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Barrow Offshore Wind Farm Bird Monitoring Programme Post Construction

1. Bird Monitoring

The offshore monitoring of birds at Barrow Offshore was initiated at the baseline studies for the Environmental Impact Assessment¹. Based on the conditions of the FEPA License² pre-construction monitoring was undertaken using boat based surveys, aerial surveys and observations from land. The results have been reported³. The monitoring continued during the construction phase using aerial and boat based surveys⁴.

The FEPA License states that the ornithological monitoring shall fulfil the following objectives:

1. Determine whether there is change in bird use and passage, measured by species, abundance and behaviour, of the windfarm site and the reference site.
2. Determine whether there is a barrier effect to movement of birds through the site.
3. Determine the distribution of wildfowl and divers in the Irish Sea, covering the Barrow site and the vicinity. This will include movements of wildfowl to and from Walney Island and Common Scoter.
4. If objectives 1 and 2 reveal significant use of the Barrow site by populations of conservation concern, at heights that could incur a risk of collision, a programme of collision risk monitoring will be implemented.

The post construction monitoring programme must fulfil the above listed objectives as the monitoring during construction of the wind farm. The methodologies for the post construction bird survey programme should be similar to earlier surveys at the site, in order to compare observations from the pre construction and the construction phase with observations post construction.

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is a private limited company
incorporated under the laws
of England, registration
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¹ Warwick Energy: Barrow Offshore Wind Farm, Environmental Impact Statement, May 2002.

² FEPA License 31744

³ RSKENSR: Barrow Offshore Wind Farm, Pre-Construction Monitoring, June 2005.

⁴ Barrow Offshore Wind: Construction Monitoring Report, November 2006.

1.1 Objective 1

Determine whether there is change in bird use and passage, measured by species, abundance and behaviour, of the windfarm site and the reference site.

This objective leads to the following hypothesis:

- I. *The establishing of Barrow Offshore Wind Farm leads to significant changes of abundance and behaviour of important bird species at the wind farm site*

1.1.1 Important species

The following species has been highlighted by Natural England as important species using the Barrow Offshore Wind Farm site and the vicinity:

- Gannets
- Auks (Guillemots and Razorbill)
- Manx Shearwater
- Lesser Black-backed Gull
- Common Scoter
- Red Throated Diver

It is considered important to Natural England to monitor displacement of these species during construction and operation.

In addition, Whooper Swan and Pink-footed Goose has been highlighted by Natural England as the important passage species.

1.1.2 Experience so far

The distribution and abundance of the most common species at the wind farm site has been analysed. The analysis presented in the construction monitoring report showed some changes in occurrence before and during construction. In relation to Herring Gull and Kittiwake, the abundance was higher during construction compared to pre-construction at the wind farm site. The abundance of Manx Shearwater was also higher during the construction period, though differences were observed between the reference site and within the wind farm site and the results are therefore not unambiguous.

The observations of Gannets and Sandwich Tern indicated an increase in the abundance during construction compared to the situation before construction. However, the data analysis didn't show any significant increase in abundance of the two species.

The distribution of Common Scoter and Red Throated Diver observed prior to construction indicates that the species are present in the area and that Barrow Offshore Wind Farm site is not an important site for these species. Analyses of survey data during construction do not indicate a change in abundance and behaviour of the two species.

No significant decrease in species abundance during construction has been observed.

1.1.3 Continued monitoring

Monitoring results at this stage cannot reject the hypothesis, which is why monitoring and data analysis post-construction should continue. It is preferred to continue with the same monitoring methods as earlier, i.e. boat based and aerial survey methods.

1.2 Objective 2

Determine whether there is a barrier effect to movement of birds through the site.

This objective leads to the following hypothesis:

- II. *The establishing of Barrow Offshore Windfarm constitutes a barrier that prevents important migrating birds from moving through the site*

1.2.1 Important species

Whooper Swan and Pink-footed Goose has been highlighted by Natural England as the important passage species, which potentially could be effected by a barrier effect during their autumn migration.

1.2.2 Experience so far

Surveys pre- and during construction has been timed to coincide with the autumn migration of Whooper Swan and Pink-footed Goose. So far, none of the species have been observed during the boat based or aerial surveys at Barrow Offshore Wind Farm.

During an October survey in 2004 from Walney Island, Whooper Swans and Pink-footed Geese were observed. Most of the Whooper Swans were observed flying down the length of Walney Island before using the southernmost tip of the island, as a springboard to set off directly south across the Morecambe Bay presumably to the Lancashire Mosses. Pink-footed Geese were observed moving in flocks, most birds were observed offshore.

1.2.3 Continued monitoring

No surveys have been completed during operation of the windfarm at this stage. DONG Energy will examine if Whooper Swans and Pink-footed Geese can be observed and determined at distances from Walney Island corresponding to the location of Barrow Offshore Windfarm. The survey should be able to monitor behaviour and potential avoidance of birds if they approach the wind farm during autumn migration. It should also be possible to observe if the birds potentially enter in between the turbines or avoid to the west of the wind farm.

Boat and aerial surveys will continue post construction in October month.

1.3 Objective 3

Determine the distribution of wildfowl and divers in the Irish Sea, covering the Barrow site and the vicinity. This will include movements of wildfowl to and from Walney Island and common scoter.

This objective leads to the following four hypotheses:

- III. *The establishing of Barrow Offshore Wind Farm leads to significant changes of occurrence of wildfowl at the wind farm site and its vicinity*
- IV. *The establishing of Barrow Offshore Wind Farm leads to significant changes of occurrence of divers at the wind farm site and its vicinity*
- V. *The establishing of Barrow Offshore Wind Farm leads to significant changes of movement of wildfowl to and from Walney Island across the wind farm site and its vicinity*
- VI. *The establishing of Barrow Offshore Wind Farm leads to significant changes of movement of common scoter across the wind farm site and its vicinity*

1.3.1 Important species

At a meeting the 24th January, 2007 with Natural England it was agreed that the Objective 3 is being answered in Objective 1 and 2.

1.3.2 Experience so far

See Objective 1 and Objective 2.

1.3.3 Continued monitoring

Monitoring covered by Objective 1 and 2.

1.4 Objective 4

If objectives 1 and 2 reveal significant use of the Barrow site by populations of conservation concern, at heights that could incur a risk of collision, a programme of collision risk monitoring will be implemented.

This objective leads to the following two hypotheses:

- VII. *Barrow Offshore Wind Farm are being significantly used by populations of conservation concern*

If this hypothesis is not rejected then:

- VIII. *The establishing of Barrow Offshore Wind Farm results in a number of collisions by [species name] that significantly affects the population*

1.4.1 Important species

The species of importance will depend on the analysis of objectives 1 and 2.

1.4.2 Experience so far

The survey programme before and during construction have not found a significant use by bird species of conservation concern.

1.4.3 Continued monitoring

Monitoring programme included under Objective 1 and Objective 2.

No targeted surveys are planned at this stage since no populations have been observed to significantly use the Barrow Offshore Wind Farm site.

In general, boat based surveys are preferable since they can monitor flight height.

1.5 Conclusion

According to the FEPA Licence post-construction monitoring must be undertaken annually for three years. The level of any subsequent ornithological monitoring, during the lifetime of the windfarm's operation, will be determined in consultation with Natural England, having regard to the magnitude of any change in bird populations observed during the initial monitoring period.

Overview of suggested bird surveys 2006-2009:

| Survey Type | Timing of surveys | Comments |
|--------------------|---|---|
| Boat based surveys | <ul style="list-style-type: none"> • August, 2006 • October, 2006 • May, 2007 • July, 2007 • August, 2007 • October, 2007 • May, 2008 • July, 2008 • August, 2008 • October, 2008 | <p>All surveys cover the wind farm site + 2 km buffer zone + reference site.</p> <p>Expected consultant: Ocean Marine</p> |

| | | |
|--------------------------------|--|--|
| Aerial surveys | <ul style="list-style-type: none"> • February 2007⁵ • March, 2007⁵ • October, 2007 • February, 2008 • October, 2008 • February, 2009 | <p>All surveys cover the NW3 area. Aerial surveys in 2007 will be made above the turbines covering the wind farm site. The following surveys will, if possible, be made between the turbine rows.</p> <p>Expected consultant: WWT / NERI</p> |
| Potential Walney Island survey | <ul style="list-style-type: none"> • October, 2007 (potentially) | <p>The survey will be initiated if Whooper Swans and Pink-footed Geese can be observed and determined at distances from Walney Island corresponding to the location of Barrow Offshore Wind Farm.</p> <p>The Walney bird observatory will be contacted in order to clarify if they can determine the species with accuracy at the required distances.</p> <p>If so, the timing of the survey will be agreed with Natural England in advance.</p> |

Monitoring reports will be provided to Natural England annually. The hypothesis of the objectives will be analysed in each annual report. If a hypothesis can be rejected before the completion of the three years monitoring, it may lead to a reduction of the survey programme. Any reduction must be agreed with Natural England in advance.

Barrow Offshore Wind Ltd.

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Environmental Planner

⁵ Flight above the turbines.