



Cetacean behavioural responses to pile-driving noise – Project Inception

A project to be undertaken by the University of Aberdeen, funded by the Department of Energy and Climate Change (DECC) Offshore Energy Strategic Environmental Assessment (OESEA) programme. For further information, contact the Project Coordinator at dmb@hartleyanderson.com.

Context

There is limited information on the scale at which marine mammals may be disturbed by pile-driving or other anthropogenic noise, with previous assessments highlighting the need for more data on the durations of periods of displacement following pile-driving activity. This information is important for determining whether intermittent pile-driving can lead to either intermittent or complete exclusion of animals from the area during a construction period. Such information will help further inform environmental impact assessment at a strategic and project level.

This project will build on DECC and industry funded studies in the Moray Firth which have provided significant baseline data on the occurrence of marine mammals in the area and their responses to loud noise from 2 seismic surveys. The original scope of this study was to assess marine mammal responses to piling during the installation of a meteorological mast within a Moray Firth wind farm development zone. Since the met mast installation did not proceed, the study is using the development of the Nigg Energy Park to assess responses of both bottlenose dolphins and harbour porpoises to piling activity (both impact and vibropiling) during jetty construction over the winter of 2013/14.

Project Objectives & Scope

The revised project objectives are to:

- Determine the relationship between the probability of displacement and distance from piling source, primarily for bottlenose dolphins but with potential to collect some data on harbour porpoises.
- Assess how long it takes animals to move back into the disturbed area after individual pile-driving events end, and the overall construction period.
- Measure received levels of noise in order to assess the performance of noise propagation models.
- Use data on received noise levels, in combination with modelling results, to estimate how the probability of displacement varies in relation to noise exposure.

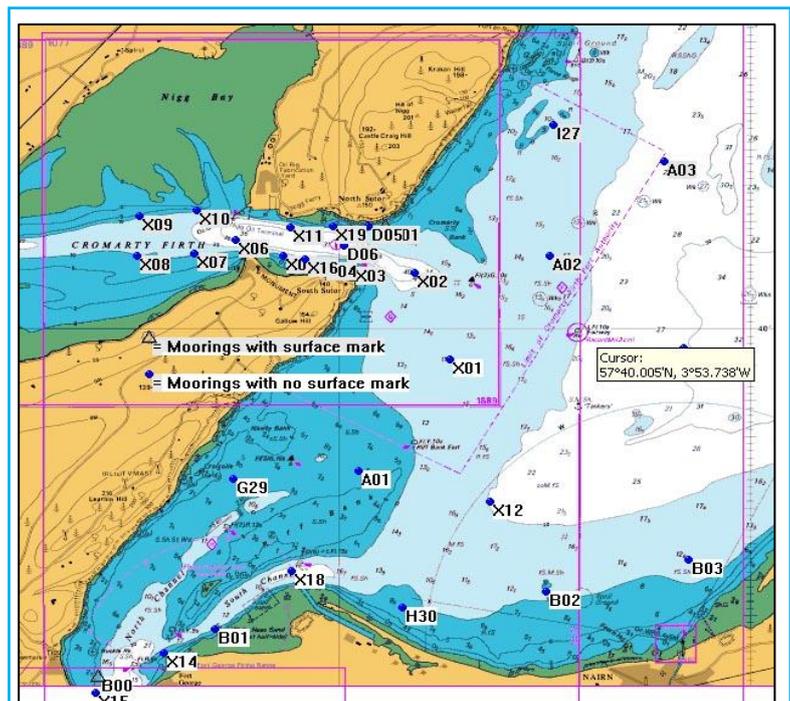


Figure: Proposed locations for C-PODs to assess responses of animals to pile driving at Nigg.

Cetacean behavioural responses to pile-driving noise

Construction of the Nigg Docks over the winter of 2013/14 will result in piling noise being propagated periodically through the mouth of the Cromarty Firth. Previous studies have shown that this area is intensively used by bottlenose dolphins, and is visited regularly by harbour porpoises, most notably in the spring when dolphin occurrence declines.

This study will build on existing baseline data from a broad scale array of C-PODs, and install a fine-scale array through the entrance to the Cromarty Firth that will provide data on variation in the extent to which these two species pass through this channel in relation to different levels of piling activity (figure above). C-PODs were deployed in the 2nd half of 2013 to collect baseline data before construction, and maintained at these sites until spring 2014. Temporal variation in received noise levels will be measured at 3 or more sites at different distances from source using data loggers. A final report is due in Q4 2014.

DECC Offshore Energy SEA

The SEA process aims to help inform licensing and leasing decisions by considering the environmental implications of a plan/programme and the activities which could result from its implementation. Since 1999, DECC has conducted a series of offshore energy SEAs, the latest covering wind, tidal stream and range, CO₂ and hydrocarbon gas storage, and oil & gas – see right.

Since the first SEA, the associated research programme has targeted key information gaps on the marine environment and potential industrial impacts, to inform the SEA process, developers, consenting bodies and others. Research priorities are discussed with the SEA Steering Group and a range of other stakeholders.

For more information on the OESEA programme, visit the offshore SEA web pages on <https://www.gov.uk/> or email oepe@decc.gsi.gov.uk

A data portal for previous SEA reports and data is at <http://www.bgs.ac.uk/data/sea>

	Area	Sector
SEA 1	The deep water area along the UK and Faroese boundary	Oil & Gas (19 th Licensing Round, 2001)
SEA 2	The central spine of the North Sea which contains the majority of existing UK oil and gas fields	Oil & Gas (20 th Licensing Round, 2002)
SEA 2 Extension	Outer Moray Firth	Oil & Gas (20 th Licensing Round, 2002)
SEA 3	The remaining parts of the southern North Sea	Oil & Gas (21 st Licensing Round, 2003)
R2	Three strategic regions off the coasts of England and Wales in relation to a second round of offshore wind leasing	Offshore wind (R2 of Leasing, 2003)
SEA 4	The offshore areas to the north and west of Shetland and Orkney	Oil & Gas (22 nd Licensing Round, 2004)
SEA 5	Parts of the northern and central North Sea to the east of the Scottish mainland, Orkney and Shetland	Oil & Gas (23 rd Licensing Round, 2005)
SEA 6	Parts of the Irish Sea	Oil & Gas (24 th Licensing Round, 2006)
SEA 7	The offshore areas to the west of Scotland	Oil & Gas (25 th Licensing Round, 2008)
OESEA	UK offshore waters*	Oil & Gas (26 th Licensing Round, 2009) Gas storage Offshore wind (R3 of Leasing, 2009)
OESEA2	UK offshore waters*	Oil & Gas (27 th Licensing Round, 2012) Gas storage Carbon dioxide transport and storage Offshore wind, wave and tidal energy

*For renewable energy included potential leasing in the UK Renewable Energy Zone (REZ) and the territorial waters of England and Wales but not the Scottish Renewable Energy Zone and Northern Irish waters within the 12 nautical mile territorial sea limit