


Annual FEPA Monitoring Report (2005-6)

March 2007

North Hoyle Offshore Wind Farm



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PROJECT TEAM

Project Management Support Services (PMSS) has extensive experience in managing renewables projects including development, consenting and construction. PMSS are currently responsible for managing FEPA consent compliance including environmental monitoring and co-ordination of the FEPA reporting on behalf of npower renewables.

Osiris Projects provide a comprehensive range of shallow water seabed mapping and geophysical survey services. Osiris Projects have carried out a number of surveys on behalf of npower renewables, ranging from pre-construction geophysical mapping to post construction debris surveys, cable route surveys and on-going scour monitoring around turbine bases and met mast structures.

Centre for Marine and Coastal Studies Ltd (CMACS) provides specialist environmental consultancy research services based on ecological investigation and interpretation. CMACS has been involved in the full project cycle for npower renewables, from EIA to post-construction monitoring. CMACS have undertaken all the benthic and beam trawl monitoring and reporting at North Hoyle since 2001.

Centre for Environment, Fisheries and Aquaculture Science (CEFAS) collate and provide data on the demersal fish in the eastern Irish Sea, based on data from annual groundfish surveys. These reports and data assist in the overall assessments of fishes undertaken by CFCM. CEFAS has been involved in the project since 2004.

Coastal Fisheries Conservation & Management. Dr Stephen Lockwood operates as an independent consultant with almost forty years experience of marine fisheries and coastal research, assessment and management. As an independent consultant since 1999 he has contributed to the preparation of FEPA applications for the shellfish industry, port and offshore wind-farm developers. As vice-chairman of the North Western & North Wales Sea Fisheries Committee he also contributes to fishery-related FEPA consultations.

Environmentally Sustainable Systems Ltd. (ESS) is a specialist ecological consultancy, conducting ecological surveys, impact assessments and monitoring of offshore and onshore renewable projects since 1995. ESS are currently undertaking boat based ornithological surveys, mapping and statistically analysing and reporting upon the boat and aerial data in fulfilment of FEPA consent conditions.

1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

This document describes the monitoring undertaken during 2005-6 to comply with the conditions of the Food and Environment Protection Act (FEPA) 1985: Part II (as amended), licence reference 31579/02/0 (as amended), issued to NWP Offshore Ltd. for the North Hoyle Offshore Wind Farm. This report represents the second year of post-construction monitoring and the 4th of a 5th year monitoring programme.

Following the North Hoyle Environmental Statement, further monitoring work has been undertaken as follows:

- FEPA Baseline Monitoring Report (June 2003),
- Annual FEPA Monitoring Report (June 2005) for the construction period 2003-4, and
- Annual FEPA Monitoring Report (February 2006) for the post construction period 2004-5

As the most recent environmental monitoring results are assimilated and compared against those of previous monitoring campaigns at the site, it is now becoming possible to make preliminary conclusions on the overall impact from construction and operation of the wind farm on the physical and biological environment. The project team continue to liaise on monitoring progress through annual FEPA monitoring review meetings in order to assess the impact of the wind farm on cross-disciplinary issues such as the interaction between changes in the physical environment, benthos, epibenthos and the distribution of birds.

Environmental monitoring to date indicates some small-scale changes with variable trends in marine sediment composition, benthic ecology and bird distribution. None of these trends (up or down) can be firmly attributed to construction or operation of the wind farm.

In general, conclusions show that the construction and two years of operation of the wind farm have not had any significant effects on the environment. Continued monitoring over the next 12 months will provide further evidence to support these early findings and the five year monitoring campaign results shall be consolidated and overall conclusion drawn.

1.2 MARINE SEDIMENTS

1.2.1 Sediment Analysis

Particle size analysis revealed a heterogeneous seabed of fine and medium sands with varied amounts of gravel, the gravel sometimes being dominant. Gravels and sands were fairly evenly distributed over the survey area with no obvious inshore/offshore differences. There has not been a consistent pattern of change in dominant sediment type near to or within the turbine array or along the cable route between 2002 and 2005. As sites both within the wind farm array and in control areas have shown both increases and decreases in coarseness during this period there is no trend present that would suggest that wind farm construction, cable burial or adjustment of hydrodynamic forces due to the presence of the piles in the seabed are responsible for changes in sediment characteristics at each site.

There also continues to be little evidence that the distribution of drill cuttings over the sea bed during construction has acted to noticeably increase the coarseness of sea bed sediments at the wind farm site with most of the wind farm sites having the same, or very similar, sediment classification in all sampling years.

1.2.2 Scour

From the North Hoyle Environmental Statement and The Project Method Statement Rev 2

(June 2003) it has been widely recognised that the dominant factor in mobilising soft re-workable surface sediment (i.e. sands) at North Hoyle was the action of tidal current (ebb and flood tides). Based upon surveys and subsequent assumptions, backed by coastal processes expert opinion, and from the latest set of surveys (Spring 2006); it can be concluded that, to date, no long term scour is developing at the North Hoyle Offshore Wind Farm.

1.3 BENTHIC ORGANISMS

At this stage, with two years post-construction data available, it is possible to tentatively suggest that observed variability in the measured benthic invertebrate community parameters is more closely related to factors that are believed to be subject to natural variability, such as local sediment characteristics, than the construction and operation of the offshore wind farm.

Benthic communities would be expected to respond to variation in seabed sediment characteristics, especially particle size, as a primary factor influencing community composition and distribution. The absence of any identifiable trend in sediment particle size characteristics associated with construction of the offshore wind farm suggests that North Hoyle has not, to date, affected benthic invertebrate communities through this mechanism. However, possible reasons behind observed community changes will be further explored in the final annual report.

Results from the previous beam trawl surveys identified the benthic communities at the North Hoyle OWF as having similar qualities to those described by Ellis *et.al.* (2000) for the Irish Sea. Communities identified were the flatfish plaice and dab *Pleuronectes-Limanda* assemblage, which is found within the 20m contour in Liverpool Bay, and the thickback sole-hermit crab (*Microcheirus-Pagurus* assemblage) found further offshore. In general, there has been only a little similarity with the latter assemblage, the samples having much stronger affinity with the plaice and dab *Pleuronectes-Limanda* assemblage. This is again true for the 2005 survey, the main affinities with the *Microcheirus-Pagurus* assemblage being limited to the relatively high incidence (in some samples) of dragonet *Callionymus lyra* and selected invertebrates such as *Macropodia* spp and *Alcyonium digitatum* (dead man's fingers).

The communities identified at the North Hoyle sites have in the past tended to also have some elements of communities typical of coarse and stony grounds with abundant hydroids, bryozoans and soft corals such as *Alcyonium digitatum*. This 2005 survey again agrees with this observation, which is also supported by the results of the grab surveys.

Overall, the beam trawl surveys presently give no indication of any changes closely related to the development of the wind farm, with variations in species and communities occurring in control areas as well as in and adjacent to the wind farm, and appearing to be within the bounds of natural variation.

1.4 FISHERIES

CEFAS

The 2005 CEFAS beam trawl survey report for the Irish Sea examined trends in the relative abundance of the dominant demersal fish species in the eastern Irish Sea region and at the station in the vicinity of the North Hoyle Wind Farm. Approximately 40 species of demersal fish occur in the vicinity of the North Hoyle site, with about 15 of these abundant. Data from 2005 indicated that catches of most of the abundant commercial species declined slightly from 2004, though the catch rates of fishes at the station near North Hoyle were broadly comparable to previous years for most species. The number of pogue captured at the North Hoyle site was again low, but there were increases in catch rates of scaldfish and tub gurnard, with 2005 catches greater than observed previously. Catches of dab, common dragonet and grey gurnard at North Hoyle also increased in 2005, though catch rates of these

species were within the range observed during the overall time series. Catches of the three species of elasmobranch all declined near North Hoyle in 2005, with only spotted rays remaining above the long-term average for the sampling station.

Fisheries Consultation

During the latter stages of the North Hoyle construction phase (spring 2004), and possibly throughout the summer-autumn of 2004 it appears that there were poor catches in that year. Initially, this appeared to continue into 2005 but from spring 2005 the general impression is that netting (for rays) in close proximity to North Hoyle Wind Farm picked up and spring fishing was not significantly different from how it was immediately before construction work began.

1.5 ORNITHOLOGY

The ornithological monitoring carried out during the period April 2005 to March 2006 found that more than 2.5 times as many birds were recorded during the boat surveys as in the previous period March 2004 to March 2005 inclusive, but the range of species recorded was similar.

The statistical analyses only found one statistically (highly) significant result. Guillemots appeared to be making more use of the wind farm site since it became operational, the estimated increase being 55%. No other changes were found to be statistically significant.

No conclusions can be drawn from the aerial or boat survey data for any changes in the two qualifying interest species for the proposed Liverpool Bay mSPA which might be attributable to the construction or operation of North Hoyle Wind Farm. Analysis of the mean densities of sea ducks revealed by aerial survey showed no statistical evidence of changes between the pre-construction, construction and operational phases of the wind farm.

The results of the density analyses of boat survey data for divers were also inconclusive because of the small number of occasions when birds were present at both the wind farm site and surrounding buffer zone. The data suggest that the divers may have made less use of the wind farm site since it became operational but there is no evidence that this is the case. During the operational phase no conclusions can be made.

Auks were recorded within the wind farm site, although most were observed on the water. Other species such common and sandwich tern may have flown through the wind farm and a gannet was recorded flying into the wind farm. These observations suggest that for these species that any barrier effect has not been insurmountable. It should be noted that all the aerial distribution maps reveal gaps in the data where aerial surveyors stopped recording over the wind farm and this should not be taken as evidence of a barrier effect for this or any other species.

1.6 MARINE MAMMALS

A total of 46 marine mammals were recorded during the period 2003-2006, primarily from boat transect surveys during bird survey work. Harbour porpoise and grey seal were the most commonly observed species. The site-specific sightings data alone indicate that marine mammals do not tend to be seen within the operational wind farm array; however, other evidence (from CMACS surveys and third party tracking studies) demonstrates that both harbour porpoise and grey seal will enter the array.

The reason for this disparity is not clear. Marine mammal sightings are, in general, relatively rare events in the context of many hours observations at sea and it may be that further monitoring will reveal more animals to be using the wind farm array area. Other monitoring

certainly reveals that there are relatively abundant food resource for pisciverous marine mammals such as seals and porpoise (MarineSeen and CMACS 2004).

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