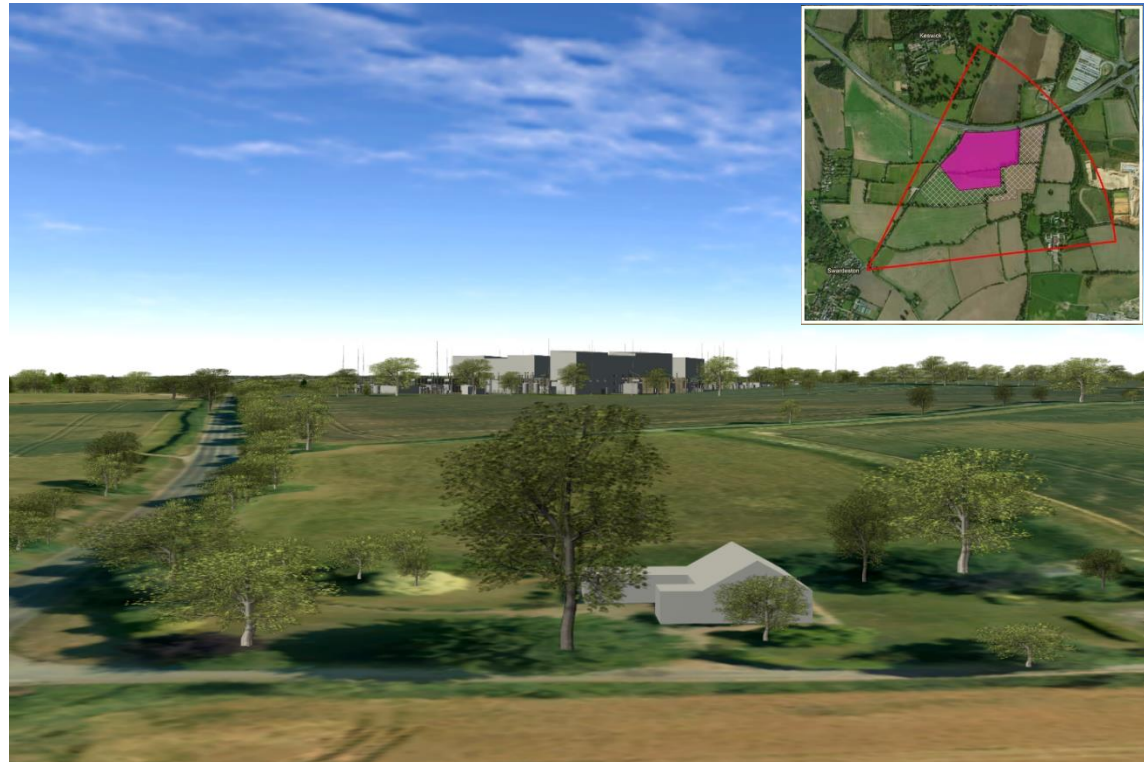
The site we have selected is close to the existing onshore substation. Generally, we seek to site our substation as close as possible to the existing substation, taking account of other constraints such as available land, access and existing infrastructure.



## What could the onshore substation look like?

In the PEIR, we presented a proposed site for the onshore substation covering an area of up to 128,000 m<sup>2</sup> of permanent land take<sup>8</sup>, which provided for the permanent infrastructure (i.e. substation and associated access – roads, fencing and some 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 location, as well as requirements for landscaping, would be determined based upon a wide range of human, biological and physical constraints as well as technical and commercial considerations. We prepared an indicative visualisation of what the onshore substation based on the maximum dimensions stated above for the September 2017 Community Consultation Events, to give members of the local community a sense of what it could potentially look like (Figure 5). This does not include any visual mitigation. More detailed designs will feed into the Environmental Impact Assessment and will be available in the final application.

**Figure 5: Viewpoint taken at a height of 15 m looking north-east from the edge of Swardeston**



*Please note, the above visualisation is indicative only and was produced to inform the September 2017 Community Consultation Events, without any visual mitigation based on maximum parameters e.g. building height. It should be noted that the onshore substation design will only be finalised post consent, but will be within the confined assessed in the final application. The visualisation shown has used maximum envelope parameters such as height, which as mentioned before would likely result from a HVDC scenario.*

Detailed OS maps can be found on our website: [www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk).

## What is the visual impact?

We have undertaken a preliminary Landscape and Visual Impact Assessment (LVIA) for the onshore HVAC booster station and onshore HVDC converter/HVAC substation, which is contained within the PEIR. Due to the preliminary nature of these assessments, they were based on the worst-case scenario with no mitigation in place and indicated that a significant effect was likely. Ongoing design refinement process and feedback from stakeholders in response to the formal consultation, is currently being used to identify potential mitigation options to reduce the impact which will then inform the preparation of the final LVIA. As an 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.

The final LVIA will be submitted as part of the Environmental Statement within the application in 2018. This will include wire line images, photomontages and will be supported by an outline Landscape Management Plan. 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 under either technology is envisaged to be similar; however, the maximum height of the substation required under the HVDC technology could be larger (towards the 25-metre maximum building height) than a HVAC solution.

<sup>8</sup> The final permanent land take requirements may be subject to change dependent on agreed requirements for visual mitigation and drainage.

### Will there be any noise?

We have undertaken noise assessments near to the proposed site for the onshore HVAC booster station and onshore substation, including conducting surveys of existing noise levels to compare against, assuming no mitigation with the loudest realistic equipment that we might use. The assessments are based on a worst-case scenario and currently indicate that a significant effect is likely. Based on these initial assessments, we will now refine our design to reduce these impacts to an appropriate level.

This could include housing noisier elements, adding additional insulating materials to the inside of buildings or introducing outdoor shielding. We will consult on the proposed mitigation measures with the relevant local planning authority before submitting our final application and beyond this. This is part of the ongoing engineering design work.

### How will the proposed development impact traffic locally?

We will work with the highways authorities and the Local Planning Authorities to minimise any impact on local traffic during the construction period, and have engaged in initial dialogue on this which will continue. Although we will be using a mixture of open cut trenching and Horizontal Directional Drilling (HDD) to install the onshore cables, we have committed to using trenchless technology for all road crossings which enables us to dig underneath roads without damaging the infrastructure above ground. By using trenchless technology, we avoid road closures and can minimise the potential impact on local road networks.

Furthermore, measures will 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 will be provided in an outline Code of Construction Practice which accompanies the application. Furthermore, 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 documenting the routing that must be followed by the contractor as they leave the primary road network.

### When could Hornsea Project Three be built?

If granted planning permission, construction for Hornsea Project Three Offshore Wind Farm, could commence in 2020 with the wind farm becoming operational from 2025<sup>9</sup>.

### Will the offshore wind farm be decommissioned?

We will submit a Decommissioning Plan as part of our DCO application. 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 could be an opportunity to review the wind farm and seek an application for repowering if this was viable. In the repowering scenario, the project would need to reapply.

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<sup>9</sup> All dates are indicative and subject to change.



## Section 4 – Construction Works

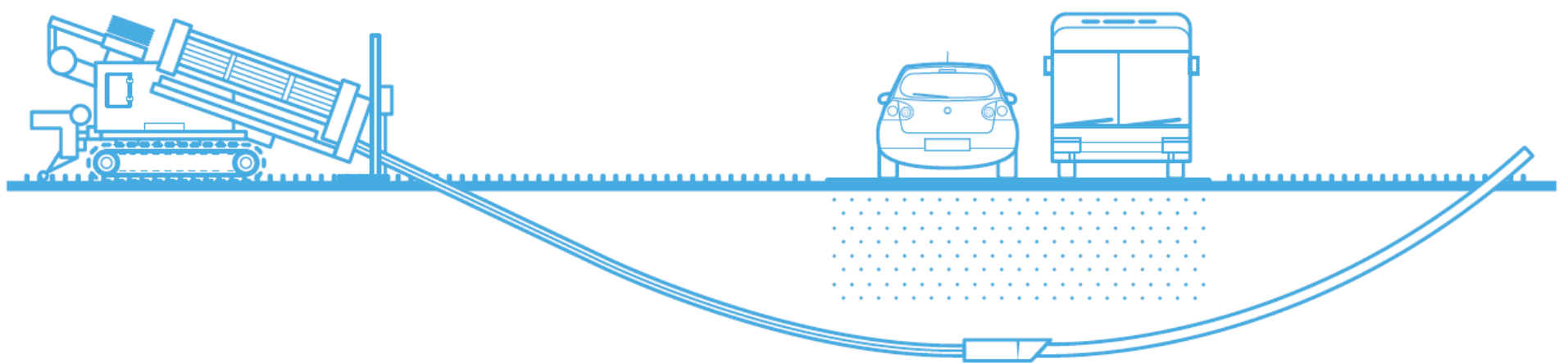
### How will you install the cables?

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 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. This could include rivers, woods and major roads. 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 6). We have identified over 70 points along the onshore cable route where we are proposing to HDD.



Figure 6: 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<sup>10</sup>.

### How deep will you bury the cables?

Individual cables will be buried on land at a minimum depth of 1.2 m 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 m. 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. We will also have plans for Soil Management, Weed Management and Bio-security.

### 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

<sup>10</sup> 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 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 they know their land best. For example, we would be very keen to see copies of drainage plans.

We have already spoken with and consulted with many landowners, and farmers' concerns have already fed into the cable route design. We 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 shown in the February 2018 newsletter and on the Interactive Map on the Project website ([www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk)). These 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<sup>11</sup>.

During construction, temporary haul roads will be installed within the 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. These access points are marked on the latest plans – see our Interactive Map on the project website ([www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk)). Further information on proposed vehicles routes and how this will be managed will be provided in the Environmental Statement that we submit alongside our DCO application.

### 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 can remain/be restored and fencing/walls etc. 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. This includes crossings of other infrastructure, joint bay and link box construction. The construction compounds will be established pre-construction and remain in place throughout the construction phase, although they may not remain in continual active use. The 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.

We have confirmed the location for the main compound site as Oulton Airfield site in Broadland. This site operate as a central base for the onshore construction works. Up to five secondary compounds (smaller in scale) will also be required along the cable route to facilitate construction works in those areas. These compounds will be used to store equipment and welfare facilities and are marked on the latest plans - view our Interactive Map on the project website ([www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk)).

### 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 heavy goods vehicles as well as abnormal indivisible loads.

Measures will be implemented to minimise dust, mud and debris associated with the movement of construction vehicles between the compounds and the route, the details of which will be provided in an outline Code of Construction Practice (CoCP) which accompanies the application. Furthermore, 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.

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

Where we cross large sections of woodland, we will install the cable using Horizontal Direction Drilling (HDD) wherever technically possible to do so. 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.

<sup>11</sup> Some of these areas identified for access are outside of the area previously shown in the PEIR and supporting plans (July to September 2017). These new areas are marked on the current consultation plans as part of the further statutory consultation (November to December 2017).



### 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, the Project 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 to be undertaken 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 works duration of three months at any one 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 could take up to 3 years.

### Will it all be built at once?

In our Preliminary Environmental Information Report (PEIR), which was published in July 2017 (available on our website [www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk) in the Documents Library), 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 this to 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 will be included in the Environmental Statement that we submit alongside our application. 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 eleven (previously presented) to eight 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?

We do not know this until we get into detailed discussions with the relevant local planning authority (LPA), however, there will likely be prescribed acceptable start and end times of construction which are agreed with the LPA both during the working day and in relation to the allowance for weekend working. In certain cases, such as HDD crossings, the project may need to seek to acquire temporary abilities for 24-hour construction. However, this would need to be discussed with the relevant LPA in advance to secure permission, and consider the proximity of residential properties etc.

## Section 5 – Landowner Specific Questions

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### 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.

### 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. We'll continue our detailed conversations with landowners to ensure individuals comments and concerns and fed through to the final design where possible.

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.

### 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.

### What surveys are needed on my land between now and DCO submission?

The majority of onshore survey work that is required prior to the submission of the DCO application is now complete. There are a small number of surveys which are still being conducted in relation to the ecology of the proposed onshore cable route. These will be completed by Spring 2018.

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

The refined 200-metre-wide cable corridor and alternative routes presented as part of our previous statutory consultation was our *preferred corridor*, however it is *subject to change*. The final 80-metre-wide cable route will be informed by the results of environmental surveys and technical and feasibility studies, as well as ongoing consultation with landowners and statutory bodies. If a major re-route were required for instance due to technical or environmental reasons, we would need to adjust the corridor accordingly. If we do need to re-route the cable corridor you will be informed.

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

At this stage of the project we are consulting on the principle of installing a cable through your property and obtaining feedback which may affect the routing of a cable through your land. Once we have a better idea of the land we are likely to affect, we will then start to discuss the terms of any agreement. This will be in Q1 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 are currently undertaking 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?

Ørsted 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](mailto:HornseaProjectThree@dalcourmaclaren.com)

**Land Agent dedicated project phone line:** 0333 2413 455

**[NOTE: For non-landowner related queries please see contact details within Section 6 or on the project website ([www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk))]**

## Section 6 – Our Consultation

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### Where can I view your latest plans?

You can view the most up to date Project information on our website – [www.hornseaproject3.co.uk](http://www.hornseaproject3.co.uk).

Our latest plans can be viewed on our Interactive Map, which allows users to zoom into their area of interest either manually, or by entering a known postcode.

The Project has published its PEIR, which presents the findings of the environmental assessments we have carried out to date to develop our proposal. This is a technical report which provide details of the project proposal and explains what effects we believe our proposals would have on the environment. It also provides some details in terms of how we plan to minimise these effects where appropriate.

The full Preliminary Environmental Information Report can be viewed/downloaded from our website here: [www.hornseaproject3.co.uk/Documents-library/PEIR-Documents](http://www.hornseaproject3.co.uk/Documents-library/PEIR-Documents).

All our previous reports are also available to download from our [www.hornseaproject3.co.uk/en/Documents-library](http://www.hornseaproject3.co.uk/en/Documents-library). This includes detailed plans showing the proposed areas both onshore and offshore.

### How will you keep local communities informed?

During the consultation period, the Project will produce quarterly newsletters to keep local communities informed as our plans progress. If you would like to sign up to receive copies of our newsletter, you can register your interest in the Project on our website ([www.hornseaproject3.co.uk/Contact-us](http://www.hornseaproject3.co.uk/Contact-us)) or by contacting us directly (details below).

Documents submitted to The Planning Inspectorate and any that they seek consultation on can be accessed on their website: [www.infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/?ipcsection=overview](http://www.infrastructure.planninginspectorate.gov.uk/projects/eastern/hornsea-project-three-offshore-wind-farm/?ipcsection=overview).

### Will I be able to comment on your plans?

We will continue to consult with local communities, local authorities, utility companies, environmental and other bodies to help shape our proposal in the lead up to submission of our DCO application in 2018. We have already held three rounds of community consultation events at various locations across Norfolk. To find out more about our events and the feedback we received visit: [www.hornseaproject3.co.uk/Public-consultation](http://www.hornseaproject3.co.uk/Public-consultation)

We strongly encourage anyone with an interest, who wants to comment on our plans to get in touch with us directly.

### Will my views be considered?

Yes. Your views are important to us and this pre-application consultation is your opportunity to influence our proposal. After each round of consultation events, we will carefully consider all the feedback received at that point in time, and will summarise the key findings in a Consultation Summary Report, which will be available on our website. These reports can be viewed on our website in our Documents Library: [www.hornseaproject3.co.uk/Documents-library](http://www.hornseaproject3.co.uk/Documents-library).

No decisions will be made until detailed studies and public consultations have been carried out. The Planning Act 2008 encourages a consultation driven application process where comments regarding our proposal are documented and addressed where possible. At the end of the consultation period, we will prepare and submit a Consultation Report alongside our DCO application (due to be submitted in quarter two 2018), which will explain how we consulted, provide a summary of all the feedback we received and explain how those comments influenced our plans.

### 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.

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. Additionally, we are in close consultation regarding any areas where there could be potential for cumulative impacts to arise as a result of both developments to ensure we progress the projects appropriately and sensitively.

### Can I speak directly to members of the team?

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

Email: [contact@hornsea-project-three.co.uk](mailto:contact@hornsea-project-three.co.uk) / **Freephone Line:** 0800 0288 466



## Section 7 – Local engagement and benefits

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### 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<sup>12</sup>. Hornsea Project Three could be the world's largest offshore wind farm, and has the potential to deliver significant benefits to Norfolk and beyond.

As part of our Environmental Impact Assessment (EIA), we will assess the potential socio-economic benefits associated with the scheme. A draft version of this document in the form of a PEIR is available to view on our website, see Chapter 10: Socio-economics: [www.hornseaproject3.co.uk/Documents-library/PEIR-Documents](http://www.hornseaproject3.co.uk/Documents-library/PEIR-Documents)

### 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 where we have a greater understanding of where the various components will come from and port capabilities. This will likely be post consent.

### 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 etc. 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 made post financial investment decision (FID), when the Project has been given the green light to go ahead.

### 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 also 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.

*Note: Construction of an offshore wind farm typically lasts 3-4 years, with operations and Maintenance lasting 25 years.*

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<sup>12</sup> RenewableUK (October 2016). <http://www.renewableuk.com/page/OWW16>

## Section 8 – Electro Magnetic Fields (EMF's)

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### 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<sup>13</sup>, 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 Annex 3.3 "Electro-Magnetic Fields (EMF) Compliance Statement" of the PEIR available online:

[www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/HOW03PEIRVolume-4-Annex-33EMF-Compliance.ashx?la=en&hash=E08F54BFEA3DC11536B8B26EAD5F8B0F1DCC6FF3&hash=E08F54BFEA3DC11536B8B26EAD5F8B0F1DCC6FF3](http://www.hornseaproject3.co.uk/-/media/WWW/Docs/Corp/UK/Hornsea-Project-Three/HOW03PEIRVolume-4-Annex-33EMF-Compliance.ashx?la=en&hash=E08F54BFEA3DC11536B8B26EAD5F8B0F1DCC6FF3&hash=E08F54BFEA3DC11536B8B26EAD5F8B0F1DCC6FF3)

### 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.

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<sup>13</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/37447/1256-code-practice-emf-public-exp-guidelines.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/37447/1256-code-practice-emf-public-exp-guidelines.pdf)