



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

Environmental Impact Assessment Written Confirmation of the EIA Consent Decision

Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) (“the Regulations”)

Bombora WavePower Europe Ltd: The mWave Project

22nd October 2019

Contents

1. Introduction	3
2. The Project.....	3
2.1 Project Background	3
2.2 Location.....	3
2.3 Statement of need	4
2.4. Regulating regimes	4
3. Environmental Impact Assessment.....	4
3.1 The Environmental Statement (ES).....	5
3.2 Other Legislative and Policy Framework	5
3.2.1 Marine and Coastal Access Act 2009, Section 66, Part 4 (Chapter 1) ('the Act')	5
3.2.2 Water Framework Directive (Council Directive 2000/60/EC).....	5
3.2.3 Waste Framework Directive (Council Directive 2008/98/EC)	6
3.2.4 The Conservation of Habitats and Species Regulations 2017 (as amended) ..	6
3.2.5 Marine Conservation Zones	7
3.2.6 Wildlife and Countryside Act 1981 (as amended)	7
3.2.7 Marine Policy Statement and Marine Plans.....	7
3.3 Further information provided by the applicant pursuant to a notification under regulation 14(1)	
4. Consultation with the public	8
4.1 Public Notices	8
5. Consultation of EEA States.....	9
6. Technical consultation	9
7. Issues arising during the consideration of the Environmental Statement, Marine Licence Application and representations received	9
7.1 Designated Sites	10
8. Mitigation or monitoring measures to be taken	14
8.1 Features or measures to avoid, prevent, reduce or offset likely significant effects...	14
8.2 Mitigation or monitoring required to be attached to the consent.....	15
9. Conclusion about Environmental Impact.....	16
9.1 Population and human health.....	16
9.2 Biodiversity	17
9.3 Land, soil, water, air and climate	17
9.4 Material assets, cultural heritage and landscape	18
9.5 Risk of major accidents and disasters relevant to the project.....	18
9.6 Cumulative impacts and in-combination impacts	18
10. EIA Consent Decision	19

1.Introduction

This document is the Environmental Impact Assessment ('EIA') Written Confirmation document for works proposed by Bombora WavePower Europe Ltd in marine licence application ORML1924 to carry out the deployment, testing and subsequent removal of a full scale wave energy prototype which is to be deployed on the seabed off East Pickard Bay on the south side of the Angle Peninsula ("the Project").

2.The Project

2.1 Project Background

2.1.1 An application for a Marine Licence for the Project was submitted to NRW by Bombora WavePower Europe Ltd on 11th June 2019.

2.1.2 The project comprises the deployment and removal of:

- a full scale energy device – Wave Energy Converter (WEC) mWave* (75m, by 15m (17m across the membranes) by 7m high)
- an acoustic doppler current profiler*
- subsea umbilical termination unit*
- aids to navigation*
- a 1,450 m subtidal 150mm armoured communication cable fed through a plastic conduit in the intertidal area*
- up to 4, 2 Tonne rock bags to secure the cable*
- up to 100, 5 Tonne rock bags for scour protection*
- temporary moorings deployed for installation or maintenance*
- temporary onshore control station.

The testing of mWave will be for 6 - 12 months, with decommissioning thereafter. As such whilst all works should be complete within the first year, a consent period is being sought is for up to 3 years, allowing contingency for project delay and suitable weather windows during the installation and decommissioning of the project.

2.1.3 All activities listed in 2.1.2 with a * require a Marine Licence under Part 4, (Chapter 1) Section 66 of the Marine and Coastal Access Act.

2.2 Location

2.2.1 The mWave device is to be located in the inshore waters of Pembrokeshire, south of the Angle Peninsula, with the communication cable making landfall at East Pickard Bay. The site is approximately 2.5km south-east of Sheep Island, the southern extent of the Milford Haven Waterway, and approximately 1.3km west of Freshwater West beach. The device is to be located offshore at approximately 415m below Mean Low Water Spring (MLWS) at a water depth of around 11m below chart datum (bcd). The offshore consented area for the Wave Energy

Converter (WEC) is centred on WGS84 Lat/Long: 51° 39.674'N 5° 5.083'W (OSGB36 East/North: 186752 E, 200336 N).

- 2.2.2 The onshore works comprise the communication cable from Mean Low Water (MLW) to the termination box which will then be connected to the Power Take Off module of the device shown in the Non-Technical Summary Figure 2.1 of the Environmental Statement (ES). Approximately 1.4km of cable will be required from the device to Mean Low Water Springs (MLWS), approximately 50m of cable will be required in the intertidal area (between MLWS and Mean High Water Springs (MHWS)) and a further 350m of cable will be required from MHWS to the control station.

2.3 Statement of need

- 2.3.1 The objectives of the Project are for the Developers, Bombora WavePower Europe Ltd, to test their first full scale device in the coastal waters of west Wales. The long-term plan is that the mWave device will produce environmentally friendly, consistent, cost competitive energy, for commercial scale needs in national electricity grids.

2.4. Regulating regimes

- 2.4.1 The Project overlaps between two consenting main regimes.
- 2.4.2 A marine licence under the Marine and Coastal Access Act 2009, administered by Natural Resources Wales acting on behalf of the Licensing Authority, Welsh Ministers. Aspects applied for via a Marine Licence are identified by * in the list below.
- 2.4.3 Planning permission under the Town and Country Planning Act 1990 for additional aspects of the project will be required from Pembrokeshire Coast National Park Authority (PCNPA). This was granted on 25th September 2019 and referenced NP/19/0333/FUL.

3. Environmental Impact Assessment

- 3.0.1 Council Directive 2011/92/EU (as amended) on the assessment of the effects of certain public and private projects on the environment (“the EIA Directive”) aims to protect the environment and the quality of life by ensuring that projects which are likely to have significant environmental effects by virtue of their nature, size or location are subject to an EIA before permission is granted.
- 3.0.2 The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) (“the Regulations”) transpose the EIA Directive in Wales and England for marine licence applications.
- 3.0.3 Pursuant to Regulation 5 of the Regulations, it was agreed between NRW and Bombora WavePower Europe Ltd that the proposed works constitute an EIA development under the Regulations. Accordingly, the Marine Licence application required for the Project was accompanied by an Environmental Statement (ES).

3.1 The Environmental Statement (ES)

3.1.1 The Environmental Statement outlined the proposed project organised under the following topic headings

3.1.2 Technical chapters:

Non-Technical summary

Chapter 1 Introduction

Chapter 2 Project Description

Chapter 3 Need and alternatives

Chapter 4 Environmental assessment methodology

Chapter 5 Coastal processes

Chapter 6 Underwater noise

Chapter 7 Benthic, subtidal and intertidal ecology

Chapter 8 Fish and shellfish

Chapter 9 Marine mammals

Chapter 10 Marine ornithology

Chapter 11 Commercial fisheries

Chapter 12 Shipping and navigation

Chapter 13 Marine Archaeology

Chapter 14 Seascape and landscape

Chapter 15 Other users

Chapter 16 Onshore geology, hydrogeology and land quality

Chapter 17 Terrestrial ecology

3.1.3 The ES is considered to satisfy the requirements of Regulation 12 (2) and Schedule 3 of the Regulations. Specific comments pertinent to each ES chapter can be found in section 7.

3.2 Other Legislative and Policy Framework

Relative considerations under other legislation and / or policy are set out below:

3.2.1 Marine and Coastal Access Act 2009, Section 66, Part 4 (Chapter 1) ('the Act')

3.2.1.1 Council Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment ("the EIA Directive") aims to protect the environment and the quality of life by ensuring that projects which are likely to have significant environmental effects by virtue of their nature, size or location are subject to an EIA before permission is granted. The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) ("the Regulations") transpose the EIA Directive into UK law for marine licence applications.

3.2.2 Water Framework Directive (Council Directive 2000/60/EC)

3.2.2.1 The sea from the mean low water mark up to 1 nautical mile from shore is protected under the WFD which requires a project or activity does not cause or contribute to deterioration in status of European Union (EU) water bodies or 'prevent the water body achieving 'good status'.

3.2.2.2 The Potential effect of the Project was also screened against the Water Framework Directive objectives for the following Water Bodies:

- Western Wales, Pembrokeshire South, GB11008590003
- Western Wales, Milford Haven Outer, GB641008220000
- Western Wales, Carmarthen Bay, GB611008590002

3.2.2.3 A Water Framework Directive Compliance Assessment concluded that the proposal, when considered alone and in-combination, will not pose a risk to deterioration of the above listed waterbodies.

3.2.2.4 Further details are described within the Water Framework Directive Compliance assessment.

3.2.3 Waste Framework Directive (Council Directive 2008/98/EC)

3.2.3.1 'Establishes a legal framework for treating waste in the EU. This is designed to protect the environment and human health by emphasising the importance of proper waste management, recovery and recycling techniques to reduce pressure on resources and improve their use.' Waste generated by a project or activity must be dealt with in an environmentally friendly way. To do this it applies the waste hierarchy from the WaFD, which gives an order of preference for how waste is dealt with (prevention, re-use, recycling, recovery, disposal at sea).

3.2.3.2 See consideration under section 7

3.2.4 The Conservation of Habitats and Species Regulations 2017 (as amended)

3.2.4.1 European sites are those designated under The Conservation of Habitats and Species Regulations 2017 (as amended) ("Habitats Regulations") as Special Protection Areas ("SPAs"), Special Areas of Conservation ("SACs") or Sites of Community Importance ("SCIs").

3.2.4.2 The proposal is located within a European Protected Site.

3.2.4.3 The effects of proposal on the following European Sites, their features and conservation objectives have been considered by NRW during the licence determination:

- Pembrokeshire Marine SAC
- West Wales Marine SAC
- Limestone of South West Wales
- Pembrokeshire Bat Sites and Bosherton Lakes SAC
- Castlemartin SPA
- Cleddau Rivers SAC
- Skomer, Skokholm and the seas off Pembrokeshire SPA
- Grassholm SPA
- Aberdaron Coast and Bardsey Island SPA

3.2.4.4 The Bombora WavePower site is within the Celtic and Irish Seas harbour porpoise Marine Unit, and the South and West England and Wales Grey seal Mammal Unit. As such, the following sites have been screened in for assessment and have been considered by NRW during the licence determination for the species identified:

- North Anglesey Marine SAC (Harbour porpoise only)
- Bristol Channel Approaches SAC (Harbour porpoise only)
- North Channel SAC (Harbour porpoise only)
- Pen Llyn A'r Sarnau (Grey seal only)
- Cardigan Bay (Grey seal only)

3.2.4.5 The potential for the project to affect the following Natura 2000 sites was also initially considered, but can be ruled out without further consideration due to the distance between feature and works (Over 50km):

- Saltee Islands SPA
- Irish Sea Front SPA
- Lambay Island SPA

3.2.4.6 A test of likely significant effect (TLSE) was undertaken and potential significant effects on features of the European Sites listed above could not be ruled out. In light of the conclusions of an appropriate assessment, and taking account conditions or restrictions as applicable, either alone or in-combination with other plans and projects, it has been established that the project will not adversely affect the integrity of any of the European Sites above.

3.2.4.7 Further details are described within the Habitats Regulations Assessment.

3.2.5 Marine Conservation Zones

3.2.5.1 Section 116 of the Act provides powers to Welsh Ministers to designate Marine Conservation Zones (“MCZs”) with the aim of contributing to the achievement of a network of ecologically coherent and well-managed marine protected areas.

3.2.5.2 The Project is not within a Marine Conservation Zone, and was not identified to have an impact on any Marine Conservation Zone.

3.2.6 Wildlife and Countryside Act 1981 (as amended)

3.2.6.1 Sites of special scientific interest (“SSSIs”) are protected by law to conserve their wildlife or geology. The Wildlife and Countryside Act 1981 (as amended) ensures that SSSIs are protected and managed effectively.

3.2.6.2 See consideration under section 7

3.2.7 Marine Policy Statement and Marine Plans

3.2.7.1 The UK Marine Policy Statement (“MPS”) is the framework for preparing Marine Plans and taking decisions affecting the marine environment. NRW must make licensing decisions in accordance with the MPS and marine plans (where in place),

unless relevant considerations indicate otherwise. In Wales, the Welsh National Marine Plan is yet to be adopted.

3.2.8 Environment (Wales) Act 2016

3.2.8.1 Article 4 of the Natural Resources Body for Wales (Establishment) Order 2012, as amended by the Environment (Wales) Act 2016 requires NRW to pursue the sustainable management of natural resources in relation to Wales, and apply the principles of sustainable management of natural resources in the exercise of its functions, so far as consistent with their proper exercise.

3.2.8.2 NRW considers that the procedures outlined in this Written Confirmation in the consideration of EIA consent are consistent with this requirement.

3.2.9 Well-being of Future Generations (Wales) Act 2015

3.2.9.1 This Act requires NRW, as a public body, to take reasonable steps in exercising its functions to work in accordance with the sustainable development principle, as set out in Section 5 of the Act.

3.2.9.2 NRW considers that that the EIA process is consistent with the sustainable development principle described in the Act, and that the processes outlined in this Written Statement are sufficient to properly demonstrate the sustainable development principle. In particular, NRW acknowledges that the principles of sustainable management include taking account of all relevant evidence and gathering evidence in respect of uncertainties, and taking account of the short, medium and long-term consequences of actions. NRW further acknowledges that it is an objective of sustainable management to maintain and enhance the resilience of ecosystems and the benefits they provide and, in so doing meet the needs of present generations of people without compromising the ability of future generations to meet their needs, and contribute to the achievement of the well-being goals in section 4 of the Well-being of Future Generations (Wales) Act 2015.

4. Consultation with the public

4.1 Public Notices

4.1.1 Pursuant to Regulation 16, public notices were advertised to notify interested parties of the proposed works and give any interested parties or members of the public an opportunity to make representation on the application as necessary.

4.1.2 The application documents were made available as follows;

- A translated public notice was placed in the Western Telegraph on 3rd July 2019 & 10th July 2019.
- The application documents were made available to the public at: Natural Resources Wales, Permitting Service, Ty Cambria, 29 Newport Road, CF5 0TP and Pembrokeshire Coast National Park Authority, Llanion Park, Pembroke Dock, SA72 6DY, for 42 days following the publication of the first public notice.

- The application documents were also available to download from NRW's website.

4.1.3 No public representations were received

5. Consultation of EEA States

- 5.0.1 A Transboundary Screening Assessment did not identify potential for effects to any other EEA State.
- 5.0.2 Consequently, no material was provided to other EEA member States in relation to the application.

6. Technical consultation

- 6.0.1 The Marine Licence application was consulted upon on 4th July 2019 for a period of 42 days, in accordance with Regulation 17 of the regulations. It was sent to the following consultation bodies:
- 6.0.2 Natural Resources Wales Technical Experts (NRW TE), Milford Haven Port Authority (MHPA), Ministry of Defence (MoD), Maritime and Coastguard Agency (MCA), The Crown Estate (TCE), Chamber of Shipping, Stenaline, Ofcom, Planning and Biodiversity Officers from Pembrokeshire Local Planning Authority and Pembrokeshire Coast National Parks Authority, APB, Royal Yachting Association (RYA), Royal Society for the Protection of Birds (RSPB), Trinity House (TH), Cadw, Welsh Government Fisheries Branch, Marine Enforcement Officers (MEO) and The Royal Commission of Historic Monuments Wales, Department for Business, Energy and Industrial Strategy, (BEIS).
- 6.0.3 The following organisations submitted a response:
 Associated British Ports (ABP), The Crown Estate (TCE), Ministry of Defence (MoD) Royal Commission for Ancient and Historic Monuments Wales (RCAHMW), Chamber of Shipping, ABP Mer, Maritime and Coastguard Agency (MCA), Royal Yachting Association (RYA) Natural Resources Wales (NRW), Pembrokeshire Coast National Parks Authority (PCNPA), Trinity House (TH), Royal Society for the Protection of Birds (RSPB).
- 6.0.4 Details of the issues raised by the Consultation Bodies and how they have been addressed is set out in section 7.
- 6.0.5 Consultees who did not provide a response were assumed to have no comment.

7. Issues arising during the consideration of the Environmental Statement, Marine Licence Application and representations received

- 7.0.1 Material issues that were highlighted by the ES and consultation process and the extent to which they have been addressed are detailed in this section.

7.1 Underwater noise

- 7.1.1 Following review of the ES ABPmer requested clarification regarding whether drill pin piling is required during installation and if it is, provision of a review of the potential effects of this activity in the context of other noise generating activities. The applicant provided clarification advising that there will be no pin piling, or piling of any sorts, associated with the Project as stated in various chapters of the ES, e.g. Para 2.5.2.6 (chapter 2), Table 9.1 and Table 9.3 in Chapter 9. The reference in 6.4.1.17 of the ES was in error and should have been removed from the ES during the development of the Project. NRW PS is satisfied with the response and considers that no further action is necessary to address the concern.
- 7.1.2 ABPmer requested further information be provided in relation to Identification of the potential zone of masking i.e. the distance from the various sources of noise at which the received levels of underwater noise are less than background noise.
- 7.1.3 With regard to the assessment of noise generated during the operation of mWave device clarification was provided by the applicant. As stated in Chapter 9 Marine Mammals, 9.11.3.13 and Chapter 6, Underwater Noise 6.7.2.4 of the ES, no noise data is available for mWave, but data will be collected through its testing period which will be 6 - 12 months. As such the noise modelling for the ES was undertaken based on noise measurements from two marine devices to give an indication of potential effect. Due to the different nature of operation for mWave (movement of air from cells into an enclosed turbine) compared to the devices used as an example (which have other noise sources such a mechanical movement and mooring chains), it is considered that the range of source noise levels modelled, in particular from Pelamis, are worst case of the potential noise output from mWave. This is confirmed in section 6.7.2.4, where it is stated that the Pelamis report (Lepper, 2011) suggests a significant contribution of noise from moorings and device movement (rattling, clanking, banging) and mWave has no equivalent systems or movement.
- 7.1.4 In terms of baseline noise levels, the applicant clarified that they considered the baseline provided to be the worst case for a number of reasons. The examples provided in the ES showed baseline noise at sea state 1 and 3, with the ambient noise levels increasing with higher sea states. The work to support this data is presented in Brooker *et al.* (Brooker, A., R. Barham, and T. Mason. 2012. "Underwater Noise Modelling Technical Report." E287R0919. Subacoustech Ltd) and is illustrated in Figure 6.5 and 6.6 and as summarised in Table 6.6 of the ES. Brooker *et al.* states, that as a result of military research oceanic ambient noise is relatively well understood. However, the information from these studies may not be directly relevant to coastal waters, where ambient underwater noise can be more variable and significantly louder or quieter than in the deep oceans. Data was therefore analysed to yield typical spectra for underwater coastal background sound. Analyses were made of recordings of underwater noise taken at 10 different sites, all of which are between 1 km and 20 km from the UK coast. mWave will be located in shallower waters around 1km from the coast and as such ambient noise levels area likely to be at the high end of those reported in Brooker *et al.*

Summary of average background levels of noise around the UK coast (Brooker et al., 2012). Overall (Un-Weighted) Average Background Noise Levels, dB re 1 μ Pa (rms)

	Sea State 1	Sea State 3
Minimum	92	94
Maximum	126	132
Mean	111	112

- 7.1.5 ABPmer were satisfied with the response. NRW PS consider the approach and outputs of the underwater noise assessment for the mWave project are reasonable and acceptable. A comprehensive and robust assessment of underwater noise effects has been undertaken.
- 7.1.6 PCNPA suggest that a thorough approach to monitoring noise from the device during the operational phase is needed due to the fact that it is a novel device and no accurate data is available on noise generation.
- 7.1.7 NRW TE suggest that operational noise measurements are undertaken to validate the assumptions made in the report.
- 7.1.7 NRW PS does not consider that there needs to be any conditions on the licence relating to mitigating marine noise, however due to the novel nature of the device and to inform future proposals noise monitoring during operation is expected to be included within any agreed Environmental Monitoring and Mitigation Plan (EMMP).

7.2 Shipping and Navigation

- 7.2.1 The MCA raised concerns in relation to the Shipping and Navigation chapter of the ES and the absence of a Navigational Risk Assessment (NRA).
- 7.2.2 The applicant responded providing supporting material on cable laying arrangements, details of the under-keel clearance calculation and a Navigational Risk Assessment.
- 7.2.3 The MCA responded with suggested conditions to be incorporated into the licence to address navigational and safety concerns which included the requirement for a Navigational Risk Assessment. NRW PS considers that this can be sufficiently addressed using appropriate conditions in any Marine Licence issued.
- 7.2.4 The UK Chamber of Shipping had no issues to raise on the application. They confirmed the device will be positioned in waters that should not affect commercial shipping and the applicant has agreed to keep them informed of any changes to this proposal. The Chamber encourages continued discussions between themselves, the Port, the ferry operators and the applicant to ensure the minimum disruption to vital shipping using the Port of Milford Haven. The Chamber has no objection to this proposal and welcomes future involvement in this work.
- 7.2.5 NRW PS reiterated the discussions that had previously been held with the applicant and provided contact information to ensure discussions would be continued.

7.3 Marine Archaeology

- 7.3.1 RCAHMMW identified a number of guidance documents and protocols which were of relevance to the project and that the applicant should take into account when assessing the impact of the device on Marine Archaeology.
- 7.3.2 RCAHMMW raised concerns about the potential for scouring to uncover previously unknown or un-recorded archaeological deposits.
- 7.3.3 The RCAHMMW required clarification regarding:
- Whether advice was sought on the specification of surveys;
 - If the data was reviewed by an appropriately qualified, archaeological marine geophysicist;
 - the type of instrumentation and the resolution of the 'bathymetric survey' undertaken by Titan in 2018;
 - imagery of the anomalies falling within or in proximity of the study area;
 - the amplitudes of the 12 magnetic anomalies within the microsite area, and
 - whether any sub-bottom profiling data or other form of shallow seismic data was gathered.
- 7.3.4 RCAHMMW wanted to review the imagery of the surface anomalies detected and for these to be mapped with the magnitude of the magnetic anomalies to provide spatial confirmation about the potential for buried wreck material. In addition, RCAHMMW wanted to see the archaeological interpretation of the sub-bottom profiling data gathered for the Study Area to provide confirmation of whether there are any buried relics, channels, features or other deposits with the potential to relate to submerged landscapes.
- 7.3.5 The RCAHMMW also requested to see the pre-deployment 'bathymetric survey' carried out by Titan in 2018 (also possible UXO survey) and other oceanographic data being gathered by Titan in 2019 to ensure the device would be deployed in an appropriate area thus preventing any damage to archaeological artefacts.
- 7.3.6 The applicant provided Titan's full geophysical report including seabed geology interpretation, complete target list from mag/sss data and isopach charts for review by RCAHMMW. The applicant also provided clarification advising that the data collected by Titan in 2018 included multibeam bathymetry (IHO order 1a, full seabed coverage), sidescan (100/600 kHz), sub-bottom profiles and a single towed magnetometer. The data from Titan provided detailed information on the geological structure of the seabed, including the depth of the sand and presence of rocks. The applicant confirmed the data from Titan had not been reviewed by an archaeological marine geophysicist.
- 7.3.7 In terms of concerns over the uncovering of previously unknown or un-recorded archaeological deposits the applicant proposed:
- A further bathymetric survey and a UXO survey (pre-installation survey) will be undertaken prior to deployment of the mWave. The UXO survey will provide 100% magnetometer coverage.

- For the final siting of mWave an area will be selected with no obstructions (e.g. rock, UXO, anthropogenic features, archaeological features) as indicated by the pre-installation survey. The mWave requires a flat sandy surface to a depth of at least 1m of sand in order for the foundation of the device to key into the sand and in order for the aerodynamics of the device to operate effectively. Based on the Titan survey data, it is a reasonable assumption that an area of sufficient size with no obstructions can be found.
- In the unlikely event that a sufficient area with no obstructions can be found, the applicant will have the pre-installation survey data reviewed by an appropriately qualified, archaeological marine geophysicist. Should any features of archaeological interest be found, the final siting of the mWave will avoid these features.

7.3.8 The Applicant proposed that the process for selection of the final siting of the mWave described above will be included in the Environmental Management Plan.

7.3.9 Following submission of the report and clarification provided detailed in 7.3.7 RCAHMMW responded advising they were content with the clarification and report.

7.3.10 NRW PS consider that the further clarification provided resolved the issues raised by RCAHMMW. NRW PS consider it appropriate to include a condition in any marine licence issued to ensure that an EMMP is submitted and approved prior to commencement of works to minimise potential effects on archaeological artefacts. In addition, a condition will be included in the marine licence to ensure that should any object of archaeological interest be found they must be reported in line with the Protocol for Archaeological Discoveries: Offshore Renewables Projects.

7.4 Terrestrial Ecology

7.4.1 PCNPA note that the terrestrial surveys indicate that there are currently no chough breeding sites in East Pickard Bay and suggest that if the onshore cable is to be installed or decommissioned close to the chough breeding season (late March to mid May) that absence of breeding would need to be established prior to cable laying or decommissioning.

7.4.2 NRW TE consider that the additional surveys undertaken are sufficient to be confident that the installation of the communications cable over a 9 day period will not result in significant disturbance to chough or have a long-term impact on the biological features of the Angle Peninsula SSSI.

7.4.3 NRW PS consider that if cable installation / decommissioning is to take place during the breeding season that the applicant establishes the absence of breeding choughs beforehand. NRW PS consider it appropriate to include a condition in any marine licence issued to ensure this takes place.

7.4.4 NRW TE note that in Chapter 17 Terrestrial Ecology, 17.10.4 of the ES - Decommissioning Phase there is no mention that all materials and components are removed from site during decommissioning of the project. Although this is an obvious expectation NRW TE suggest that this commitment be included in the Environmental Management Plan (EMP) to be submitted prior to commencement of works.

7.4.5 NRW PS consider this can be addressed through including appropriate conditions to request the implementation of an agreed decommissioning plan in any Marine Licence issued.

8. Mitigation or monitoring measures to be taken

8.1 Features or measures to avoid, prevent, reduce or offset likely significant effects

- 8.1.1 In reaching the Conclusion about Environmental Impact (Regulation 21A of the Regulations), NRW must consider any features of the project, or proposed measures, to avoid, prevent, reduce or offset any likely significant adverse environmental effects (regulation 21A (1)(f)).
- 8.1.2 NRW considers that the following features of the project, or measures included within the project proposal, as described in the application form, Environmental Statement and other supporting information, would avoid, prevent, reduce or offset any likely significant adverse environmental effects
 - 8.1.2.1 The deployment site is on a flat sandy substrate and the cable route is along an area of low diversity. This minimises the potential impact on sensitive habitats.
 - 8.1.2.2 The flat sandy seabed requires no preparation in advance of deployment. This minimises disturbance during installation when there is the potential for increased suspended sediments and noise.
 - 8.1.2.3 A gravity foundation, and simple installation requires no moorings which minimises the potential for collision and disturbance from noise and suspended sediments.
 - 8.1.2.4 The cable will be laid on the surface of the seabed and not trenched offshore and onshore. This will reduce disturbance of suspending sediments during installation and disturbance to onshore ecology.
 - 8.1.2.5 There will be limited vessel activity in the location of the mWave device during installation and operation, thus minimising the potential for collision and pollution incidents.
 - 8.1.2.6 There are no external moving parts on the mWave device, only the membranes on top of the device inflating and deflating to move air within the device. This will minimise potential for collision and impact with marine ecology.
 - 8.1.2.7 The design uses air to generate energy, therefore noise levels are anticipated to be lower than conventional Wave Energy Converters. In addition, the use of a gravity foundation in place of mooring lines will reduce potential sources of noise.
 - 8.1.2.8 The onshore cable route and control station site were selected to minimise potential impact on ecological features including protected species.
 - 8.1.2.9 The works will implement an Environmental Management Plan that will cover both the onshore and shore elements of the project and will include planning for

accidental spills, including measures to reduce the risk of an incident. In addition it will include an Invasive Non-Native Species assessment.

8.1.2.10 The works will implement an Environmental Monitoring and Mitigation Plan will also cover both onshore and offshore elements. This document will provide details of any requirements identified within to minimise potential effects on ecology prior to installation, as well as any recommended monitoring.

8.2 Mitigation or monitoring required to be attached to the consent (Regulation 22 (c)-(e))

8.2.1 In reaching the EIA Consent Decision required under Regulation 22, NRW must make consideration of the requirement for any mitigation measures or monitoring required to be attached to the consent.

8.2.2 Section 7 outlines where NRW PS considers that there is a requirement for mitigation and/or monitoring, and sets out the measures we consider necessary to address potential impacts identified through the EIA process. These are summarised below:

8.2.2.2 Licence conditions will be required to ensure that pollution prevention best practice will be adhered to, this would include that appropriate bunding and storage facilities are installed to contain and prevent the release of fuel, oils and chemicals associated with the plant, refuelling and construction equipment into the marine environment. This will reduce the impact on water quality.

8.2.2.3 Licence conditions will be required to ensure mariners and fishermen's organisations are aware of the activity and the HM Coastguard and UKHO were notified prior to commencement of works and on decommissioning of the device, this will reduce impact on navigation and other uses of the sea.

8.2.2.4 Licence conditions will be required to produce an Environment Management Plan (EMP), the EMP will need to be submitted and approved prior to commencement of works. The plan must be implemented as approved.

8.2.2.5 Licence conditions will be required to produce an Environmental Monitoring and Mitigation Plan (EMMP), the EMMP will need to be submitted and approved prior to commencement of works. This may include but may not be limited to scour and underwater noise monitoring as discussed in Section 7. The plan must be implemented as approved.

8.2.2.6 A licence condition will be included to ensure that the appropriate authorities are informed, (NRW, MCA, Trinity House and the UKHO), within 24 hours should there be any damage, decay or destruction to the device, or cable whist on the seabed. This will reduce impact on navigation and other users of the sea.

8.2.2.7 Licence conditions will be included to ensure existing and future safe navigation is not compromised. These will include adherence to a Navigational Risk Assessment and an Aids to Navigation plan. Should any aspects of these works reduce navigable water depths by more than 5% referenced to chart datum, further

consultation with the MCA and Trinity House must be undertaken to ensure existing and future safe navigation is not compromised.

- 8.2.2.8 A licence condition will be included to require the applicant to establish the absence of breeding coughts along the onshore cable route prior to cable laying or decommissioning to ensure the area remains free from breeding coughts and the action that should be taken in that event.
- 8.2.2.9 A licence condition will be included to ensure that any archaeological deposits or artefacts discovered throughout the installation, operation and decommissioning phases of the development are reported through the Offshore Renewables Protocol for Archaeological Discoveries Implementation Service. To ensure accurate records are maintained for archaeological finds and to inform future deployments.
- 8.2.3 A licence condition will be included to ensure a decommissioning plan has been agreed with NRW TE prior to works commencing.
- 8.2.3.1 In considering the monitoring requirements outlined above we do not consider that these requirements can be met by existing monitoring arrangements.

9. Regulation 21A Conclusion about Environmental Impact

- 9.0.1 In reaching a Conclusion about Environmental Impact, as required by Regulation 21A, NRW has considered the following (Regulation 21A(1)):
- The application for a Marine Licence
 - The Environmental Statement submitted
 - Further information provided, as outlined in section 3.3
 - The responses to public consultation outlined in sections 4 and 7
 - The responses to the technical consultation outlined in sections 6 and 7
 - Any comments received from another EEA state, as outlined in section 5 and 7
 - Any features of the project, or proposed measures, to avoid, prevent, reduce or offset any likely significant adverse environmental effects as outlined in section 8
- 9.0.2 NRW, as appropriate authority, has considered the likely significant effects of the project, and reached a conclusion of the likely significant effects of the project with regard to the following (Regulation 21A(2)):
- Population and human health (9.1)
Biodiversity (9.2)
Land, soil, water, air and climate (9.3)
Material assets, cultural heritage and landscape (9.4)
Risk of major accidents and disasters relevant to the project (9.5)
Cumulative impacts and in-combination impacts (9.6)

9.1 Population and human health

- 9.1.1 The ES has assessed the impact on population and the human environment. The mWave project will facilitate the advancement of green energy resources in the form of wave energy, potentially leading to less dependency on fossil fuels in the future and consequently less pollution adversely affecting the human population. NRW PS consider that considering the design, installation and the temporary nature of the project and the proposed mitigation there will be no significant impact on population or human health as a result of the project.

9.2 Biodiversity

- 9.2.1 The location of the project is within Pembrokeshire and West Wales Marine SAC and a number of other designated areas surround the project location. A Habitat Regulation Assessment was carried out and considered, subject to appropriate conditions the works will not adversely affect the integrity of any of the European Sites identified in paragraph 3.2.4.3.
- 9.2.2 The ES considers the potential further impact on biodiversity including that of a pollution event, or increased sedimentation during installation, maintenance and decommissioning. NRW PS conclude that considering mitigation proposed within the ES and the licence conditions outlined in section 8 related to pollution prevention best practice and adherence to appropriate environmental mitigation and monitoring plans, no significant impact on biodiversity is predicted.

9.3 Land, soil, water, air and climate

- 9.3.1 There is potential for an impact to water quality through a pollution event during installation, operation, maintenance and decommissioning. In addition, there is the potential to impact on water quality during deployment of the mWave device. The ES has assessed these impacts and proposed mitigation including adherence to appropriate environmental mitigation and monitoring plans which would include pollution prevention best practice. NRW consider that the works have been appropriately assessed and that considering mitigation proposed within the ES and the licence conditions outlined in section 7 and section 8, that no significant impacts on water quality are predicted.
- 9.3.2 The ES has considered the potential for an impact to land quality during cable laying and installation of the control station. The control station will be positioned within agricultural land at the South Eastern extent of the old WWII Raf Angle Airfield, to the south of the B4320. Although the site is currently used for agriculture, it could be classed as a brown field site as a result of its previous use. The control station will be placed in an area of rough grassland. NRW PS consider the mitigation proposed within the ES will ensure minimal impacts to land and that no significant impacts on land are predicted.
- 9.3.3 The ES has considered the loss of maritime cliff with coastal grassland habitat beneath the footprint of the communication cable as it passes through the Angle Peninsula Coast SSSI. Approximately 30m² of habitat could be temporarily lost. This is considered to represent a temporary and fully reversible minor impact at a local level. NRW PS consider the mitigation proposed within the ES will ensure minimal impacts to land.

- 9.3.2 The impact of the mWave device on air quality has been considered, due to the location, duration, scale and nature of activities the proposed risk of increased air pollution is considered low. There will be minimal additional vessel traffic associated with the installation of the marine cable and a small increase associated with the deployments, operation, maintenance and decommissioning activities. NRW PS consider significant impacts are not predicted.
- 9.3.3 The aim of the mWave project is to take forward the development of a Wave Energy Device to reduce future resilience on traditional energy resources, thereby reducing the potential for climate change. For this reason a chapter within the ES has not been assigned to the impacts of the mWave device on climate. NRW PS consider that due to the nature, scale and temporary duration of the activity significant negative impacts from installation of the device are not predicted.

9.4 Material assets, cultural heritage and landscape

- 9.4.1 The ES has assessed the impact on material assets, including architectural and archaeological heritage, valued for socio-economic or heritage reasons. Material assets are considered across a range of topic areas within the ES, in particular Marine Archaeology (Chapter 13) and Other Users (Chapter 15). An archaeological desk-based assessment has been prepared for the onshore works. NRW PS consider that due to the design, installation and the temporary nature of the project and proposed mitigation there will be no adverse effect on material assets as a result of the project.
- 9.4.2 The ES considered impact on Landscape. There will be a temporary visual impact due to movement of vehicles and installation of the control station during and operation and maintenance of the device, however this impact will be temporary in nature, in addition suitable mitigation has been proposed in the ES to reduce this impact.

9.5 Risk of major accidents and disasters relevant to the project

- 9.5.1 The purpose of the project is to facilitate the advancement of green energy resources in the form of wave energy, potentially leading to less dependency on fossil fuels in the future and consequently less pollution. The risk of a major pollution event from vessel movements has been adequately assessed in the ES and identified as a low risk. NRW consider there is low risk of the project contributing to the severity of major accidents or disasters.
- 9.5.2 Due to the nature and scale of the operation the risk of a major accident or disaster is low. In addition to this sufficient pollution prevention measures have been proposed to reduce the risk of a major accident or pollution event.

9.6 Cumulative impacts and in-combination impacts

- 9.6.1 NRW PS concluded that the potential impacts due to the project have been adequately addressed in the ES. As detailed in section 3.2.4 NRW PS carried out a Habitat Regulation Assessment as part of which an in-combination assessment

was carried out and concluded subject to appropriate mitigation that the works would not cause a significant impact alone or in combination on a European designated site.

Produced By: Zoe McMellin

Signed: *Z McMellin*

Date: 22/10/2019

Approved by: Peter Morrison

Signed: *Peter Morrison*

Date: 22/10/2019

10. Regulation 22 EIA Consent Decision

10.0.1 The Marine Licensing Team has considered the application ORML1924 and information provided in support of the application and is now in a position to make an EIA consent decision to Bombora WavePower Europe Limited.

10.0.2 In accordance with Regulation 22 of the Regulations, NRW PS, as appropriate authority, have considered:

- The application for a Marine Licence
- The Environmental Statement submitted
- Further information provided, as outlined in section 3.3
- The Conclusion about Environmental Impact (under Regulation 21A(2)) in section 9 (8th October 2019), which we consider to be up to date
- The responses to public consultation outlined in sections 4 and 7
- The responses to the technical consultation outlined in sections 6 and 7
- Any comments received from another EEA state, as outlined in section 5 and 7
- Whether monitoring of the significant adverse environmental effects of the Project is appropriate (as outlined in section 8), including whether
 - Existing monitoring can be relied upon
 - Conditions should be attached to the regulatory approval
 - Whether conditions to make provision for potential remedial action are required, as outlined in section 8
 - Whether any other conditions need to be attached to the regulatory approval, with respect to the likely significant environmental effects of the Project, as outlined in section 8.

10.0.3 After conducting a full and comprehensive review of the Project and applying appropriate additional external expertise, we conclude that the environmental impacts of the Project have been adequately identified, described and assessed. Accordingly, we conclude a favourable determination and that EIA consent for the project should be given.

- 10.0.4 We consider that adequate mitigation has been proposed or have been included as licence conditions, which will minimise or altogether remove the potential significant impact associated with the installation, operation, maintenance and decommissioning of the project.
- 10.0.5 We consider that the monitoring and mitigation conditions outlined in section 8 should be considered in the regulatory decision.
- 10.1 This Written Confirmation of the EIA Consent Decision will be sent to the following, in accordance with Regulation 23 of the Regulations:
- Bombora WavePower Europe Ltd
 - Any person from whom NRW received representation arising from the consultation described in section 4
 - Any EEA states consulted (see section 5)
 - All consultation bodies listed in section 6
- 10.2 This Written Confirmation of the EIA Consent Decision is available on the NRW online public register at <https://naturalresources.wales/permits-and-permissions/permit-applications-consultations-and-decisions/marine-licensing-decisions/?lang=en>

Produced By: Zoe McMellin
Signed: *Z McMellin*
Date: 22/10/2019

Approved by: Peter Morrison

Signed: *Peter Morrison*
Date: 22/10/2019

References

Brooker, A., R. Barham, and T. Mason. 2012. "Underwater Noise Modelling Technical Report." E287R0919. Subacoustech Ltd.

P Lepper, E Harland, S Robinson, P Theobald, G Hastie & N Quick (2011) Acoustic Noise Measurement Methodology for the Billia Croo European Marine Energy Centre Wave Energy Test Site (EMEC). Annex A: Summary of Operational Underwater Noise Tests for Pelamis P2 System at EMEC May 2011.