

Preliminary Information Memorandum

Thanet Offshore Transmission Assets

July 2009



RBC Capital Markets®

SUMMARY

In April 2009 Ofgem distributed a teaser document, "UK Offshore Transmission – Investment Opportunity", to investors outlining the opportunity to acquire offshore electricity transmission assets in Great Britain ("GB") under a new regulatory regime governing the ownership and operation of offshore electricity transmission. This regime has been developed jointly by the UK Government, through the Department of Energy and Climate Change ("DECC") and the GB energy regulator, the Office of Gas and Electricity Markets ("Ofgem").

This document is a summary of information provided by the developer and outlines specifically the opportunity for investors to acquire the transmission assets and to become the licensed Offshore Transmission Owner ("OFTO") for the Thanet offshore wind project (the "**Thanet Wind Farm**") that is being developed by Thanet Offshore Wind Limited, a wholly owned subsidiary of Vattenfall AB ("**Vattenfall**"). The Thanet Wind Farm will consist of 100 3MW Vestas wind turbine generators.

The transmission assets for the Thanet Wind Farm (referred to in this document as the "**Thanet Transmission Assets**") are currently owned and will be constructed by Vattenfall. Vattenfall has contracted construction of the Thanet Transmission Assets to various third party contractors, as set out later in this document.

It is currently expected that construction of the Thanet Transmission Assets will be completed in April 2010. Once completed, the Thanet Transmission Assets will be transferred to the OFTO identified as the successful bidder through the tender process via a sale and purchase agreement.

The preliminary transfer value estimated by Ofgem on the basis of information provided to date (the "**Estimated Transfer Value**") of the Thanet Transmission Assets is £189 million. This Estimated Transfer Value includes the offshore substation platform ("**OSP**"). The Estimated Transfer Value is subject to adjustment, as described in the document entitled "Generic Preliminary Information Memorandum" and as further described below.

THE INVESTMENT OPPORTUNITY

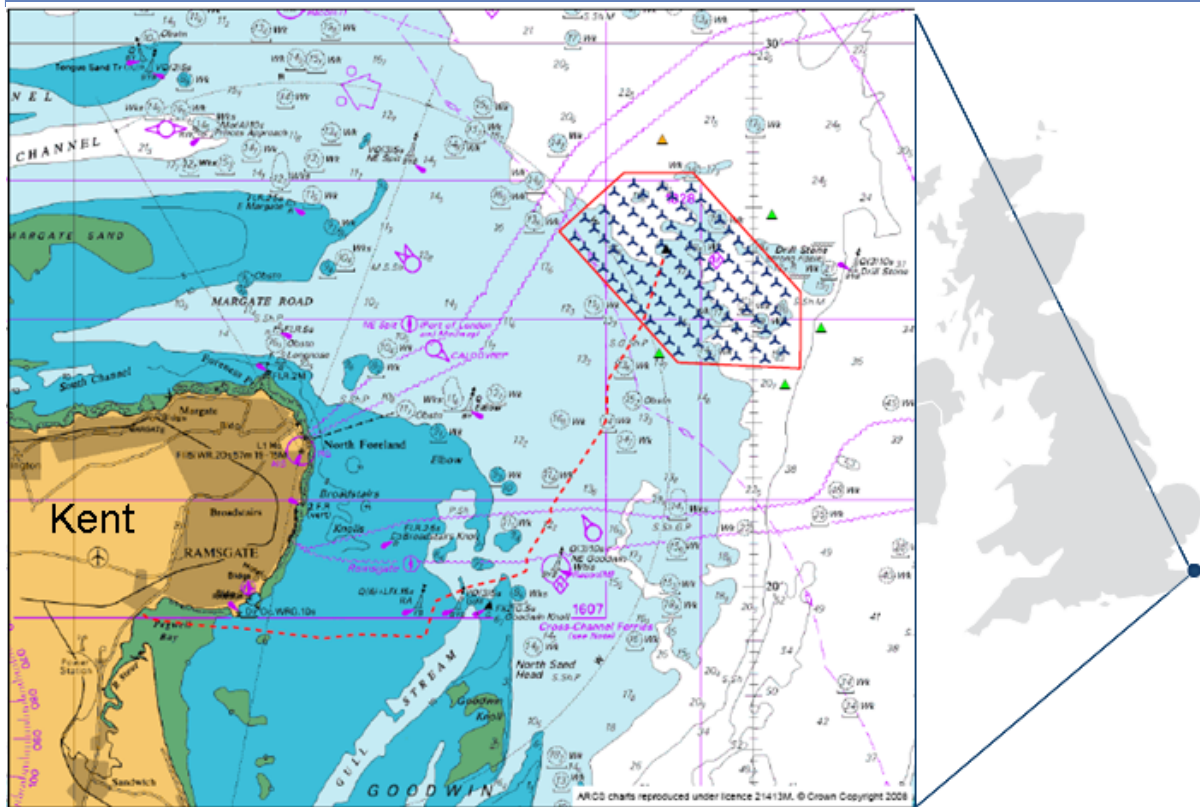
1. Transmission Assets Overview

Location

The Thanet Wind Farm is to be located off the Kent coast. The offshore connection point will be on the OSP located within the boundaries of the Thanet Wind Farm approximately, 7 nautical miles from North Foreland Point, as shown in Figure 1 below. The Thanet Transmission Assets will connect to the distribution system at the Richborough 132kV substation near Sandwich (the “Onshore Substation”). The onshore distribution licensee is EDF Energy Networks (“EDF Energy”).

The Thanet Transmission Assets and Offshore Wind Farm are all within UK territorial waters, with Ramsgate being the nearest port.

Figure 1: Location of the Thanet Wind Farm and Transmission Assets



Source: Vattenfall

Timeline

Construction of the Thanet Transmission Assets commenced in March 2008. The expected date of delivery of the onshore connection by EDF Energy Networks is August 2009 in respect of the first cable and September 2009 in respect of the second cable. Construction of the Thanet Transmission Assets is expected to be completed in April 2010, with the wind farm being fully operational by October 2010.

Transmission Network Design

Table 1 summarises the key transmission network design features of the Thanet Transmission Assets:

Table 1 – Thanet Network Design Features

Key Features	
Expected minimum designated service life	Main transmission components expected to be 25-40 years
Capacity ratings	300MW (split between two cables)

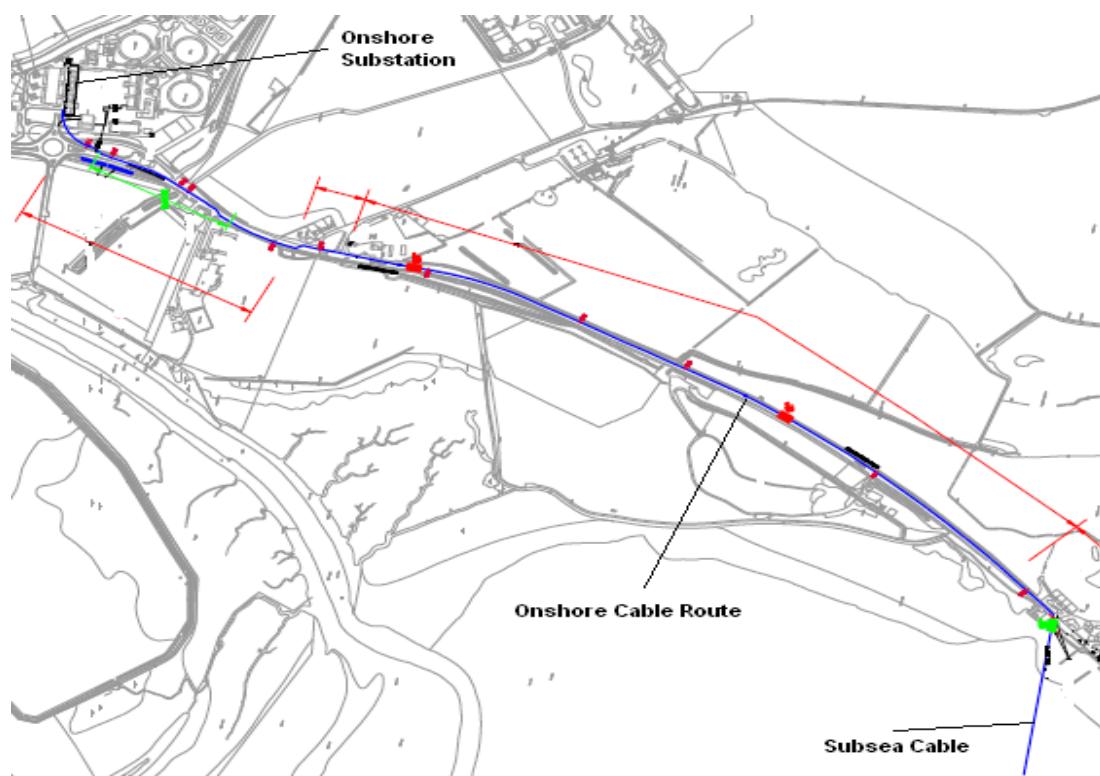
Vattenfall entered into a Connection and Use of System Agreement (“**CUSA**”) with EDF Energy in August 2006, confirming export rights onto the distribution network of up to 300MW.

Vattenfall estimate that its required ongoing offshore export requirements will be 300MW along with suitable reactive power limits.

Description of Transmission Assets

Figure 2 shows the proposed route for the onshore cable.

Figure 2: Route of Thanet Transmission Cable (Onshore)



Source: Vattenfall

An overview of the assets that Vattenfall currently propose to transfer to the OFTO and which were used by Ofgem to derive the Estimated Transfer Value of the Thanet Transmission Assets, is set out in Table 2 below. Table 4 provides a more detailed list of equipment currently proposed for transfer.

Table 2 – Asset summary

Asset	Description
OSP	The OSP's purpose is to house the necessary equipment for connection and switching of the wind turbine arrays. Main apparatus proposed to be transferred to the OFTO includes two 132/33/33 kV transformers together with associated 132kV and 33kV switchgear and one standby diesel generator.
Subsea cables	The two subsea export cables connect the OSP to the shore where it is joined to the onshore cable in a jointing chamber. The subsea cable connection will consist of two 26.3km 3 core 132 kV cables. Each cable has an overall rating of at least 150MW.
Onshore cables	The onshore cables link the subsea connections to the onshore substation. The connections will consist of two sets of three underground single core 132 kV aluminium cables, each 2.4 km in length. Each set of three single core cables has an overall rating of at least 150MW.
Onshore substation	The onshore substation houses the necessary high voltage switchgear for connecting the onshore cables to the transmission or distribution network and associated reactive compensation equipment. Main apparatus proposed to be transferred to the OFTO includes two 132kV transformers together with associated 132kV switchgear, reactive compensation for the connection and if required associated harmonic filtering equipment.
Spares	A provisional list of spares for transfer includes one 132/33/33kV and one 132/11kV transformer, a 42MVAR reactor, miscellaneous switchgear spares and 500m of subsea cable with associated cable joint.

Table 3 below sets out the current offshore and onshore boundary points proposed by the developer. These have been used for the purposes of calculating the Estimated Transfer Value.

Table 3 – Proposed boundary points offshore and onshore

Boundary Point	Location
Offshore	Located at the outgoing 33kV wind turbine feeder circuit breakers.
Onshore	Located at the incoming busbar disconnectors at the Onshore Substation.

Redundancy

Electrical redundancy will be provided by two offshore transformers, two subsea cables, two sets of onshore reactive compensation equipment and two connections to the EDF Energy Networks 132kV system.

Contractual arrangements

Vattenfall has adopted a multi-contract strategy for the delivery of the Thanet Transmission Assets which is consistent with its approach with previous wind energy developments. Vattenfall has a proven track record in the development of offshore wind assets having already constructed some of the largest operational offshore wind farms including the 110MW Lillgrund, 160MW Horns Rev and 90MW Kentish Flats offshore wind farms.

Table 4 sets out the main contracts, current contract status and assets proposed for transfer:

Table 4– Key Contracts and Assets

Services & Main Equipment List	Contract	Contractor
OSP – construction:	Design	SLP and McNulty
	Supply	SLP and McNulty
	Installation	To Be Awarded
Offshore substation – mechanical and electrical equipment:	Supply and installation	Siemens/Prysmian
2 x 132/33/33kV 180MVA transformers		
2 x 132kV disconnecter bays		
18 x 33kV switchgear bays		
4 x earthing transformers		
Subsea cables:	Supply Installation	Siemens/Prysmian Subocean
2 x 26.3km 3 core cables		
Onshore cables:	Supply and installation	Siemens/Prysmian
2 x (3 x 1c) circuits of 2.4km length		
Onshore substation:	Supply and installation	Siemens/Prysmian
2 x 132/11kV 55MVA transformers		
2 x SVC+ 25MVAR (static VAR compensation system)		
2 x 42MVAR switched reactor		
2 x 48 MVAR switched capacitor		
4 x 132kV circuit breaker bays (with 8 x associated 132kV disconnecter bays)		
Harmonic filter (if required)		

All pre-construction geophysical and geotechnical surveys have been completed.

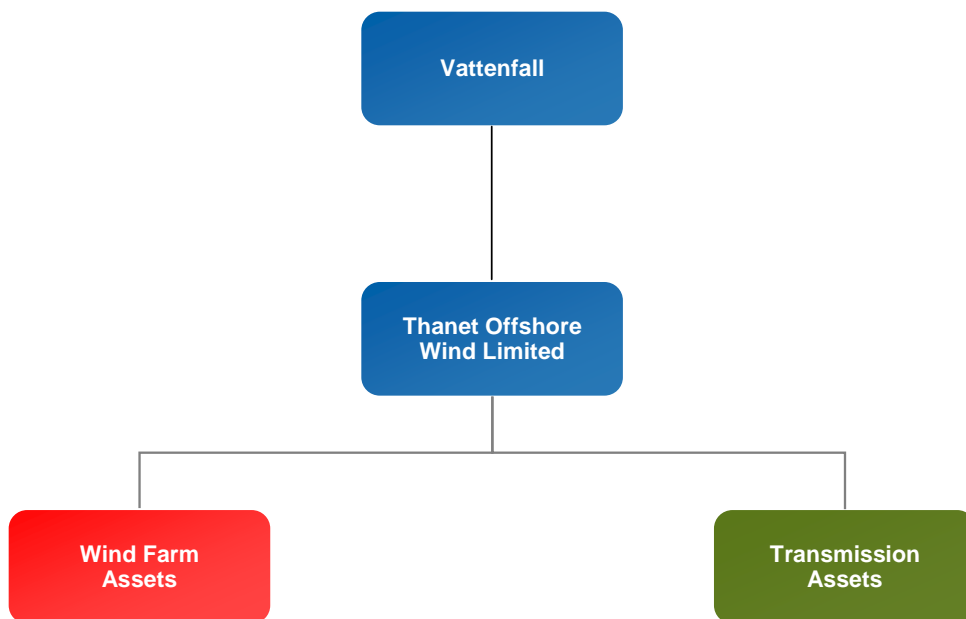
Consents and property rights

All necessary offshore consents and licences are in place for the construction of the Thanet Transmission Assets. These include an exercised option on a Crown Estate lease, Electricity Act (1989) Section 36 and Coastal Protection Act (1949) consents and a Food and Environment Protection Act (1985) licence. In addition to this, all necessary property rights for the onshore cable route have been agreed and secured.

Ownership structure

The Thanet Transmission Assets are owned by Thanet Offshore Wind Limited, which is a wholly owned subsidiary of Vattenfall. An overview of the ownership structure of the Thanet Wind Farm and Thanet Transmission Assets is set out in Figure 3 below:

Figure 3: Ownership Structure



2. Preliminary view of Estimated Transfer Value

Ofgem, with input from its external advisers, has undertaken an exercise to determine the Estimated Transfer Value for the Thanet Transmission Assets summarised in Table 2 and 4 above, assuming the boundary points summarised in Table 3. The Estimated Transfer Value is intended to allow Vattenfall to recover its economic and efficient costs of developing the Thanet Transmission Assets and, as such, may be subject to adjustment based on new or more detailed information becoming available to Ofgem, and upon final completion of the Thanet Transmission Assets.

For the purpose of commencing the tender process, Ofgem has established an Estimated Transfer Value of £189 million for the Thanet Transmission Assets.

CONTACT DETAILS

The information in this document is provided for information purposes only. It is designed to provide prospective OFTOs, lenders and advisers with certain high-level information related to the Thanet Transmission Assets, to support the launch of the initial, pre-qualification (“PQ”) phase of the first tender process.

All enquiries or communications, including requests for additional information, should be sent to tendercoordinator@ofgem.gov.uk.

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