



**MARINE WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) REGULATIONS 2017 (AS AMENDED). APPLICATION BY AWEL Y MÔR OFFSHORE WINDFARM LIMITED FOR THE DESIGNATION OF A DISPOSAL SITE TO SUPPORT THE AWEL Y MÔR OFFSHORE WINDFARM.**

Reference Number: ORML2233

From: Dr Jemma Lonsdale  
Cefas, Lowestoft Laboratory  
Date: 15<sup>th</sup> July 2022

To: Peter Morrison - NRW (by e-mail)

1. With reference to the above application for Awel y Môr Offshore Wind Farm by Awel y Môr Offshore Wind Farm Limited (AyMOWFL) (the Applicant) and your request for comments on the disposal of dredged material dated 28<sup>th</sup> June 2022, please find my comments below.
2. This minute is provided in response to your advisory request in relation to the above proposal in my capacity as scientific and technical advisor for sediment quality in relation to, and regulatory requirements for dredge and disposal operations. The response pertains to those areas of the application request that are of relevance to this field. This minute does not provide specialist advice regarding benthic ecology, marine processes, fish and fisheries, shellfisheries, or underwater noise as, whilst these are within Cefas' remit, they are outside my area of specialism.
3. In providing this advice I have spent 3 hours of the allocated 7.5 hours by Natural Resources Wales (NRW). I have booked my time to ORML2233 (C8391ORML2233).

**Documents reviewed**

4. The following documents were provided by email from NRW (Peter Morrison) to Cefas (Jemma Lonsdale) dated 28<sup>th</sup> June 2022 and formed part of this review:
  - a) Marine Licence application form ("Application Form")
  - b) Characterisation Report ("Characterisation Report")
  - c) Environmental Statement Non Technical Summary ("NTS")
  - d) Environmental Statement – Volume 2 chapter 1 offshore Project Design ("ES1")
  - e) Environmental Statement Volume 2 chapter 3 Marine Water and Sediment Quality ("ES2").
5. Cefas provides comments based on the below category system:

Category 1: **Major Comment (Action)**- It is Cefas' advice that the application should not be granted a licence until this is resolved. There is high uncertainty or a large risk to the environment. MMO are strongly advised to request this further information then re-consult Cefas.

Category 2: **Minor Comment (Action)**- There is data/ information/ evidence missing that could affect our assessment. Provision of the data/information would allow for due diligence to ensure we have confidence in the applicant's and our own assessment but would not necessarily preclude the granting of a licence. MMO advised to request further information from applicant and then to re-consult Cefas, however MMO may be able to grant licence if this information is not

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submitted, provided MMO have clear rationale for their decision.

Category 3: **Minor Comment (No Action)**- These highlight those things that should be included as best practice but would not affect our overall decision/ conclusions. Should be taken forward by the developer for any future applications/ post consent requirements, or presentation issues. MMO case team could pass this on to applicant however this information is not required for consultation with Cefas.

Category 4: **Observation**- Statements regarding what is stated in the application, or areas of good practice are highlighted. No action for MMO case team but this could be passed on to applicant if MMO wish, to pass on areas of good practice.

### Description of the proposed works

6. The applicant is applying to NRW for the construction of Awel y Môr Offshore Wind Farm, a sister project to Gwynt y Môr Offshore Wind Farm, approximately 10.5km off the North Wales coast at Llandudno. This request is not to consider the construction or operation of the wind farm, but rather to review the Characterisation Report to provide advice in relation to the whether it is an appropriate approach to designate a disposal site for the entirety of the array area and cable corridor. And if so, to provide advice whether sufficient information has been provided for the designation of the disposal site and whether sufficient sampling has taken place.
7. Awel y Môr Offshore Wind Farm will comprise an array of offshore Wind Turbine Generators (WTGs) with an overall capacity greater than 350 Megawatts (MW), for the purpose of generating renewable energy. There will be up to 50 WTGs and all associated infrastructure required to transmit the electricity generated to shore, where it will then be transmitted to the existing National Grid Bodelwyddan substation.
8. The remit of this advice is to cover the assessment associated with designating a disposal site. A disposal site is required for dredge, the removal of material from the seabed required for the construction of the Licensed Activities and the disposal of inert material of natural origin and/or dredged material as a result of construction drilling and seabed preparation for the installation of the foundations of the offshore structures or during seabed preparation for cable laying.

**Comments.** All responses are observations unless otherwise stated.

9. Figure 1 in the Disposal Site Characterisation Report (document referenced in paragraph 5b) shows that both the array and export cable corridor are considered for disposal site designation.
10. Table 2 of the Disposal Site Characterisation Report (document referenced in paragraph 5b) provides a summary of the spoil volumes associated with seabed preparation and associated activities for the maximum design scenario. The table is replicated below for ease of referencing.

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Source	Volume (m <sup>3</sup> )	
	Drilling for piled foundations	Seabed preparation for non-piled foundations
Foundations		
Wind Turbine Generator Foundations	276,862	500,000
Offshore Substation Platform	24,127	86,400
Met Mast	589	N/A
Cables (Sandwave Clearance)		
Array Cables	7,600,000	
Export Cable	1,532,615	
Gwynt y Môr Interlink Cable	860,625	
Cables (Trenching)		
Array Cables	2,089,854	
Export Cable	160,273	
Gwynt y Môr Interlink Cable	90,000	
<b>Total</b>	<b>12,634,945</b>	<b>12,919,770</b>

11. Section 3 of the Disposal Site Characterisation Report (document referenced in paragraph 5b) provides an overview of the assessment of alternatives including both the Waste Hierarchy Framework and also other disposal site options. I agree with the conclusions within section 3 of the report but defer to NRW regarding the adequacy of this assessment.
12. Paragraph 57 of the Disposal Site Characterisation Report (document referenced in paragraph 5b) states that the array and wider Liverpool Bay largely consists of either sandy gravel or gravely sand. The report states that 62 benthic samples were taken (map of sampling stations is shown in Figure 3) however, given these are benthic samples, I am unable to comment on these samples or the methods.
13. **Minor Comment (No Action):** Given my area of remit I have not reviewed Section 4.2 (Biological Characteristics) of the Disposal Site Characterisation Report (document referenced in paragraph 5b) and defer to NRW Advisory.
14. Section 5.1 (paragraph 99) of the Disposal Site Characterisation Report (document referenced in paragraph 5b) states that dredging can be expected to result in localised lowering of the seabed by up to ~5 m in some places, however the more typical dredge depths will be between 1-3m.
15. Paragraph 100 of the Disposal Site Characterisation Report (document referenced in paragraph 5b) states that the array area is predominantly gravelling sand and (paragraph 101) the offshore export cable area sediments become finer with varying contributions of mud-sized material towards the east of the area.

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16. From Volume 2, Chapter 3 (document referenced in paragraph 5e) it states that 10 surface samples were taken from the array area, although due to project refinement, three samples now sit outside the array area. These samples were analysed for polyaromatic hydrocarbons (PAHs) and trace metals. Eight surface samples were taken from the export cable corridor although due to project refinement, two samples now sit outside the corridor area. These samples were analysed for polyaromatic hydrocarbons (PAHs) and trace metals.
17. For **12,919,770m<sup>3</sup>** of material OSPAR Guidelines recommends a larger number of samples however, given the area to be dredged is considered to be predominantly coarse (see comments 18 and 19) and the material to be dredged will be disposed of within the vicinity and thus the material is likely to be similar, I consider that the material has been spatially represented from the sampling stations.
18. **Minor Comment (No action):** No particle size distribution data have been provided. I appreciate that the benthic samples were classified to their EUNIS habitat types but preferably, the samples should be analysed for particle size distribution by a laboratory that has experience in analysing marine sediments. Additionally, as there is no particle size distribution data, I do not know the sediment type. This is not classed as a minor comment as per comment 25, the material to be disposed is likely to be similar to the existing material due to close proximity of source and disposal areas, although there is a requirement to report the percentage sand, gravel and silt as part of annual reports to OSPAR and London Protocol Secretariats.
19. **Minor Comment (Action):** As per comment 14, it is likely that dredging may be required down to typically 1-3m, and exceptionally down to 5m. However, no evidence has been provided regarding the potential contamination down to 5m. For the array area and offshore export cable corridor, this is likely to be low risk as the material is generally considered coarse in nature and is unlikely to be contaminated to an extent to be a cause for concern. However, for the inshore export cable corridor, the material will likely become finer and may be subject to more contamination e.g., from vessels or run off, and as such has the potential to be a source of contamination. Can the applicant provide assurances that the inshore area will only be subject to trenching? If dredging to any depth may be required, additional samples may be recommended.
20. **Minor Comment (Action):** The results from sediment contaminant analysis were only provided in pdf form as part of Volume 2, Chapter 3 (document referenced in paragraph 5e). The full results should be provided in the NRW template as this will be required for the annual reporting disposal site returns to OSPAR and London Protocol.
21. **Minor Comment (Action):** The laboratory that analysed the trace metals and their methods should be stated to ensure that methods and results submitted can be compared with the Cefas Action Levels.
22. Table 12 shows that the trace metal results for all samples are below Cefas Action Level 1, provided the methods used allow for the results to be compared to the Cefas Action Levels (see comment 21).
23. **Minor Comment (Action):** Table 12 includes the limits of detection for cadmium and mercury to two decimal places, however Table 10 does not: the results for cadmium and mercury state “<0.0”, the results should be to 2 decimal places. This is for accuracy of reporting.

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24. **Minor Comment (No action):** The full suite of PAHs have not been analysed. In the absence of agreed Cefas Action Level 2 for PAHs, Cefas utilise the Gorham-Test approach (1999; also in Long et al. 1995 and Long et al. 1998), which calculates the sum total of low- (LMW) and high- (HMW) molecular weight PAHs and compares these to observed effect-ranges. Total values of the LMW PAHs and total values of the HMW PAHs are calculated and then compared to threshold values. If a total value (for either LMW or HMW selection of PAHs) does not exceed the effects-range low (ERL), the indication is that the sediment in the sample can be considered low risk. If a total value exceeds the effects-range median (ERM) for either the LMW or the HMW total values, it can be considered higher risk, with more likelihood of harm occurring. I have calculated the LMW and HMWs. For the LWM analyses results for Naphthalene are missing, however the highest values for LWM is 128 (ERL 552; ERM 3160) and HMW is 461 (ERL 1700; ERM 9600). With the Naphthalene it is unlikely the level would exceed the ERL or ERM and therefore the risk can be considered low. For best practice, if available the Naphthalene data should be provided.
25. Paragraph 110 of the Disposal Site Characterisation Report (document referenced in paragraph 5b) states that “ Although the actual process of disposal may result in a slight change to the existing particle size composition of seabed sediments, the material disposed in situ via seabed preparation and cable trenching would be similar to the existing material as the spoil disposal will occur close to the site of production”. I agree with this assertion.
26. I note in Section 7 (Monitoring) of the Disposal Site Characterisation Report (document referenced in paragraph 5b) no monitoring is recommended. I agree that no additional monitoring is required.

### Summary

27. Overall, I consider the risk of the disposal operations to be low however, some minor clarifications are required to increase confidence in the assessment. Should NRW be minded to grant a licence, Cefas would require written confirmation to designate a disposal site, including the coordinates and after which we will provide a disposal site code.

**Dr Jemma Lonsdale**  
Principal Advisor

Quality Check	Date
Sylvia Blake	14/07/2022

### References

- Gorham-Test, C., Wade, T., Engle, V., Summers, K., & Hornig, E. (1999). Regional Environmental Monitoring and Assessment Program — Galveston Bay 1993. Proceedings, Galveston Bay Estuary Program, State of the Bay Symposium IV, January 28–29, Galveston, TX, 97–109.
- Long, E.R., Field, L.J., and MacDonald, D.D. (1998). Predicting toxicity in marine sediments with numerical sediment quality guidelines. *Environmental Toxicology and Chemistry*. 17, 714-727
- Long, E.E., MacDonald, D.D., Smith, S.L., and Calder, F.D. (1995). Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental management*, 19(1):81-97.

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