

European Offshore Wind Deployment Centre Environmental Statement

Chapter 2: Site Selection



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2.1 Site Selection

- 1 The European Offshore Wind Deployment Centre (EOWDC) site location has been determined through a long process of examining the constraints, undertaking consultations, and conducting surveys, studies and assessments.
- 2 The concept of an offshore wind farm in Aberdeen originated in 2002 following approach by AREG to AMEC Wind Energy. The concept of a Renewable Energy Centre in Aberdeen was discussed and included an onshore wind turbine and a number of offshore wind turbines. AMEC Wind Energy began to look at an offshore layout stretching up the coastline and initial visualisations were carried out by the Macaulay Institute.
- 3 Aberdeen Bay was considered suitable for development as it is capable of providing ideal conditions, for example:
 - wind speeds likely to be in excess of 8 metres per second (m/s) at 60 m
 - water depth consistent with commercial offshore developments
 - not directly inside any area designated for nature conservation (see Figure 2.1) although consideration given to areas nearby
 - not within a major international shipping route but consideration given to the maritime industry in the area (see Figure 2.2)
 - proximity to electricity transmission network
- 4 A joint venture was formed in 2005 in the proportions AMEC 75 % and AREG 25 %. With the sale of AMEC Wind Energy to Vattenfall, the joint venture now comprises Vattenfall Wind Power Ltd 75 % and AREG 25 %. The company AOWFL has a board of directors drawn from the two constituent organisations.
- 5 The wind farm layout has undergone a number of alternative iterations from 2004 to 2010 which are described in Table 2.1 and shown on Figure 2.3 and Figure 2.4. These alternative layouts have primarily been a result of consultation with Aberdeen Harbour Board, the aviation industry, the Ministry of Defence and key environmental stakeholders.
- 6 In 2005, a Scoping Opinion was sought on a wind farm development layout which was located approximately 1 km from the Aberdeenshire coast (See LABER007 Figure 2.3, Frame 2). This site comprised an area following the coastline between Girdle Ness and Newburgh, with the study area for development covering approximately 26 km². It was proposed that the wind turbines would be aligned in two rows either side of the 10 m water depth contour. The wind farm at that time comprised approximately 33, three-bladed wind turbines, with an individual wind turbine capacity of up to 5 MW.
- 7 The current layout (LABER039) comprises 11 wind turbines located approximately between 2 and 4.5 km offshore, see Figure 1.2. This layout has been driven by both biological and human constraints as identified on Figures 2.1 and 2.2 these are primarily:
 - proximity to designated sites
 - helicopter routes to the north
 - coastal bird populations to the west

- shipping to the east
 - proximity to Aberdeen Harbour to the south
- 8 Aberdeen is ideally placed, both in terms of location and supply chain expertise, to drive offshore renewable technologies forward and the EOWDC would be the focal point for the next phase of development for this world-renowned energy industry hub.

TABLE 2.1 Site Layout Iterations			
Internal Layout Reference	Number of Wind Turbines	Date	Wind Turbine Layout Description
LABER002	18	October 2004	Initial layout (based on 10 m water depth constraint) extended north to Newburgh Bar and increased indicative rotor diameter to 120 m and separation between wind turbines to suit.
LABER007	33	February 2005	Layout followed the coastline between Girdle Ness and Newburgh. Two rows of wind turbines were designed to be aligned either side of the 10 m water depth contour. This is the layout included in the previous Scoping Report 2005.
LABER008	24	September 2005	Similar to LABER007, this layout follows the coastline between Girdle Ness and Newburgh. There are two distinct groups, a northern one and a southern one, with a gap in the middle to accommodate a 4 nm helicopter corridor (Shrub – Balis). Both groups have three columns of wind turbines. Outer wind turbines now in water depths up to 20 m. Layout created for discussion.
LABER011	23	January 2006	Updated aviation constraints (including Bridge of Don alternative route) were used to create this layout along with a water depth limit of 25 m. Layout wind turbines have a 120 m rotor diameter. Layout created for discussion.
LABER012	10	September 2008	From the previous layout, the columns closest and furthest from the shore were both removed (for bird and shipping interests) along with the two northern most wind turbines of the remaining 12 (for Black Dog Firing Range impact), leaving 10 wind turbines. Layout submitted to the Ministry Of Defence for re-assessment.
LABER015	10	March 2009	Wind turbine locations similar to subset of LABER011. Wind turbine locations differ slightly due to increased separation to accommodate a 126 m rotor diameter. Created with the intention of a 10 wind turbine layout not extending as far south as LABER012, in order to avoid Bridge of Don alternative helicopter corridor constraint.
LABER021	15	September 2009	Layout created based on LABER015. Five wind turbines added in total. Two coastal wind turbines removed, extra row added to south (but outside helicopter constraint) and three wind turbines added as eastern column. One wind turbine added into the Black Dog Firing Range giving a total of two in this area.
LABER027	12	October 2009	Layout based on new internal agreed list of constraints: - outside existing northern and alternative southern helicopter constraints - within geophysical survey area

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Internal Layout Reference	Number of Wind Turbines	Date	Wind Turbine Layout Description
			- outside of MoD Black Dog Firing Range - no closer to coast than layout LABER021. Layout designed to consider multiple rotor diameters of 90 m, 126 m and 150 m so that outer row accommodates largest rotor diameter. The layout was limited by the necessary spacing between wind turbines. Layouts LABER022 to 026 informed this layout through several variations for discussion.
LABER028	11	November 2009	Following a response from the MoD the wind turbine which was located within the MoD Black Dog Firing Range was removed.
LABER032	16	April 2010	Following further consultation with NATS, it became apparent that there is a possibility of moving the northern helicopter route further north allowing room for two more wind turbines at the north of the site. Also three wind turbines were added to the east of the site as the geophysical survey boundary constraint was relaxed due to this expansion to the north. The decision to have wind turbines beyond the geophysical survey boundary was driven by desire to increase distance from Aberdeen Harbour.
LABER033	11	April 2010	The six southernmost wind turbines were removed to increase distance from the harbour and shipping. The entire site was slightly shifted down to accommodate an extra wind turbine to the north of the site such that it doesn't lie within the helicopter constraint.
LABER034	11	April 2010	Entire layout was rotated using northernmost wind turbine as a turning point to align the rows of wind turbines to the proposed realigned helicopter constraint. Layout created for discussion.
LABER037	12	April 2010	New layout based on latest constraints of revised northern helicopter route, MoD Black Dog Firing Range and maintaining a distance from the harbour similar to LABER036. Layout is a regular grid of 3 rows and 4 columns of wind turbines.
LABER039	11	April 2010	Removed the easternmost wind turbine of LABER037 to increase distance from shipping routes.