

## 6 CHOICE OF SITE

### 6.1 INTRODUCTION

6.1.1 Whilst *Chapter 5* established the need for the development of Marine Energy Parks in the UK, this chapter establishes that there are few sites with the necessary features and only one along the east coast of England that is capable of supporting a significant development. The proposed site is demonstrably unique in its size and optimal location.

### 6.2 LEGISLATION, POLICY AND GUIDANCE

#### *Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the 2009 EIA Regulations)*

6.2.1 In accordance with Schedule 4, Part 1 of the 2009 EIA Regulation, an Environmental Statement must include,

*'(a)n outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects'.*

Accordingly, this chapter reports on the alternative sites that have been studied and explains the choice of site taking into consideration all of those needs for the development that are defined in *Chapter 5*.

#### *The Conservation of Habitats and Species Regulations 2010*

6.2.2 In accordance with the Conservation of Habitats and Species Regulations 2010, a legal requirement to consider alternative solutions arises (and only arises) where an appropriate assessment, which is undertaken by the decision maker, is unable to exclude an adverse effect on the integrity of a European Site. Where this is the case, a development proposal may only be consented where the development is needed, where there are no feasible alternative solutions and where there are imperative reasons of overriding public interest (IROPI) that the development should be carried out. Alternative solutions include the possibility that the proposal could be located on an alternative site. A separate Habitats Regulations Report has been prepared to accompany the application for Development Consent and includes a more general review of alternative solutions. This chapter only considers the possibility of an alternative site.

## *National Policy Statement for Ports, October 2011*

6.2.3

The NPS for Ports sets out the approach to the decision maker's consideration of alternative sites. In particular, it records the following principles to be relevant to any assessment:

*'the consideration of alternatives in order to comply with policy requirements should be carried out in a proportionate manner;*

- *whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescale as the proposed development;*
- *the decision-maker should not reject an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and it should have regard as appropriate to the possibility that other suitable sites for port infrastructure of the type proposed may be needed for future proposals;*
- *alternatives not among the main alternatives studied by the applicant (as reflected in the ES) should only be considered to the extent that the decision-maker thinks they are both important and relevant to its decision;*
- *if the IPC, which must (subject to the exceptions set out in the 2008 Act) decide an application in accordance with the relevant NPS, concludes that a decision to grant consent to a hypothetical alternative proposal would not be in accordance with the policies set out in this NPS, the existence of that alternative is unlikely to be important and relevant to the IPC's decision;*
- *suggested alternative proposals which mean the primary objectives of the application could not be achieved, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the decision;*
- *it is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made in respect of it (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Where, therefore, an alternative is first put forward by a third party after an application has been made, the person considering that application may place the onus on the person proposing the alternative to provide the evidence for its suitability as such, and the applicant should not necessarily be expected to have assessed it', (paragraph 4.9.3).*

## 6.3 CONSULTATION

6.3.1 A number of consultation responses were included in the Scoping Opinion issued by the Infrastructure Planning Commission. Further consultation responses were received in response to the consultation procedures undertaken in compliance with the requirements of the Planning Act 2008. The responses of relevance to the choice of the MEP site are summarised in *Annex 2.2*.

## 6.4 SITE SELECTION CRITERIA

### *Socio-Economic Criteria*

6.4.1 In the UK, manufacturing has declined rapidly in recent decades, falling from 29 per cent of the UK output in 1979 to 13 per cent of output in 2007 (NESTA, 2010). The development aims to act as a catalyst for the development of a new UK manufacturing sector in the marine energy sector; this is an emerging sector which must grow if the UK is to deliver its renewable energy action plan targets.

6.4.2 The 'The UK Low Carbon Transition Plan' (DECC, 2009) recognises the potential for new business opportunities in UK manufacturing stating that:

*'Many more of us will find ourselves working in a growing low carbon industry. Already 880,000 people in the UK work in the low carbon and environmental sector, a rapidly growing worldwide market worth £3 trillion per year and £106 billion per year in the UK. By 2020, this could rise to more than a million people if we seize the opportunity to establish the UK as a global centre of low carbon industries and green **manufacturing**. Around 200,000 of these new jobs by 2015 are expected to be in renewable energy, which could grow by a further 300,000 additional renewables jobs by 2020 as set out in the UK Renewable Energy Strategy, **a total of half a million additional UK jobs in the renewable energy industry to 2020**. In doing this, the UK will need to focus on low carbon sectors where we are likely to have a competitive advantage such as **offshore wind**, marine energy, civil nuclear power, carbon capture and storage, renewable chemicals, low carbon construction and ultra-low carbon vehicles, and specialist financial and business services', (pg. 112, emphasis added).*

6.4.3 Only those alternative sites that can provide significant socio-economic benefit to the UK are considered feasible alternatives as only these sites would meet the long term economic and social needs of the UK and stated Government policy. This socio-economic benefit will be

enhanced where a MEP is located in a region and in a locality of relative deprivation.

### *Proximity to Wind Farm Sites*

#### *Logistical Criteria*

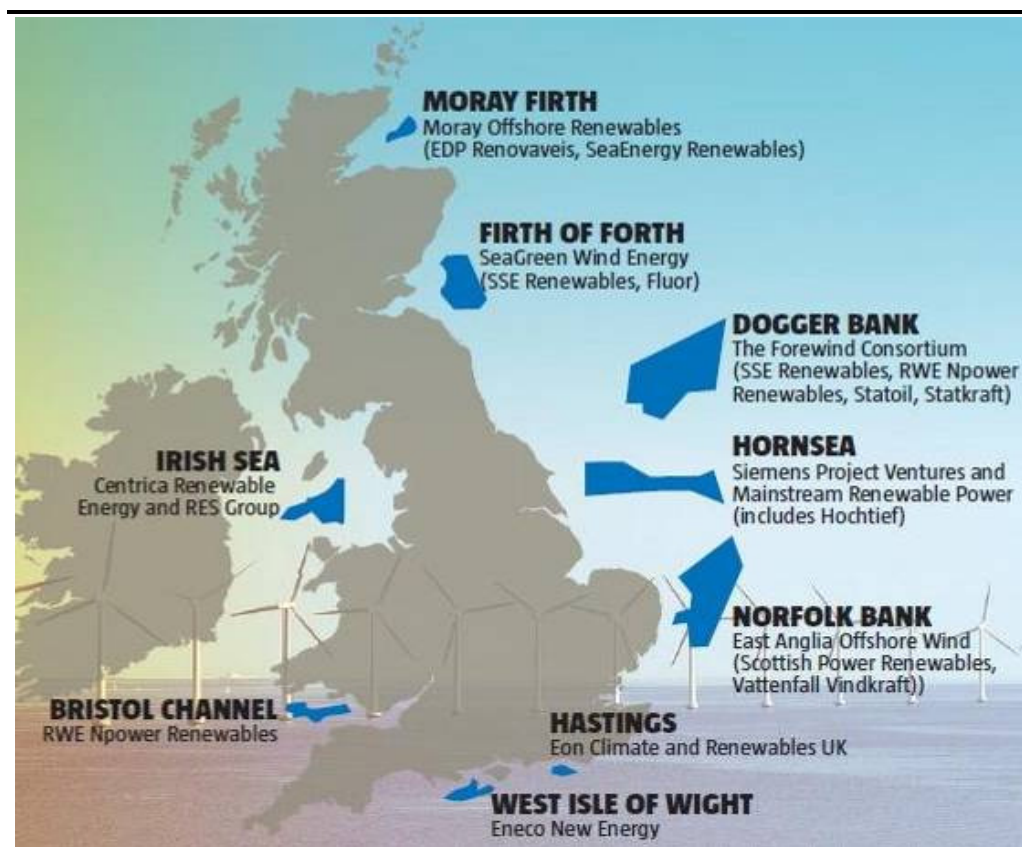
- 6.4.4 As noted in *Chapter 5*, the installation of foundations for OWTs and of the OWTs themselves is very weather dependent. To maximise vessel utilisation it is essential that installation quays are in close proximity to the wind farm sites so that vessels can utilise weather windows and weather risk is minimised.

#### *Environmental Criteria*

- 6.4.5 MEPs will serve the renewable marine energy sector that must be developed to contribute towards decarbonising world energy production. As such, AMEP aims to minimise its carbon footprint both during construction and also, importantly, over its operational life. Modern installation vessels are likely to use around 2 T of fuel per hour when travelling at 10 knots (pers comm., 2011). This hourly rate of consumption is similar to a typical car's usage over a whole year.
- 6.4.6 The carbon content of vessel fuel is 86.7% by weight, and its combustion corresponds to a CO<sub>2</sub> emission of 3 179 kg/T fuel (Entec, 2010). Accordingly, the development site should be in close proximity to the major Round 3 development zones in order that carbon emissions from installation vessels transiting to and from the zones are minimised so far as reasonably practicable.
- 6.4.7 As noted in *Chapter 5*, the Crown Estate has announced three rounds of development for offshore wind generation since 2000. Development zones for the first two rounds were generally near shore, whereas Round 3 zones are much further offshore and are concentrated off the east coast of the UK, as illustrated in *Figure 6.1*.
- 6.4.8 Of the five Round 3 development zones located in the North Sea, a significant proportion of the capacity lies within Dogger Bank, Hornsea and Norfolk Bank zones. Together, these three zones account for approximately two thirds of the total Round 3 development as detailed in *Table 6.1*. Proximity to these particular sites is therefore essential for any integrated manufacturing facility and construction port.
- 6.4.9 Discussion with the industry suggests that developers would prefer construction ports less than 12 hours steaming time from the

development site (250 km at 12 knots) and, for economic reasons, are unlikely to consider installing large projects from a port that is more than 24 hours steaming time (500 km at 12 knots) from the wind farm.

**Figure 6.1** Round 3 Development Zones



Source: New Civil Engineer

**Table 6.1** UK Round 3 Development Zone Capacities

SITE	CAPACITY	SITE	CAPACITY
Moray Firth	1.3 GW	Hastings	0.6 GW
Firth of Forth	3.5 GW	West Isle of White	0.9 GW
Dogger Bank	13 GW	Bristol Channel	1.5 GW
Hornsea	4 GW	Irish Sea	4.2 GW
Norfolk Bank	7.2 GW	TOTAL	36.2 GW

6.4.10 It is therefore clear that to limit the carbon footprint of the development and to ensure its commercial viability, the site must be located on the east coast of England.

## ***Technical Criteria***

### *Vessel Access*

- 6.4.11 Whilst installation vessels have different designs and characteristics, many already have a beam of around 40 m and future vessels designed specifically for the deployment of larger OWTs may be around 50 m.
- 6.4.12 In the future, installation vessels may have draughts of up to 10 m. Allowing for 1 m under keel clearance, these vessels will need a maintained approach channel of at least 9 m below CD to permit access at most stages of the tide.
- 6.4.13 To enable a range of load out options to be undertaken, there should be overhead clearance to sea of at least 100 m to allow the vertical shipment of towers. If complete wind turbines are to be shipped from the port then air clearance of up to 165 m will be required. The Baetrice Demonstrator project in Scotland, which included the pre-assembly of the tower, nacelle and blades at the construction port, has clearly shown the advantages of maximising pre-assembly.

### *Dedicated Berth Facilities*

- 6.4.14 Based on emerging designs, berths will need to accommodate vessels up to 160 m long. However, in the longer term, vessels could reach greater lengths. The vessels will also need to extend their support legs whilst on the quayside to ensure stability during loading operations and to use on board craneage. Berthing pockets will need the necessary soil bearing capacity to support the concentrated leg loading.

### *Transport Links*

- 6.4.15 Good road and rail access will be essential for the efficient operation of any new manufacturing facility.
- 6.4.16 Rail provides a sustainable means of transporting large quantities of material such as plate steel that will be required in significant amounts.

### ***Land Use and Topography***

- 6.4.17 It was shown in *Chapter 5*, that for a significant manufacturing cluster to develop, and to maximise the socio-economic benefit to the UK, a substantial land parcel is needed, ideally it should be at least 150 ha. This area needs to be flat to enable the transportation of large and very heavy products from their place of manufacture to the quay. The waterside frontage must have either an existing heavy duty quay, or,

alternatively the land must be appropriately designated for marine development under local planning policies.

## 6.5 *ALTERNATIVE SITES FOR MARINE ENERGY PARK*

### *General*

6.5.1 As stated in *Chapter 5*, the need for MEPs is, inter alia, driven by the need to provide bespoke infrastructure that enables the efficient exploitation of renewable marine energy. In particular, the current focus for development, and of UK energy policy, is on offshore wind.

6.5.2 The number of MEPs that are required will be dependent on their size. However, it was demonstrated in *Chapter 5* that the UK can support, and will need, more than one MEP to be self sufficient in terms of manufacturing capacity. Additional port facilities will also be required around the British coast for other activities related to deployment and installation including, foundation manufacture, substation manufacture, cable manufacturing and for operation and maintenance activities.

### *Possible Alternative Sites*

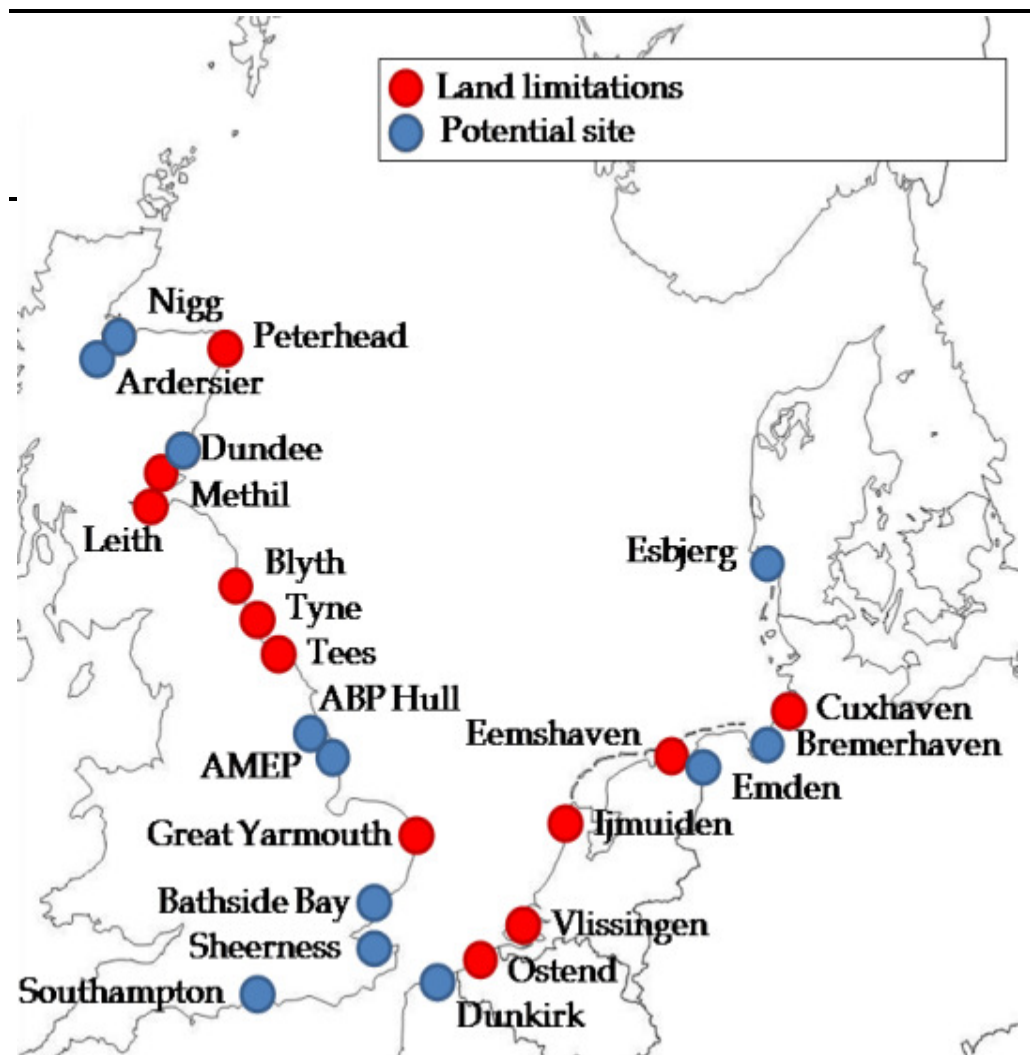
6.5.3 A number of port sites are identified in the publication, *UK Offshore Wind Ports Prospectus* (DECC, 2009). The report contains details of 26 potential ports, 15 of them on the southern and eastern shoreline of the UK, which could be developed to serve the offshore wind industry in some capacity, though not necessarily as a MEP. These ports are Nigg, Peterhead, Dundee, Methil, Leith, Blyth, Tyneside, Able Middlesbrough, Hartlepool, Able Seaton, ABP Humber, Able Humber, Great Yarmouth, Isle of Grain and Sheerness.

6.5.4 Given the scale of development required to support the offshore wind sector, the ports cannot all be considered as alternatives to each other; the development of one site will not satisfy the need. Instead, many facilities are going to be required if the UK is to maximise the economic benefits of offshore wind. Ports will be suited to different uses dependent of their specific features and, importantly, their geographical location. The issue addressed in this chapter is which ports can support a viable manufacturing cluster.

6.5.5 Of the ports identified on the east coast of Britain, eight have clear size limitations in terms of their development as a manufacturing cluster; these are summarised in *Table 6.2* below and have been screened out of

any further assessment. The remaining alternatives in Britain – Nigg, Ardersier, Dundee, ABP Humber, Bathside Bay, Sheerness and Southampton - have *prima facie* potential and are considered in greater detail below. Information has been sourced from company documents and websites as well as publications by public and industry bodies. All distances quoted to wind farm sites are to the approximate centre of the zone.

Figure 6.2 Potential Alternative Port Locations



Source: BVG Associates

6.5.6

A Strategic Environmental Assessment of the Scottish sites has been undertaken on behalf of Scottish Enterprise and Highlands and Islands Enterprise (HE-HIS, 2010). A comprehensive review of ports in East Anglia is included in, 'Offshore Industries Integrated Regional Operation, Maintenance, Training & Service Capability', (ITPower, 2009).



**Table 6.2 Port Locations with Insufficient Land**

Port	Restriction	Details
Peterhead	Land/Quay	The port is developing an 8 ha site for renewables with a further 22 ha offsite. A new 200 m quay has been developed to support operations.
Methil	Land/Quay	The port's Energy Park is 54 ha of which 14 ha are currently available. The site has two quays with a total length of 340 m. It has been used for the fabrication of offshore foundations for the Alpha Ventus project and can reasonably be expected to develop this business further.
Leith	Land	The port owner has designated 40ha for renewable activity. The port has 1 800 m of quay but this is lock restricted and includes areas already committed.
Blyth	Land/Quay	100 ha of land are available with more than 500 m of quay but this is divided into six parcels with areas already utilised by existing customers.
Tyne	Land	The Renewable Energy Park is located on the north bank of river and has 60 ha of available land with 800 m of quayside. This is split into a number of discontinuous sites. The Port of Tyne operates a site downriver (estimated 60 ha) and has indicated its interest in offshore wind but has made no public offering.
Tees	Land	The Seaton and Middlesbrough sites on the north and south banks of the river could offer a total of 72 ha and 550 m and 350 m of quay respectively. Outside the river mouth, Hartlepool offers 23 ha with 910 m of quayside. The sites could be developed for discrete manufacturing facilities but not a construction port/manufacturing cluster.
Great Yarmouth	Land	The port has 12 ha of development land with up to 1 000 m of quay as well as the opportunity to develop further land beyond the new outer harbour. Its proximity to the Norfolk Bank zone would suggest that it has long term potential as one of the construction ports for that site.

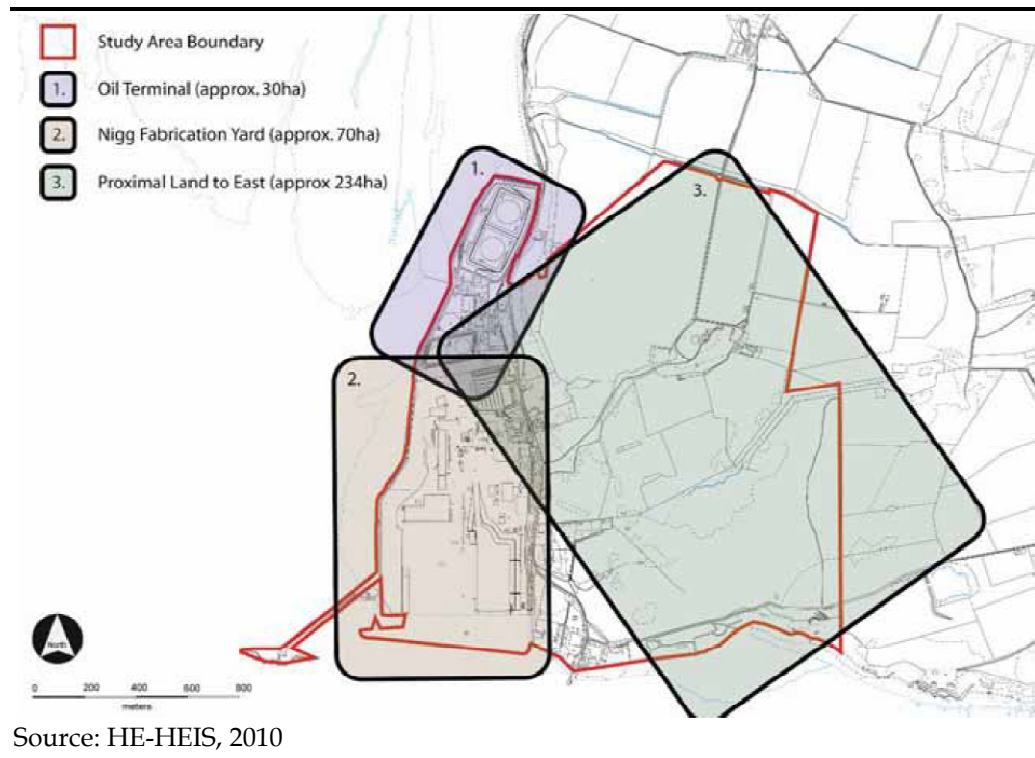
### **Description of UK Sites with a Single Land Parcel >100 ha**

#### *Nigg*

6.5.7 The Highlands and Islands Enterprise and the Highlands Council developed a masterplan for the Port of Nigg in 2009. The masterplan identified two options for the site, one of which was for a green energy park that accommodated manufacturing.

6.5.8 The Nigg site is illustrated in *Figure 6.3*.

Figure 6.3 Nigg Site Layout



6.5.9 The 70 ha fabrication yard has the benefit of an existing 306 m long dry dock. A heavy duty quay partly runs along one side and is capable of supporting a distributed load of 90 T/m<sup>2</sup>. The quay wall outside of the dock is 430 m long but has a working draft of only 4.5 m below CD that renders it unsuitable for many larger installation vessels.

6.5.10 The proximal land to the east lies on steeply rising ground and only a small area near the coast is actually flat and suitable for offshore component manufacturing. The coastal boundary also lies within the Cromarty Firth SPA/SSSI/Ramsar site.

6.5.11 Its geographic remoteness from the majority of the Round 3 zones is a significant barrier to the commercial development of a manufacturing cluster. Topographic constraints also mean that Nigg cannot be considered a feasible site for a MEP. It is nevertheless in a very favourable position to serve as a construction port for the Moray Firth zone and could clearly support a significant foundation fabrication yard. Its dry dock also provides a real opportunity for the manufacture of gravity based foundation structures.

#### *Ardersier*

6.5.12 The Ardersier yard is located in north east Scotland on the south shore of the Moray Firth and lies within the Moray Firth SAC, Inner Moray

Firth SPA and Ramsar sites and Whiteness Head SSSI. The site is approximately 550 km from Dogger Bank, 650 km from Hornsea and 800 km from Norfolk Bank. An aerial view of Ardersier is shown at *Figure 6.4*.

- 6.5.13 Ardersier was originally reclaimed for the construction of oil and gas platforms in the early 1970s but such activity ceased in the early 1990s. The available site is 109 ha of prepared hardcore with an additional 28 ha of development land. The sheet piled harbour wall is around 1 000 m and is sheltered by a natural sand spit but the condition of the quay and its load bearing capacity is unknown. Dredging would be required to achieve suitable water depths.

*Figure 6.4 Aerial View of Ardersier*



- 6.5.14 The site is owned by a private company, Whiteness Property Company, which has outline planning permission for nearly 2 000 residential units already and ambitions for up to 4 000 units. Investment has been made to remediate the land in preparation for housing. The site is approximately 22 km from Inverness.
- 6.5.15 Whilst the Scottish Government has included the port in their 'National Renewable Infrastructure Plan' (N-RIP) (Scottish Enterprise, undated), there is little public information that suggests the owner is taking steps to move away from its original housing plans. The fact that the port is a

significant distance from all the main UK North Sea wind farms would also be a significant disincentive for any major turbine manufacturer.

6.5.16 The HE-HIS Strategic Environmental Assessment concluded that there was potential for development of the site to have significant adverse environmental effects on the designated sites. In summary the assessment stated that:

*'It is likely that Habitats Regulations Appraisal will be required at the project level, covering at least the following issues:*

- *effects of construction noise and vessel movement on bottlenose dolphins*
- *effects of construction on birds using habitat within the SPA*
- *effects of dredging on coastal erosion/deposition patterns and the potential for this to affect the SPA and SAC interests.'*

6.5.17 The sites geographical remoteness to Round 3 zones is its key weakness.

*Dundee*

6.5.18 The port has 24 ha available in the port. The city also has two other sites (57 ha and 97 ha) within 3 miles of the port but with no direct quay access. The port has 1 800 m of quay but this is not continuous, is already utilised by existing customers and is partially lock bound. Development of the port for the offshore wind sector would require reclamation and consequential habitat loss within the Firth of Tay and Eden Estuary SAC.

6.5.19 The landholding is clearly too dispersed to provide a base for an integrated manufacturing and construction port facility.

*Able Humber*

6.5.20 The Able Humber site is located on the south bank of the Humber Estuary and lies between ABP Immingham Port to the south and Humber Sea Terminal to the north. The site is located within an existing industrialised area and can provide the largest single parcel of flat land adjacent to a deep water channel on the east coast of England. It is served by the local road network and this connects to the strategic road network at the junction of Rosper Road and the A160, approximately 1 km from the site entrance. *Figure 6.5* shows an aerial view of the site.

- 6.5.21 A rail line passes through the site and whilst it has not been in use for some years, it is still maintained by Network Rail and can be brought into use at minimal cost.
- 6.5.22 The approach channel in the Humber Estuary currently permits the passage of vessels of up to 12 m draught to South Killingholme Oil Jetty immediately to the south of the site and capital dredging is, therefore, only required relatively local to the quay.
- 6.5.23 There are no air restrictions on the Humber between the application site and the open sea.

*Figure 6.5 Aerial View of Able Humber Site*



- 6.5.24 The site needs a new quay to be constructed within a Natura 2000 site. The development of approximately 1200 m of frontage suitable for the offshore wind sector would cause the loss of approximately 50 ha of the Humber Estuary SPA/SAC/SSSI/Ramsar site.

#### North Lincolnshire Local Plan

- 6.5.25 As noted in *Chapter 3*, the application site is located on the South Bank of the Humber within the administrative boundary of North Lincolnshire Council (NLC). The site is covered by a number of Local

Plan policies that are retained as part of NLC's Local Development Framework.

6.5.26 Policy IN1 of the Local Plan states that new industrial development will be allowed on the application site for Estuary related B1, B2 and B8. It is recognised within this policy that the site is also greenfield. Its allocation is specifically due to the proximity of the site to the deep-water channel of the River Humber which is of regional and national economic importance.

6.5.27 Policy IN4 is dedicated to the South Humber Bank area and states that:

*'The South Humber Bank area between South Killingholme Haven and East Halton Skitter is proposed for estuary related B1, B2 and B8 industrial development and ancillary activities with close operational links. Proposals for estuary related development will be permitted provided that:*

- land immediately fronting the deep water channel will be reserved for the development of jetties and the means to access them; and*
- a regular or essential requirement to import or export large amounts of material either by means of a private jetty or pipeline, or via the port of Immingham is demonstrated; and/or*
- a requirement to take large amounts of water from the estuary is demonstrated; and/or*
- a requirement for close operational links with firms which comply with the above and need direct pipeline or conveyor belt connection; and*
- proposals will have to achieve a high standard of landscaping, particularly providing for belts of appropriate planting within large sites incorporating and enhancing existing landscape features;*
- the proposal does not compromise the integrity of the existing South Humber Bank tidal defence system;*
- the development proposed does not adversely affect high tide roosts and feeding areas either separately or in combination with other plans or projects.'*

6.5.28 In the subsequent explanatory text for Policy IN4, the potential for the South Humber Bank to support a new port is recognised:

*'5.30 The South Humber Bank Industrial Area is proposed for industrial development principally because the land is allocated adjacent to a deep water channel of the River Humber. The site therefore has special potential for estuary related industry to locate there. It will be essential for all proposals to meet the requirements for estuary related industry as specified in the policy. In addition, in order to prevent this land from*

*being sterilised by industry not defined as requiring an estuary location, new port, wharf and jetty facilities and their means of access should not be prejudiced from being developed by firms which do not need such a location on the land fronting the deep water channel area. Jetties should be installed on the frontage to serve the large undeveloped backland areas', (emphasis added).*

6.5.29 Policy IN10 states that proposals for new or extended port, wharf and jetty facilities on the Humber will be permitted provided that there is no adverse effect on:

- sites of nature conservation;
- high quality agricultural land;
- the landscape of river corridors and coastal margins;
- the flood defence system;
- the road network; and
- the amenity of settlements.

6.5.30 Policy IN12-6 provides for bulk rail freight handling facilities to be permitted on the South Humber Bank.

#### North Lincolnshire Core Strategy

6.5.31 As stated in *Chapter 3*, NLC's Core Strategy was adopted in 2011. Policy CS12 identifies the South Humber Bank as a strategic employment site and states its role and function to be to:

*'(m)aintain, increase and enhance the role of Immingham Port as part of the busiest port complex in the UK, by extending port related development northwards from Immingham Port to East Halton Skitter in harmony with the environmental and ecological assets of the Humber Estuary. This will include safeguarding the site frontage to the deep water channel of the River Humber for the development of new port facilities and the development of new pipe routes needing access to the frontage. The deep water channel offers the opportunity of developing a new port along the River Humber frontage between Immingham Port and the Humber Sea Terminal. The role of the South Humber Ports should be strengthened by providing an increased number of jobs particularly giving employment opportunities for North Lincolnshire and North East Lincolnshire residents', (emphasis added)*

#### Socio Economic Factors

6.5.32 The Humber ports regions of North Lincolnshire, North East Lincolnshire and the City of Hull are areas of relative deprivation,

ranking 132, 49 and 11 respectively in the, 'English Indices of Deprivation 2007', (DCLG, 2008). In addition, certain wards within all three local authorities are classified as 'Assisted Areas' under criteria established by the EC and are thereby further recognised as being economically disadvantaged from a national perspective.

6.5.33 In September 2011, HM Treasury announced eleven new Enterprise Zones that are designed to boost local growth and create over 30 000 jobs by 2015. Able Humber is located within the Humber Estuary Renewable Energy Super Cluster.

#### Additional Local Impacts

6.5.34 The site additionally benefits from proximity to the following related supply chain industries:

- *Tata Steel, Scunthorpe* The local steelworks has substantial plate steel production capacity and is located 20 miles from the application site. The works has recently invested in specialist equipment to prepare plate for use in turbine towers. The proximity of this plant has the potential to greatly reduce transport miles for a material that will be required in significant quantities.
- *Humberside Airport* The extensive Heliport located within Humberside International Airport is 10km from AMEP. After Aberdeen it is believed to be the largest facility of its kind in the UK and has played a central role in terms of supporting Offshore Oil and Gas activity in the North Sea. 'UK Ports for the Offshore Wind Industry: Time to Act', (DECC 2009) states that, '*as wind farms get larger and further out to sea, the use of helicopters ... is likely to become more common*'.

As far as OWT installation and maintenance is concerned the deployment of helicopters – for both plant and personnel – is seen as an important element of the overall support package. Indeed it will also be an integral aspect of ongoing Operation and Maintenance activities.

The Heliport provides a full range of services including:

- Hangar and Storage Space
- Full Helicopter Maintenance
- Fuelling
- Skilled and Experienced Manpower
- Existing Operators



- Permission to load and transport 'under slung' cargo.
- *Bluestar Fibres Ltd* Located 11m from the site, this company has one of the world's largest capacities (22,000 t) of carbon fibre precursor, which is particularly suited for industrial applications like wind turbines. BSF has recently installed carbon fibre capacity on the Grimsby site and whilst capacity is relatively small (600 tpa) Bluestar have expressed a willingness to collaborate with large scale carbon fibre users to develop bespoke capacity to meet the need.

## Hull

6.5.35 The Port of Hull is owned by ABP and is 10 km up river from the application site. An aerial view of Hull is shown in *Figure 6.6*.

*Figure 6.6 Aerial View of Hull*



6.5.36 The facility is currently a general purpose port handling dry bulks, general cargo, containers and roll-on/roll-off services as well as passenger traffic. Consent was granted in 2006 for the development of a 12 ha riverside berth with 600 m of quayside adjacent to Alexandra Dock on the western end of the port. The consent provided for the development of a container terminal and is likely to require a new authorisation to cover a different use.

6.5.37 Development of the site was subject to an appropriate assessment (Department for Transport, 2005) which agreed with English Nature (as so named at the time) that the development would have an adverse effect on the integrity of the Humber Estuary designated site because it would, 'result in the loss of about four hectares of inter-tidal mudflats used by waders and other water birds, while demolition of West Wharf Pier would result in a loss of roosting habitat'. In the event, consent was granted on

the basis that no alternatives existed and that the development was required for imperative reasons of overriding public interest (IROPI). The decision letter noted that:

*'(t)he Secretary of State accepts the Applicant's case that the port forms part of the national infrastructure and is a valuable component in the national and regional logistics chain. The port plays a vital role in the national feeder container market and in the continental short sea shipping market. The potential of Hull and of the Humber Region to provide a major link between Ireland, the UK and continental Europe is recognised in Regional Planning Guidance note 12. The Secretary of State observes moreover that Hull and the Humber ports form one of the key areas in the three northern Regional Development Agencies' Northern Way initiative for the regeneration of the North of England.'*

- 6.5.38 Despite the IROPI case being accepted, the consent has never been implemented and ABP has since marketed the facility to the offshore wind industry and has also proposed infilling half of Alexandra dock to offer more development land. Further quayside would also be available within the King George Dock, although this would be beam restricted by locks. In January 2011, Siemens identified Hull as their preferred location for the construction of a new offshore wind turbine factory. This further evidences the potential of the Humber as a manufacturing and port hub for the offshore wind sector.
- 6.5.39 A 200 ha satellite site is available close to Hull Docks but is separated from it. If it were to be developed as a manufacturing site additional quays would need to be developed. The land has a narrow frontage onto the estuary.
- 6.5.40 The redevelopment of the Port of Hull for a turbine factory is likely to progress through the statutory planning process in 2011/12 and does not preclude the need a MEP.
- 6.5.41 The Port of Hull also lies within the Humber Estuary Renewable Energy Super Cluster Enterprise Zone.

#### *Bathside Bay*

- 6.5.42 Bathside Bay lies within the Stour and Orwell Estuaries SPA and Ramsar site. It also lies within the Stour Estuary SSSI. The consented development of the site for a container port will result in the direct loss of 69 ha of intertidal feeding habitat within the SPA. As a consequence the that development has been assessed to have an adverse effect on the integrity of the designated site and a 138 ha managed realignment site

has been secured to compensate for the damage to the coherence of the Natura 2000 network. The development was consented on the basis that there were imperative reasons of overriding public interest for a container terminal to be developed at the site.

- 6.5.43 Bathside Bay is located on the south bank of the river Stour in Essex next to the existing port of Harwich. It is 125 km from the East Anglia zone, 250 km from the Hornsea zone and 400 km from the Dogger Bank. An aerial view is shown in *Figure 6.7*.

*Figure 6.7 Aerial View of Bathside Bay*



- 6.5.44 Bathside Bay was given planning permission in 2006; an artist's impression of the completed terminal is shown in *Figure 6.8*. The consent is limited to ten years but the recession has affected the growth of the container market business that has meant that demand has not yet justified its construction. Hutchison Ports (UK) Ltd (HPUK) is currently working to extend the consent up to 2021. If constructed, the project would see up to 1 400 m of quayside built. There would be no beam restrictions and a 15 m water depth limit.
- 6.5.45 It is likely that use of the terminal for anything other than containers would require either a change of use of the extant planning permission or a new development consent. The land area available is sufficient for the requirements of a construction port with associated manufacturing
- 6.5.46 While HPUK has marketed the development to the offshore wind industry, it appears firmly committed to its container port plans in the long term. This is shown by the fact that the company has described its ambitions for offshore wind in the port as a temporary measure in the interim before demand for containers picks up sufficiently. Turbine manufacturers are expected to require tenancies in ports lasting 20

years or more and temporary facilities are inconsistent with the development of a permanent manufacturing hub.

*Figure 6.8 Artist's impression of completed container terminal at Bathside Bay*



6.5.47 In conclusion of the above, a 110 ha MEP could feasibly be located on this site but such development would:

- permanently displace a consented container terminal development which is required for imperative reasons of public interest;
- destroy more Natura 2000 land than the Able Humber site whilst providing less land for manufacturing;
- provide a less optimal geographic location than Able Humber and thereby give rise to a greater overall carbon footprint from vessels travelling to the three main offshore development zones.

### *Sheerness*

6.5.48 The Port of Sheerness is located on the bank of the Medway near its confluence with the Thames. An aerial view is shown in *Figure 6.9*. The port is 180 km from the East Anglia zone, 300 km from the Hornsea zone and 450 km from the Dogger Bank zone. Sheerness is not located within a European designated site although the Thames Estuary and

Marshes SPA and the Medway Estuary and Marshes SPA are both in close proximity.

6.5.49 The Port handles over 450 000 T per year of high value forest products including pulp, packaging paper, printing paper, sheet material and lumber. In addition it handles 700 000 T of fresh produce per annum having invested £70 million since 1990 in dedicated facilities. A significant area of land is also used for car storage with around 400 000 car units currently being handled each year. Other cargo is also brought in at the Port including steel products, aggregates and cement.

**Figure 6.9** *Aerial View of Sheerness*



- |                  |                             |
|------------------|-----------------------------|
| 1. Ridham Dock   | 4. Sheerness                |
| 2. Neats Court   | 5. Isle of Grain            |
| 3. Queensborough | 6. Kingsnorth (off picture) |

6.5.50 The South East England Development Agency (SEEDA) has published an information brochure, 'Offshore Wind: Opportunities in South East England', which provides details of potential facilities at Sheerness. SEEDA state that the port could currently release 50 ha of land for offshore wind with the potential for > 85 ha in the future although it has not defined which areas of the port this covers. The only feasible location for this land however is the existing car storage area. It has also said that a further 80 ha could be made available in the future through an undefined reclamation scheme.

- 6.5.51 In terms of quayside, 330 m of jetty is currently available which has pier accesses. This jetty and pier arrangement is not suitable for use by the offshore wind industry and the quay could only be made suitable by land reclamation works. A further 630 m of quay is said to be potentially available but, again, this could only feasibly be achieved by further significant land reclamation works.
- 6.5.52 In addition to the existing port estate, the regional development agency has identified a number of additional sites that are all within 10 km of the port by road or barge. These include Ridham Docks (6 ha, 200 m quay, 6.2 m draft), Queensborough (12 ha) and Neats Court (36 ha).
- 6.5.53 On the north bank of the Medway, there is a 46 ha site at Kingsnorth and up to 150 ha on the National Grid's Isle of Grain site. Both sites are currently undeveloped and would require the construction of port facilities.
- 6.5.54 While the port is able to offer parcels of land almost immediately, that land parcel is currently too small. The additional sites in the surrounding area could help meet the total land requirement but the benefits of clustering would be diminished by the need to load units onto barges to be moved between sites.
- 6.5.55 The location of the site also means that while it is well located to serve the East Anglia zone and the southern North Sea, it is not favourably located for either the Hornsea or Dogger Bank zones.
- 6.5.56 In conclusion of the above, an 80 ha site or thereabouts could feasibly be located at Sheerness but such development would:
- permanently displace a significant quantum of existing international trade activity;
  - need development of the existing quays including land reclamation and potentially dredging. A likely significant effect on nearby SPA's cannot be excluded;
  - provide a less optimal geographic location than Able Humber and thereby give rise to a greater overall carbon footprint from vessels travelling to the three main offshore development zones.

## Southampton

6.5.57 The Port of Southampton is shown in *Figure 6.10*. It is owned and operated by ABP and is located on the UK's south coast. It is a mixed use port, handling a range of traffic including cars, containers and cruise liners. The main port is heavily utilised with limited spare land available but it does have a 323 ha site called Dibden Bay available on the western bank of the river Test. Dibden Bay lies within the Solent Maritime SAC, and the Solent and Southampton Water SPA and Ramsar sites. All of these habitats fall within the Hythe to Calshot SSSI.

6.5.58 That site was the subject of a £600 million proposal submitted by ABP in 2000 for a deep water container terminal with a 1 850 m quay and 202 ha of port facilities. However the application faced strong local opposition and was rejected on environmental grounds in 2004 following a public inquiry. According to the Inspectors Report (The Planning Inspectorate, 2003),

*'(t)he construction of the proposed quay, and the dredging of the deep-water berthing pocket and approach channel, would entail the destruction of some 76ha of inter-tidal mudflat on the Dibden foreshore, together with 52ha of shallow sub-tidal habitat. This harm is unavoidable if the project proceeds. It cannot be mitigated', (paragraph 7.94)*

6.5.59 The site is currently undeveloped, has no quay and any proposal would require planning permission to proceed.

**Figure 6.10** Aerial View of Southampton



6.5.60 Southampton is 450 km from the East Anglia zone, 600 km from the Hornsea zone and 700 km from the Dogger Bank zone.

- 6.5.61 While the Dibden Bay site would meet the requirements for a MEP, its location on the south coast means it is too far from the main North Sea sites to be viable as major turbine manufacturing and construction cluster. Development would also result in significant environmental impact to a designated site.
- 6.5.62 In conclusion of the above, a large MEP could feasibly be located on this site but such development would:
- exclude its potential development as a container terminal in the future;
  - destroy significantly more Natura 2000 land than the Able Humber site whilst providing only a small additional area of land for manufacturing;
  - provide a far less optimal geographic location than the east coast and thereby give rise to a much greater overall carbon footprint from vessels travelling to the three main offshore development zones.

## 6.6 COMPARISON

### *Alternative Sites*

- 6.6.1 A brief summary of salient features relating to individual sites is detailed in *Table 6.3*. There is no single alternative site that is of an equivalent scale to AMEP except for Southampton and development of that site would result in the destruction of significantly more of the Natura 2000 network than would AMEP and is much further from the principal Round 3 sites. It is therefore a manifestly less suitable site on both environmental and economic grounds.

### *Alternative Distributed Sites*

- 6.6.2 In the absence of any single site that could be brought forward as a feasible alternative to AMEP, there are there are two broad potential alternatives:
- a grouping of manufacturing and construction sites distributed along the east coast of the UK; and
  - a grouping of manufacturing and construction sites distributed across the UK and the continent.



**Table 6.3 Summary of Alternative Sites**

	Nigg	Ardersier	Southampton	Sheerness	Bathside Bay	ABP Hull	Able Humber
Area Available (ha)	70 (234 ha proximal land is on sloping ground)	109 (28 ha additional land available)	323	50 (+ potential for an additional 85 ha)	113	82	330
Potential Quay Length (m), and Draught	420 m @ 9.4m (existing)	1 000 m @ 4.5 m (new quay req'd)	1 850 m @ 16 m (new quay req'd)	800 @ 9m (new quay req'd)	1 400 m @ 15 m (new quay req'd)	600 m @ 11m (new quay req'd)	1200 m @ 11m (new quay req'd)
SPA/SAC Site	Cromarty Firth SPA/Ramsar	Moray Firth SAC, Inner Moray Firth SPA/Ramsar	Solent Maritime SAC, Southampton Water SPA/Ramsar	Proximal to Thames Estuary and Marshes SPA, Medway Estuary and Marshes SPA	Stour and Orwell Estuary SPA/Ramsar	Humber Estuary SPA/SAC/Ramsar	Humber Estuary SPA/SAC/Ramsar
Area of European Site likely to be adversely affected	Unquantified indirect effects	Unquantified indirect effects	Up to 128 ha	Unquantified indirect effects	69 ha	4 ha	55 ha
Proximity to Wind Farm zones (NM):							
<i>Dogger Bank</i>	283	283	377	244	202	117	111
<i>Hornsea</i>	328	328	310	168	131	46	40
<i>Norfolk Bank</i>	421	421	218	90	53	108	102
Existing Planning Consents	No, existing use is for offshore fabrication	Yes, site has been remediated for housing	No, application for container terminal refused in 2004	No, operational port activity would be displaced	Yes, for container terminal that would be displaced.	Yes, for a container terminal that would be displaced.	Yes, on terrestrial areas for 122.4 ha of port related storage

6.6.3 Whilst these two solutions could themselves have a number of alternatives within their scope, one reasonable option for each has been developed in order to make an informed comparison of relevant environmental impacts. These are presented and assessed in further detail in *Annex 6.1*. The comparison illustrates that alternative distributed supply chains are not likely to provide a manifestly better environmental solution.

#### *Carbon Footprint*

6.6.4 An assessment of the relative carbon footprint of AMEP compared to a UK distributed site, and a continental distributed site is reproduced in *Annex 6.2*. Briefly, AMEP will give rise to a smaller carbon footprint than either of the generic alternatives.

#### *Alternative Distributed Sites*

6.6.5 In the absence of any single site that could be brought forward as a feasible alternative to AMEP, there are there are two broad potential alternatives:

- a grouping of manufacturing and construction sites distributed along the east coast of the UK; and
- a grouping of manufacturing and construction sites distributed across the UK and the continent.

6.6.6 Whilst these two solutions could themselves have a number of alternatives within their scope, one reasonable option for each has been developed in order to make an informed comparison of relevant environmental impacts. These are presented and assessed in further detail in *Annex 6.1*. The comparison illustrates that alternative distributed supply chains are not likely to provide a manifestly better environmental solution.

#### *Carbon Footprint*

6.6.7 An assessment of the relative carbon footprint of AMEP compared to a UK distributed site, and a continental distributed site is reproduced in *Annex 6.2*. Briefly, AMEP will give rise to a smaller carbon footprint than either of the generic alternatives.

**6.7**            **CONCLUSION**

6.7.1            From the above assessment, Able Humber is the only feasible solution for a significant MEP to serve the emerging offshore wind market in the North Sea. The Port of Hull and Sheerness can feasibly provide additional manufacturing capacity but that capacity will be needed as well as Able Humber.

6.7.2            An alternative distributed group of sites that both manufactures and constructs an equivalent quantum to AMEP is not a manifestly better environmental solution but will give rise to a larger carbon footprint.