CONTENTS

1 INTRODUCTION

1.1 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. WEL successfully developed the Barrow Offshore Wind Farm project in Morecambe Bay, which is currently being constructed.

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.

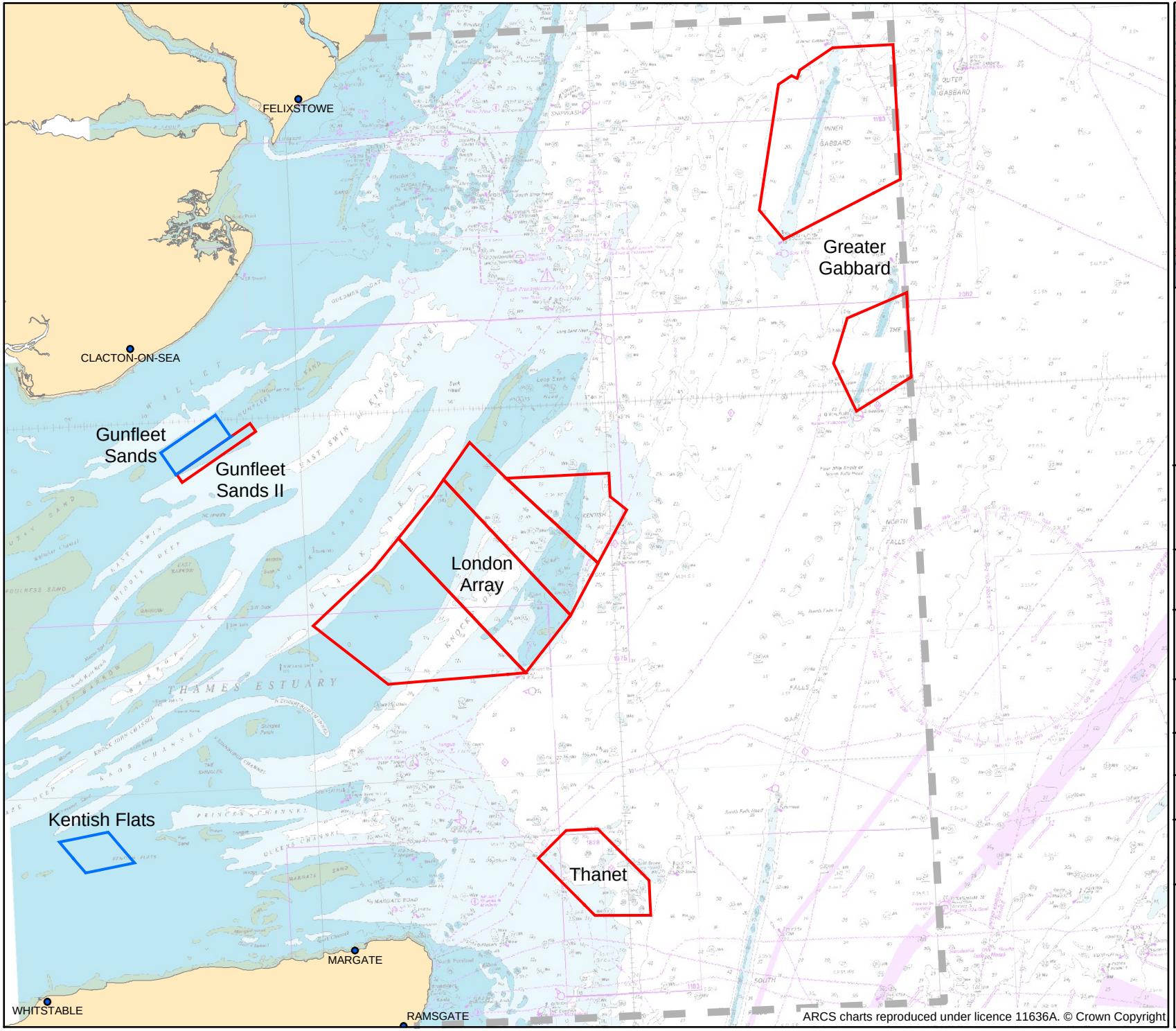
1.1.1 Round Two offshore wind farm developments

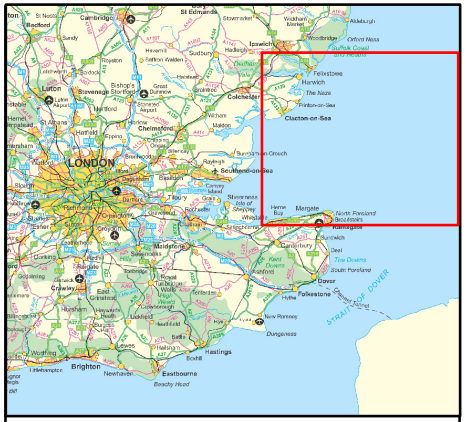
The Crown Estate's announcement of the first major round of UK offshore wind farm development in December 2000 resulted in 18 companies prequalifying for the right to develop an offshore wind farm project at various locations around the UK. To date, 13 of these sites have gained consent and three sites are now generating electricity. In July 2003, following the success of the Round One competition, The Crown Estate, in discussion with the Department of Trade and Industry (DTI), invited developers to bid for site option agreements in the second round of offshore wind farm development. Arrangements for Round Two were designed to facilitate offshore wind farm development in three strategic areas namely the:

- North West;
- Greater Wash; and
- Thames Estuary.

These areas had already been the subject of a Strategic Environmental Assessment (SEA), which reported on the potential impact of various scenarios of offshore wind farm development and identified a maximum build scenario that could reasonably be accommodated within each strategic area (BMT Cordah, 2003).

In December 2003, The Crown Estate offered 12 companies/consortia, options for 15 site lease agreements spread across each of the three strategic areas. WEL obtained two of these options, one of which is for the Thanet Offshore Wind Farm (Thanet) project. This agreement grants TOW a development option for seven years, during which time TOW must obtain the relevant statutory consents. Once these are in place, the option agreement could then be converted into a full lease of the seabed for a period of 40 years. **Figure 1.1** shows the Round One and proposed Round Two sites within the Thames Estuary SEA area. Both Round One sites have consent and Kentish Flats has recently started generating electricity.





Legend:

- Round 1 Wind Farm Sites
- Round 2 Wind Farm Sites
- Thames Estuary SEA Area

Title:
LOCATION OF ROUND ONE AND ROUND TWO OFFSHORE WIND FARM SITES IN THE THAMES ESTUARY SEA

Project:
THANET OFFSHORE WIND FARM

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Client:
THANET OFFSHORE WIND LTD

Drawn by:	Checked:	Drawing No:
SMG	SDG	9P5164/06/107
Date: 11/10/2005		Figure: 1.1
Scale: 0 1 2 3 4 5 Kilometres		Revision No: 001

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1.2 Thanet Offshore Wind Farm

The proposed site, which is known as the Thanet project, is located offshore from Foreness Point, the eastern most part of the Kent coastline. The nearest turbine would be approximately 11.3km from this point. The site takes up an area of 35km^2 of the seabed and is positioned to the west of Drill Stone Buoy in water depths of 18-25m (see **Figure 1.2**). 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, which is enough to provide electricity for 240,000 average homes.

The turbines would nominally be arranged in rows running northwest to southeast with an approximate spacing of 450m to 600m between each turbine within rows and 675m to 900m between rows, depending on the size of turbine chosen.

The maximum height of the turbines would be up to 150m from mean sea level to the blade tip in the vertically up position and the minimum clearance would be 22m from mean high water springs (MHWS) level to the blade tip in the vertically down position.

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. The turbines would be interconnected by a buried 33kV cable network and connected to an offshore substation located within the wind farm, where the voltage would be stepped up to 132kV. From here, two export cables would be routed to shore, each would be buried to a depth of between 1m and 3m depending on localised seabed properties and be up to 50m apart.

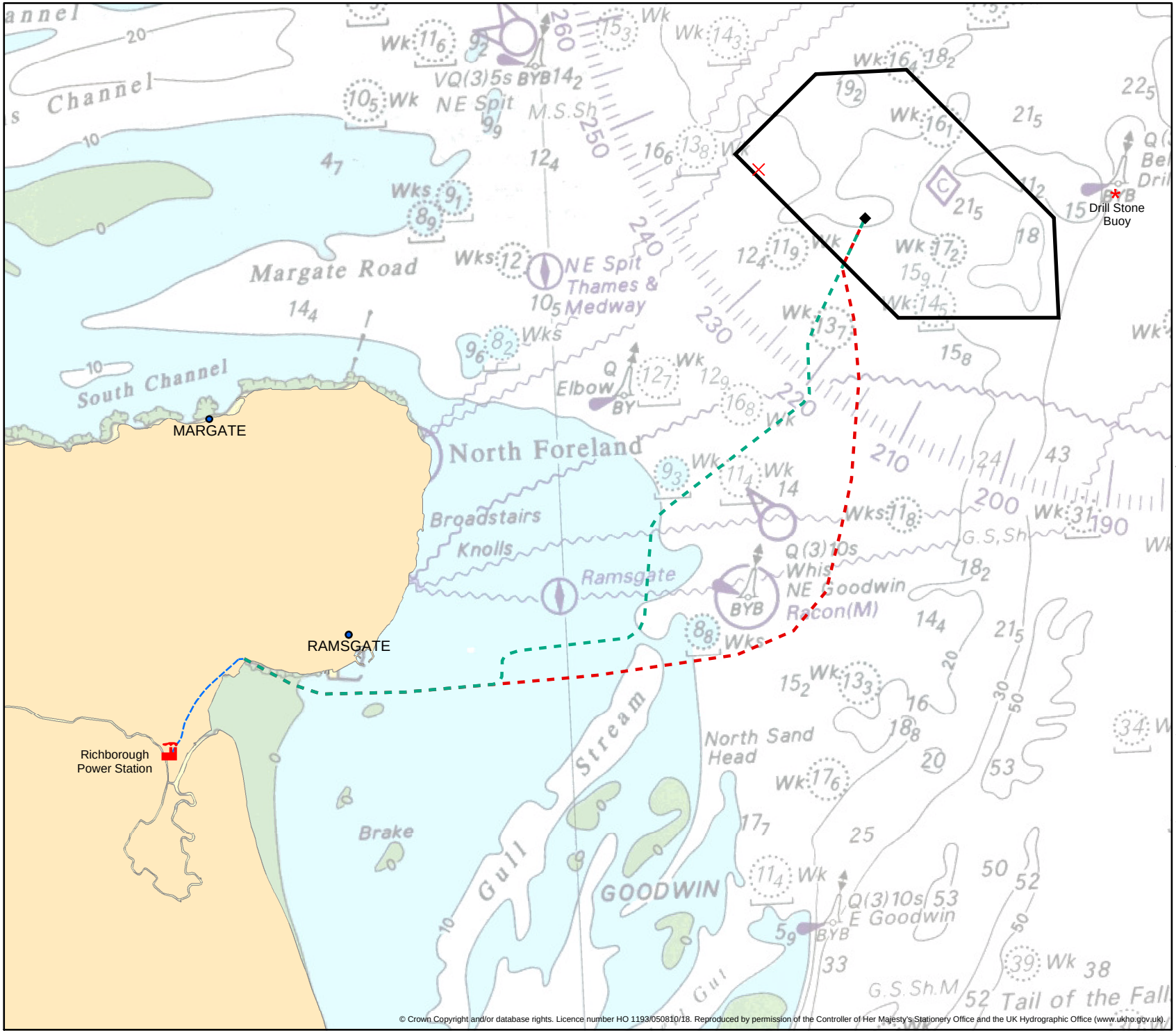
The preferred export cable route (see **Figure 1.2**) has been developed following analysis of a number of options. The cables would make landfall just north of the disused hoverport facility in Pegwell Bay and connect via a buried cable route along the A256 Sandwich Road to an existing substation at the disused Richborough Power Station. Electricity would then be distributed via the existing EDF Energy distribution system.

Subject to the necessary consents, construction work might begin as early as 2007 and would be expected to cost over £300m.

1.3 The Environmental Impact Assessment

Royal Haskoning was commissioned by TOW to undertake an Environmental Impact Assessment (EIA) of the proposed development, including both offshore and onshore elements. This Environmental Statement (ES) presents the findings of the EIA. A Scoping Report for the project was produced in July 2004 (Royal Haskoning, 2004). It provided an initial overview of the environmental issues associated with the Thanet project and set the scope of work for the next phase of the EIA.

The EIA process has involved detailed and extensive consultation with statutory and non-statutory consultees, Non Governmental Organisations (NGOs), local user groups and the general public. Desktop studies of existing information have been carried out, as well as a comprehensive survey programme to collect site specific data, where gaps in information were identified (see **Section 3, Regulatory and Legislative Context**).



Legend:

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

Title:

LOCATION OF THE THANET OFFSHORE WIND FARM SITE AND ELECTRICAL CONNECTION

Project:

THANET OFFSHORE WIND FARM

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Drawn by:	Checked:	Drawing No:
SMG	SDG	9P5164/06/108
Date: 31/10/2005		Figure: 1.2
Scale: 0 0.5 1 1.5 2 Kilometres		Revision No: 003

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1.4 Renewable Energy Policy

1.4.1 International and European policy

In 1997, more than 160 nations met in Kyoto, Japan, to negotiate binding limitations on greenhouse gases for the developed nations, pursuant to the objectives of the United Nation's Framework Convention on Climate Change of 1992. The outcome of the meeting was the Kyoto Protocol, in which the developed nations agreed to limit their greenhouse gas emissions, relative to the levels emitted in 1990. Different countries have individual targets for their energy generation from renewable sources. The European Union's overall emission target under the Protocol is a reduction of greenhouse gas emissions to 8% below 1990 levels by the commitment period of 2008 to 2012 (www.dti.gov.uk).

1.4.2 National energy policy

The UK's Climate Change Programme, published in November 2000 (DETR, 2000) includes the development of renewables in its plans to reach the UK's Kyoto target[1]. The Government proposed an initial ten year strategy, which included a target to generate 10% of the UK's electricity from renewable sources by 2010. Other targets included reducing greenhouse gas emissions to 12.5% below 1990 levels by 2012 and cutting carbon dioxide (CO_2) emissions to 20% below 1990 levels by 2010.

These initial targets were revised in February 2003 with the Energy White Paper '*Our Energy Future - Creating a Low Carbon Economy'* (DTI, 2003). 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 CO_2 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 revised target that 15% of the UK electricity supply should come from renewable sources by 2015, and has an aspiration of 20% of renewable energy supply 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 CO_2 by approximately 36 million tonnes over its 40 year lifetime, compared to a coal fired power station.

The Government aims to work with industry to meet these targets and, as part of its Climate Change Programme, has introduced a number of incentive measures including the Renewables Obligation (RO). The RO came into force in April 2002[2] and places an obligation on all licensed electricity suppliers in England and Wales to source a growing percentage of their energy from renewable sources. The original RO started at 3% in 2003, rising gradually to 10.4% by 2010/2011. The RO currently stands at 5.5% in 2005/2006, increasing gradually to a requirement of 15.4% by 2015/16 (www.dti.gov.uk, 2005).

[1] The UK and European governments are signatories to the Kyoto Protocol (http://unfccc.int/)
[2] Renewable Obligation Order 2002 made under the terms of the Utility Act 2000 and amended by the Renewables Obligation (Amendment) Order 2004.

1.4.3 South East England energy targets

The South East England Regional Assembly provides a regional framework for energy efficiency and renewable energy. Chapter 10 of the Regional Planning Guidance for the South East (RPG 9) (ODPM, 2004) sets out a vision for the region where, by 2016, the South East should generate at least 8% of its electricity from renewable sources. The minimum regional targets for electricity generation from renewable sources are provided in Policy INF6 (Regional Renewable Energy Targets) as shown in **Table 1.1**.

Table 1.1 Reviewed renewable energy targets for 2010, 2016 and 2026

Year/timescale	Installed Capacity (MW)	% Electricity Generation Capacity
2010	620	5.5
2016	895	8.0
2026	1,750	16.0

Expressed as installed capacity and the percentage contribution of renewables to total electricity generation capacity in the region (Source: RPG 9, 2004)

At present, only 0.65% of electricity generation in the South East is from renewable sources, most of which is from the combustion of landfill gas. The proportion falls to 0.05% if energy from waste is excluded. The target is for at least 16% of the region's electricity generation capacity to be provided from renewable sources by 2026 (South East England Regional Assembly, October 2002).

It is widely recognised that the renewable energy resources with the greatest potential for electricity generation are onshore and offshore wind, biomass and solar. The strategy anticipates that offshore wind technologies will provide a significant contribution to the regional targets of 200MW at 2010 and 300MW at 2016 (RPG 9).

The proposed Thanet project would make a significant contribution to meeting the regional targets for renewable energy generation in the South East.

1.5 Benefits of Wind Energy

There are many benefits associated with the exploitation of onshore and offshore wind energy, including:

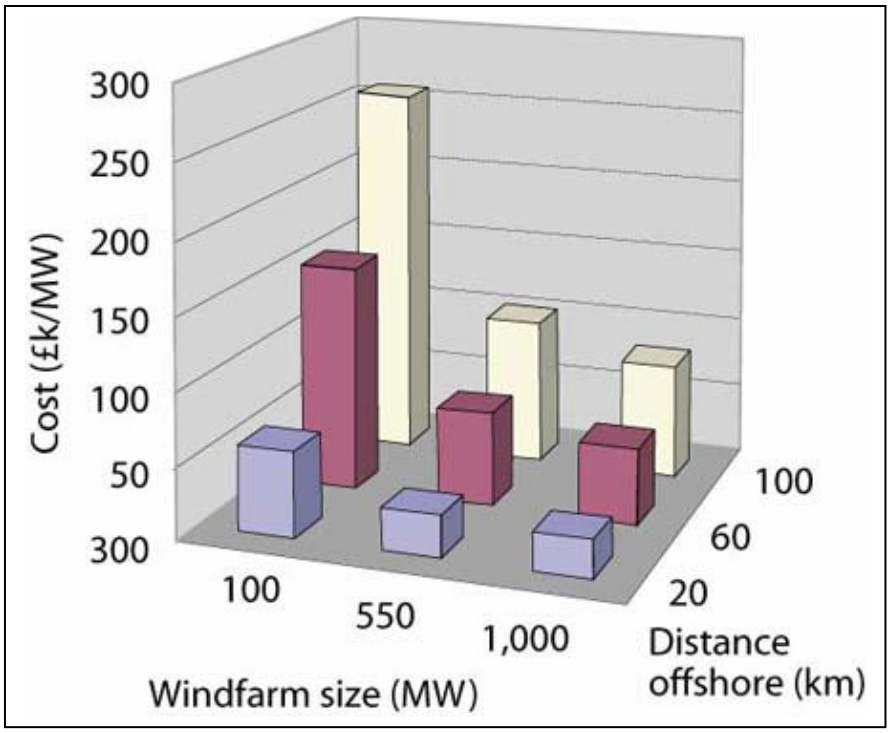
- Very low lifetime CO_2 emissions per unit of electricity generated;
- Increased levels of sustainability in energy resource market;
- Increased diversity and security of electricity supply;
- Elimination of the cost uncertainties associated with fuel supply price fluctuations;
- Energy production costs approaching those for existing thermal plant;
- Rapid 'energy payback' such that wind turbines take between three to ten months to produce the electricity consumed during their lifecycle[3]; and
- Opportunities for economic development and job creation e.g. supply and assembly, turbine provision and installation, and infrastructure development.

[3] UK Cabinet Office (2002). Performance and Innovation Unit. The Energy Review.

Currently, wind energy is the only renewable energy technology ready to deliver on a significant scale. Unlike many other renewable technologies, the cost of generating electricity from wind is already comparable with the price of some conventionally generated electricity sources. The average cost of generating electricity from onshore wind is now around 3.2p/kWh (±0.3p/kWh), with offshore wind at around 5.5p/kWh, compared to a wholesale price of electricity of around 3.0p/kWh (Sustainable Development Commission (SDC), 2005). The wholesale price of electricity has risen further since the SDC report was issued and currently stands at above 4.0p/kWh (Platts Power UK, 2005).

Offshore wind is currently more expensive than onshore, but the wind industry expects costs to come down over time, as experience is gained and the technology is improved. The costs of offshore wind will vary from site to site, depending on the seabed geology, the depth of the water and the distance from shore (see **Figure 1.3**). The latter cost factor is particularly influential in the overall cost of smaller and medium scale installations. As gas prices increase and wind power costs fall, both of which are very likely, wind becomes even more competitive, so much so, that some time after 2010, wind should challenge gas as the lowest cost power source (SEERA, 2005). Furthermore, once the Thanet project is in place, there are very limited fuel and waste related costs associated with operation and maintenance activities, and if the social cost of carbon is included, the net additional cost of wind power is reduced and could be zero (SDC, 2005).

Figure 1.3 Indicative cost of cabling for a range of wind farm sizes relative to distance from shore



Source: DTI website (www.offshore-sea.org.uk)