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Morlais Project

Potential for Underwater Noise from Operational Turbines to Significantly Disturb Marine Mammals

Applicant: Menter Môn Morlais Limited
Document Reference: MMC577 MOR-RHDHV-DOC-0168
Author: Royal HaskoningDHV

Morlais Document No.:	Status:	Version No:	Date:
MMC577 MOR-RHDHV-DOC-0168	Final	F1.0	06 Jan 2021

1. INTRODUCTION

This note has been prepared following the round table session for marine mammals on Thursday 3rd December 2020 during the Morlais Inquiry. It relates to evidence given orally at that session and which NRW invited be formally presented to the inquiry. The content of this note covers evidence already given orally by Dr Learmonth in the session, and which is itself simply a further way of presenting evidence that was already before the inquiry.

The focus is on the application of a notional 1.3km buffer around the perimeter of the Morlais Demonstration Zone to assist in assessing the impacts of potential noise disturbance on marine mammals and consequential effects on the SAC relative to applicable JNCC guidance: See Dr Learmonth Proof of Evidence para 6.55. During the round table session on marine mammals Dr Learmonth, on behalf of the Applicant, referred to such a buffer to illustrate that even adopting a highly precautionary approach of the worst case noise source being deployed at the boundary of the MDZ, the 20% threshold referred to in the JNCC guidance could not be exceeded.

The purpose is to further clarify and demonstrate that there would be no potential for the significant disturbance of marine mammals from underwater noise of operating tidal turbines, with no adverse effect on site integrity (AEoSI) for the North Anglesey Marine SAC designated for harbour porpoise, based on the latest Statutory Nature Conservation Bodies (SNCBs) Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise Special Areas of Conservation (SACs) in England, Wales and Northern Ireland (JNCC *et al*., 2020[1]).

2. UNDERWATER NOISE FROM OPERATIONAL TURBINES

The underwater noise modelling for operational turbines [MDZ/A28.10] is based on the best information currently available and realistic worst-case scenarios. A range of thresholds and criteria have been presented and assessed in the ES [MDZ/A25.12], Information to Support HRA [MDZ/A27.11], the Underwater Noise Modelling Report [MDZ/A28.10] and Underwater Noise Modelling Assessment Note [MDZ/A28.10]. Providing a range of potential thresholds and criteria was a precautionary approach to ensure a range of potential impact ranges were included in the assessments.

The underwater noise modelling note [MDZ/A28.11] presented an assessment for the full deployment based on individual turbines representing arrays, as individual marine mammals would be more likely to be disturbed by the closest turbine they approach rather than all individual turbines within the array. As an indicative precautionary worst-case, the assessment was based on up to 10 turbines representing 10 arrays for 240MW capacity. The assessment in the underwater noise modelling note [MDZ/A28.11] assumed no overlap in disturbance areas or overlap with land.

- The potential impact area of 0.15km^2 for 10 tidal devices representing 10 arrays (based on 70m maximum range for large turbine and 142dB threshold range [MDZ/A28.10]). Represents up to 0.005% of the North Anglesey Marine SAC (which has an area of 3,249km^2). With a seasonal average for 183 days in summer season of up to 0.005%.
- For the maximum impact area of 5.31km^2 (based on 1.3km maximum impact range for large turbine and 120dB threshold range) the maximum area for 10 devices representing 10 arrays could result in a disturbance area of up to 53.1km^2, which is 1.6% of the North Anglesey Marine SAC. With a seasonal average for 183 days in summer season of up to 1.6%.

[1] JNCC, Department of Agriculture, Environment and Rural Affairs (DAERA) and Natural England (2020). Guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise SACs (England, Wales & Northern Ireland). June 2020. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/889842/SACNoiseGuidanceJune2020.pdf

The total Morlais Demonstration Zone (MDZ) area of 35km^2 represents 1.08% of North Anglesey Marine SAC (**Figure 1**). Although the estimated maximum area taken up by all arrays, including spaces between devices would be up to 12.5km^2 (35% of the MDZ array area of 35km^2) for the full 240MW capacity project (ES Chapter 4 Section 4.4.4.3 [MDZ/A25.4]).

- However, if the worst-case underwater noise modelling impact ranges are applied as a buffer around the entire 35km^2 MDZ area:
    - MDZ 35km^2 + 1.3km buffer (minus land overlap) = 73.02km^2
      This represents 2.25% of the North Anglesey Marine SAC (**Figure 1**), with a seasonal average of up to 2.25%.
      (based on the maximum predicted range of up to 1.3km for large tidal turbine at a single location [MDZ/A28.10] and 120db threshold).

- If underwater noise modelling impact ranges are applied as a buffer around the estimated largest array area for Phase 1:
    - Phase 1 area + 1.3km buffer (minus overlap with land) = 9.7km^2
      This represents 0.3% of the North Anglesey Marine SAC (**Figure 1**), with a seasonal average of up to 0.3%.
      (based on the maximum predicted range of up to 1.3km for large tidal turbine at a single location [MDZ/A28.10] and 120db threshold).

Therefore, under these circumstances, the area of potential disturbance would not exceed 20% of the area of the SAC at any given time or exceed an average of 10% of the seasonal area of the site over a season. As such there would be no significant disturbance of harbour porpoise and no AEOSI for the North Anglesey Marine SAC.

There is a commitment in the Outline Environmental Mitigation and Monitoring Plan (OEMMP) (Section 1.1 [MDZ/A16.8]) that, underwater noise from operational turbines will be reviewed as part of the ongoing development of the EMMP when details on the types of devices to be deployed are available post consent. These assessments will determine the potential for any significant disturbance based on operational tidal device noise levels in different conditions, for individual devices and the array of devices to be deployed, taking into account ambient noise, the different species hearing sensitivities and the latest guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise Special Areas of Conservation (SACs) (JNCC *et al*., 2020).

The EMMP will ensure that underwater noise from operational turbines will not result in the significant disturbance of marine mammals and that, following the latest guidance for assessing the significance of noise disturbance against Conservation Objectives of harbour porpoise in the North Anglesey Marine/Gogledd Môn Forol SAC, for the project alone or in-combination with other projects and activities, would not *exclude harbour porpoise from more than:*

1. *20% of the relevant area of the site in any given day, or*
2. *an average of 10% of the relevant area of the site over a season*.

It is acknowledged that the underwater noise from multiple tidal devices will interact and the assessments above are simplistic, but precautionary based on the modelling for one device in different areas. However, it is important to note that underwater noise from multiple sources is not additive for each tidal device an array.

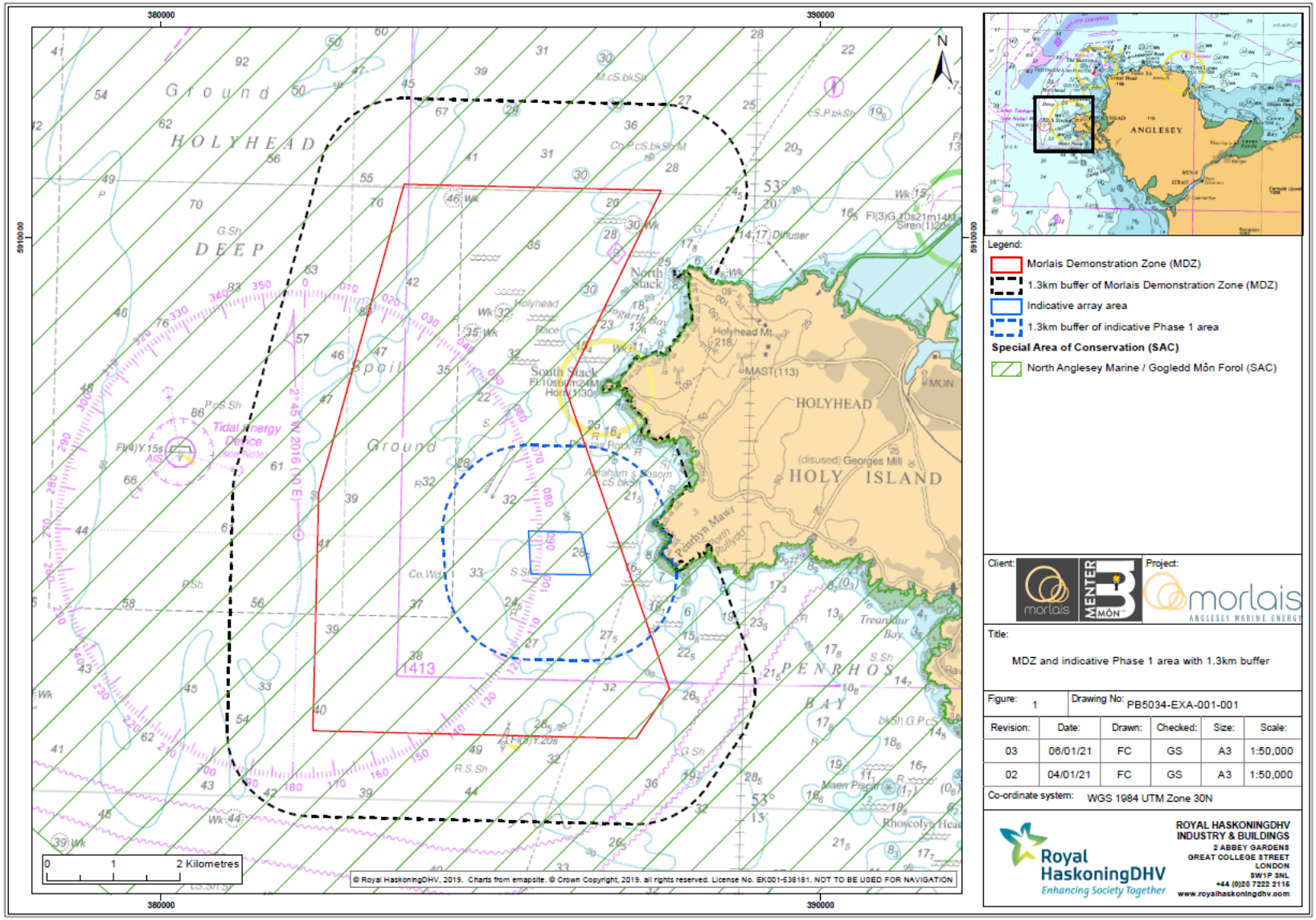

Figure 1: Morlais Demonstration Zone (MDZ) area and indicative Phase 1 array area with 1.3km buffer for underwater noise from operational turbines

3. SUMMARY

The underwater noise modelling for operational turbines [MDZ/A28.10] has been based on the best information currently available and realistic worst-case scenarios. A range of thresholds, criteria and scenarios have been presented and assessed in the ES [MDZ/A25.12], Information to Support HRA [MDZ/A27.11], the Underwater Noise Modelling Report [MDZ/A28.10] and Underwater Noise Modelling Assessment Note [MDZ/A28.10].

The precautionary assessments indicate no potential for any significant disturbance of marine mammals and no AEOSI for the North Anglesey Marine SAC as result of underwater noise from operational turbines.

There is a commitment in the OEMMP that, underwater noise from operational turbines will be reviewed as part of the ongoing development of the EMMP to determine the potential for any significant disturbance from underwater noise.

The OEMMP has been revised to include further information on the commitments and proposed approach for mitigation and monitoring of underwater noise impacts on marine mammals, to ensure there would be no significant disturbance of marine mammals and no AEOSI for the North Anglesey Marine SAC.