Beatrice Offshore Windfarm

Environmental Statement Addendum

Annex 6B Integrating Marine Mammal Research and Monitoring to Support Conservation and Development in the Moray Firth

Beatrice Offshore Wind Farm

Annex 6B. Integrating marine mammal research and monitoring to support conservation and development in the Moray Firth.

Prepared for consideration by a funding partnership involving Beatrice Offshore Wind Farm Ltd

Professor Paul Thompson, University of Aberdeen

Integrating marine mammal research and monitoring to support conservation and development in the Moray Firth

This document highlights the potential for developing high quality integrated marine research and monitoring in the Moray Firth, NE Scotland. Its initial focus on marine mammals results from a combination of urgent policy issues, particularly relating to marine renewables, ongoing regulatory requirements and unique research opportunities (Box 1). The unusually broad range of stakeholders involved in these issues (Box 2) provides an opportunity to develop new models for delivering marine science, and overcoming some of the barriers to delivery identified in the UK Marine Science Strategy. If successful, work through organisations such as MASTS would permit expansion to a broader suite of ecosystem studies.

The challenge. Many organisations have a requirement for data on marine mammal populations, and the existence of these core population studies provides widespread common benefits within and beyond the region. The value of these population studies depends heavily on sustained annual data collection (Box 3), yet they have generally been maintained through a patchwork of short-term funding. At best this leads to inefficiencies, and at worst it can result in loss of expertise and data gaps. The current economic climate is particularly challenging in this respect, as previous work has often been maintained through charitable donations. Currently, there is no funding contract in place for bottlenose dolphin and harbour seal photo-identification studies beyond the end of the 2012 field season.

At the same time, lack of co-ordination in other aspects of research and monitoring can lead to duplication of effort, inefficient use of scarce funds, and competition for limited infrastructure such as research vessel support. Without careful planning, new funding opportunities can fail to deliver the required data because suitable research capacity is unavailable at critical times.

A way forward? The pressing need for data to support marine renewable developments now provides an opportunity to develop a more strategic framework for integrating and sustaining marine mammal research and monitoring in the Moray Firth.

As a first step, this paper identifies the resources required to maintain these studies of Scottish bottlenose dolphin and harbour seal populations through the period running up to 2020. This core programme would directly produce much of the key data required by industry and regulators. In addition it would provide critical infrastructure to attract other research activities, and develop training opportunities that will build future research capacity in this area.

This document aims to encourage the development of a new funding model that allows different stakeholders to buy into this framework, in ways that suits their budgetary and tendering constraints, whilst ensuring that the overall programme maintains critical mass and builds sufficient capacity to deliver high quality science beyond 2020.

What the Programme will offer.

The core programme has been costed to provide key annual data from the Moray Firth bottlenose dolphin and harbour seal populations. For bottlenose dolphins, this will include the annual estimates of abundance within the SAC that are required for Site Condition Monitoring (SCM), and the integration of data collected from other parts of their range to periodically update estimates of total population size. Similarly, core data collection will provide annual data on the reproductive success of individual females and the data required to estimate survival. For harbour seals, detailed data on reproductive success and survival will complement the broader scale annual counts conducted by SMRU. In addition, individual-based estimates of pupping phenology and female investment provide opportunities to explore how variations in food resources and levels of disturbance interact to influence annual reproductive success. The data manager will be responsible for archiving data internally and, where appropriate, integrating these data into national or international data archives and monitoring programmes. New avenues will be developed to disseminate key results more widely to other stakeholders and the public.

The presence of the two Research Fellows and a data manager will also increase our capacity to provide advisory services and develop additional work packages in response to the needs of regulators and industry. This could, for example, involve additional work packages to support data collection in other geographical areas (such as the Firth of Forth in collaboration with SMRU) or using other approaches (such as developing long-term passive acoustic monitoring studies). The core programme would allocate up to three days a month of these staff members time to support advisory work or training activities for the funding consortium. It is anticipated that members of the funding consortium would also be able to contract additional services from these or other University staff at research rates, as long as these services are related to the programme's core research objectives. Additional work, or work required by external parties, would continue to be provided at normal consultancy rates.

Finally, this core team will work with existing internal and external collaborators to access other external funding to develop broader blue skies and applied research that builds upon and feeds back into the core programme. These efforts are anticipated to focus on work within three strategic research themes that are being developed at the Lighthouse Field Station:

- indentifying the key drivers underlying marine top predator population dynamics
- understanding the population consequences of disturbance
- assessing the impacts of offshore windfarms on ecosystem structure and function

Funding requirements

We are seeking to identify a consortium of funding partners who would together be able to fund 80% of this budget, with the University providing 20%. It is anticipated that individual consortium members would each contribute between 5% and 30% of the annual budget. For example, SNH have indicated that they will fund SCM work every third year between 2013 and 2017. If this agreement can be extended to 2020, this would provide approximately 10% of the programme budget.

It is recognised that some key industrial partners may be unable to commit fully to the programme whilst there is uncertainty over about consent for their developments. It is therefore anticipated that the mix of funding through time may need to be flexible, with more strategic public funding required in the early phase of the project.

Box 1 - Why the Moray Firth?

- Marine science issues are typically large-scale and complex. Whilst some key questions require broad scale and comprehensive studies across UK waters, many of the most challenging issues can be best tackled through focussed research at sample study sites. The Moray Firth provides good opportunities for focussed studies in several research areas.

- In particular, the Moray Firth contains important populations of marine mammals. EU Special Areas of Conservation have been designated for both harbour seals and bottlenose dolphins, and the area is frequented by other protected species such as grey seal, harbour porpoise and minke whale. The area also supports many other internationally important wildlife populations and habitats.

- The presence of these populations in relatively accessible inshore waters has resulted in a long history of marine mammal research in the area. Over 20 years of individual based studies of Moray Firth harbour seals and bottlenose dolphins have made these two of the most intensively studied marine mammal populations in the world.

- The Moray Firth supports vital economic activity. Fifty years ago, the area was heavily dependent upon fisheries, whereas recent decades have seen the increasing importance of North Sea Oil and the tourism sector. Today, the Moray Firth is set to become an important stage for the development of offshore renewables in Scotland.

- This body of marine mammal research now provides a strong scientific base for continued economic development within the region. At the same time, this diversifying regional economy offers unique opportunities for case studies that develop our general understanding of interactions between marine mammals and a variety of human activities. This results in an excellent base for further focussed research within all three of the UK Marine Science Strategy's high level priority areas. Crucially, the Moray Firth offers a rare opportunity to develop studies of the population consequences of disturbance arising from a range of proposed activities.

- The University of Aberdeen's Lighthouse Field Station provides a strong focus for co-ordinating the programme, with excellent links with the research community, regulators and a broad cross-section of other marine stakeholders. The University's recent acquisition of the Cromarty Lighthouse Tower provides new opportunities for increasing outreach and public understanding of marine issues and research.

Box 2 - Who requires data on marine mammals in the Moray Firth?

- The UK's vision is for "clean, healthy, safe, productive and biologically diverse oceans and seas". The UK Marine Science Strategy highlights the need for the development of high quality marine science programmes required to underpin this vision and support the sustainable management of existing and emerging marine industries.

- Data on population trends and status within SACs are required by SNH for the UK's site condition reporting to Europe. There is also potential for JNCC to incorporate data from this programme into Marine Strategy Framework Directive reporting, and other broad-scale initiatives such as the Joint Cetacean Protocol.

- Statutory bodies such as Marine Scotland, JNCC, DECC and SNH require an understanding of the nature and extent of potential impacts on these species to support regulatory responsibilities and conduct Appropriate Assessments.

- Crown Estate and a wide variety of coastal and offshore marine industries require data to support Environmental Statements, and may need to conduct monitoring during and after new developments.

- Tourism interests and environmental bodies require information on regional wildlife populations to support business and environmental education activities.

- Information on marine mammals can be used by government and academic bodies to increase public understanding of science and raise awareness of marine science and policy issues.

- The growing body of data on these populations can underpin new opportunities for tackling applied, strategic and blue skies research questions.

Box 3 – Core population studies

Broad-scale surveys offer useful information on the density and distribution of different marine mammal species. However, understanding of the detail of their population processes, and the natural and man-made factors that affect those processes, benefits greatly from sustained study of the individuals within those populations. One of the strengths of marine mammal research in the Moray Firth is the combination of long-term survey programmes and individual based population studies.

Bottlenose dolphins. Annual photo-identification surveys have provided information on changes in bottlenose dolphin abundance since 1990. Initiated as a collaboration between Aberdeen University and SMRU, this project has since involved a wide range of regional and international partners.

These surveys have allowed individual dolphins to be followed for over 20 years, providing information on reproductive rates, survival and movement patterns between the Moray Firth and other parts of their range, including the Firth of Forth.

Since 2005, these studies have been complemented by passive acoustic monitoring, providing fine-scale data on changes in the occurrence of both dolphins and harbour porpoises at a series of core-sites within and outside the Moray Firth.

Harbour seals. Since 1987, annual counts have been made at harbour seal haul-out sites during both the pupping season and moult, providing detailed information on trends in abundance and changes in distribution. The first 20 years of this time-series were based upon land-based surveys, carried out by Aberdeen University. Since 2006, annual data have been collected through aerial survey as part of SMRU's national seal monitoring programme.

Following the development of a new pupping site in Loch Fleet NNR, photo-identification studies of individually recognisable harbour seals were initiated in 2005. Detailed annual surveys have now monitored the reproductive success and survival of over 60 different females. Information on variation in the timing of pupping, lactation duration and pup survival provide important indicators of environmental changes that would be impossible to collect at most other sites in the world.

In some years, this information is complemented by tracking data on foraging distribution. New developments in GPS technology mean this work can be built upon with increasingly high resolution data. This is especially valuable when tracking data can be integrated with information on these individual's previous reproductive history and subsequent survival.

These data sources have recently underpinned the development of a framework for assessing the impacts of offshore windfarm construction on protected seal populations, and now provide unique opportunities to evaluate the assumptions within these models to support assessment of future developments.

Underpinning all these studies of live populations, the maintenance of the Scottish Strandings Programme provides important information on patterns of mortality and causes of death. Working alongside other population studies, analyses of post mortem samples can lead to additional insights into life-history characteristics, disease and even behaviour.