

NAVITUS BAY WIND PARK

ENVIRONMENTAL STATEMENT

NON-TECHNICAL SUMMARY

DOCUMENT 6.3

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1 INTRODUCTION

1.1 PURPOSE

- 1.1.1 The proposed Navitus Bay Wind Park (the Project) is an offshore wind farm of up to 970 megawatts (MW) of generating capacity located west of the Isle of Wight in the English Channel.
- 1.1.2 This Non-Technical Summary (NTS) document summarises the Environmental Statement (ES) (Document 6.1) for the Project. The ES provides information on likely significant impacts of the construction, operation, maintenance and decommissioning phases of the Project on existing physical, biological and human environments and details mitigation measures proposed.
- 1.1.3 Although this NTS provides a full summary, for more detailed information readers should refer to the full ES which is divided into four main volumes with supporting appendices (Document 6.2).

1.2 THE APPLICANT

- 1.2.1 Navitus Bay Development Limited (NBDL) is a British company registered in the UK formed following a joint venture between Eneco and EDF Energy to develop the Project.
- 1.2.2 Based in Warwick, Eneco Wind UK Ltd is a subsidiary of the publicly owned Dutch utility, Eneco BV – a company dedicated to supplying energy that is reliable, affordable and clean. The UK portfolio includes six onshore wind projects with 17.5 MW in operation, 94 MW under construction, 82.5 MW consented and 69MW in planning. Eneco UK also owns and operates a 10 MW solar farm.
- 1.2.3 EDF Energy is one of the UK's largest energy companies and the largest producer of low-carbon electricity. Electricity is generated from its nuclear power stations, wind farms, coal and gas power stations and combined heat and power plants. EDF Energy has recently constructed a 62 MW offshore wind farm in Teesside, off the North East coast. It also has over 500 MW of onshore wind farms in operation or under construction in the UK.

¹ This figure has been calculated with a site specific capacity factor of 35% and is based on an average annual UK domestic household electricity consumption of 4,266 kWh (Source, DECC).

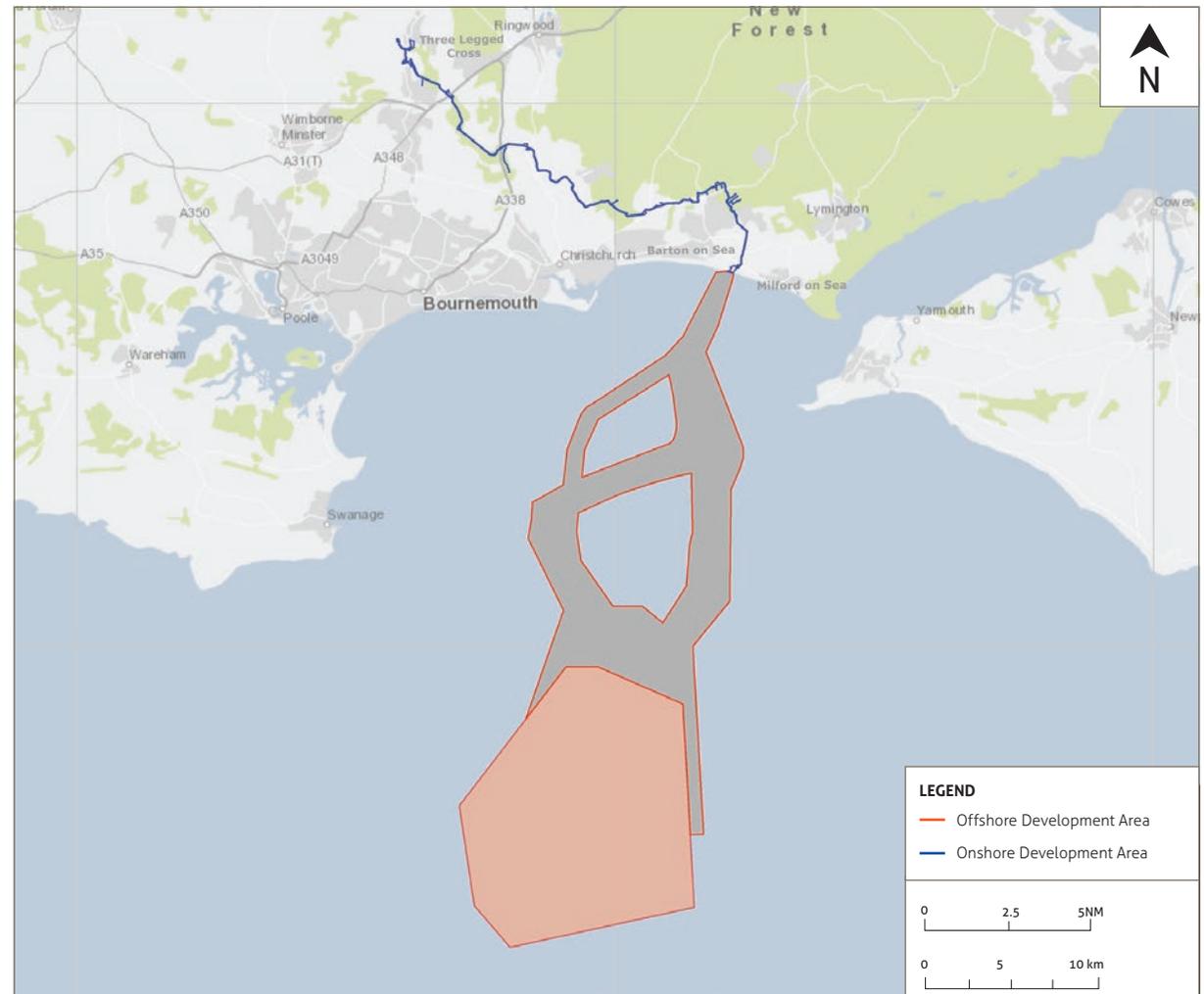
² Based on Office of National Statistics census data (2011).

³ Based on a figure of 430g CO₂/kWh, calculated using Renewable UK's CO₂ Reduction (pa) in tonnes methodology (Source: Renewable UK's UK Wind Energy Database).

1.3 THE PROJECT

- 1.3.1 The Project comprises both offshore elements and associated onshore infrastructure. Figure 1 shows both areas of the overall Project. The Offshore Development Area comprises the Turbine Area and the Export Cable Corridor. The Onshore Development Area consists of a cable Landfall, the Onshore Cable Corridor and the Onshore Substation.
- 1.3.2 The offshore elements of the Project include wind turbine generators and associated foundations connected by subsea inter-array cables that are, in turn, connected to offshore substation platforms. These are located within the Turbine Area and convert the electricity generated by the turbines to a higher voltage. The electricity is transferred via export subsea cables to a point onshore where they will meet the onshore transmission cables at Taddiford Gap, between Barton-on-Sea and Milford-on-Sea. The onshore cables will be buried underground along a distance of approximately 35 km to a new substation built by NBDL at Three Legged Cross, north of Ferndown, East Dorset. Within the Turbine Area there will be a meteorological mast which would provide information about the wind (speed and direction etc.) at the project site, check the output of the wind turbines and monitor performance.
- 1.3.3 The expected maximum installed capacity of the Project is 970 MW. In an average year the Project would generate enough electricity for around 710,000 homes,¹ which is equivalent to eight times the number of homes in Bournemouth or nearly 12 times the number on the Isle of Wight.² The energy produced would also lower harmful carbon dioxide emissions by up to 1,290,000³ tonnes per year.

Figure 1 – Map of Offshore and Onshore Development Areas



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2 LEGISLATION AND POLICY

2.1 INTRODUCTION

2.1.1 There is a clear demonstrated need for the Project as set out in the National Policy Statements (NPS). For example, Part 3 of the Overarching NPS for Energy (EN-1 Statement) describes the need for new Nationally Significant Infrastructure Projects (NSIP) such as the proposed Navitus Bay Wind Park. This statement makes it clear that the UK needs a mix of all types of energy infrastructure to achieve energy security at the same time as dramatically reducing greenhouse gas emissions. Other relevant NPSs relate to Renewable Energy Infrastructure (EN-3) and Electricity Networks Infrastructure (EN-5). Figure 2 shows the relevant legislation and policy.

2.1.2 The 2010 National Renewable Energy Action Plan confirmed the UK's commitment to source 15 % of its energy from renewable sources by 2020, meeting the mandatory national target set under the Renewable Energy Directive at a European level. While biomass, hydroelectricity and wave and tidal generation are all considered to have an important role to play, the Action Plan states that offshore wind is a key area for development and will play a key role in meeting the 2020 target.

2.2 THE PLANNING ACT 2008

2.2.1 Consent for the Project is being sought under the Planning Act 2008, which sets the framework for developing NSIPs. The Project is defined as an NSIP as it would be an offshore wind farm with a generating capacity of more than 100 MW.

2.2.2 The consent to build and operate an NSIP is given in the form of a Development Consent Order (DCO). DCO applications are examined by the Planning Inspectorate and a decision to grant or refuse consent will be made by the Secretary of State for Energy and Climate Change.

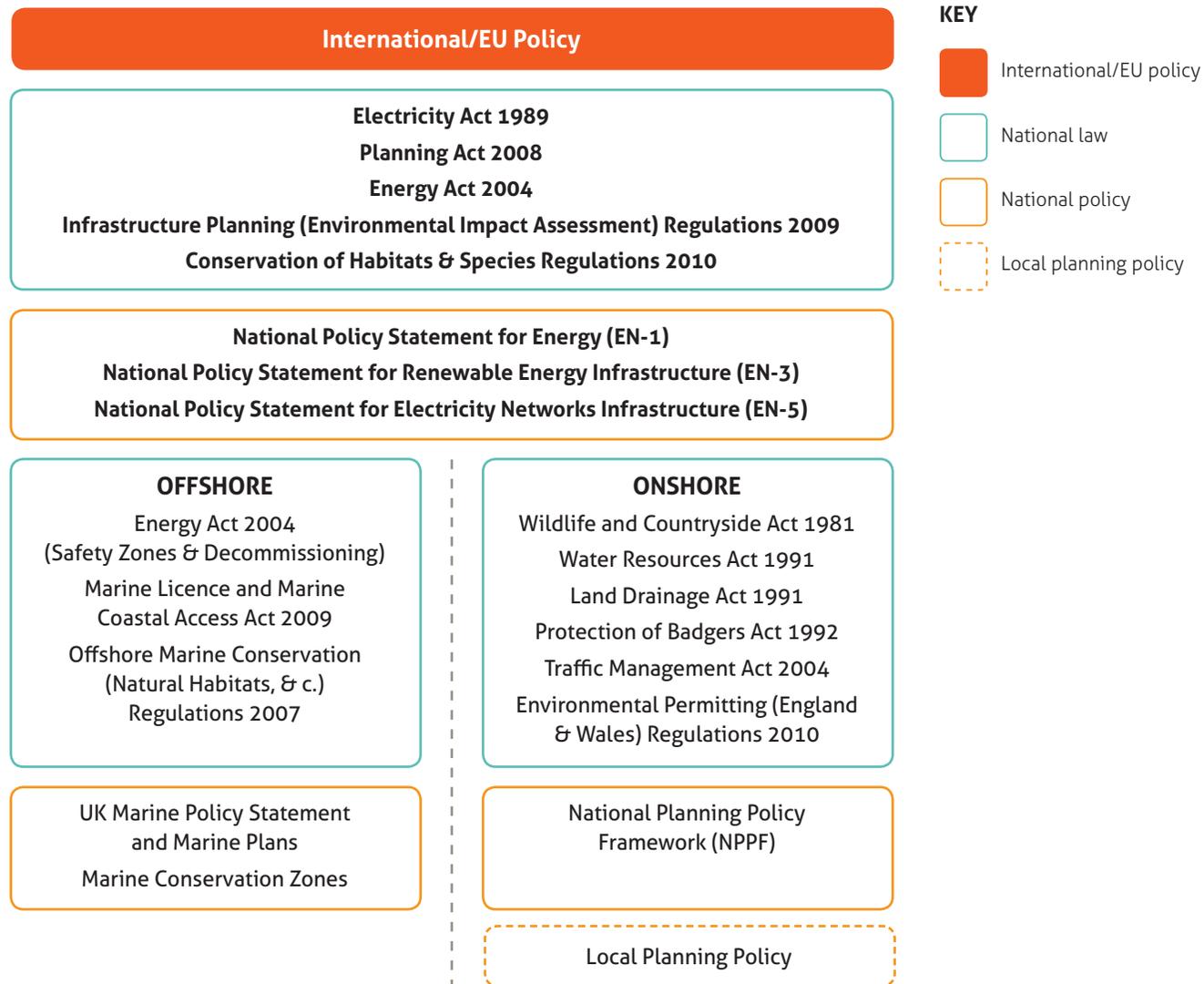
2.2.3 This application for development consent covers all aspects of the Project (i.e. including the offshore and onshore elements), with electrical grid connection works being defined as 'associated development' under this process. This application for development consent includes provision for deemed marine licences which have been written in consultation with the Marine Management Organisation (MMO) and other statutory bodies.

2.2.4 The process of Environmental Impact Assessment (EIA) is required to be followed for the DCO application. For NSIPs such as the Project the requirements of the European Directive 2011/92/EU (the EIA Directive) have been transposed into UK legislation by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009, as amended (the EIA Regulations).

2.2.5 In accordance with the EIA Regulations, an ES and this NTS have been produced by NBDL to provide information on the likely significant environmental effects. These documents accompany the application for development consent. Together with responses from statutory consultees and members of the public they form the environmental information that the Secretary of State is required to take into account before determining this application for development consent.

2.2.6 Separate to the ES, reports providing information to support a Habitat Regulations Assessment (HRA) (Documents 5.3 and 5.4) are also required for the Project. The Secretary of State will use the report to determine whether there are any likely significant effects on European sites protected under the Habitats or Birds Directives as Special Areas of Conservation (SACs), candidate SACs, Special Protection Areas (SPAs), proposed SPAs and Ramsar sites and, if so, to undertake an appropriate assessment to determine whether there would be adverse effects on the integrity of any of these sites. The Project has therefore also provided the required information as part of this application for development consent.

Figure 2 – Legislation and policy context



3 CONSULTATION

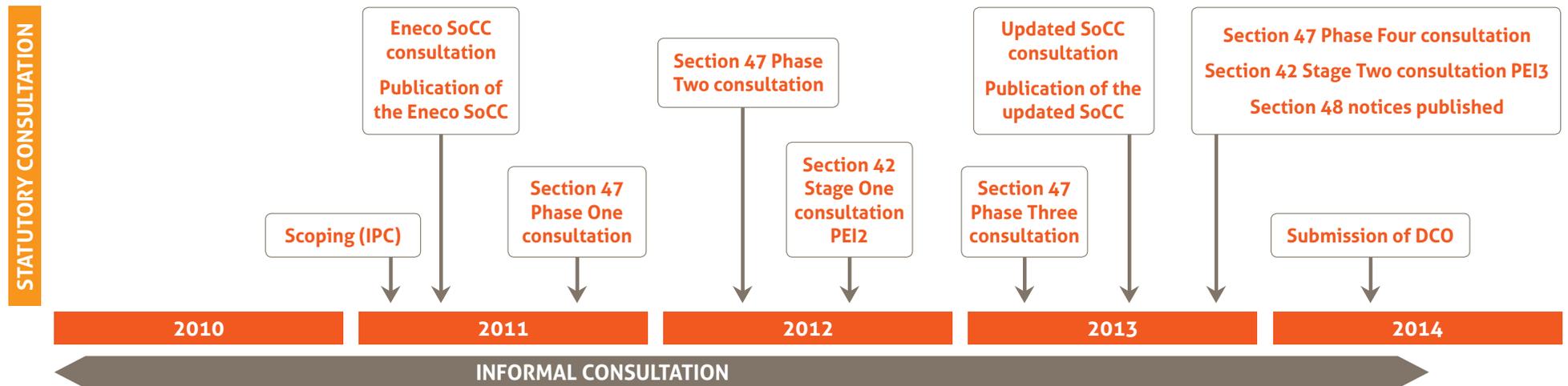
3.1 PURPOSE AND AIMS

- 3.1.1 Pre-application consultation is a key element of the Planning Act 2008, which sets a requirement for the developer to consult with members of the public, those with an interest in the land affected by the Project and certain prescribed statutory bodies. The local community are consulted under Section 47 of the Act and the general public under Section 48 of the Act. Statutory bodies are consulted under Section 42 of the Act and those with an interest in the land under Section 44 of the Act. Consultation is also an essential part of the EIA process under the EIA Regulations.
- 3.1.2 Consultation on the Project with the local community was set out in a Statement of Community Consultation (SoCC) .
- 3.1.3 Comprehensive consultation, both formal and informal, has been ongoing with the local community and statutory bodies since 2010, which has helped to shape the Project. This consultation has been undertaken to seek agreement on surveys and methodologies, exchange information and results, consider potential mitigation measures for significant effects and to discuss the way in which the ES and HRA should be undertaken.
- 3.1.4 Figure 3 illustrates the main stages of pre-application consultation adopted for the Project. This multiple stage process has allowed NBDL to develop the Project through iterative design, enabling consultees to see how the Project has changed in response to their feedback.
- 3.1.5 A Scoping Report was submitted to the Infrastructure Planning Commission (now subsumed into the Planning Inspectorate) in September 2011 and a Scoping Opinion was received in November 2011. Refer to Documents 6.1 and 6.4 for further information.
- 3.1.6 Phase One community consultation on the proposed Onshore Substation location was undertaken in November 2011, with Phase Two focusing on the offshore project elements following in February 2012. During the summer of 2012, the first stage of formal consultation with statutory consultees under Section 42 was completed, with Phase Three community consultation, seeking views and comments on the revised Project design informed by the first two public consultation exercises completed a year later in February 2013. A second stage Section 42 consultation with statutory bodies was undertaken in the autumn of 2013, together with Phase Four community consultation and publicity under Section 48 of the Act.
- 3.1.7 NBDL has made sure that information about the Project has been available and accessible throughout the process, with clear instructions on how to respond to the consultation events and documents, making extensive use of the Project website, public exhibitions, community drop-in sessions, comments forms and newsletters.
- 3.1.8 Further detail on the consultation that has been undertaken and the way in which the Project has addressed feedback is set out in each topic chapter of the ES and in the Consultation Report (Document 5.1).



Public exhibition at Lymington Community Centre in February 2013

Figure 3 – Pre-application consultation process



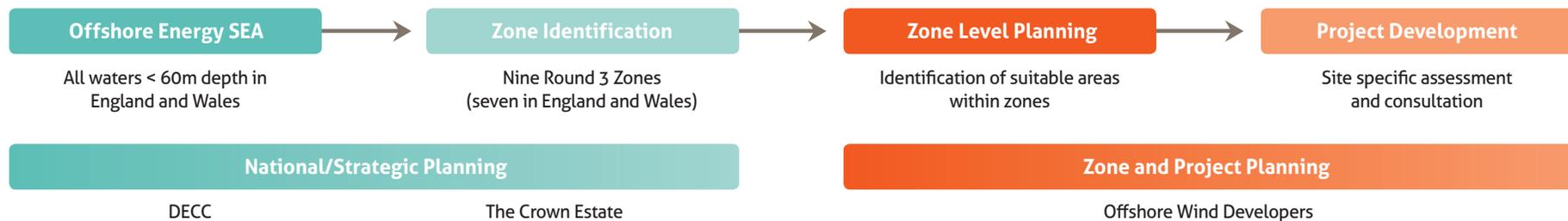
4 ALTERNATIVES AND SITE SELECTION

4.1 OFFSHORE

- 4.1.1 The process for considering alternatives and selecting the final project site was a detailed exercise that started with The Crown Estate launch of its third large-scale offshore wind programme 'Round 3', which was itself informed by the findings of the Offshore Energy Strategic Environmental Assessment undertaken by the Department of Energy and Climate Change (DECC) in 2009 (DECC, 2009). Figure 4 shows the process for offshore site selection.
- 4.1.2 Nine areas (called zones) were identified for Round 3; Zone 7 (West Isle of Wight) being the zone within which the Project has been brought forward. Being allocated a large zone area provided the opportunity to ensure that the best site for a wind farm project could be identified; designing a project that could be built safely and efficiently and minimising any negative impacts to the environment or stakeholders, whilst at the same time making sure that the maximum benefit in terms of renewable energy generation could be achieved.

- 4.1.3 The assessment of the zone, called 'Zone Appraisal and Planning' (ZAP), was undertaken in 2010. The ZAP process involved the collection of a wide range of data to gain a better understanding of the zone and a consultation with over 55 statutory and non-statutory organisations and the local community to capture early views on the site selection process.
- 4.1.4 The selection of the most appropriate site within the zone started initially by excluding areas where the seabed was unsuitable, for example because of seabed geology or water depth, or where environmental sensitivity or human use would have presented conflicts that could not be avoided. This process is called 'constraints mapping' and the results of this exercise resulted in an area for development being identified in the north of the zone.
- 4.1.5 The progression from this point was one of further continuous refinement and revision of the Project design within the selected area as knowledge of the site increased as part of the EIA and pre-application consultation process.

Figure 4 – Offshore site selection process



4.1.6 There have been some notable milestones where plans have been consulted on and subsequently altered following consultation. This illustrates the iterative approach taken by NBDL. A boundary reduction was made before the Preliminary Environmental Information (PEI) 3 was published for consultation with Section 42 and 47 consultees in September 2013, which included:

- aligning the new boundary with the Hurst Point leading light, a key navigation aid, and thus increasing the distance of the project from the coastlines of Bournemouth, Poole and Christchurch;
- reducing the range of wind turbine sizes and the maximum number of turbines being considered;
- reducing the maximum height of the largest turbines proposed; and
- reducing the overall Turbine Area.

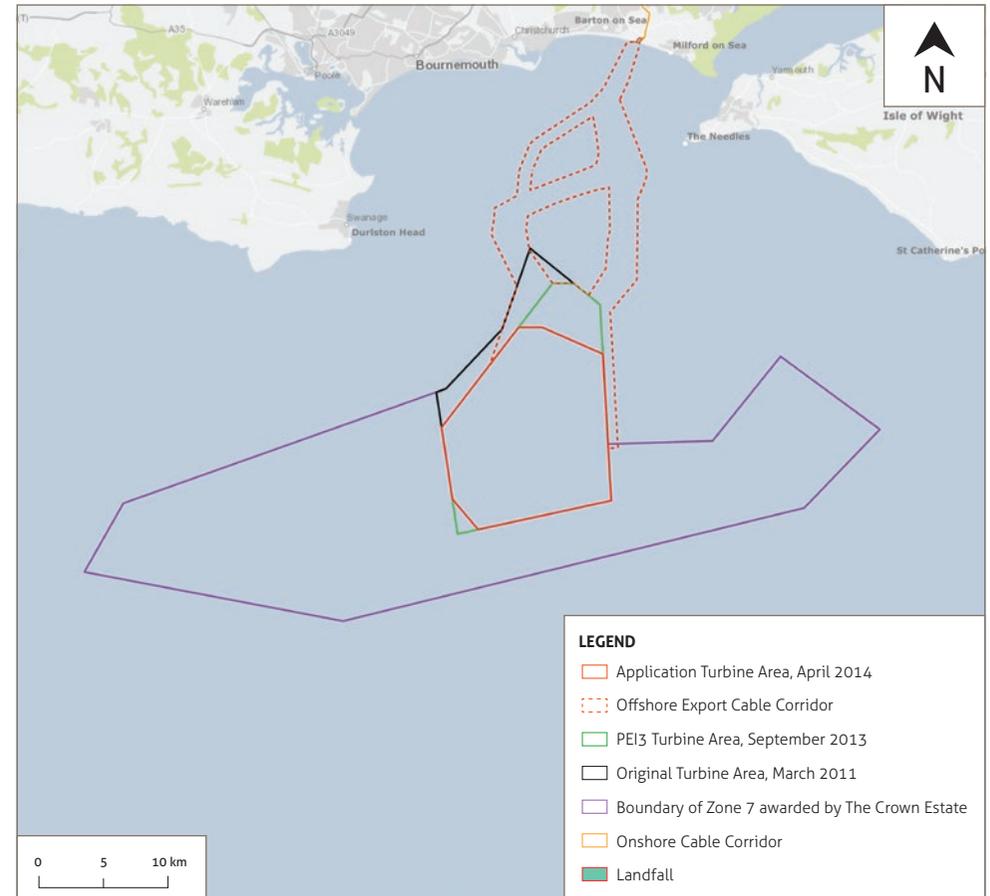
4.1.7 These changes aimed at avoiding effects on shipping and navigation, reducing the impacts to seascape and visual amenity and responding to issues raised during early consultation.

4.1.8 After publication of the PEI3 and in response to feedback from the public and statutory consultees, additional changes to the project were made, notably removing the northernmost part of the development, which resulted in increasing the distance to the nearest turbine from Bournemouth by 1.7 km and further reducing the maximum number of wind turbines. Figure 5 shows the evolution of the Turbine Area boundary.

4.1.9 This project wide reduction has resulted in an overall decrease in the Project area and importantly a reduction in horizontal spread of turbines on the horizon from key viewpoints as well as introducing a clear gap between the edge of the Project and views between the Isle of Wight and the Isle of Purbeck.

4.1.10 These changes are also beneficial for most of the offshore topics, for example moving the noise source of piling further away from coastal receptors.

Figure 5 – Map showing the evolution of the Turbine Area boundary



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4.2 ONSHORE

- 4.2.1 Onshore site selection and design started in 2011 and was informed by consultation and by engineering and environmental studies together with the use of the EIA process to refine and revise the design.
- 4.2.2 Connection options were discussed with National Grid that identified potential at existing substations at Chickerell, at Fawley and at Mannington. Following more detailed work on these options, Mannington was selected as the preferred option. National Grid made a grid connection offer at Mannington which was then signed in October 2011.
- 4.2.3 In order to connect to the National Grid at Mannington, a number of potential landfall locations, where the offshore cables reach the shoreline in order to link with the onshore cables, were investigated. The site selection process involved consideration of the grid connection location, the potential route that the onshore cables might take to that point and the options for the offshore cable routeing.
- 4.2.4 The built up nature of the south coast (e.g. residential and harbour development), as well as natural features (e.g. Hurst spit, river estuaries) were key constraints. Therefore, the search area for landfalls to Mannington was focused within the area between Southbourne and Milford-on-sea.
- 4.2.5 The desire to avoid impacts on, amongst other things, road networks, visitors and ecologically or archaeologically sensitive sites, whilst balancing the need to find a location which offered potential from a practical engineering perspective resulted in the selection of Taddiford Gap, between Barton-on-Sea and Milford-on-Sea as the preferred cable Landfall. This site was identified as the best solution as it provided the ability to locate the construction compound away from residential properties and away from designated sites of nature conservation importance, with the exception of the geological Site of Special Scientific Interest (SSSI) that would be drilled under thereby avoiding impact; and it would not constrain the routing of the Onshore Cable Corridor.
- 4.2.6 A search corridor was identified for the onshore cable route by reviewing high level constraints between the Landfall and the Onshore Substation, having already committed to burying the entirety of the cable underground. Identifying and refining the cable route with this search corridor was undertaken in parallel with the Landfall and Onshore Substation site selection work. The cable route aimed, wherever possible, to minimise any potential for impacts by avoiding sensitive locations and residential areas; minimising the potential for impacts where avoidance was not practical, for example the New Forest National Park (however, even here the route was able to keep to the fringes of the National Park); and keeping to the most direct, and therefore shortest, route.
- 4.2.7 The siting of the Onshore Substation at Three Legged Cross, to the eastern side of West Moors Road, was decided through a process of assessment of alternative locations, the mapping of constraints and consultation. The shortlisted site location options was also consulted upon during Phase One consultation in November 2011, with the feedback from the public being considered together with environmental and technical aspects including consideration of access and the practicalities of connection with the substation.



5 PROJECT DESCRIPTION

5.1 OFFSHORE

- 5.1.1 The final design and layout of the offshore elements of the Project will be determined at a later stage, if a DCO is granted. The key offshore parameters are shown in Table 1.
- 5.1.2 The Project would be operational for a period of 25 years and have a maximum installed generation capacity of up to 970 MW, so the number of turbines used will depend on the individual capacity of the model chosen. The Project could contain turbines of a single size class or a combination of different size classes.

Table 1 – Offshore design parameters

OFFSHORE DESIGN PARAMETERS			
INDICATIVE PARAMETERS	TURBINE CLASS		
	5 MW	6 MW	8 MW
Maximum installed capacity of the wind park (MW)	970	966	968
Maximum number of turbines to achieve generating capacity	194	161	121
Maximum turbine rotor diameter (m)	154	154	176
Maximum revolutions per minute	12.5	12.5	11.5
Maximum hub height (m) (above LAT*)	100	105	112
Maximum blade tip height (m) (above LAT*)	177	182	200
Minimum air draft clearance (m) (Mean High Water Springs)	22	22	22
Approximate cut-in wind speed (metres per second (m/s))	3.5	3.5	3.5
Approximate cut-out wind speed (m/s)	25	25	25

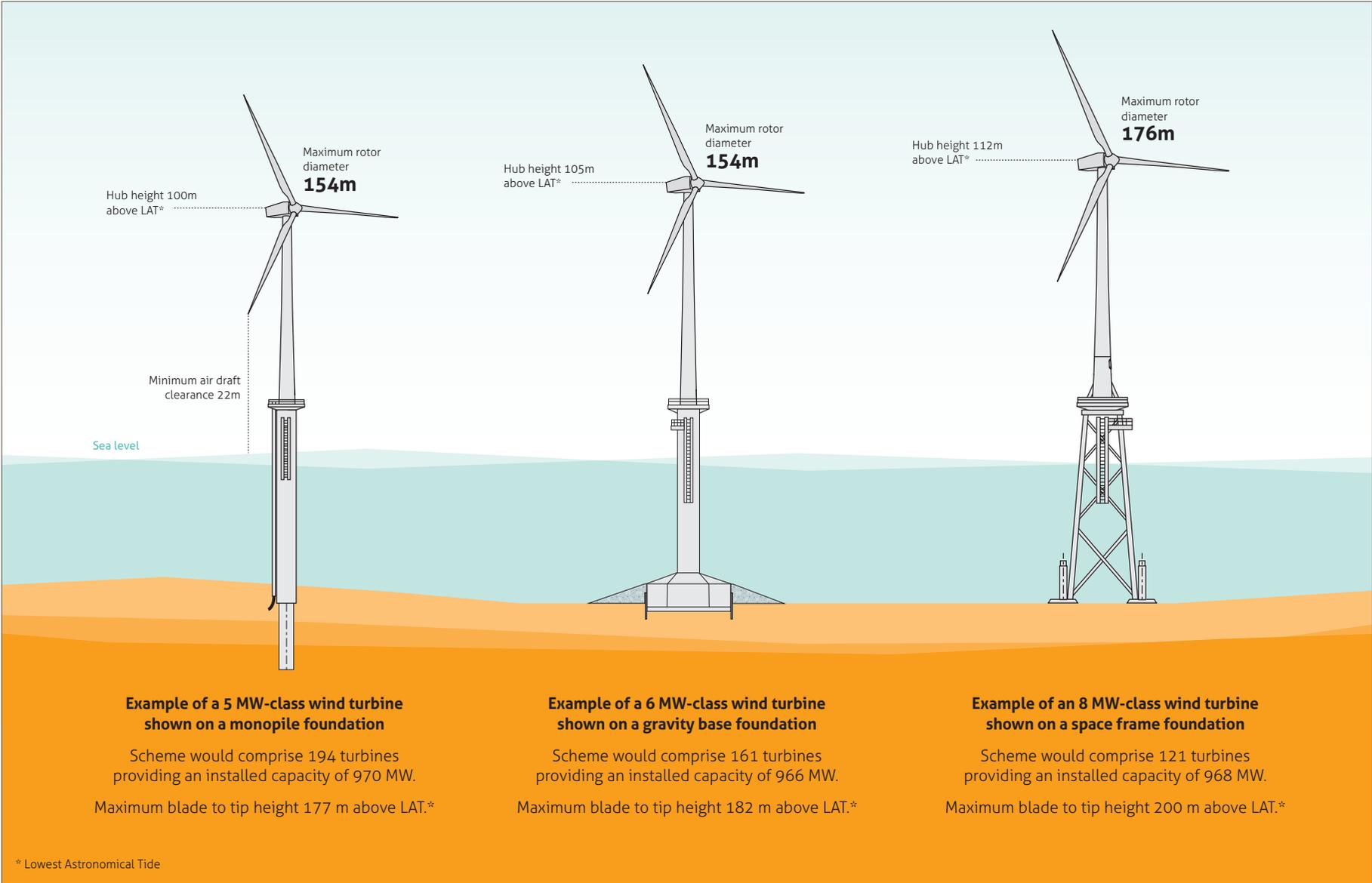
* Lowest Astronomical Tide

a) Turbine Area

- 5.1.3 The wind turbine generator consist of three primary components: a tower, a nacelle and a rotor. The rotor is the device which, through circular motion, extracts the energy from the wind. The nacelle houses the equipment that can turn rotational motion into electrical energy. The tower supports the nacelle and gives the rotor the necessary height.
- 5.1.4 A range of foundation types are being considered including:
 - steel monopile foundations, each of which comprises a single tubular steel structure that is driven or drilled into the seabed to support the turbine tower;⁴
 - Gravity Base Structure (GBS), which comprises a large diameter base constructed of reinforced concrete or steel that sits on the seabed to support the turbine tower. The gravity base relies on the weight of the structure to support the turbine and to maintain position and verticality, with the seabed being prepared for installation through dredging or levelling to provide a sufficiently flat area within which to set the structure;
 - space frame structures (steel jacket, tripile or tripod), which typically consist of three or four legs which are linked by a lattice of cross-braces. Each leg is secured to the sea floor using driven or drilled steel piles; and
 - suction caisson options (either a monopile or jacket with suction caissons), where the foundation is held in place by one or more inverted bucket-like structures through hydrostatic pressure acting on the seabed.
- 5.1.5 All foundations listed above will have provision for safe access and working for operational and maintenance activities.
- 5.1.6 Any turbine class can be used with any foundation type (Figure 6).
- 5.1.7 The Project would also include a meteorological mast and up to three offshore substation platforms. However, their precise siting would be determined at the detailed design stage if a DCO is granted.

⁴ NBDL has taken the decision to exclude monopiles from the southernmost section of the Turbine Area following an assessment of ground conditions and potential plume generation and dispersal modelling

Figure 6 – Indicative turbine and foundations options. Not to scale, for representational purposes only.



b) Export cables

5.1.8 The Project would also require:

- inter-array cables to interconnect the wind turbines (including meteorological mast) to the offshore substation platforms;
- inter-substation cables to connect the offshore substation platforms together; and
- up to six export cables to bring the power to shore, which would run from the offshore substation platforms to the Landfall point.

5.1.9 The total length of submarine cabling required is dependent upon the detailed turbine layout, the number of offshore substation platforms and the voltage capacity of the cables selected.

5.1.10 The offshore cables would be buried where possible, and protected where it is not feasible to do so, to prevent movement of the cables, to limit potential environmental impacts, limit electromagnetic field and heat effects and to prevent any navigational risk to other marine users.

5.1.11 There are three principal installation methods for burying cables into the seabed: ploughing, jetting and trenching.

- ploughing: The cable is laid and buried. The cable plough lifts a section of the seabed deposit and lays the cable below it. The seabed deposit is then returned to its original position;
- trenching: A remotely operated vehicle fitted with a cutting attachment is used to cut a trench into the seabed as the cable is simultaneously laid. This option may be required where stiff clay or rock is present; and
- jetting: The cable is first laid on the seafloor. A remotely operated vehicle equipped with high pressure water jets then proceeds along the cable route, fluidising the seabed around the cable, allowing the cable to be lowered.

5.1.12 The final choice of cable installation methods would be made at the detailed design stage and would be dependent on seabed conditions based on more detailed information collected post-consent. These studies will also help choose the final route for the export cables. This would run along a single route to be chosen from the potential cable corridor options identified and assessed in the ES (see Figure 1).

5.1.13 Offshore construction is anticipated to take up to four and a half years (Figure 7), with the Project being built in up to three stages within that period. At the end of the operational period, the offshore project elements would be removed in line with the seabed leasing arrangements made with The Crown Estate. The methods for removal, or decommissioning as it is termed, would be agreed with The Crown Estate and with the Department of Energy and Climate Change (DECC) and in accordance with the relevant guidance, legislation and good practice in place at that time. A full decommissioning programme would be submitted to and approved by the Secretary of State at least four months prior to carrying out any decommissioning works.

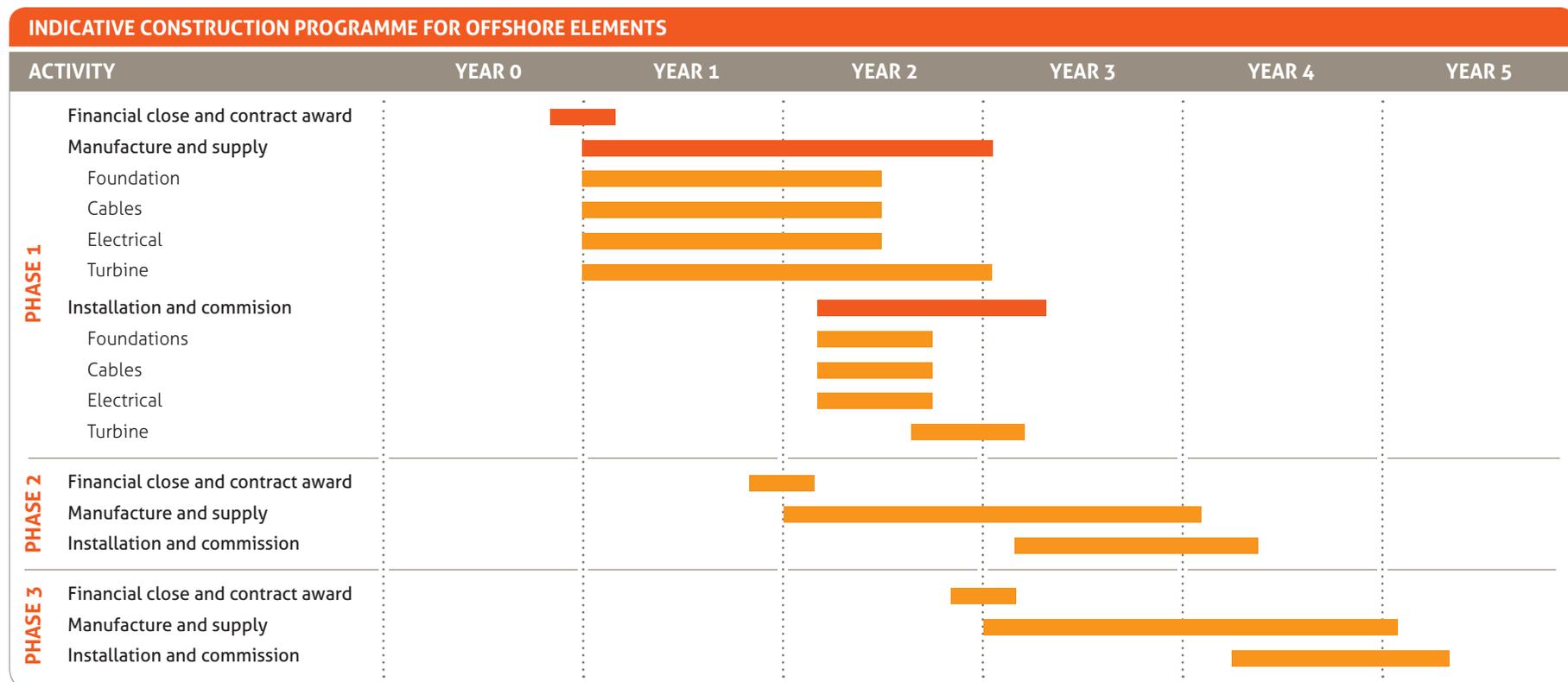
5.1.14 It is anticipated that the overall timeframe for manufacture and construction of the offshore elements will be between three and four and a half years. This programme could be achieved with two or three construction phases respectively, whereby the total capacity of the Project could be delivered.

5.1.15 Figure 7 provides an indicative programme for the delivery of the offshore elements assuming up to three phases. The programme presents the following approach:

- an anticipated start and end date for construction relative to financial close of the project;
- an approximate duration for manufacture, supply, installation and commissioning of the major offshore elements;

- a breakdown of timeframes for individual element delivery for phase 1 are shown. The same individual element breakdown could be applied for phases 2 and 3; and
- parallel on site activities within each phase and in relation to the next construction phase. This means there will be installation and commissioning for multiple elements simultaneously and also that the project will be operational whilst construction is ongoing.

Figure 7 – Indicative construction programme for offshore elements



5.2 ONSHORE

- 5.2.1 The onshore elements of the Project would be located in the Counties of Hampshire and Dorset and comprise the electrical infrastructure to allow the electricity generated by the offshore wind turbines to be transferred into the National Grid transmission system, connecting at the existing 400 kV substation at Mannington.
- 5.2.2 The onshore elements comprise the cable Landfall at Taddiford Gap, between Barton-on-Sea and Milford-on-Sea, the Onshore Substation at Three Legged Cross, north of Ferndown and the Onshore Cable Corridor of approximately 35 km that would connect these sites and pass through the local authority areas of New Forest District Council, Christchurch Borough Council and East Dorset District Council, as well as the New Forest National Park Authority. The key onshore parameters are shown in Table 2.
- 5.2.3 All onshore construction would be undertaken in accordance with a Construction Environmental Management Plan (CEMP) and other topic specific plans, to be agreed with local authorities. A Code of Construction Practice (CoCP) (Document 8.5) sets out the basis for these plans and outlines the measures that contractors would be required to adopt and implement. These measures have been developed based on those identified during the EIA process and are set out within the ES. They include strategies and control measures for managing the potential environmental effects of construction and limiting disturbance from construction activities as far as reasonably practicable. The CoCP has been developed in consultation with the local planning authorities and included in the DCO application.

Table 2 – Onshore design parameters

ONSHORE DESIGN PARAMETERS	
PROJECT ELEMENT	DESIGN PARAMETERS
Landfall	<ul style="list-style-type: none"> • up to six offshore cables • up to six transition joint bays • two temporary construction compounds
Onshore Cable Corridor	<ul style="list-style-type: none"> • working width of generally 40 m • up to six cable circuits and fibre optics in six trenches • four temporary construction compounds
Onshore Substation	<ul style="list-style-type: none"> • electrical footprint of approximately 3 hectares (ha) • maximum height of electrical equipment – 11 m • maximum height of GIS* building – 14 m • maximum height of lightning masts – 19 m • ground raising above elevated ground level – up to 1 m • one temporary construction compound
Working Hours	<ul style="list-style-type: none"> • generally, construction site working will be during normal working hours (08.00 – 18.00 Monday to Friday and 08.00 – 13.00 Saturday), with no activity on Sundays or public holidays • exceptions will be required where seven days working and/or 24 hours working are required for specific construction activities such as Horizontal Directional Drilling (HDD) works.

* Gas Insulated Switchgear

a) Landfall

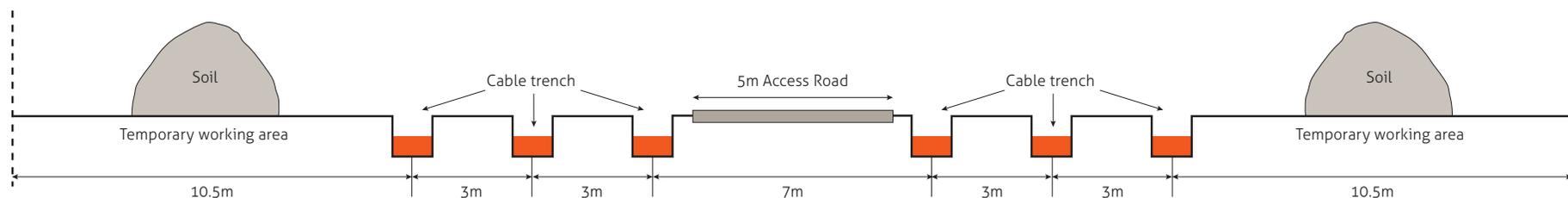
- 5.2.4 The connection between the onshore and offshore cable circuits will be made at the Landfall at Taddiford Gap using a technique known as Horizontal Directional Drilling (HDD), which enables the cables to be installed underground beneath the cliffs and the beach. The drilling would be undertaken within the two temporary construction compounds set well back from the cliff to allow for predicted future coastal erosion (minimum of 50 years). The offshore cables would then be installed within the drilled bores under the cliffs and joined to the onshore cables at transition joint bays, one for each cable circuit, below the ground.
- 5.2.5 Work at the Landfall would take approximately six months within a two year period, scheduled to run in parallel with the main construction period for the onshore cable route.

b) Cable Corridor

- 5.2.6 Up to six cable circuits (each made up of three single-core cables) would be buried underground within trenches running from the Landfall to the Onshore Substation along the Onshore Cable Corridor shown in Figure 8. Each trench would contain a single circuit, so up to six trenches would be required.
- 5.2.7 Typically, the cables would be buried to a depth of 1.2 m although the final depths will be dependent on local conditions and may differ, for example, if required to pass beneath other utilities.

- 5.2.8 Cables would be supplied in lengths of between 700 and 1,200 m and sections of cables would need to be joined together along the route. The joining of cables would be made in specially constructed joint bays which would also be used for access to repair or test cables if required.
- 5.2.9 Temporary fencing would be erected along the Onshore Cable Corridor during construction for safety, with provision made for private land access, where possible, and as required by the landowners.
- 5.2.10 The topsoil and subsoil would be removed and stored separately within the working width of the cable corridor to avoid mixing. All necessary vegetation clearance would be undertaken in accordance with the requirements of landowners and stakeholders and in line with the measures outlined in the CoCP. Required drainage works would be undertaken to protect land and waterways and contain any movement of sediment.
- 5.2.11 The onshore cables would be buried within a working width of approximately 40 m. This provides enough room for the six cable trenches, temporary working areas for the storage of soils and a temporary access road as depicted in Figure 9. Access routes to the working width and construction compounds located along the Onshore Cable Corridor will be temporary and all of these, including the haul road through the cable corridor, would be removed and the land reinstated once construction is complete.
- 5.2.12 The need for cable installation using trenchless techniques, such as HDD, has also been identified for a number of other locations along the route to avoid impacts to, for example, sensitive ecological sites or major roads and rivers, where these are crossed by the Onshore Cable Corridor.

Figure 8 – Indicative working width for cable installation



c) Onshore Substation

- 5.2.13 A new substation is proposed at Three Legged Cross, which would connect to the existing National Grid 400 kV substation at Mannington. The building itself would occupy a maximum area of 3 hectares (ha) and the total area of the new substation site would be approximately 8 ha. Buildings required to house the substation components would be up to 14 m high, with lightning masts reaching a maximum of 19 m. A range of earthworks and site levelling would be required to construct the substation, with a temporary construction compound established to provide adequate space for the contractor's plant, storage and welfare facilities.
- 5.2.14 The substation design includes planting and landscaping to make sure that visibility of the structures is minimised as far as possible.
- 5.2.15 Construction for the Onshore Substation would be programmed to fit with the Onshore Cable Corridor and offshore construction.
- 5.2.16 All construction activities at the Landfall and along the Onshore Cable Corridor would be temporary, with land reinstated to its former use after construction. Whilst construction activities at the substation would also be temporary, the substation would be an operational structure. At the end of its operational period, the onshore project elements would be decommissioned. A decommissioning plan will be agreed with the relevant authorities upon cessation of the Project.

5.2.17 The construction programme for the onshore works would be undertaken in three broad stages over a period of five years as follows:

5.2.18 Pre-construction, year 1:

- specialist site clearance activities, such as tree or hedgerow clearance;
- specialist vegetation clearance, habitat protection and species relocation works; and
- site preparation activities, such as temporary fencing and demarcation of cable corridor and construction compounds.

5.2.19 Primary construction, years 2 and 3:

- topsoil stripping and installation of temporary access roads, associated drainage and pollution control measures;
- temporary ground improvement measures, where necessary;
- all cable duct installation works, including the excavation of the cable trench, installation of trench wall support systems where necessary, installation of the ducts and backfill of the trench with excavated and appropriate selected material;
- construction of joints bays;
- cable pulling and jointing for the first stage; and
- re-instatement as appropriate.

5.2.20 Cable and jointing works, in years 2 to 5:

- cable pulling;
- cable jointing; and
- reinstatement.

Figure 9 – Map of Onshore Development Area



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6 ENVIRONMENTAL IMPACT ASSESSMENT (EIA) METHODOLOGY

6.1 EIA PURPOSE AND PROCESS

6.1.1 The ES required to accompany the application for development consent has been prepared in accordance with the relevant legislation and guidance and has considered all of the phases of the Project: construction, operation & maintenance, and decommissioning at the end of its operational lifespan (25 years).

6.1.2 The purpose of EIA is to inform the decision-making process of the 'likely significant adverse effects' of a proposed project so that these can be assessed as part of the consenting process.

6.1.3 The Project has been assessed using a design envelope approach wherever flexibility is required as aspects of the Project, particularly offshore, remain at the time of application. These include the actual number of wind turbines that would be constructed, or the specific sizes. In such cases, the assessment has been based on a 'worst-case scenario basis'. This provides a meaningful assessment of the potential effects, while maintaining reasonable flexibility for future design refinements.

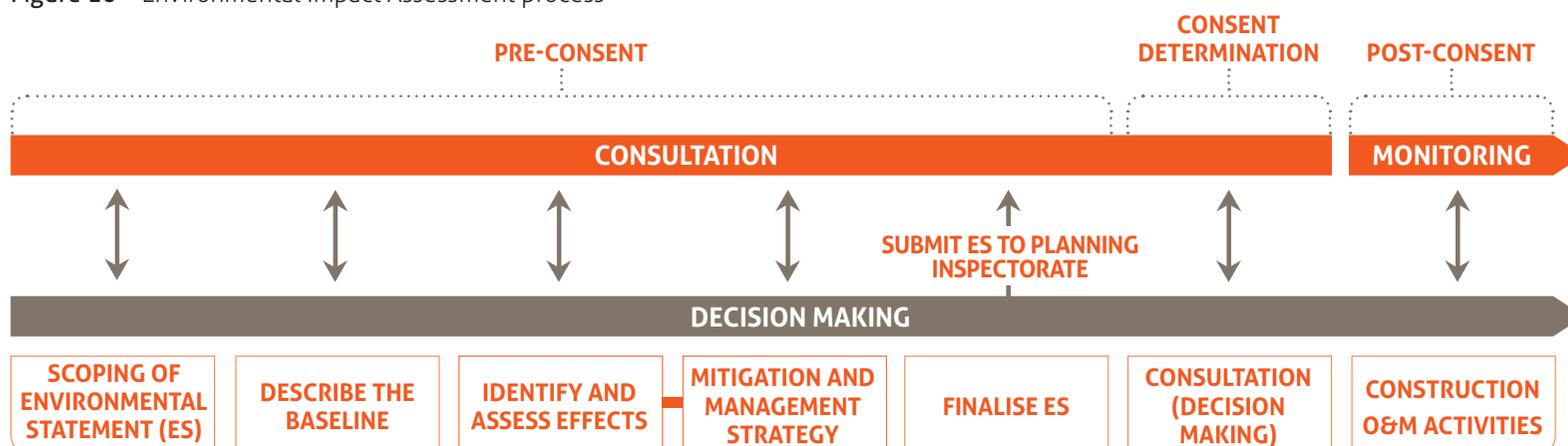
6.1.4 The use of the design envelope, often called the 'Rochdale Envelope', is recognised as an acceptable approach in the National Policy Statements and has been used in the majority of previous offshore wind farm ESs.

6.1.5 The EIA has followed four main steps:

- scoping of the issues to be assessed in the ES;
- collection of baseline data, through surveys and desk based work, to describe the existing environmental conditions;
- identification and assessment of likely significant impacts; and
- identification of mitigation measures and any management strategies that could be applied to reduce significant and other impacts.

6.1.6 The overall process that has been followed for this EIA is depicted in Figure 10.

Figure 10 – Environmental Impact Assessment process



6.2 SCOPING

- 6.2.1 Scoping is the process of identifying the issues to be addressed in the ES. A Scoping Report was prepared, which set out details of the proposed scope of environmental assessments to be undertaken for both the offshore and the onshore elements of the Project, and a Scoping Opinion was received from the Infrastructure Planning Commission (IPC) (now the Planning Inspectorate) in November 2011.
- 6.2.2 The scoping exercise highlighted a number of areas that consultees wished to see addressed within the ES. These responses, together with other consultation responses provided through the EIA process to date, have been taken into account in identifying the scope of the ES. This scope has also been informed by the nature, size and location of the project.

6.3 BASELINE CONDITIONS

- 6.3.1 The existing conditions have been identified from a range of site surveys and studies to characterise the onshore and offshore environments. These are known as 'baseline conditions'. The baseline conditions of the study area form the basis of the assessment, enabling the likely significant impacts of the Project to be identified.

6.4 ASSESSMENT OF POTENTIAL IMPACTS

- 6.4.1 The ES includes an assessment of the likely significant impacts during the construction, operation & maintenance and decommissioning phases of the Project. For this ES, the terms impact and effect are used in the following way. An effect is set in motion because of a particular activity and is usually measurable. An impact is a perceived change in the baseline as a result of an effect, which can be beneficial, adverse or neutral. The significance of an impact takes into account the magnitude of the effect and the sensitivity of the receptor (i.e. the person, species, habitat etc. that might be affected). Significance levels are defined separately for each topic using the terms major, moderate, minor or negligible. The level at which an impact is considered to be significant or not is specific to each topic, as described in the full ES. For clarity and simplicity in this NTS, impacts are reported as being either significant or not significant.

6.5 MITIGATION MEASURES ADOPTED

- 6.5.1 Mitigation measures that are incorporated into the design of the Project are referred to in the ES as 'measures adopted as part of the Project'. These measures are intended to prevent, reduce and where possible offset any significant adverse effects on the environment. These are effectively 'built in' to the impact assessment and as such, the assessment includes consideration of these measures. Development activities are also controlled through legislative compliance and standard good practice.
- 6.5.2 Further mitigation measures, which are additional (known as 'additional mitigation') to any measures adopted as part of the Project, may be required where significant adverse effects are predicted through the impact assessment. These mitigation measures, where they are considered necessary, are determined by the technical expert and agreed with the relevant stakeholders, where possible.

6.6 CUMULATIVE, INTERRELATED AND TRANSBOUNDARY IMPACTS

- 6.6.1 **Cumulative impacts** can occur where the effects from one project on a certain receptor (i.e. a person, species, habitat etc) that might be affected are combined with similar effects from another project or development on the same receptor i.e. they overlap both in space and time.
- 6.6.2 The purpose of considering cumulative impacts (assessed in all chapters of the ES) is to identify whether impacts from the Project in association with other plans and projects are more significant than those arising from just the Project alone, in order that additional mitigation measures can be identified and put in place.
- 6.6.3 The assessment of **interrelationships** considers all Project activities and their impacts on a single receptor. For example, noise from foundation piling could affect echo location ability by fish which are also being affected by high suspended sediments in the water from jetting which may prevent visual hunting for prey.
- 6.6.4 Where a significant impact is identified, mitigation measures are considered. For the purpose of this assessment, consideration has been given to all topics (see Volume D, Chapter 6 of the ES). It is also important to note that even residual impacts which have been assessed as negligible, have been included in the assessment. An impact taken in isolation may be assessed as not significant, but when considered together with other impacts, may give rise to an impact that is considered significant.
- 6.6.5 **Transboundary impacts** determine if the Project is likely to have significant effects on the environment of another European Economic Area State.
- 6.6.6 The potential for transboundary impacts has been considered in Volume D, chapter 7 of the ES.

6.7 HABITAT REGULATIONS ASSESSMENT (HRA)

- 6.7.1 Alongside the ES, consideration is being given to whether the Project could generate potential effects on European sites. The first stage of the HRA process has been supported in the HRA Screening Report (Document 5.3) and the HRA Report (Document 5.4) to provide the information necessary for the Secretary of State to undertake an Appropriate Assessment of the Project.
- 6.7.2 The HRA process undertaken for the Project identified a large number of European sites based on a range of selection criteria that were agreed with Natural England. The majority of the European sites (and their associated designated features) identified using these search parameters were subsequently screened out on the basis of information gathered through desk-study, field survey data analysis and mathematical modelling.
- 6.7.3 Likely significant effects on six European sites (including Ramsar sites) were identified that required further analysis within the HRA Report. After devising appropriate mitigation measures, the Project was determined to have no adverse effects on the integrity of any of the sites and therefore the further stages in the HRA process (i.e. assessment of alternatives and Imperative Reasons of Overriding Public Importance (IROPI)) were unnecessary.





7 OFFSHORE IMPACT ASSESSMENT

7.1 INTRODUCTION

- 7.1.1 This section describes the features of the baseline environment, including the surveys undertaken, and presents the likely significant environmental impacts from the offshore elements of the Project during construction, operation & maintenance and decommissioning. It also sets out the mitigation measures proposed.
- 7.1.2 In order to control and mitigate potential impacts from offshore construction activities a number of plans will be developed and agreed with the relevant authorities prior to the start of construction. The main plan will be the Project Environmental Management Plan (PEMP). This will be supplemented by other plans developed for specific topics for example a Marine Pollution Contingency Plan (MPCP).
- 7.1.3 The Offshore Development Area includes the Turbine Area and the Offshore Export Cable Corridor, with a broader specific buffer where appropriate.

7.2 PHYSICAL PROCESSES

- 7.2.1 The term physical processes encompasses the tides, currents, waves and sediment transport, with the impact assessment considering potential changes as a result of the Project, and the potential impact on features, including the coast and seabed terrain.
- 7.2.2 The assessment describes the existing physical processes of the study area, which is focused on the Offshore Development Area, extending to Portland Bill in the west and Selsey Bill in the east. The assessment is supported by detailed surveys and data collection to inform the baseline characterisation, with physical processes modelling to identify and assess the predicted impacts, together with computer modelling of tides, waves and sediment plumes.
- 7.2.3 The project lies in waters with an average depth of 37 m and spring tidal ranges of 1-2 m near the coast and up to 2 m towards the Turbine Area. Currents are relatively fast, exceeding 1.5 m/s on spring tides in the Turbine Area and waves, predominantly from the south west, can reach heights of up to 9 m in infrequent conditions.
- 7.2.4 The seabed in the Offshore Development Area is mainly characterised by coarse sediments such as pebbles, boulders and exposed bedrock, including chalk in the south-west and sandstones and claystones to the north. There are also gravel and sand deposits in palaeochannels (ancient river beds) in the north of the Turbine Area.
- 7.2.5 Where there is sediment on the seabed within the Turbine Area, it typically occurs as a thin layer (0.5 m) of coarse sediments, with some boulders. There is very little fine sediment within the Turbine Area. The Offshore Export Cable Corridor comprises a thin layer of sand and gravel deposits overlaying bedrock, but this layer thickens in certain areas such as Dolphin Sand and Dolphin Bank, where sandwaves have been observed.
- 7.2.6 Within the coastal waters of the study area, the sediment mainly comes from locally eroding coasts. Offshore, the turbidity (cloudy water) near to the seabed varies with both tide and season, and suspended particle concentrations are higher during the winter.
- 7.2.7 The impact assessment considers a range of features and activities that might be affected by the project, which can be summarised as the following:
- the coast (as managed in sections);
 - navigable enclosed water bodies;
 - designated seabed and/or coastal areas;
 - non-designated sandbanks;
 - surfing locations;
 - marine aggregate dredging areas;
 - navigation channels;
 - marine dredge disposal sites;
 - The Needles Burial at Sea site; and
 - seabed and coastal infrastructure.
- 7.2.8 Design mitigation measures have been adopted including a monopile exclusion zone in the area of chalk bedrock and controls on the way the cables are laid, both of which reduce the potential for sediment plumes. Buffer areas to protect other users have also been identified, for example, the marine aggregate licence areas to the north and east.
- 7.2.9 The assessment findings show that during construction and decommissioning, effects such as seabed disturbance, increasing levels of suspended sediment in the water or changes to seabed shape and form would be localised and temporary and the impacts are therefore not significant.

7.2.10 When the project is in place, i.e. in operation, it was found that the effects predicted on waves, tidal currents or sediment movement would be small and localised with no significant impacts predicted for features such as water depths, sandbanks or at shoreline locations, notably including waves at coastal locations that might affect beach or cliff erosion or sites used for surfing.

7.2.11 The potential for cumulative impacts considers marine aggregate dredging and application areas, together with licensed disposal sites. No significant cumulative effects have been identified.

7.3 OFFSHORE WATER QUALITY

7.3.1 The assessment covers the marine and coastal areas surrounding the proposed Offshore Development Area, extending from Purbeck to St Catherine's Point on the Isle of Wight, including the western Solent, Poole Harbour and Christchurch Harbour. Sediment plume modelling has been undertaken to inform the identification and assessment of the predicted impacts of an increase in suspended sediment.

7.3.2 A number of things that could be affected by deterioration in water quality have been scoped out of the impact assessment, due to the nature and extent of predicted impacts. These are as follows:

- designated bathing waters are assessed on the level of bacteria in the water and the proposed cable would not significantly affect bacterial concentrations in the seawater;
- the potential for the proposal to exceed the thresholds set by the Shellfish Waters Directive relates to the predicted increase in suspended sediment. The nearest designated water is more than 14.5 km distant from the Project boundary, where required levels would not be exceeded;

- the impact of sediment released due to scour as any effect would be localised;
- measures would be used to help prevent corrosion on metal elements of turbine structures or foundations which are in contact with sea water. Therefore the amount of chemicals released would be diluted and dispersed and therefore not affect the status of the water body; and
- during decommissioning, should the removal of structures such as gravity bases or cables be required, the potential for impact on water quality is not likely to be sufficient to affect the water quality status of the water body.

7.3.3 Current water quality was found to be typically within required levels, with some variation noted, for example, near estuary mouths, while turbidity levels naturally vary with factors such as the tidal cycle, the season and the weather.

7.3.4 A number of mitigation measures are included within the project design, to reduce the potential impacts on sediment and water quality. Such measures include correct servicing and maintenance of vessels and equipment, adherence to the relevant legislation and best practice guidance together with implementation of appropriate work plans. Construction methods have also been selected to reduce the potential for sediment disturbance where feasible, particularly of the fine grained chalk.

7.3.5 The mitigation measures incorporated into the project design means that the potential impacts on water and sediment quality that might occur through disturbance of sediments and any contaminants that might be held within the seabed, for example during piling or cable laying, are assessed as being not significant.

7.3.6 The potential for cumulative impacts considers a number of projects, including marine aggregate dredging areas, capital and maintenance dredging operations, licensed disposal sites and a proposed cable, with no cumulative effects identified.

7.4 OFFSHORE AIR QUALITY

- 7.4.1 The assessment uses both desk based data collection and air quality modelling information and covers a study area comprised of the Offshore Development Area itself and extending to the surrounding coastline.
- 7.4.2 Background concentrations along the coastline for all pollutants are estimated to be well below their respective air quality limit values.
- 7.4.3 Although there are no relevant site-specific mitigation measures for air quality, vessels would need to comply with national and international emissions standards. In addition, the English Channel has been declared an area in which all ships are required to use low sulphur fuel.
- 7.4.4 The potential for an impact from emissions to air considers potential increased shipping movements associated with the Project through various phases of construction, operation and decommissioning, with modelling used to predict the dispersion of such emissions. The potential for impact was found to be not significant.
- 7.4.5 The potential for cumulative impacts considers marine aggregate dredging activity at Areas 127 and 137, with no cumulative effects identified.

7.5 IN-AIR NOISE

- 7.5.1 Noise generated into the air from the offshore elements of the Project have been assessed. This is referred to as 'in-air' noise. Underwater noise is assessed for marine ecology and recreational users, e.g. divers, in the relevant ES chapters. Noise and vibration from the onshore elements of the Project are assessed separately in Section 8.5 of the NTS.

- 7.5.2 The assessment covers the area predicted to be potentially affected by in-air noise from development activities through construction, operation and maintenance and decommissioning phases. This included the Offshore Development Area, extending to Warbarrow Bay in the west and St Catherines in the east.
- 7.5.3 As agreed with the relevant local authorities' Environmental Health Officers (EHO), site specific in-air noise data have not been collected, due to the distance of the Turbine Area from shore.
- 7.5.4 Effects on recreational sea users, ferry passengers and offshore workers have been scoped out of the impact assessment due to the temporary duration of impact and masking due to noise associated with the commercial/recreational vessel, as well as the use of a 500 m 'rolling' safety zone around construction/decommissioning activity, which would keep these sea users away from the immediate location of the works.
- 7.5.5 The offshore construction and decommissioning works would be undertaken in line with best practice, to ensure that appropriate fixed noise limits would not be exceeded. Design mitigation measures include construction techniques such as the soft start approach to piling (which is the practice of gradually increasing the power of the hammer driving the pile into the seabed over time).
- 7.5.6 The closest residential properties to the construction works occurring within the Turbine Area are 14 km away and are located in Swanage. The nearest offshore feature where people could be affected, the Burial at Sea Site, is located approximately 13 km from the Turbine Area. The distance between the source and the burial at sea site or residential properties is so large that during construction, operation and decommissioning the impacts are assessed as not significant.
- 7.5.7 The potential for cumulative impacts for in-air noise considers several different activities including onshore wind farms, a golf club and the Rampion Offshore Wind Farm, with no cumulative effects identified.

7.6 BENTHIC ECOLOGY

- 7.6.1 The assessment describes the existing benthic ecology within the study area, which was determined through consultation. The Study Area comprises the Offshore Development Area, together with adjacent seabed areas within a single spring tidal excursion (to take account of the movement of disturbed fine sediment).
- 7.6.2 Benthic ecology includes seabed habitats and the associated animals that live on and in the seabed, together with the way these interact with each other and with the wider marine system. Any habitats listed under Annex I of the Habitats Directive⁵ are considered, with fish and shellfish addressed in Section 7.6.
- 7.6.3 The existing baseline environment has been informed through site specific surveys (including trawl, grab and video surveys) and a literature search, with sediment plume modelling used to identify and assess the potential for impact on the benthic ecology. The habitats and species described include rocky seabed habitats, such as chalk and bored clay outcroppings, the sand bank habitats along the proposed export cable corridor, the sand and gravel habitats which characterised the study area and a single mantis shrimp (*Rissoides desmerstia*), which is a local (Isle of Wight) Biodiversity Action Plan species.
- 7.6.4 Although no species or habitats listed under either the Habitats Directive or the Wildlife and Countryside Act were found within or around the boundaries of the Project, several features of nature conservation interest were identified including areas of seagrass and various sandy, gravelly or rocky seabed types.
- 7.6.5 The Project design includes HDD as part of the installation of the export cable at the landfall site. This would avoid any direct disturbance to intertidal habitats through the installation of export cables, with intertidal habitats scoped out of the assessment.
- 7.6.6 In addition to the use of HDD, a number of mitigation measures have been incorporated into the Project, including choice of cables, armouring of cables and a target burial depth of cables to 1.5 m (export) or 1 m (inter array) to minimise electromagnetic field (EMF) emissions.
- 7.6.7 The impact assessment considers the potential impacts on seabed animals and habitats from construction, operation and decommissioning. This includes the assessment of impacts arising from suspended sediments and deposition during construction, which could affect seabed animals, as well as the loss of habitat area underneath turbine foundations.
- 7.6.8 All of the assessments show that potential effects are limited and that no significant impacts are predicted during any phase of the Project.
- 7.6.9 The cumulative impact assessment for benthic ecology considered a number of projects, including marine aggregate dredging, oil and gas, cables and dredging waste disposal. Cumulative effects are localised and likely to be within the range of those that occur naturally and are considered to be not significant.

⁵ Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora, known as the Habitats Directive was adopted in 1992. Annex I lists a number of defined habitats under the Directive.



Image of black bream

7.7 FISH AND SHELLFISH ECOLOGY

- 7.7.1 The assessment describes the existing fish and shellfish ecology of the study area, which is broadly defined within the Channel region. The extent of the Study Area takes into account the foraging and migration range (where practicable) and distribution of the key commercial and ecologically important species identified within the region. Relevant catchments and local Rivers including the Frome, Avon and Itchen are also considered for migratory species. The study area defined also takes account of the potential extent of impacts from piling noise and potential sediment plumes released during construction using computer modelling.
- 7.7.2 The assessment is supported by detailed surveys and data collection to inform the baseline characterisation and impact assessment. Due to the infrequency of occurrence in the study area, the common thresher shark and basking shark have been screened out of the assessment.
- 7.7.3 The fish species that occur within the Study Area include species that live on the seabed and those that live higher up in the water column. Common species in the area include bib, black bream, blonde ray, brill, cod, common dragonet, common stingray, Dover sole, long-snouted seahorse, sandeel, sea bass and mackerel. Characteristic shellfish include brown crab, spider crab, European lobster, common cuttlefish and the common whelk. Seahorses are not present within the Offshore Development Area, being found in the inshore seagrass beds. Several species are also likely to use the Development Area as spawning or nursery ground, but as part of a wider habitat rather than relying on the area specifically.
- 7.7.4 A number of mitigation measures, relevant to fish and shellfish ecology, are incorporated into the Project as follows:
- sort-start to piling to allow mobile species to leave the area of greatest impact before noise levels become likely to cause injury;
 - restriction on the maximum number of hours actively piling per day and proposed temporal restriction during key sensitive periods (spawning) to reduce potential noise impacts to key fish species;
 - burial of subsea cables to a target depth (1.5 m for export cables and 1 m for inter array) or cable covering where appropriate to reduce electromagnetic fields (EMF);
 - cable lengths minimised as far as possible; and
 - use of 24 hour working practices to minimise the length of disturbance.
- 7.7.5 The impact assessment considers potential impacts from all phases of the Project, for example seabed disturbance leading to increased suspended sediment, sediment deposition, habitat loss and noise disturbance. For the majority of fish and shellfish receptors no significant impacts are identified. The exception to this is the effect of increased noise associated with piling of foundations during the construction phase of the Project when potential significant impacts are identified for a number of fish species including Atlantic salmon smolts, seahorses and black bream.
- 7.7.6 To mitigate for these effects additional measures are proposed which include a proposed temporal restriction on piling during key sensitive periods (spawning), to reduce potential noise impacts to key fish species. With the application of such mitigation measures, no significant impacts are predicted.
- 7.7.7 The cumulative impact assessment for fish and shellfish ecology considered a number of projects in the UK and in French waters, including offshore wind farms, marine aggregate dredging, oil and gas and tidal energy. Cumulative effects are considered to be not significant.

7.8 MARINE MAMMALS

- 7.8.1 The assessment describes the existing marine mammals and megafauna (basking shark and marine turtle) of the study area, which is comprised of the Offshore Development Area within a wider region, due to the highly mobile and wide ranging nature of marine mammal species.
- 7.8.2 The assessment is informed by site specific survey data collected during boat based and aerial observer surveys together with under water acoustic surveys to record animals that were not visible at the water surface. Existing reports and studies were also used, as well as noise modelling to inform the assessment of potential underwater noise impacts on these species.
- 7.8.3 The marine mammal species most likely to be found in the Study Area are harbour porpoise, bottlenose dolphin, grey seal and harbour seal. Harbour porpoise are found in greater numbers to the eastern and western extents of the English Channel, with low numbers found in the vicinity of the Offshore Development Area.
- 7.8.4 Bottlenose dolphins may occur within the Study Area, but are seen in greater numbers towards the eastern and western limits of the area. Data collected by the Durlston Marine Project shows bottlenose dolphin are observed frequently along the coast, although the site specific surveys recorded no sightings and the acoustic methods showed limited dolphin activity.
- 7.8.5 Grey seals are thought to be resident in the Solent and along the Hampshire and Dorset coasts, however estimated densities are low, and few animals were seen during the surveys.
- 7.8.6 Haul-out sites for harbour seal closest to the Study Area occur at Langstone and Chichester Harbours, with some evidence suggesting small numbers of harbour seal occur along the coastline of the Study Area, however no harbour seals were seen during the surveys.
- 7.8.7 Although not marine mammals, other animals are included in this assessment that are termed 'megafauna'. Animals considered in this assessment as megafauna include turtles and basking shark. Limited sightings within the study area resulted in both basking shark and marine turtles being scoped out of the assessment.
- 7.8.8 A number of measures are incorporated into the Project as mitigation, designed to minimise or reduce the level of potential impact. Those of relevance to marine mammals are as follows:
- reduced maximum energy for the hammer that pushes the foundation piles into the seabed, resulting in a lower level of noise produced;
 - soft start procedure for pile driving, whereby the hammer energy and therefore the sound levels produced is started at a low level, gradually increasing to the full force; and
 - the commitment to a monopile exclusion zone effectively reducing the number of monopiles required across the site.
- 7.8.8 The construction phase of the Project has the most potential to affect these species due to the use of piling for some foundation types proposed and detailed computer modelling was therefore used to inform the assessment. With the mitigations listed above in place, no significant impacts are predicted from noise effects, nor from other aspects such as potential for vessel collisions causing injuries to marine mammals.
- 7.8.9 The cumulative impact assessment for marine mammals considered a number of projects in the UK and in French waters, including offshore wind farms, marine aggregate dredging, oil and gas, tidal energy and cables. Cumulative effects were found to be not significant.



7.9 OFFSHORE ORNITHOLOGY

7.9.1 The assessment describes the existing use of the study area by birds, which has been defined by the extent of the original zonal area, relevant guidance and through consultation. The information to be submitted has been agreed with the statutory nature consultation bodies through a formal mechanism called an Evidence Plan process.

7.9.2 The assessment is focused on individual bird species, rather than designated sites. Only where likely significant impacts on bird species are identified are associated designated sites considered as sensitive features in their own right – refer to the Habitat Regulations Report (Document 5.4) for further details.

7.9.3 The description of the baseline environment draws on information gained through consultation, from the desk study and two years of site specific surveys. A range of sensitive species have been identified, with these placed into three categories:

- key seabirds – seabird species (11 species in total) occurring regularly or in mean peak numbers in excess of 1% of the regional population estimate;
- migrant seabirds – seabirds (4 species in total) recorded during the survey period when on passage; and
- migrant birds – birds (mainly wildfowl and waders – 11 species in total) that could pass through the Project area and have the potential to be impacted upon at the population level (either regional, national or international).

7.9.4 The key issues for ornithological assessment for offshore wind farm developments, include:

- disturbance and/or displacement of foraging seabirds from the Study Area during the construction, operation and maintenance and decommissioning phases of the Project with specific reference made to Balearic shearwater;

- collision of individual seabirds and migratory birds (particularly nightjar) with offshore infrastructure leading to injury or mortality; and
- impacts on bird populations listed as features of national and international designated sites.

7.9.5 The assessment considered the potential impacts associated with the worst case scenario, drawing on the outputs from the project specific modelling and taking account of the mitigation, with no significant impacts predicted during any phase of the Project.

7.9.6 A number of plans and projects were included in the cumulative impact assessment, including offshore wind farms in the UK and France, marine aggregate extraction and tidal power projects. The potential for a cumulative impact would only occur if the other projects were constructed simultaneously, with potential impacts including cumulative disturbance and displacement from vessels and construction activities and indirect cumulative impacts on prey stocks including invertebrates and fish. None of these effects are predicted to cause significant impacts.

7.10 SEASCAPE, LANDSCAPE AND VISUAL

7.10.1 The assessment describes the existing seascape, landscape and visual aspects of the study area, being based on a 45 km radius around the Turbine Area. The study area is broadly defined by the Zone of Theoretical Visibility ('ZTV') of the proposed Project and is appropriate to cover the area within which all potentially significant effects are anticipated to arise. Additional points agreed through consultation were the methodology to use, the number and location of viewpoints and the sites for inclusion in the cumulative impact assessment.

7.10.2 The assessment has been informed by a review of published data, site surveys, the ZTV studies, computer generated visual representations of the Project (called wireframes and photomontages) and further site visits.

7.10.3 It is a highly varied coastline, with a number of national designations. The ZTVs indicate that the turbines would generally be visible from the coastal parts of the study area, being largely confined to coastal margins and cliff tops, with visibility reducing markedly inland. The assessment considers the potential for impacts upon 'receptors', which in this case comprise seascape and landscape character areas (including designated landscapes), and different groups of people who may experience views of the development. These visual receptors include residents and visitors, people using accessible or recreational landscapes and seascapes (including sea users), people using public rights of way and people using key viewpoints.

7.10.4 The seascape, landscape and visual impact assessment process has greatly contributed to the project design being taken forward. Particular changes made in response to consultation and to mitigate effects include: the reduction in size of the Turbine Area; the repositioning of the northern and north-western Turbine Area boundaries so that turbines are located further away from the coastline, and the view between St Catherine's Point and St Aldhelm's Head remains open and clear; the commitment to the siting of offshore substation platforms away from the perimeter of the Turbine Area; a commitment to use minimum levels of turbine and offshore substation lighting; a marked reduction in potential total turbine numbers; and a reduction in the maximum height of turbines.

7.10.5 Based on the ZTV, several potential sensitive features have been scoped out of the impact assessment. These are the South Downs National Park, selected Landscape Character Types and both the West Dorset Heritage Coast (Dorset) and Hamstead Heritage Coast (Isle of Wight).

7.10.6 The impact assessment considered the realistic worst case scenario which, when taking into consideration the proposed mitigation and revised project design, concluded that the majority of impacts assessed are not significant. However significant impacts are predicted at some locations as follows (some for part of the location or feature only):

- Regional Seascape Unit 2: Purbeck Coast (eastwards from St Aldhelm's Head, in the coast and coastal sea portion only);
- Dorset AONB (within area A. Coast and coastal fringe from Old Harry Rocks to St. Aldhelm's Head);
- Dorset Heritage Coast – Purbeck Coast (within area A. Coast and coastal fringe from Old Harry Rocks to St. Aldhelm's Head);
- Viewpoints: 07 – Swyre Head; 08 – St. Aldhelm's Head; 09 – Durlston Head; 12 – Old Harry Rocks; 27 – Hurst Castle; 28 – The Needles, Isle of Wight; and 29 – Tennyson's Monument, Isle of Wight.
- Swanage (from recreational areas and the seafront to the north of Victoria Avenue, and from open parts of New Swanage);
- recreational routes: South West Coast Path National Trail (between Studland and Egmont Point); Purbeck Way Long Distance Path (between the coast and Ailwood Down); E9 European Long Distance Route; Solent Way Long Distance Path (at Hurst Spit); Isle of Wight Coastal Path and Tennyson Trail (between the Needles and Freshwater); and Footpaths around Barton Common and Barton on Sea golf course;
- The Needles Burial at Sea site – those facing south-west;
- Durlston Country Park;
- ferry passengers (to / from Poole and Weymouth when near to the Turbine Area); and
- those engaged in water sports / yachting – Bournemouth and Christchurch Bays area.

7.10.7 The cumulative assessment indicates that the combined or individual cumulative effects arising from the three cumulative wind farms (namely Alaska Wind Farm, Cheverton Down Wind Farm and Camp Hill Wind Farm) in combination with the Project will not be greater than the effects arising due to the Project alone.

7.11 OFFSHORE ARCHAEOLOGY

- 7.11.1 The assessment describes the existing marine historic environment of the study area, which is comprised of the Offshore Development Area, including a 1 km buffer around the Turbine Area and 100 m buffer around the Cable Corridor.
- 7.11.2 The existing baseline has been supported by detailed surveys and data collection, which provide information on both the surface of the seabed and features that may lie beneath the surface.
- 7.11.3 A range of features of archaeological interest were identified along with the potential for the existence of currently unknown features that might be of interest. All of these (i.e. including the potential for finds during the development) have been considered and assessed. These include prehistoric archaeology, maritime archaeology (known wrecks, recorded shipping casualties/losses, unknown wreck sites, and isolated maritime artefacts or finds), and aviation archaeology (known aircraft crash sites, recorded losses and isolated aircraft finds).
- 7.11.4 Some 29 World War I or II charted wrecks are recorded in the Offshore Development Area, with a single charted aircraft wreck recorded in the Offshore Export Cable Corridor.
- 7.11.5 Whilst the development of the Project could affect archaeology present in the area, both from disturbance during construction (for example when installing a foundation) and from changes to seabed sediment movement when the project is operational (which might uncover and then erode an important artefact), mitigation measures have been identified that will limit the potential for effects to occur. These include the construction of exclusion zones around important archaeological features, such as known and charted wrecks, and all high and medium potential geophysical anomalies, together with a Written Scheme of Investigation ('WSI'), which details the offshore archaeological mitigation strategy to be followed throughout the lifetime of the Project. Some five exclusion zones have been identified across the Offshore Development Area.
- 7.11.6 With the mitigation measures in place, the impact assessment predicts that no significant impacts on marine archaeology will occur.
- 7.11.7 The cumulative impact assessment for marine archaeology considered a number of projects, including marine aggregate dredging, oil and gas, tidal energy and dredging waste disposal, finding the potential for impact to be not significant.

7.12 SETTING OF HERITAGE ASSETS

- 7.12.1 The assessment describes the potential impacts of the offshore element of the Project within the setting of terrestrial heritage assets. A heritage asset is a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest.
- 7.12.2 The setting of a heritage asset is defined as the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.
- 7.12.3 The assessment included an appraisal of over 1000 designated and undesignated heritage assets comprising scheduled monuments, conservation areas, listed and locally-listed buildings and structures, and registered parks and gardens.
- 7.12.4 The impact can be broadly characterised as the alteration of the distant seascape vista (particularly the maritime horizon) through the introduction of the Turbine Area. The extent to which the introduction of the Turbine Area has the potential to affect a heritage asset depends on the degree to which the appreciation of the uninterrupted maritime horizon contributes to the overall significance (and experience) of the asset and also to what extent that appreciation is altered or prevented.
- 7.12.5 Consultation was undertaken with heritage stakeholders to agree the scope of the assessment and the selection of heritage assets that warranted detailed assessment.
- 7.12.6 The assessment concludes that the alteration of the distant seascape vista through the introduction of the Turbine Area will alter the setting of many of the heritage assets within the study area. Those assets considered to be of the greatest sensitivity to the Turbine Area are the Lower Needles Point Battery Scheduled Monument, the Grade I Listed St Aldhelm's Chapel, the Grade II Listed Tennyson's Beacon, the Grade II* Registered Encombe and the Grade II Registered Durlston Historic Landscape. In each of these instances, the Turbine Area would not result in any harm to their heritage importance. As such, the Turbine Area is not considered to conflict with any national or local policies relating to the setting of heritage assets.
- 7.12.7 The cumulative impact assessment for heritage assets considered a number of onshore wind farms. No cumulative impacts were identified.

7.13 SHIPPING AND NAVIGATION

- 7.13.1 The assessment describes the existing vessel activity and navigational features of the study area, which is comprised of the Offshore Development Area together with a 10 nm buffer around the Turbine Area and a 2 NM buffer around the Export Cable Corridor. Computer modelling has been undertaken to provide an understanding of navigational risk, which includes recreational craft, ferries and other commercial traffic, commercial fishing vessels, aggregate vessels, military vessel transits and emergency response activities.
- 7.13.2 The existing baseline has been informed by numerous data sources, including site specific survey. The site specific data were collected during August 2012, with an average of 28 unique vessels per day passing through the Study Area. Some 13 main shipping routes have been identified as transiting in proximity to the site, several of which directly cross the Study Area.
- 7.13.3 Recreational activity has been recorded in winter and summer and included vessels between 2.5 m and 24 m in length, notably covering the duration of the 2012 Olympics. Vessels were recorded transiting through the Turbine Area, with the densest area of activity to the north. A low number of fishing vessels were recorded intersecting the site over the survey period, with the densest fishing activity to the north east of the site.
- 7.13.4 The majority of ferry routes do not cross the Turbine Area, although the Poole-Barfleur route does partially cross the western boundary. The Turbine Area is not used heavily by aggregate dredgers, with the Study Area overlapping with two submarine exercise areas.
- 7.13.5 A large number of shipping and navigation specific mitigation measures have been included within the Project to ensure that the safety of maritime users is not compromised at any stage during the lifetime of the Project. These mitigation measures include construction phase safety zones; lighting and marking of structures at sea.
- 7.13.6 The assessment of potential impacts covered aspects such as potential collisions with vessels or wind turbine structures, deviations to routes and effects on communications and navigation equipment, finding that the residual risks, once the mitigation measures had been implemented, are broadly acceptable or tolerable with monitoring and are therefore considered not significant.
- 7.13.7 The cumulative impact assessment for shipping and navigation considered a number of offshore wind farms (in the UK and France), together with cabling, offshore marine users not engaged in navigational activities and oil and gas exploration infrastructure. The inclusion of the proposed mitigation measures resulted in a conclusion of no significant cumulative impacts.



7.14 COMMERCIAL FISHERIES

- 7.14.1 The assessment describes the existing commercial fishing activity of the study area, which extends from St Catherine's Point on the Isle of Wight in the east to St Alban's Head in Dorset in the west, including the area of inshore water up to the coast and the offshore waters beyond the most southerly extent of the Turbine Area. Commercial fishing is defined as the activity undertaken by both registered commercial fishing and charter angling vessels for declared taxable profit.
- 7.14.2 The commercial fisheries baseline is informed by detailed surveys, consultation and data collection, with numerous types of fishing vessel included. Fishing activities covered include static gear, towed gear, other gear (e.g. rod and line) and charter angling.
- 7.14.3 The fishing grounds in and around the Turbine Area have been subject to infrequent fishing activity over the years by nomadic vessels 10 metres and under, originating from ports in Sussex, Devon, Cornwall, Wales and continental Europe. Information on vessel activities indicates that fishing in the study area by UK registered 12 metre and over vessels and continental European vessels is low.
- 7.14.4 Areas of relatively higher fishing intensity are often inshore, including near the cable landfall, such as cuttlefish traps, potting, netting and trawling. The whelk fishery is located mainly across the Offshore Cable Corridor and the northerly tip of the Turbine Area. Rod and line fishing grounds follow a broadly east/west band that crosses the northerly part of the Turbine Area.
- 7.14.5 The impact assessment takes account of mitigation measures incorporated as part of the Project, with those that apply to commercial fishing being as follows:
- measures that reduce noise levels, including the soft-start procedure to piling and the monopile exclusion zone, which reduces the total number of monopiles used;
 - exclusion zones around features such as wrecks, often important features for charter angling;
 - buffer zones around marine aggregate dredging sites, with such zones remaining open for commercial fishing;
 - burial or protection of cables as appropriate;
 - keeping cable lengths to a minimum, thus limiting the potential for EMF effects;
 - consideration of commercial fishing navigational requirements; and
 - the use of best practice, such as the appointment of a Fisheries Liaison Officer (FLO), issue of Notices to Mariners and removal of debris as soon as practical.
- 7.14.6 The potential for impact on commercial fishing activity arises during construction and decommissioning due to a loss of access to fishing areas near to the Project from safety zones around structures and from interference to fishing vessels from construction/ decommissioning vessels. Changes in where fish and shellfish species occur, through the disturbance effects of noisy activities such as piling, also have the potential to affect commercial fisheries. During operation, access to grounds due to the presence of the Project structures and export cables can also affect the fisheries, particularly those using towed gear.

7.14.7 However taking into consideration the proposed mitigation measures the findings of the assessment show that impacts are generally considered not significant. There are exceptions to this, where significant impacts are possible, including:

- the potential for impact due to the presence of the inter-array cables on individual vessels engaged in static gear fishing is potentially adverse. However, given that the majority of cabling would be buried the impact is assessed as not significant;
- the potential for impact on individual potting vessels using the Turbine Area is significant, due to interference with operational and maintenance traffic; and
- the potential for impact on individual vessels using towed gear in the Export Cable Corridor is significant, due to the risk of so called seabed 'fasteners' that can snag fishing gear when a vessel is actively fishing.

7.14.8 In response to the potential for significant impacts to occur, discussions with the fishing community are ongoing and appropriate mitigations are being developed in consultation. Inclusion of the proposed mitigation measures reduces the assessment of the potential impact to a level that is not significant.

7.14.9 The cumulative impact assessment for commercial fishing considered marine aggregate dredging, conservation areas, tidal energy, cabling and offshore wind farms. Specifically, the assessment looked at the potential for a cumulative loss of access to traditional fishing grounds and effects on commercially exploited species. All potential cumulative impacts are assessed as being not significant.

7.15 AVIATION AND MILITARY ACTIVITY

- 7.15.1 The assessment describes the existing aviation and military interests of the study area, which is comprised of the Turbine Area with extensions to include all areas necessary to take into account air traffic control coverage and operational requirements.
- 7.15.2 The assessment is supported by detailed data collection to inform the understanding of the existing baseline, with modelling undertaken to support the assessment of potential impact on radar operations. A number of issues have been scoped out, as they do not exist within the study area or are not affected by the Project, as follows:
- there is no non radar licensed aerodrome with a runway of more than 1,100 m within 17 km;
 - there is no non radar licensed aerodrome with a runway of less than 1,100 m within 5 km;
 - there are no unlicensed aerodromes with runways of more than 800 m within 4 km;
 - there are no unlicensed aerodromes with runways of less than 800 m within 3 km;
 - there are no gliding sites within 10 km;
 - there is no other aviation activity such as parachute sites and microlight sites within 3 km; and
 - Ministry of Defence Air Defence Radars, Meteorological ('Met Office') Radars and Aerodrome Physical Safeguarding are not affected.
- 7.15.3 A number of mitigation measures have been incorporated into the Project, including those considered best practice. Information on construction activity will be passed to NATS Aeronautical Information Service (NATS AIS) in time to ensure that it can be promulgated to all affected airspace users.
- 7.15.4 The impact assessment typically found that the proposed mitigation results in no significant adverse impacts for other aviation and military activity. However, a potentially significant impact has been identified for the military vessel testing range at Portland, due to noise disruption

during construction, and the civil radar operation at Bournemouth Airport, due to potential radar disruption during operation. In addition airport operators at Southampton Airport have raised concern regarding a potential aviation risk.

- 7.15.5 In response to the potentially significant impacts consultation with operators is continuing and through the application of appropriate mitigation measures, impacts are expected to be not significant.
- 7.15.6 The cumulative impact assessment for aviation and military activity considered a number of projects and proposed developments, all of which are onshore wind farms, with a potential for interaction with military systems identified. The application of appropriate mitigation measures leads to conclusions of impacts being not significant.

7.16 OTHER OFFSHORE INFRASTRUCTURE

- 7.16.1 The assessment describes the existing offshore infrastructure of the study area, including marine aggregate extraction, oil and gas, cables and pipelines, disposal sites and burial at sea. The study area extends some 15 NM (including a 5 NM buffer) beyond the Offshore Development Area.
- 7.16.2 Infrastructure such as carbon capture and storage, offshore gas exploitation structures, capital or maintenance dredging, cables, ground disturbance to marine disposal sites, out-of-use disposal sites and a former munitions disposal site were scoped out of the assessment during the consultation process due to a lack of such within the study area.
- 7.16.3 The offshore industry identified within the study area is as follows:
- two actively dredged licensed marine aggregate areas to the north and north-east of the Turbine Area;
 - two previously licensed marine aggregate dredging areas, to the north and north-east of the Turbine Area;
 - six marine aggregate dredging areas under application to the east of the Turbine Area;

- the Wytch Farm and Beacon oil fields, being located to the north-west of the Offshore Export Cable Corridor, the latter of which overlaps with the western most cable route option;
- oil and gas licensing blocks; the south eastern tip of licence block 98/11 falls within the Turbine Area, with part of licence blocks 98/16, 98/17 and 98/12b within the Turbine Area or Offshore Export Cable Corridor;
- two out of service cables are located within the Offshore Development Area, although there are no active telecommunications or power cables within this boundary;
- pipelines, although there are none within the Offshore Development Area;
- licensed marine disposal sites, although again no sites currently licensed fall within the Offshore Development Area; and
- the Needles Burial at Sea Site is 13 km from the Turbine Area at its closest point.

7.16.4 A number of mitigation measures have been adopted as part of the project, which include a rolling 500 m safety zone during construction, decommissioning and any major maintenance; aggregate extraction area buffers around cables and installed structures; the use of direct drilling in the intertidal; and best practice activities such as the issue of Notices to Mariners. Future measures identified include consultation with neighbouring industries for the lifetime of the Project and a cable crossing/recovery agreement for an out of use cable.

7.16.5 The impact assessment found that the proposed mitigation measures result in no significant impacts for other offshore infrastructure.

7.16.6 The cumulative impact assessment for other offshore infrastructure considered a number of projects and proposed developments, including marine aggregate dredging, oil and gas, cables and pipelines, dredging waste disposal and burial at sea, with no cumulative impacts identified. Further potential for cumulative impacts with marine aggregate dredging are considered in physical processes, water quality and shipping and navigation.

7.17 TELECOMMUNICATIONS AND BROADCASTING

7.17.1 Site specific data have been collected to inform the description of the existing baseline, with modelling undertaken to inform the assessment of impacts to communication systems and television reception; namely to wireless microwave links (used by mobile phone service providers) and wireless Ultra High Frequency (UHF) telemetry links (often used by utility companies and terrestrial television broadcast services). Potential effects on marine communication and navigation systems are considered within the Shipping and Navigation chapter.

7.17.2 The study areas relate to the extent of potential impact. For wireless microwave (mobile phone services)/UHF links, the area extends for 1 km around the Turbine Area, with the study area for TV interference issues considering locations around Totland and Moortown on the west of the Isle of Wight, Christchurch, Highcliffe, Bournemouth, Swanage and Weymouth.

7.17.3 The baseline survey of TV reception found most areas to receive a strong and good quality signal, with a minority reliant on alternative transmitters. No microwave or UHF telemetry links were identified within the study area, and therefore the issue was scoped out of the assessment.

7.17.4 The impact assessment found the potential impact to be not significant. Even so, should such interference be proven to be attributable to the Turbine Area, mitigation would be provided, e.g. the installation of satellite TV to upgrade the reception at affected homes. It is likely that if any impacts do occur these would be minor and on a small scale.

7.17.5 The cumulative impact assessment for telecommunications and broadcasting considered the proposed Rampion Offshore Wind Farm only, located some 93 km away. No cumulative concerns are anticipated with regard to TV interference or wireless communication links.

8 ONSHORE IMPACT ASSESSMENT

8.1 INTRODUCTION

- 8.1.1 This section provides a summary of the baseline environment and surveys undertaken, and presents the likely significant environmental impacts from the onshore elements of the Project during construction, operation and maintenance and decommissioning.
- 8.1.2 In order to control and mitigate potential impacts from onshore construction activities a number of plans will be developed and agreed with the relevant planning authorities prior to construction commencing. The main plan will be the Construction Environmental Management Plan (CEMP) and this will be supplemented by individual subject specific plans covering topics such as noise and air quality.
- 8.1.3 A Code of Construction Practice (CoCP) is included with the application and sets out the basis for the standards and controls to be incorporated into the CEMP and its subject specific management plans.
- 8.1.4 The Onshore Development Area includes the cable Landfall (and transition joint bay), the Onshore Cable Corridor and associated accesses, temporary compounds and a new Onshore Substation.

8.2 GROUND CONDITIONS AND CONTAMINATED LAND

- 8.2.1 The assessment considered the existing variety of rocks, minerals, fossils, soils, landforms and natural processes and ground conditions at the Onshore Development Area and evaluated the potential for ground instability and existing land contamination from past and present land uses. By undertaking desk studies, site walk overs and ground investigations, a description of the baseline environment has been produced across a study area generally extending 500 m either side of the centre line of the cable route.
- 8.2.2 The Landfall point is known to be subject to degradation by marine erosion amongst other things, which has been taken into account in the Project design. The Onshore Development Area extends across a number of bedrock formations, overlain by surface soils. The surface soils are silty sand or silty clay, with some gravel. Various watercourses cross the cable corridor, the main three being the Danes Stream, the Moors River and the River Avon.
- 8.2.3 The desk studies identified five potential sources of land contamination on or in close proximity to the cable route, with two in the vicinity of the substation.
- 8.2.4 The mitigation measures include industry best practice, aimed at preventing significant impacts from occurring during construction.
- 8.2.5 The potential for impact at the Landfall site is mitigated by the proposed use of HDD beneath the cliff and beach, a minimum set back distance from the existing cliff edge and the implementation of best practice, with the impact considered to be not significant for all Project phases.

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- 8.2.6 Along the Onshore Cable Corridor, appropriate mitigation to ensure sediment stability together with implementation of mitigation measures to reduce or avoid potential impacts associated with contaminated land leads to an assessment of not significant for all Project phases.
- 8.2.7 At the Onshore Substation the mitigation measures for correct storage and use of fuel and hazardous materials mean the impact is assessed as not significant during the construction, operation and maintenance phases. An Onshore Decommissioning Plan would be provided for the Onshore Substation on the cessation of commercial operation.
- 8.2.8 Cumulative impacts are not anticipated with respect to ground conditions or contaminated land.

8.3 SOILS AND LAND USE

- 8.3.1 The assessment considered the potential impacts on agricultural land quality, soil and land use at the Onshore Development Area. A combination of desk-based data and site walk overs has informed the technical baseline report.
- 8.3.2 Mapping of the Onshore Development Area shows nine soil associations, together with Agricultural Land Classifications of Grades 2, 3 and 4 (the grade numbers used to classify land represent a scale from excellent quality agricultural land (Grade 1) through to very poor quality (Grade 5)). The land use is predominantly agricultural, with a mixture of grazing pasture, arable crops, occasional horse paddocks and non-agricultural land including heathland and both natural and managed woodland plantations.
- 8.3.3 The Onshore Development Area would cross numerous minor roads and watercourses, a live railway line, three disused railway lines, a major trunk road (the A31) and several watercourses and their floodplains. A sand and gravel extraction site is found near the crossing with the A338, with a Ministry of Defence (MOD) fuel depot site at the northern end.
- 8.3.4 The Project includes a number of mitigation measures and adheres to industry best practice, aimed at preventing significant impacts from occurring, such as loss of productive land. Such measures include Project design and routing and land would be reinstated to former use following construction.
- 8.3.5 The proposed construction at the Landfall site is subject to mitigation, including restoration and reinstatement, with no significant impacts predicted on soil resources, land quality or use. There would be no effect during operation and maintenance, with no significant impacts arising during decommissioning.
- 8.3.6 Along the Onshore Cable Corridor, again no significant impact is predicted during construction on soil resources, with mitigation measures ensuring no significant impact arises on agricultural land. The potential for impacts during operation and maintenance or decommissioning is also not significant.
- 8.3.7 At the Onshore Substation site, construction impacts are considered as not significant, with the effect on agricultural land and land use being similarly not significant.
- 8.3.8 None of the projects or schemes identified would lead to cumulative impacts to soils, agricultural land quality or land use during any phases of the works.

8.4 ONSHORE WATER ENVIRONMENT

- 8.4.1 The assessment describes the existing onshore water environment of the study area, comprised of the Onshore Development Area. Surrounding land listed as flood zones within 2 km is also included in the study area, together with all the watercourse catchment areas. The assessment covers surface waters (rivers and streams), groundwater and pluvial (surface water and foul drainage) sources.
- 8.4.2 The baseline environment is based on information from literature review (including water quality data, existing mapping, flood risk assessments and management plans) together with site walkovers. Existing water quality is generally good.
- 8.4.3 A Flood Risk Assessment (FRA) has been prepared for the proposed Onshore Substation. The assessment identifies a very shallow groundwater table beneath the Onshore Substation site, together with local seasonal groundwater flooding, and confirms that there would be no flood risk impact from tidal or impounded waterbodies. There are no historic records of flooding from rivers or streams affecting the substation site and the site is classified as Flood Zone 1 (Low Probability of Flooding). Site specific modelling confirms that this type of flood risk would not be significant.
- 8.4.4 Mitigation for impacts on the water environment is included throughout the project design. For example where the cable route crosses major water features, trenchless cable installation techniques are proposed. Other measures include careful siting and management of infrastructure (taking account of flood risk and flood management) and measures to prevent contamination of surface waters.
- 8.4.5 The impact assessment found that the potential flood risk and waterbody impacts are not significant during any Project phase (construction, operation or decommissioning). The potential for impact on the Water Framework Directive status of waterbodies is not significant.
- 8.4.6 No other projects or schemes have been identified that could result in cumulative impacts or impacts on the onshore water environment arising from the proposed development during any phase of the works.

8.5 ONSHORE AIR QUALITY

- 8.5.1 The assessment of air quality considered dust, particulate matter (PM10) and nitrogen dioxide (NO₂) emissions along the Onshore Development Area including a 350 m buffer.
- 8.5.2 The baseline environment is defined based on data obtained from the UK-AIR (Air Information Resource) website operated by the Department for Environment Food and Rural Affairs (Defra) and consultation with the local authorities.
- 8.5.3 None of the onshore infrastructure falls within an Air Quality Management Area and there are no local authority monitoring stations nearby. The available data shows the emission values in proximity to the area are within the Air Quality limits, as defined by Christchurch Borough Council, which set the standards that should be complied with.
- 8.5.4 A number of mitigation measures are included within the project design to ensure potential impacts to air quality are minimised. These include measures to minimise emissions, such as dust suppression and management of vehicles leaving the site, together with regulatory measures, such as Key Performance Indicators, and ongoing consultation with local residents.
- 8.5.5 The assessment found that the potential impact from dust during construction, taking into account mitigation would not be significant. The potential for impact from construction traffic emissions and during decommissioning were also concluded to be not significant. Operation and maintenance phase effects were scoped out due to the lack of emissions during operation and the low level of traffic required for maintenance activities.
- 8.5.6 The cumulative impact assessment considers a number of projects, including the potential redevelopment of the former St Leonards Hospital site and an extension to Lone Pine Lodge and Chalet Park. No cumulative impacts were identified for such developments.

8.6 ONSHORE NOISE AND VIBRATION

- 8.6.1 The assessment of onshore noise and vibration examines the potential effects that may be generated and the potential impact on sensitive sites or premises used by people. For the construction and decommissioning phases, the assessment considered sensitive sites or premises used by people within 300 m of the boundary of the Onshore Development Area, and for the operation phase within 500 m of the boundary. Operational noise has only been considered at the Onshore Substation.
- 8.6.2 When considering the potential impact from noise, elements of work that were assessed included the timing of construction activity, the proposed construction techniques along the Onshore Development Area (e.g. trenchless installation) and the different stages in construction (e.g. site preparation or equipment installation).
- 8.6.3 Proposed mitigation of the temporary impacts from construction includes the provision on noise screening along the Onshore Cable Corridor where required, adoption of best practice, for example locating noise generating equipment away from sensitive locations, where possible, and a public awareness campaign, e.g. to provide information on the nature of work and its expected duration.
- 8.6.4 Along the Onshore Cable Corridor, including the Landfall, the impact of the predicted construction noise taking into account of the proposed mitigation is considered to be not significant.
- 8.6.5 The potential for noise during the construction phase at the Onshore Substation considers overall activity noise levels for all elements of construction and at various distances. The potential for impact is assessed as not significant. Due to the sensitive siting of the Onshore Substation to the south of the proposed site, and the inclusion of noise enclosures around some equipment during operation and maintenance, the predicted noise levels for surrounding sites, premises and locations during the day and at night are concluded to be not significant. The potential for vibration during operation and maintenance is also found to be not significant.
- 8.6.6 Noise and vibration impacts at the onshore substation during the decommissioning phase would be broadly similar or lower to those defined for the construction phase. Decommissioning activities along the Onshore Cable Corridor are not predicted to give rise to significant impacts and have therefore been scoped out.
- 8.6.7 The cumulative impact assessment considers the former St Leonards Hospital site and Mannington substation. Given the proposed construction timing of the former St Leonards Hospital site and the low levels of noise at the proposed onshore substation combined with its distance from the Mannington substation, cumulative impacts are considered to be not significant.

8.7 TERRESTRIAL AND FRESHWATER ECOLOGY

8.7.1 The assessment of terrestrial and freshwater ecology draws on a number of desk top studies and survey and reports, as follows:

- Desk Study and Consolidated Phase 1 Habitat Survey;
- Hedgerow Survey;
- National Vegetation Classification Survey at West Moors Ministry of Defence Area;
- Conservation Notable Species Ecology Surveys;
- Hurn Forest and West Moors Plantation Reptile Survey; and
- Tree Survey.

8.7.2 The study area encompasses the Onshore Development Area, with a variable buffer zone depending on the survey type (e.g. specific species), as agreed with Natural England.

8.7.3 Sites designated for nature conservation are identified, including the reasons for designation and proximity to the Onshore Development Area, with several overlapping the boundary including sites of international importance.

8.7.4 The location and extent of habitats of ecological value, together with the location of species such as badgers, bats, amphibians, reptiles and aquatic invertebrates are identified. No sign was found of otter, water vole, bat roosts, dormice or great crested newt within the Onshore Development Area, although some bat activity was noted within the boundary. Part of the study area was not accessible for survey until October 2013, with these areas to be surveyed in 2014.

8.7.5 Mitigation measures adopted as part of the project include changes to the design of the route, selection of construction techniques, measures to prevent pollution, restrictions on work at hedgerow/watercourse crossings and habitat restoration.

8.7.6 The impact assessment identifies the various development activities with the potential to affect ecological features, e.g. habitat removal or direct damage or disturbance to species. The assessment also highlights the designated sites, habitats and species which have the potential to be affected and that are therefore assessed in detail.

8.7.7 Designated sites included within the impact assessment are:

- Dorset Heaths Special Area of Conservation (SAC);
- Dorset Heathland Ramsar;
- Holt and West Moor Heaths Site of Special Scientific Interest (SSSI);
- St Leonards and St Ives Heaths SSSI;
- Breakhill Copse Site of Importance for Nature Conservation (SINC);
- Breakhill Heath SINC;
- Flybrook Plantation Site of Nature Conservation Interest (SNCI);
- Hurn Forest SNCI;
- St Leonards Hospital SNCI;
- West Moors Plantation SNCI;
- West Moors Long Paddock SNCI;
- The Nursery SNCI; and
- Mannington Substation SNCI;

8.7.8 Habitats included within the impact assessment are:

- broadleaved and mixed woodland;
- dry heath/acid grassland and shrub heath;
- rivers and streams (running water); and
- hedgerows.

8.7.9 Species included in the impact assessment are:

- badger;
- bats;
- sand lizard;
- common reptiles;
- aquatic invertebrates; and
- migratory fish.

8.7.10 Without additional mitigation measures, there is potential for an effect on these features and species and as a result, additional measures have been identified. Such measures include the restoration of habitats damaged during the construction phase, the creation of additional wooded heath and heathland habitats outside of the Onshore Development Area to provide both mitigation of impacts and biodiversity gain, as well as specific measures to be adopted to ensure compliance with relevant wildlife legislation.

8.7.11 Following the implementation of additional mitigation, the potential for impact to all designated sites and to the habitats and species highlighted is not significant.

8.7.12 No other plans or projects have been identified which would create a likely significant cumulative impact with the onshore works associated with the project and therefore there are no cumulative impacts on terrestrial and freshwater ecological features for this assessment.



8.8 ONSHORE ORNITHOLOGY

- 8.8.1 The onshore ornithology impact assessment draws on baseline information from a desk based study and site specific surveys. The study area for individual surveys is defined by the location of suitable habitats for breeding and wintering birds together with the extent of the Onshore Development Area, the latter having been reduced over time. The desk study area included an examination of records of notable bird species and sites designated for nature conservation within the Onshore Development Area together with a 1.5 km buffer.
- 8.8.2 A number of site specific surveys were undertaken to inform the baseline description, including breeding bird surveys, wintering bird surveys and nightjar surveys. Access was not granted to all areas until October 2013, with surveys in these areas to be undertaken in 2014.
- 8.8.3 The baseline data describes numerous bird species during both breeding and wintering periods within the study area, including a number of species of nature conservation interest.
- 8.8.4 Species present with populations valued as being of international importance were Bewicks swan, dark-bellied Brent goose, hen harrier, merlin, Mediterranean gull, nightjar, woodlark and Dartford warbler. Three sites of international importance for birds occur within 1.5 km of the Onshore Development Area: the Avon Valley Special Protection Area (SPA), the Avon Valley Ramsar site (these two designations overlap) and the Dorset Heathlands SPA.
- 8.8.5 Mitigation for impact on ornithology is included within the Project design and includes measures such as route design (e.g. avoidance of sensitive habitats), trenchless techniques for cable installation at sensitive areas to minimise disturbance, restrictions on working areas at hedgerow and watercourse crossings, pollution prevention measures, habitat restoration and timing of site preparation to take account of bird breeding seasons.
- 8.8.6 Where an impact may be significant, additional mitigation is identified and includes habitat creation and scheduling of construction activities to avoid disturbance. Following the inclusion of mitigation, all residual impacts are found to be not significant.
- 8.8.7 No other plans or projects have been identified that would create a likely significant cumulative impact with the onshore works associated with the project and therefore there are no cumulative impacts to onshore ornithology for this assessment.



Image of a badger

8.9 ONSHORE LANDSCAPE AND VISUAL

- 8.9.1 The onshore landscape and visual aspects assesses the potential impacts arising from all phases of the onshore elements of the Project, specifically the following:
- landscape impacts – changes in relation to protected landscapes, areas of common landscape character (landscape character areas and/or types) and on individual components of the landscape; and
 - visual impacts – relating to how the surroundings of individuals or groups of people may be affected by change in the landscape, specifically in relation to fixed views and in the general visual amenity experienced by people in particular places.
- 8.9.2 The onshore study area was agreed in consultation, being a 3 km radius from the Onshore Substation site boundary and a 500 m buffer either side of the Onshore Cable Corridor.
- 8.9.3 The baseline has been defined through a combination of desk based assessment and site specific survey. It includes computer generated representations (wireframes and photomontages). The modelling in particular enables maps to be produced showing the Zone of Theoretical Visibility (ZTV); essentially showing which areas of land would have a view of the development.
- 8.9.4 The Landfall site currently comprises a pastoral landscape set on top of the elevated and heavily eroded coastal fringe where there are panoramic views across Christchurch Bay and the mouth of the Solent.
- 8.9.5 The Onshore Cable Corridor passes through a generally rural landscape comprising mostly agricultural land and plantation forestry. The route crosses a small number of major transport routes together with a larger number of local and minor roads. The proposed cable(s) would be placed underground for the entire length, using an array of construction techniques, determined by site constraints.
- 8.9.6 The Onshore Substation site is situated within the East Dorset Green Belt, bounded to the south by Ministry of Defence buildings. In general, the area surrounding the proposed Onshore Substation site has scattered housing, isolated farmsteads and a range of woodland areas.
- 8.9.7 There are a number of designated sites within proximity to the Project, including New Forest National Park and the Dorset Area of Outstanding Natural Beauty (AONB).
- 8.9.8 A number of aspects have been scoped out of the assessment, as examination has found that further consideration is not necessary. These are as follows:
- five of the landscape character areas where there would be little chance of a line of sight during any phase of the Project;
 - residential amenity assessment – it is not predicted that the nearest properties to the substation would experience a change in their views that requires assessment (this would need to be at a level of 'unacceptable harm');
 - decommissioning of cable and landfall infrastructure – the short-term, temporary and reversible impacts would be no greater (and typically less) than those of the construction period; and
 - night-time lighting assessment – assessment of effects arising from lighting of the onshore substation is not required because of the contained nature of the site and the limited lighting needed for safe construction and operation.
- 8.9.9 Mitigation has been identified and designed to minimise potential landscape and visual impacts that might arise because of the visibility of construction plant or works and the presence of, for example, the Onshore Substation. The mitigation measures include: additional vegetation and landscape planting at the Onshore Substation and habitat and farmland restoration.

- 8.9.10 The impact assessment evaluates the potential impact from construction, operation, maintenance and decommissioning of the Project on landscape designations (such as National Parks and woodland areas of great landscape value), landscape character, site-scale character area, National Character Areas and Rural Landscape Character Areas, together with views from representative viewpoints, Public Rights of Way and settlement edges.
- 8.9.11 For the majority of visual receptors, the potential impact was found to be not significant. However, for the following the potential change to the character of the view and visual amenity was found to be significant:
- private residents at Viewpoint 1 (Gundry's Farm);
 - private residents at Viewpoint 14 (Hordle);
 - visitors to the coast at Viewpoint 16 (Taddiford Gap car park); and
 - users of Coastal Footpath at Viewpoint 17 (Coastal footpath, Grid Ref: 426200 92316).
- 8.9.12 The Onshore Substation is the only construction project of its type (or of a similar/comparable nature) within the 3 km study area. The existing Mannington substation forms part of baseline and has been considered within the main impact assessment. Similarly, there are no comparable cable laying operations within the Onshore Development Area study area. As such, there would be no cumulative landscape and visual impacts expected.

8.10 ONSHORE CULTURAL HERITAGE AND ARCHAEOLOGY

8.10.1 The onshore cultural heritage and archaeology assessment draws upon baseline data collected from a broad study corridor that comprised an area of at least 500 m from the boundary of the Onshore Development Area.

- 8.10.2 The baseline environment has been defined through a detailed literature review, a field survey comprised of driven and walked surveys and detailed inspection of four specific areas along the route within Hordle Parish (the point of Landfall, the location of a possible post-medieval structure within Stanley's Copse, a quarry site on Golden Hill, and the possible location of Medieval Hinton).
- 8.10.3 The baseline surveys identified 60 designated heritage assets (primarily listed buildings but also five scheduled monuments) together with 358 non-designated assets, ranging from the Palaeolithic through to modern day and included agricultural remains, such as ridge and furrow, and ritual/funerary monuments such as barrows.
- 8.10.4 All heritage assets identified are subject to screening, to identify those that may be directly affected.
- 8.10.5 In a number of cases mitigation measures adopted as part of the project are sufficient to prevent any significant impacts from occurring. These include routing of the cable corridor and the use of trenchless crossing techniques at key locations.
- 8.10.6 The impact assessment identifies the potential impact for the majority of heritage assets as being not significant, with the exception of the Golden Hill marl pit, where a significant impact is predicted, as well as a number of sites where the impact significance is identified as 'unknown'. However, a programme of pre-construction works, set out in a Written Scheme of Investigation (WSI) would mitigate against the chance of disturbing features that are not currently known but which might be discovered during the construction phase and implementation of the proposed mitigation measures would resolve the instances where the impact significance is uncertain and reduce levels to not significant.
- 8.10.7 The cumulative impact assessment considered the Avon Tyrell Reservoir and the Downton Manor Farm proposals (both in planning) and specifically the potential for a cumulative impact upon buried archaeology. The potential for cumulative impact is very low.

8.11 ONSHORE TRAFFIC AND TRANSPORTATION

- 8.11.1 The assessment of onshore traffic and transportation considers a study area covering parts of both Dorset and Hampshire and includes the urban area along the coast between Milford-on-Sea and West Bournemouth, extending north to include Ferndown, Ringwood and the larger villages at Three Legged Cross, West Moors and Bransgore.
- 8.11.2 The study area is broad and encompasses the Onshore Development Area, the access routes to be used by site traffic entering the area, proposed temporary diversion routes to be used by non-works related traffic during certain periods of the construction programme and areas to be used during operation, maintenance and decommissioning.
- 8.11.3 Information to describe the baseline has been gathered from a number of sources, including consultation with the Highways Authorities.
- 8.11.4 Within the study area, the only strategic road is the A31 dual carriageway, with the A338 holding the only other section of dual carriageway, although there are several other A and B classified roads. The area is served by several bus routes, connecting smaller towns and villages, together with the London Waterloo to Weymouth train line. Two national cycle routes are found locally with Route 2 being crossed by the cable route.
- 8.11.5 The specific aspects of the proposals that are assessed are as follows:
- construction – the effect of additional traffic movements associated with the Project (workforce and freight movements) on the highway network and the effect on driver delay of the highway being closed or restricted to allow for the cable construction to cross the roads;
 - operation and Maintenance – the effect of additional movements on the highway network associated with this phase; and
 - decommissioning – the effect of additional movements on the highway network associated with this phase.
- 8.11.6 A landfall construction compound is included to avoid the need for construction vehicles to park and manoeuvre on the public highway. Planning the routes to be taken by site vehicles has also taken into account matters such as sensitive receptors, weight and height restrictions. The use of trenchless cable installation is incorporated to mitigate impacts when crossing the railway line at Hordle, the A338, A31, A35, A3055 Bashley Cross Road (near the junction with the A35).
- 8.11.7 The impact assessment considers the potential impact on a number of parameters. For the majority of receptors assessed, the level of impact is not significant, however, for a few there are potentially significant impacts identified. These relate to the construction phase only and include four significant impacts on pedestrian severance and three on pedestrian amenity. Further mitigation is proposed to manage and reduce such significant impacts and includes the restriction of HGV routes to avoid sensitive receptors, avoidance of peak hours, such as schools, and a reduction in the length of cable route served by certain accesses. The additional mitigation measures reduce the level of potential impact, with all residual impacts being not significant.
- 8.11.8 No significant impacts are found for other aspects including fear and intimidation, driver delay, accidents and road safety. All impacts during operation, maintenance and decommissioning would be not significant.
- 8.11.9 A number of projects are identified for inclusion in the cumulative impact assessment. These are the Solar Energy Farm in Parley, the Anaerobic Digestion facility in Parley and planning consent for mixed commercial and industrial use at Bournemouth Airport and Northern Business Parks. The former two were scoped out of the assessment, with the growth applied to the baseline traffic flows allowing for the development of Bournemouth Airport.

9 PROJECT WIDE IMPACT ASSESSMENT

9.1 NATURE CONSERVATION DESIGNATIONS

9.1.1 The assessment considers the existing nature conservation designations within the study area, both onshore and offshore. Additional information on specific issues, for example individual habitats or species, is given in the relevant ES chapters, with further information in the HRA Report (Document 5.4).

9.1.2 The study area, essentially the designated sites included within the baseline and impact assessment, draws on information included within individual chapters and is based on pathways of potential effect. For example, the inclusion of sites designated for birds takes account of ecological factors such as foraging range, while sites included for benthic habitats would take account of the findings of physical process modelling. The sites considered were subject to consultation in order to confirm the list.

9.1.3 Numerous designated sites are included within the assessment from both the UK and mainland Europe, which include the following types of designation:

- World Heritage Site;
- Ramsar site;
- Special Protection Area (SPA);
- Special Area of Conservation (SAC and cSAC);
- National Nature Reserve;
- National Park;
- Area of Outstanding Beauty (AONB);
- Heritage Coast;
- Sites of Special Scientific Interest (SSSI);
- Marine Conservation Zone (MCZ and rMCZ);
- Sites of Importance for Nature Conservation (SINC);
- Ancient Woodland;

- Areas of Great Landscape Value (AGLV);
- Areas of Landscape Importance (ALI);
- Land of Local Landscape Importance (LLLL); and
- County Landscape Areas.

9.1.4 In total, 30 International Conservation Designations were identified, including five Ramsar sites, 13 Special Protection Areas, ten Special Areas of Conservation and two candidate Special Areas of Conservation. There were also 56 National Conservation Designations identified, including 44 Sites of Special Scientific Interest (many of which are components of identified Special Protection Areas), two Marine Conservation Zones, four recommended Marine Conservation Zones, one National Park, one National Nature Reserve and four Areas of Outstanding Natural Beauty. A total of 21 County Conservation Designations were also noted including five Sites of Interest for Nature Conservation, nine Sites of Nature Conservation Interest, three Ancient Woodlands and four county landscape areas.

9.1.5 Assessments of significant impacts are detailed within the relevant chapters of the ES.

9.1.6 With the exception of the impacts identified at two specific locations, all of the potential effects on features of designated sites have been assessed in the relevant chapters as being not significant. No potential for effects on designated sites, either in terms of individual features or the structure and function of the sites, is therefore predicted to arise from the Project.

9.1.7 For the two locations where significant effects have been predicted (the coastal part of the Dorset AONB and the Dorset Heritage Coast – Purbeck Coast between St Aldhelm’s Head and Old Harry Rocks), these are related to landscape character effects, with a significant impact on the character of the coastline due to the presence of the turbines.

9.2 SOCIO-ECONOMICS AND TOURISM

- 9.2.1 The assessment describes the existing socio-economic and tourism interests, both onshore and offshore, with 5 separate study areas for specific aspects. The socio-economic analysis examines the interaction between the Project and the local and wider economy. It also considers the potential for the local labour force to absorb new employment opportunities in terms of its capacity and skills profile. Where relevant, broader population impacts have been examined.
- 9.2.2 The description of the existing baseline has been informed using data from the various study areas, including the characteristics of tourist activity and associated businesses, as well as identifying the type of impacts of concern to visitors and tourism businesses. Broadly, the scope of the assessment considers the potential impacts on:
- the local and regional economy and employment as a result of investment in the construction, operation, maintenance and decommissioning phases of the Project and the associated supply chain;
 - commercial fisheries businesses, as a result of the potential changes in the accessibility and displacement of fishing operations;
 - commercial shipping businesses, as a result of potential changes to routes; and
 - tourism businesses, as a result of potential changes to visitor numbers through visual and other effects and the accommodation requirements of workers.
- 9.2.3 The Project would have a beneficial impact in terms of the local economy and employment. At peak construction the Project could create more than 1,700 jobs annually and generate around £1.62 billion for the economy. During the operation and maintenance phase, more than 140 jobs annually would be created, and around £590 million generated in the economy. These opportunities are in addition to those which would be generated indirectly, including the use of local facilities (e.g. shops, restaurants, hotels). NBDL will work with relevant stakeholders in order to maximise opportunities for the local supply chain and workforce.
- 9.2.4 A number of mitigation measures are included as part of the Project, including the siting of the Turbine Area (which has, where possible, avoided or minimised intrusion, disturbance, damage to commercial fishing grounds, navigation routes, dive sites and marine recreation). Other mitigation measures include: the use of construction techniques that avoid disturbance or damage; the routing of construction vehicles to minimise obstruction; and the implementation of a communications protocol and Notices to Mariners.
- 9.2.5 Whilst the proposed impacts are assessed as not significant, NBDL will work with stakeholders to deliver measures to enhance tourism, during construction through the provision of a visitor centre in the local area and setting up a fund to support tourism locally.
- 9.2.6 A study of other offshore wind farm projects has demonstrated that developments similar to the Project, in terms of their distance to shore, have either had a positive or neutral impact on the local tourism economy.
- 9.2.7 The potential for cumulative effects considered marine aggregate extraction, cabling and several onshore developments including residential and redevelopment of a hospital. No significant cumulative effects are predicted.

9.3 RECREATION

- 9.3.1 The assessment describes existing recreational activities being undertaken within the study area, which includes onshore and offshore elements. Offshore, the study area includes the Bay within which the Offshore Development Area is located and runs from Weymouth in the west to Ventnor and Fareham in the east, extending some 5 km inland. Onshore, the study area is informed by the Zone of Theoretical Visibility and includes a 3 km zone around the Onshore Substation and 2 km around the Onshore Cable Corridor.
- 9.3.2 The baseline environment has been described using existing literature and information received during consultation (including through interviews). Watersports are notable in the area, with key locations including Weymouth and Portland, Poole Harbour, the Solent and within the Bay. Sailing events take place throughout the year, such as the Cowes Round the Island Race, the Cowes Week regatta and the Fastnet race.
- 9.3.3 Many diving sites are located in the study area, including 13 in the Offshore Development Area. There are 23 surfing locations identified around the study area, with windsurfing particularly in Poole Harbour and Kimmeridge Bay.
- 9.3.4 Bathing is popular throughout the study area, particularly along many of the beaches. River, lake, shore and boat based angling take place with participation by individuals and clubs.
- 9.3.5 Onshore, areas used for recreation include the Dorset Area of Outstanding Natural Beauty, Purbeck, Poole Harbour, Bournemouth, Christchurch and East Dorset, Isle of Wight and the New Forest District. Attractions range widely and include beaches, open spaces and sporting facilities.
- 9.3.6 Astronomy takes place at observatories and cliff top locations, with Dark Sky Discovery Sites in the area. Leisure cycling occurs across the study area, including roads, trails, paths and networks, with short and long distance routes available. Nature study occurs widely onshore and offshore, often focused on specific sites or habitats and may include bird or marine mammal watching. Other activities include paragliding, shooting and walking.
- 9.3.7 The mitigation measures incorporated into the project design mean that the potential for impact on recreation, through for example disturbance or disruption to activities, or lack of access to areas, is assessed as being not significant. However, prior to mitigation significant impacts are predicted in relation to boat-based angling offshore and recreational diving during the construction phase of the Turbine Area as well as cycling, walking and horse riding during the construction phase of the Onshore Cable Corridor. Where significant impacts are predicted mitigation measures are proposed to reduce those impacts. These measures include: the implementation of a communication protocol, which will include: provision for Notices to Mariners; the use of guard vessels to prohibit recreational diving and sailing in proximity to any construction activities; and the implementation of a Public Rights of Way Strategy (Document 8.3) to provide information on any onshore construction works and any closures of Public Rights of Way.
- 9.3.8 A number of recreational activities have been scoped out, due to a lack of effect, including river based recreation such as kayaking, onshore nature study other than bird watching and other onshore outdoor sports (e.g. tennis, golf and football).
- 9.3.9 The potential for cumulative impacts considers offshore (marine aggregate dredging and cabling) and onshore plans and projects (residential developments, solar energy farms, anaerobic digestion facility and an electricity substation with negligible potential for significant cumulative effects).

9.4 JURASSIC COAST WORLD HERITAGE SITE

- 9.4.1 The assessment considers the potential impacts on the Outstanding Universal Value (OUV) of the Dorset and East Devon Coast World Heritage Site (WHS) and its setting. The site is commonly referred to as the Jurassic Coast WHS.
- 9.4.1 The site was granted World Heritage status for the unique nature of its geology and geomorphology. The cliff exposures provide an almost continuous sequence of rock formations spanning the Mesozoic Era; 185 million years of the earth's history. The area's important fossil sites and coastal geomorphologic features have contributed to the study of earth sciences for over 300 years.
- 9.4.2 The assessment has been undertaken in line with guidance from the International Union for Conservation of Nature, United Nations Educational, Scientific and Cultural Organization (UNESCO) and English Heritage. Consultation with key stakeholders has also been undertaken to ensure that the importance of the WHS is fully understood and the methods for assessment fully take into account the status of the site.
- 9.4.3 The impacts that are relevant to the OUV of the Jurassic Coast WHS are the potential for changes to waves and tidal currents to cause a change in the natural erosion and sedimentation (deposition of material) at the coastline of the WHS; and the potential for changes to the setting and important views that contribute to the OUV of the site.
- 9.4.4 The assessment identifies that there will be no physical impact on the fabric of the Jurassic Coast WHS.
- 9.4.5 In terms of impacts upon the setting of the WHS:
- the surrounding environment of the east Devon and Dorset coastline that place the OUV in a wider geological landscape context would not be affected;
 - the relationship with the sea, which plays a central role in the on-going erosion of the geological exposures would not change;
 - views along the Jurassic Coast WHS, that allow for an appreciation of geological progression would change but none of the views of the exposures would be obscured or interrupted (i.e. lie between the viewer and object); and
 - the accessible nature of the WHS, along the South West Footpath, from the sea, and from the areas of recreational foreshore (within, and in the immediate vicinity of, the WHS) would in no way change.
- 9.4.6 The potential for cumulative impacts considers onshore wind farms and aggregate dredging in terms of contributing to potential effects on the Jurassic Coast WHS, specifically on the OUV of the site, with no significant impacts predicted.

9.5 INTERRELATIONSHIPS

- 9.5.1 The assessment describes the potential impacts occurring as a result of interrelationships between individual effects, essentially where there is potential for two or more effects resulting from the Project to interact. The assessment therefore draws on the findings of each topic section, with the study area defined by the maximum extent over which two (or more) effects may cause an impact on a single receptor (for example a person, species, habitat, protected site and so on).
- 9.5.2 The identification of potential interrelated impacts has been developed through discussion with specialists and key stakeholders. In addition, discussions have been undertaken at both a topic level (e.g. offshore ornithology) and a specific level (e.g. seabirds) basis as part of the wider consultation programme for the Project.
- 9.5.3 The consideration of interrelated impacts has been undertaken on both beneficial and adverse impacts. Although an impact taken in isolation may be assessed as not significant, when it is considered in an interrelated manner with other impacts on the same receptor, it may give rise to an impact that is in fact found to be significant.
- 9.5.4 An example of the potential for interrelationships is an increase in suspended sediment, which may reduce fish numbers directly (by reducing the oxygen absorption ability of gills and fish eggs) and reduce seabirds' ability to locate fish (reducing the foraging efficiency of seabirds), with an overall effect that is potentially greater than that associated with each individual effect.
- 9.5.5 The potential for interrelationships has been considered in Volume D, Chapter 6 of the ES on a topic by topic basis, clearly determining both potential impact and potential receptor, with all potential interrelationships identified concluded to be not significant. The assessment incorporates the mitigation measures described for each topic.

9.6 TRANSBOUNDARY IMPACTS

- 9.6.1 Transboundary impacts are those that cross the national boundary. NBDL sought the opinion of the Secretary of State as to whether the Project was likely to have transboundary effects. The Secretary of State considered that there was the potential for likely significant effects on European sites and species; fish and marine mammals; fisheries, shipping and navigation in the following member states: the Netherlands, Belgium, France and Spain. The member states were notified of the Project. The only response received was from the Walloon Government in Belgium, that does not anticipate any environmental impacts.
- 9.6.2 Consideration is given to likely significant transboundary effects in Volume D, chapter 7 of the ES. The assessment of potential impacts concluded that no significant transboundary impacts would occur.



10 APPLICATION INFORMATION

10.1 APPLICATION DOCUMENTS

10.1.1 This document is a Non-Technical Summary (NTS) of the ES prepared by NBDL in support of the application for a Development Consent Order (DCO) for the proposed Navitus Bay Wind Park.

10.1.2 All of the application documents referred to within this document are available to download from the National Infrastructure Planning website at <http://infrastructure.planningportal.gov.uk/projects/south-east/navitus-bay-wind-park-formerly-isle-of-wight/> for the duration of the registration and examination period.

10.1.3 You can also refer to the Project website at www.navitusbaywindpark.co.uk to access the application documents.

The NTS is available as a paper copy free of charge. Free copies of the application documents in electronic format can also be requested:

- by post at: **FREEPOST NAVITUS BAY WIND PARK**
- by email at: **info@navitusbay.com**
- by phone at: **0800 008 6763**

10.1.4 The full application documents runs to many thousands of pages and therefore a charge of £5,000 will be made for a paper copy. This cost covers printing, post and packaging and delivery will take 10 working days from clearance of payment.

10.1.5 Please make a cheque payable to 'Navitus Bay Wind Park' and post to **FREEPOST NAVITUS BAY WIND PARK** with your full name, address and telephone number.

