

NON TECHNICAL SUMMARY

INTRODUCTION

Thanet Offshore Wind Limited

Thanet Offshore Wind Limited (TOW), a subsidiary of Warwick Energy Limited (WEL), was created to develop opportunities for energy generation from renewable resources in the Thanet area. TOW has been awarded the rights to develop an offshore wind farm in the Thames Estuary Strategic Environmental Assessment (SEA) area by The Crown Estate under Round Two of the offshore wind licensing arrangements. This is subject to TOW being successful in gaining the necessary consents for construction and operation of the wind farm.

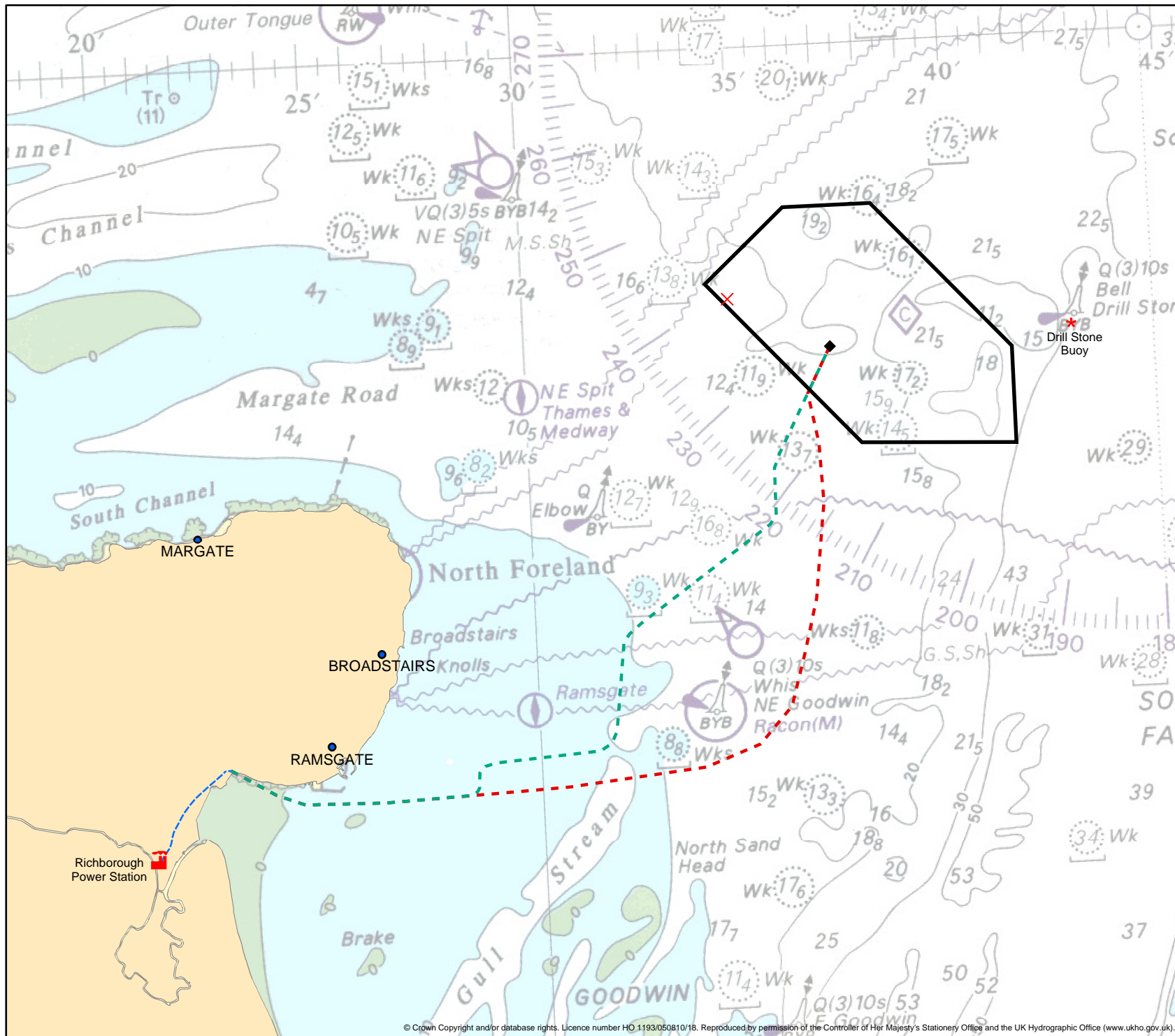
Thanet Offshore Wind Farm - Project Details

The Thanet Offshore Wind Farm (Thanet) project is located 11.3km offshore from Foreness Point, the eastern most part of the Kent coastline. Between 60 and 100 wind turbines would make up the wind farm, depending upon the size of turbine chosen and based on a maximum output of 300MW. This is enough to provide electricity for 240,000 average homes, which will account for a significant proportion of the energy needs of East Kent.

The maximum height of the turbines would be up to 150m (approx 500 feet) from sea level to the blade tip in the vertically up position and the minimum clearance would be 22m (approx 70 feet) to the blade tip in the vertically down position. The spacing between turbines would be a minimum of 450m (approx 1,500 feet).

The turbine nacelle, or hub, complete with three blades would be mounted upon a cylindrical steel tower, which would in turn be supported by a foundation fixed to the seabed. A number of different foundation types were considered for the Thanet project. Given the seabed conditions, water depth and environmental conditions at the site, it was considered that either monopiles or gravity base structures (GBS) would be the most likely alternatives. The wind farm would also include an anemometry mast to collect data on wind speed and direction data.

The turbines would be interconnected by a buried 33kV cable network and connected to an offshore substation platform where the voltage is stepped up to 132kV. Electricity would be transferred to shore by two export cables, which would be routed to a landfall point in the northern part of Pegwell Bay. The cables would be buried to a depth of between 1m and 3m depending on localised seabed conditions. Cable installation would most likely require a bespoke cable plough, which minimises disturbance to the seabed by cutting a narrow trench little wider than the cable itself, whilst consecutively laying the cable and pushing the sediments back into place. Grid connection would be made via cables buried under the A256 Sandwich Road to the existing substation at the disused Richborough Power Station, from where power would be distributed via the existing local electricity network.



Legend:

- Wind Farm Site Location
- Proposed Cable Route 1
- Proposed Cable Route 2
- Terrestrial Cable Route
- Offshore Substation
- X Anemometry Mast

Title:
LOCATION OF THE THANET OFFSHORE WIND FARM SITE AND ELECTRICAL CONNECTION

Project:
THANET OFFSHORE WIND FARM

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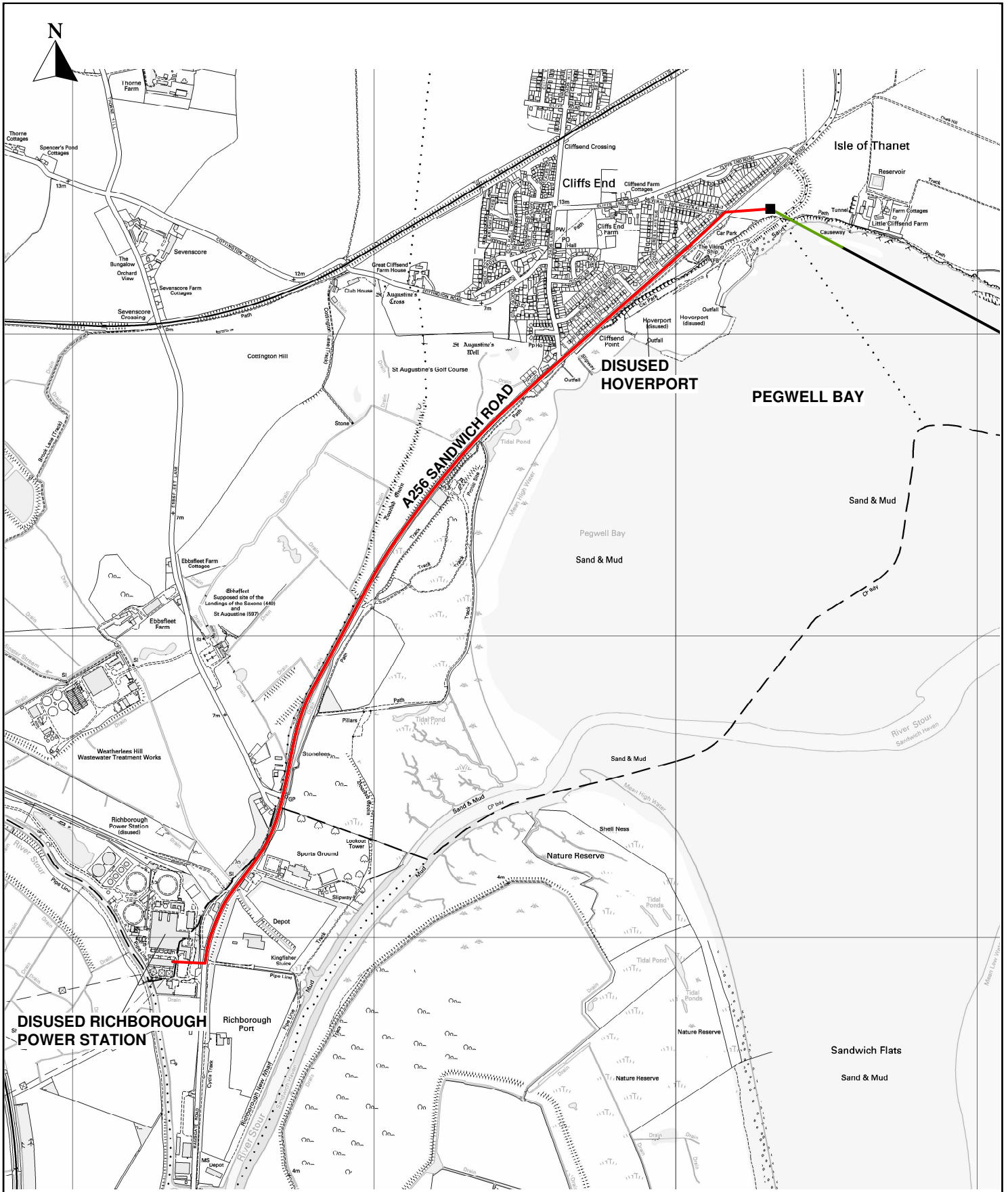
Client:
THANET OFFSHORE WIND LTD

Drawn by: SMG	Checked: SDG	Drawing No: 9P5164/06/099
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Date: 31/10/2005	Figure: 1
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Scale: 0 0.5 1 1.5 2 Kilometres	Revision No: 001
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Legend: Terrestrial Cable Route Joint Transition Pit Landfall Route Marine Cable Route	Title: CABLE LANDFALL AND ONSHORE ROUTE	Drawn by: MJM	Checked: CO	Drawing No.:
	Project: THANET OFFSHORE WIND FARM	Date: SEPT 05	Figure: 2	
	Source: This product includes mapping data licensed from Ordnance Survey ©. © Crown copyright and/or database right 2004. License number 0100031673	Scale: 1:12,000	Revision No.: 	
	Client: THANET OFFSHORE WIND LTD	 ROYAL HASKONING		

The wind farm would have an operational life of 40 years after which it would be decommissioned. A full Decommissioning Plan would be agreed prior to construction and would include for the complete removal of all offshore structures above seabed level. It is anticipated that the cables would be disconnected and left buried, with notification that they are disused, as is currently common practice. Regular servicing of the turbines will take place during the operational life of the project, and this would probably be carried out from a service base located at Ramsgate.

The Need for Renewable Energy

The central aim of the UK Government's energy policy is to establish a supply of energy that is diverse, sustainable and secure and is offered at competitive prices. Key to this goal is a 60% reduction of CO₂ emissions by 2050. The development of renewable energy plays a key role in the Government's strategy for carbon reduction. In particular, it has set a target that 10% of the UK's electricity supply should come from renewable sources by 2010. This has subsequently been revised to 15% by 2015, and the Government has an aspiration of increasing this further to 20% by 2020. The Government's targets for renewable energy will help the UK to meet its international obligations, but also obtain greater security of energy supply through the promotion of indigenous electricity generation.

The development of the Thanet project would help the UK move towards its goals by reducing emissions of CO₂ by approximately 36 million tonnes over its 40 year lifetime, when compared to generating the equivalent electricity from a coal fired power station.

REGULATORY REQUIREMENTS AND THE EIA PROCESS

Regulatory Consents

A number of regulatory consents are required for the construction and operation of the Thanet project. The Department of Trade and Industry's (DTI) Offshore Renewable Consents Unit (ORCU) is leading the consents process.

TOW is applying for the following key consents:

- Consent under **section 36 of the Electricity Act 1989** to construct and operate the offshore wind farm, including all ancillary infrastructure.
- Licence under **section 5 of the Food and Environment Protection Act 1985** to deposit materials such as the turbine foundations and the buried cables, on the seabed. The Department for Environment, Food and Rural Affairs (defra), which takes responsibility for protecting marine ecosystems, will make the decision on this.
- Consent under **section 34 of the Coast Protection Act 1949** in order to make provision for the safety of navigation in relation to the export cables.
- Deemed planning permission under **section 90 of the Town and Country Planning Act 1990**, sought as part of the section 36 application, for the onshore elements of the works.

In addition, the extinguishment of public rights of navigation will be requested under the Energy Act 2004 for the areas of seabed directly covered by the offshore structures comprising the turbines, offshore substation and anemometry mast. Safety Zones of up to 500m around all structures will also be requested, which would limit the activities of certain vessels within this area. The exact requirements for Safety Zones will depend on the phase of the project and the activity involved. This is to ensure the safety of life at sea.

Programme

Construction of the offshore works is likely to take place in the summer months between March and November in order to avoid adverse weather conditions. Construction of the onshore elements is also likely to take place in the summer months in order to avoid the key season for overwintering birds in Pegwell Bay. Onshore construction works would be carried out within normal daily working hours, whilst offshore construction would be on a 24 hours basis.

Whilst it is targeted that the Thanet project be constructed during a single season, it is acknowledged that the offshore elements may extend to two seasons depending on a number of factors, including timing of consent award.

Subject to the consents being received during the first half of 2006, it is currently intended that the Thanet project would be deployed in the following construction season or seasons, with electrical generation commencing either in late 2007 or late 2008, depending on a single or two season build programme.

The Need for Environmental Impact Assessment

The Thanet project is subject an Environmental Impact Assessment (EIA), as required under the Electricity Works (Environmental Impact Assessment) Regulations 2000. The Environmental Statement (ES) has been carried out in accordance with these regulations.

The EIA Process

EIA is a tool for systematically examining and assessing the impacts and effects of a development on the environment. The resultant ES reports on the EIA and contains:

- A description of the development, including any alternatives considered;
- A description of the existing environment at the site and surrounding areas;
- A prediction of potential impacts on the existing human, physical and natural environment at the site and assessment of subsequent effects;
- A description of mitigation measures to avoid or reduce such effects;
- A description of monitoring requirements; and
- A Non Technical Summary.

Scoping and Consultation

A scoping exercise was carried out to identify the main issues that needed addressing as part of the EIA. Consultation was carried out as part of this process with over 100 statutory and non-statutory bodies representing key interests and user groups in the Thanet district and the wider area. Consultation and liaison continued throughout the EIA and will be ongoing throughout the life of the project.

Four public exhibitions were held in Margate, Broadstairs, Ramsgate and Deal. In total, 731 people visited the exhibitions. Questionnaires were available at the exhibitions and of the 400 responses, a total of 73% (292 individuals) of all returns were either supporters or strong supporters of the project. Only 7% (28 individuals) considered themselves to be against or strongly against the project.

Figure 3 Renewables in the South East

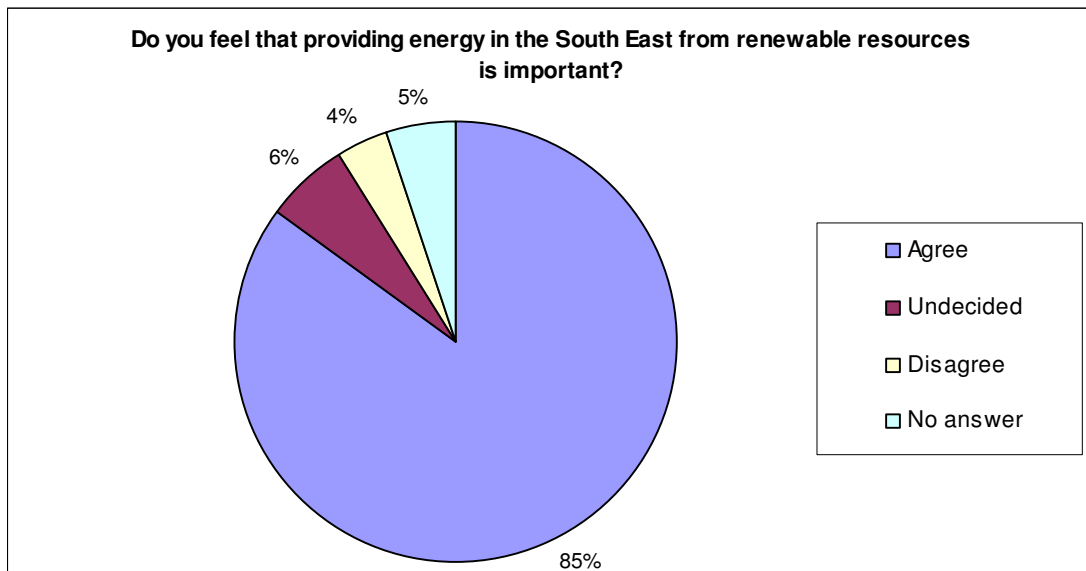
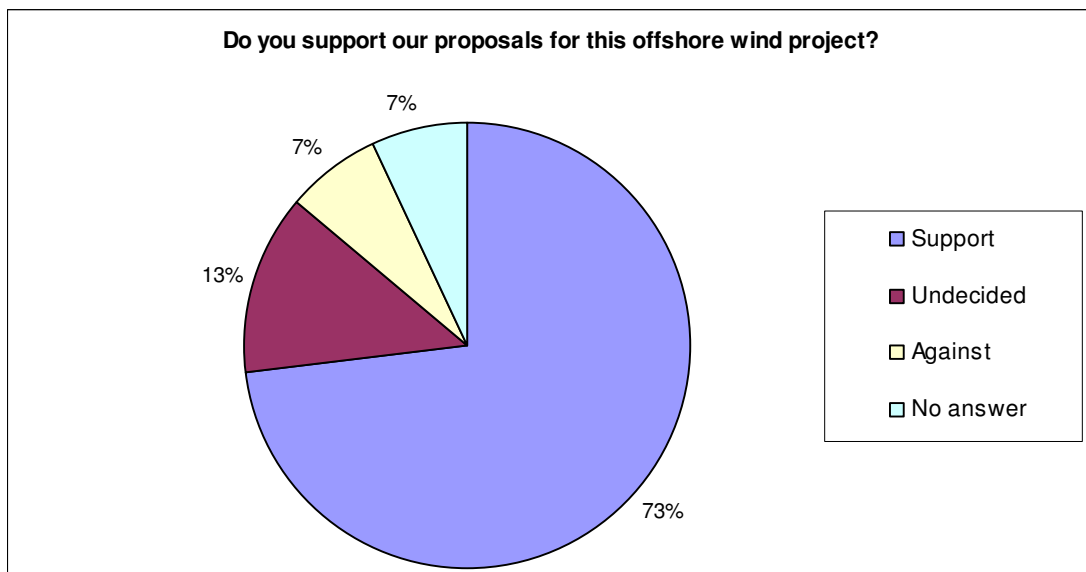


Figure 4 Public opinion of the proposals



Original Data Collection and Surveys

Further to the findings of the scoping exercise and consultation with the statutory consultees, the following surveys were undertaken as part of the EIA.

- Geophysical survey to understand the characteristics and features on the surface and subsurface of the seabed;
- Marine biological survey including sampling and analysis of organisms living in the sediments of the seabed and on the surface of the seabed;
- Fish surveys and observer trips on local fishing vessels;
- Activity survey of local fishermen;
- Intertidal walkover survey of the seashore;
- Aerial and boat based bird surveys;
- Marine traffic survey;
- Seascape and visual character assessment;
- Terrestrial ecological survey to identify the main habitats and presence of any protected species.

Impact Identification and Evaluation

Impact identification and evaluation was carried out via a number of standard methods and techniques, as agreed during the scoping exercise. Significance levels have been assigned to each impact in order to provide a consistent framework for considering and evaluating impacts. The assigned definitions are set out in Table 1.

Table 1 Terminology for classifying environmental impacts

Impact Significance	Definition
Major adverse	The impact gives rise to serious concern and it should be considered as unacceptable.
Moderate adverse	The impact gives rise to some concern but is likely to be tolerable depending on scale and duration.
Minor adverse	The impact is undesirable but of limited concern.
Negligible	The impact is not of concern.
No Impact	There is an absence of one or more of the following: impact source, pathway or receptor.
Minor beneficial	The impact is of minor significance but has some environmental benefit.
Moderate beneficial	The impact provides some gain to the environment.
Major beneficial	The impact provides a significant positive gain.

Mitigation and Monitoring

Mitigation measures are considered and described where potentially significant adverse impacts were identified, either as part of design or as a measure implemented during construction or operation. Monitoring programmes have been described where necessary, which would take place either during or post construction, in order to verify predicted impacts.

SUMMARY OF ENVIRONMENTAL IMPACTS

Introduction

The following sections summarise the potential environmental impacts associated with the Thanet project, as detailed in the ES. It is divided into offshore and landside works. Impacts on the following environmental parameters have been assessed, with mitigation and monitoring requirements included where necessary:

Offshore Wind Farm and Export Cable Route

- Hydrodynamics and geomorphology;
- Marine and coastal water quality;
- Ornithology;
- Marine ecology;
- Natural fish resource;
- Marine mammals;
- Commercial fisheries;
- Seascape and visual character;
- Shipping and navigation;
- Marine archaeology;
- Radar and transmission systems;
- Other human activities and;
- Socio-economics.

Cable Landfall and Landside Infrastructure

- Geology, land quality and water resources;
- Terrestrial ecology;
- Landscape and visual character;
- Terrestrial archaeology and cultural heritage;
- Coastal tourism and recreation;
- Traffic and access; and
- Noise, dust and air quality.

Offshore Wind Farm and Export Cable Route

Hydrodynamics and Geomorphology

An assessment of the impact of the wind farm on hydrodynamics and geomorphology looked at the changes that the wind farm and cable route would have on the local waves, currents, sediment transport regime and features of the seabed. The Thanet project would have some localised impact in the immediate vicinity of the wind farm site, but is unlikely to have any significant impacts further away from the site. There would

be potential for localised erosion or scour around the base of each offshore structure, however, the design of the foundation would take this into account.

Some disturbance of sediment would occur as a result of the cable installation process, however, background levels of suspended sediment in the area are naturally high so the short term impact of sediment plumes arising from the cable burial process are unlikely to be significant. The amount of disturbance would, in any case, be minimised by the installation processes. Overall a **minor adverse to negligible** effect is predicted.

Marine and Coastal Water Quality

There are two designated bathing waters and one designated shellfish water located within the vicinity of the wind farm and export cable route. A **negligible** impact on water quality is predicted due to the distance of the works to these areas.

Ornithology

The aerial and boat based bird surveys showed very low numbers of seabirds using or flying over the Thanet site. Those recorded included razorbill and guillemot, small numbers of terns and red throated divers. Gulls were the most common feature. Other seabirds included fulmar, kittiwake and gannet with common scoter seen rarely.

Birds can be susceptible to disturbance effects and collision risk from wind farms, however, the assessment showed that due to the low number of birds recorded at the Thanet site and the fact that they generally fly near to the surface of the sea, impacts are **negligible to minor adverse**. Disturbance to the important overwintering populations of birds within Pegwell Bay would be avoided by installing the cables outside the winter period (November to March).

Marine Ecology

The marine ecology of the area is typical of this part of the southern North Sea with common and widespread organisms being recorded as part of the surveys. Of note, however, was the presence of *Sabellaria spinulosa*, a type of worm, which in the right conditions can build a reef like structure that is of importance for marine life. Evidence of this type of worm was recorded in the southern part of the site as having the potential to form such a structure. In order to minimise disturbance to this area, further surveys will be undertaken prior to construction in order to locate the foundations appropriately. Given this mitigation and further monitoring of the area after construction, **no significant impact** on the marine ecology of the area is anticipated.

Natural Fish Resource

The fish surveys undertaken for the project collected a total of 19 species of fish with dogfish and dab being the most common. Dover sole, smoothhound and thornback ray were also caught. No species of conservation importance were caught and the area is not an important fish spawning or nursery area. The main impact on fish is considered to be noise from the construction works, particularly during piling. This would be effectively reduced by adopting working practices that minimise noise at the beginning of the piling operation to allow the fish to move away from the area. Overall, the impact on the natural fish resource is predicted to be **negligible**.

Marine Mammals

Overall, the region is not considered of significant importance to marine mammals. Harbour porpoise, bottlenose dolphin and common and grey seals are the most likely marine mammals to be encountered in the area. Studies of other offshore wind farms have shown that construction activities do not have a large scale influence on the species. Overall a **negligible to minor adverse** impact is predicted.

Commercial Fisheries

Fishing activity at the Thanet site involves coastal vessels operating out of Ramsgate, larger UK vessels from ports further afield, and by EU member state vessels. Approximately ten vessels operate full time from Ramsgate, with a further 17 fishing on a more seasonal basis.

The majority of the Ramsgate fleet undertakes drift netting, where nets are set to drift with the tide, and static gill netting, where nets are anchored to the seabed. The fishing area of one drift netting vessel overlaps with the Thanet site and several vessels occasionally set anchor nets within part of the site. Vessels also fish areas along the export cable routes and cross the wind farm site when travelling to and from fishing grounds.

Some disturbance and displacement of existing fishing activity would result from the construction and operation of the wind farm ranging from a **moderate adverse** impact on one full time fishing vessel and a **negligible to minor adverse** impact on the other fishing vessels in the area. Ongoing liaison with the fishing community will be undertaken to avoid and minimise impacts as far as possible.

Seascape and Visual Character

The seascape is defined as views from the land out to sea. Given the scale and extent of the Thanet project, it is inevitable that effects upon the surrounding seascape would be incurred, even though the wind farm is located 11.3km offshore.

The visual effects arising from the turbines would be greatest from the eastern coastline of the Isle of Thanet peninsula, but ease significantly with distance from the site, where the wind farm would only be seen on days of good visibility.

Overall, the likely seascape and visual effects arising from the Thanet project ranges from **minor to moderate adverse**. The effects arising from the project are reversible and, in the medium to longer term, would leave **no net residual effect** upon either the seascape resource or the visual environment.

Figure 5 Margate Harbour Wall



Figure 6 Kingsgate/North Foreland, Coastal Path



The photomontages show the cumulative view of the London Array and Thanet projects. Refer to **Section 13** of the ES for A3 versions of these images.

Figure 7 Broadstairs Promenade

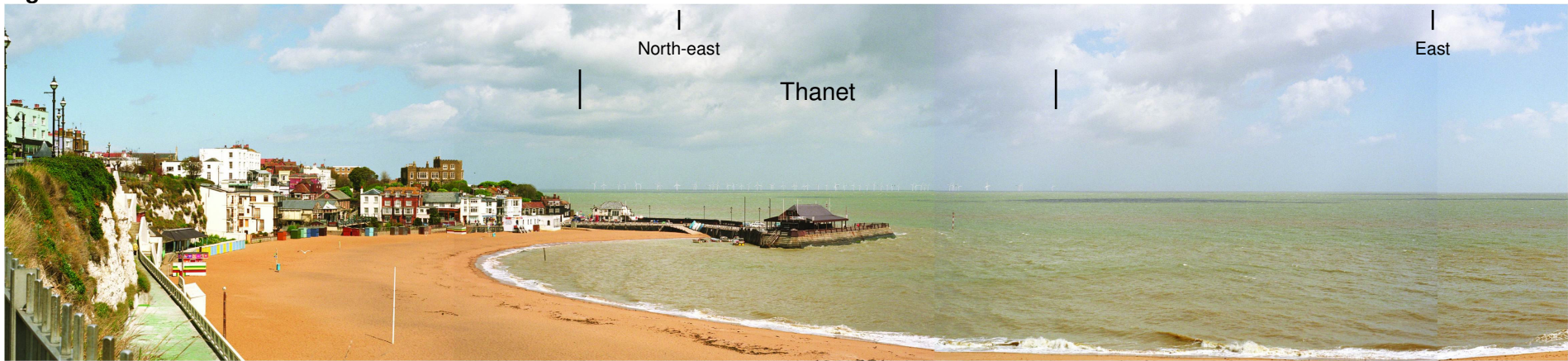


Figure 8 King's Avenue/Princess Drive, Sandwich Bay



Refer to **Section 13** of the ES for A3 versions of these images.

Shipping and Navigation

The navigation assessment has shown that with one exception, the introduction of the wind farm would not raise the risks to shipping above levels currently being recorded at other areas around the UK coast. The marine traffic predictions support the introduction of an additional navigation buoy, as proposed by Trinity House Lighthouse Service in the area to the north of the Thanet site, which would mitigate this exception.

The turbine towers will be painted, marked and fitted with navigation lights in accordance with the necessary safety requirements. Procedures will be put in place to respond to vessels in distress and search and rescue requirements. Given the implementation of the stated mitigation measures, the risks identified are considered to be tolerable.

Marine Archaeology

The archaeological potential of the area includes submerged landscapes and artefacts and remains from marine wrecks. No known areas of archaeological importance have been identified, however mitigation measures will be implemented to ensure that any features of archaeological importance that are identified are either avoided or recorded.

Radar and Transmission Systems

Studies have shown that the wind farm is unlikely to have a significant adverse impact on any of the radar or transmission systems operating in the area. Consultation will however remain ongoing to confirm that the Thanet project is acceptable to all potentially affected parties.

Other Human Activities

An assessment was undertaken to identify the location of any other marine activities in the Thanet area, including dredging, telecommunications cables, disposal sites, recreational sailing and military exercise areas. No unacceptable conflicts with any of these interests have been identified.

Socio-economics

The project has the potential to generate some positive economic effects, which given the total project investment of in excess of £300million, is considered to be a **beneficial** impact to the local and national economy. Positive effects would arise from employment and via the supply chain. There is also the possibility that the Port of Ramsgate would be used for elements of the construction phase, depending on the contractor chosen, and also as the location of the operation and maintenance base.

Cable Landfall and Landside Infrastructure

Geology, Land Quality and Water Resources

Areas of geological interest in the area of the landfall and areas of local contamination have been identified in the vicinity of the disused hoverport in Pegwell Bay. These areas will be avoided during construction in order to minimise impacts. Standard pollution prevention guidelines will be adhered to during construction to avoid adverse impacts on the local water resources. Overall **no impact** is predicted.

Terrestrial Ecology

The majority of the onshore cable route would be buried beneath the A256 Sandwich Road. Habitats within the study area include grassland, arable, scrub and small areas of broadleaved woodland, mostly characterised by common and widespread species. A number of protected species were identified within the study area during the surveys, although adverse impacts on these species are not anticipated as a result of the construction activities due to distance separation. Mitigation measures will be implemented to minimise impacts on habitats and species. Overall a **minor adverse to negligible** impact during construction is predicted. **No impact** is envisaged during the operational stages.

Landscape and Visual Character

The nature of the onshore development, being mainly confined to the A256 Sandwich Road, would mean that the landscape and visual effects arising from these works are temporary in nature, with the exception of a small extension to the existing substation at Richborough Power Station. A **negligible** impact is predicted.

Terrestrial Archaeology and Cultural Heritage

In order to minimise impacts on areas of potential archaeological interest, a survey of the intertidal section of the cable route would be undertaken and a watching brief adopted. The County Archaeologist and English Heritage's Maritime Team would be consulted if there were any significant discoveries. Given these mitigation measures, a **negligible** impact is predicted.

Coastal Tourism and Recreation

It is considered that the construction works would not deter tourists from visiting the area, and would not adversely affect the quality of their stay. Overall, the impacts on recreational activities and tourism are anticipated to be of a temporary nature and limited to a small area. They are therefore considered to be of **negligible** significance.

Traffic and Access

All works within the highway will be undertaken in accordance with the New Roads and Street Works Act (1991) and deliveries will be timed to avoid the morning and afternoon peak traffic flows. In addition, further discussions will take place with the Highways Authority to agree other traffic management requirements, as well as the maintenance of access to residences and businesses. Overall, a short term **minor adverse** impact is anticipated. Discussions with Kent County Council will take place regarding the recently consented improvement works along the A256, known as East Kent Access, Phase 1C, to ensure that disruption is minimised by co-ordinating activities wherever possible.

Noise Dust and Air Quality

Elevated noise levels during installation of the onshore cables would be temporary in nature and short term. Mitigation measures will be implemented to control all air emissions and local residences will be informed of the programme. Overall a **negligible** impact is predicted.

CONCLUSION

Overall, given the successful implementation of the stated mitigation measures as committed to by Thanet Offshore Wind Limited, as well as further dialogue with interested parties and Regulators, it is not predicted that the Thanet project would have any long term unacceptable impacts. The project would, however, make a significant contribution to regional and national targets for renewable energy.