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CONSOLIDATION OF WAVE AND TIDAL EIA/HRA ISSUES AND RESEARCH PRIORITIES

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ABSTRACT

Aquatera was commissioned by The Crown Estate to identify priority research projects that should form the principal / initial focus of any coordinated research programme that is established for the wave and tidal energy sectors in the UK.

A consolidated list of EIA/HRA issues facing the wave and tidal sectors was produced through extensive consultation with regulators, advisors, industry and researchers. Following identification of the EIA/HRA issues and a detailed gap analysis, five priority research projects were identified that could form the focus of any coordinated research programme. Additional research priorities that would best be coordinated by regulators, statutory nature conservation bodies, developers and researchers were also identified. Priority projects that were considered most suitable for a coordinated research programme to focus upon were; behavioural monitoring around wave and tidal developments, investigation into the possible consequences of collisions with tidal current turbines, further development of instrumentation for monitoring behaviour around wave and tidal energy developments, development of an approach for assessing the effects of displacement and the establishment of an evidence base for operational device acoustic data.

INTRODUCTION

As part of the current initiative to assist with developing a coordinated approach to addressing the key strategic EIA/HRA issues associated with wave and tidal stream arrays (under, for example, an Offshore Renewables Joint Industry Programme (ORJIP) for wave and tide), Aquatera Limited was commissioned by The Crown Estate to undertake a short, focused consultancy project; 'Consolidation of wave and tidal EIA/HRA issues and research priorities'.

This project was informed by an extensive consultation process including a workshop hosted by Natural Environment Research Council (NERC) which was attended by over 50 participants. The consultation process, which also included a Call for Evidence at the outset, included regulators, Statutory Nature Conservation Bodies (SNCBs), developers, researchers and other stakeholders from across the UK and the international community. Therefore, the results are considered to represent a consensus as to the key EIA/HRA issues and the current research gaps and priorities relevant to the wave and tidal sectors.

The key driver for this project was the recognition of the benefits of a coordinated effort to obtain, translate and share learning, knowledge, experience, information and data from single device and particularly first array projects to larger array deployments. It is considered that a coordinated approach will ensure that the best possible information is available to developers, regulators, SNCBs and other stakeholders to inform the consenting process and project planning and design activities. As such, the main aims of this project were to:

- Produce a consolidated up-to-date list identifying the key strategic EIA/HRA issues facing the wave and tidal stream sectors
- Identify the priority research gaps relevant to wave and tidal stream demonstration scale arrays and then outline potential approaches to address them
- Identify strategic research priorities which could be addressed through a coordinated programme

It is intended that the outputs from this project, by guiding future research work, will assist with resolving the priority EIA/HRA issues relevant to wave and tidal stream arrays. It will do this by focusing any coordinated approach to research that is developed (e.g. via ORJIP Wave and Tide). However, it should be noted that the priorities identified in this project are not only relevant to any coordinated research programme but also to any research which individual developers, regulators/advisors, academic institutions etc. may plan to undertake.

METHODOLOGY

Task 1 - Identification of key EIA/HRA issues

The principal objective of this task was not to simply identify the potential impacts of wave and tidal energy array projects but to identify the principal issues that developers and regulators are currently facing with regards to EIA and HRA in the context of the consenting process.

A long list of relevant EIA/HRA issues was developed based on a review of existing information in consultation (including via a Call for Evidence)

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with key stakeholders. A screening process was then undertaken to identify 'key issues' as defined by the project objectives.

Task 2 - Identification of relevant research / information and gap analysis

The objective of this task was to consider each of the key EIA/HRA issues defined during Task 1 and identify any relevant gaps based on a review of existing and planned research and available information. This work was informed by a number of Specialist Contributors and responses to the Call for Evidence.

This process resulted in a list of research gaps relevant to a number of the key issues identified during Task 1. For some areas, it became apparent that sufficient information either currently exists or the gaps are being tackled via research currently underway. However, for other areas, gaps in knowledge and information were identified. These were therefore taken forward to the next task for further consideration. For full details of the gap analysis, please refer to Table 3.1 in the main report.

Task 3 - Research recommendations and identification of priority research projects

The first objective of this task was to provide recommended research areas that could help address the research gaps identified during Task 2. The second objective was to identify a number of priority research projects that could inform the priorities and focus of any coordinated research programme (e.g. ORJIP Wave and Tide). During this process, a number of high priority research areas were identified that would be best undertaken/coordinated by other bodies e.g. regulators, SNCBs. Many of these are of equal importance to the future development of the wave and tidal sectors.

Recommended research areas to address each gap identified during the gap analysis (Task 2) were proposed. 'Priority projects/research areas' were then identified based on the following criteria:

- Projects that could address research gaps which could help to resolve key issues relevant to demonstration arrays that are currently inhibiting the advancement of the wave and tidal sectors.
- Projects that could help address the key initial questions that need to be answered.

  Note: Research projects that are dependent upon, or would largely benefit from the findings of other studies (yet to be completed or undertaken) were not considered priorities that could be addressed through a coordinated programme (e.g. ORJIP Wave and Tide) at this point in time.
- Projects that could be carried out around single devices and/or at first demonstration array projects that will provide results to inform demonstration and future commercial scale projects; reducing risk, cost and timescales.
- Projects that ORJIP Wave and Tide would be best placed to undertake or support e.g. projects which would benefit from a coordinated approach to translate device and first array outcomes to commercial scale development.

  Note: Gaps which have a clear wider relevance beyond the wave and tidal sectors were considered to be beyond the focus of ORJIP Wave and Tide and within the remit of other programmes/organisations.

For each project/research area, possible research coordinators were identified along with the relevant sector(s) i.e. wave or tidal. Issues not identified as priorities (Task 1) and issues where no gaps were apparent (Task 2) were not taken forward to this task.

Task 4 – Development of outline plans for priority research projects

Using consistent, transparent criteria, and informed via a significant amount of information (including that generated from the many responses received via the Call for Evidence), high priority projects, which appear appropriate for a coordinated research programme (such as ORJIP Wave and Tide) to undertake, were identified.

Outline plans were then developed for each priority project, including; the aims, objectives and outline scope of work.

CONCLUSIONS

Five high priority projects, which appear appropriate for a coordinated research programme (such as ORJIP Wave and Tide) to undertake, were identified:

- Project 1 - Research and monitoring studies around single devices and first arrays to gather further information on the behaviour of marine mammals, birds and fish around operating wave and tidal devices
- Project 2 – Further investigation into the possible physical consequences of collision for marine mammals, diving birds and fish with operating tidal turbines
- Project 3 - Further development of suitable instrumentation and methodologies for monitoring wildlife behaviour around wave and tidal devices and arrays and for detection of any collision events
- Project 4 - Development of an agreed approach to assessing the potential effects of displacement of marine mammals and birds from wave and tidal arrays

- Project 5 - Establishment of an acoustic 'evidence base' for operational wave and tidal devices and first arrays

  Note: these projects are listed in no particular order.

It is recommended that these projects form the principal / initial focus of any coordinated research programme that is established for the wave and tidal energy sectors. However, it is clear that several other areas remain in need of further research by the relevant organisation(s) or group(s). It should be noted that the priorities identified in this project are not only relevant to any coordinated research programme but also to any research which individual developers, regulators/advisors, academic institutions etc. may plan to undertake.

The gap analysis demonstrated that significant work has already gone into furthering our understanding of many of the key issues. However, in order to ensure the best possible information is available to those involved in the consenting process and to enable the sustainable development of the wave and tidal energy sectors, there is an urgent need to progress a number of these priority project/research areas, particularly, but not exclusively, the five listed above.

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REFERENCES

Refer to project report - *http://www.thecrownestate.co.uk/media/485012/consolidation-of-eia-hra-issues-and-research-priorities.pdf*