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**Our ref:** R/5224_18_Fishguard Port/JFO

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Via Email

05 August 2025

# FORMAL REQUEST FOR ADVICE ON SEDIMENT SAMPLE ANALYSIS ADVICE RESULTS FOR STENA LINE LINKSPAN REPLACEMENT IN FISHGUARD REF: CML2533

Dear Maria,

1. With reference to your request dated 23 June 2025, for advice on the sediment sample analysis results relating to the above marine licence application (CML2533) for Stena Line Linkspan Replacement in Fishguard, please find the advice below.

## Description of the Project

2. The Stena Line Linkspan Replacement in Fishguard project includes the replacement of the existing linkspan bridge and jack up barge with new floating linkspan pontoon to serve the Stena Line ferry at Fishguard Harbour. The project will include capital dredging and disposal; reclamation to facilitate extension to the road and pedestrian network; demolition of structures including disused Royal National Lifeboat Institute (RNLI) slipway; rock armour revetment with toe detail to tie into scour protection; storm sewer extension; and ancillary and temporary works.

3. There has been no dredging undertaken in the harbour for at least the last ten years. Therefore, all initial dredging undertaken as part of these works constitute capital dredging. The Applicant (Stena Line) is also applying for a licence for subsequent maintenance dredging within the harbour over the next five years under a separate application (therefore advice relating to maintenance dredging and the requirements of the OSPAR guidelines are not provided in this letter).

4. The proposed areas to be dredged have been named 'A', 'B', 'C', 'E', and 'H', and a 'Reclamation Area' is also required to be dredged. These areas are shown in Figure 1 (taken from Figure 2-9 of the ES). The approach channel (Area E) and new approach dredge basin (Area B and C) is proposed to be dredged to depths ranging between -7.3m CD and -6.8m CD. The outer basin (Area H) will be dredge to -5.5m CD. A new dredge basin (Area A) will be dredged to -9.0m CD. The area of land reclamation requires around 4 m depth of material to be removed. In total, allowing for contingency, 78,000m$^3$ of capital dredging is expected.

5. Subject to geotechnical testing finding the material to be suitable, it is proposed that all dredged material will be disposed of to sea under licence from Natural Resources Wales (NRW) at Milford Haven (LU169) licenced sea disposal site.

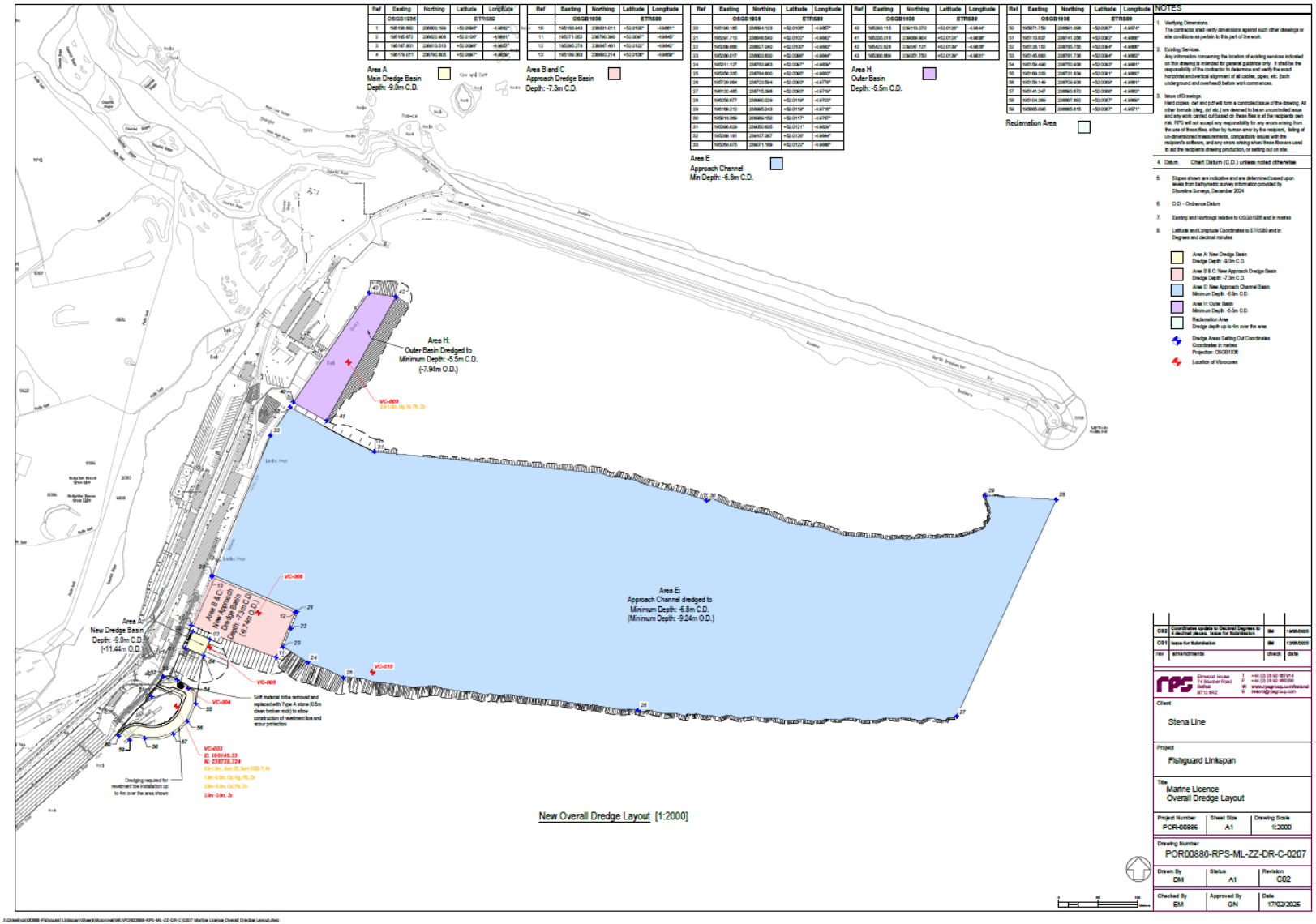


**Figure 1. Dredge areas and sample locations provided by RPS (Figure 2-9 in Environmental Statement)**

## Documents Reviewed

6. The following documents have been reviewed:

- CML2533 03.06.25-Marine-Licence-Application-Forms.pdf;
- CML2533 20-05-2025-Environmental-Statement-Vol-1-Main-Text-Part-1.pdf - Marine Doc Set View – Chapter 2 Project Description;
- CML2533 20-05-2025-Environmental-Statement-Vol-1-Main-Text-Part-2.pdf - Marine Doc Set View – Chapter 11 Water Quality;
- CML2533 29-05-2025-Environmental-Statement-Vol-II-Technical-Appendices-Part-1.pdf - Marine Doc Set View – Appendix 11.A Water Framework Directive Assessment;
- CML2533 20-05-2025-Environmental-Statement-Vol III-Figures and Drawings-Part4.pdf - Marine Doc Set View – POR00886-RPS-ML-ZZ-DR-C-0207 Marine Licence Overall Dredge Layout;
- CML2533 20-05-2025-Environmental-Statement-Vol III-Figures and Drawings-Part4.pdf - Marine Doc Set View – POR00886-RPS-ML-ZZ-DR-C-0208 Marine Licence Heat map showing removal of Material to achieve Design Depth; and
- CML2533 Environmental-Statement-Vol-II-Technical Appendices – 17C Sample Analysis Results.xlsm.

## Responses to Questions Posed Within 'CML2533 Stena Line Fishguard Linkspan replacement – quote' Request for Advice (by E-mail)

**Can you provide advice on the sediment sample analysis results attached CML2533 Environmental-Statement-Vol-II-Technical Appendices - 17C Sample Analysis Results, in line with OSPAR guidelines, on whether the material can be deemed suitable for dredging and disposal at sea?**

7. The analysis results provided in the Excel spreadsheet titled 'CML2533 Environmental-Statement-Vol-II-Technical Appendices – 17C Sample Analysis Results' indicate that sediment samples were collected and analysed from a total of five sample stations/locations. The samples were analysed for trace metals, organotins, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), polybrominated diphenyl ethers (PBDEs), and particle size distribution.

8. Whilst the number of samples is in line with the sample plan (SP2502), the sample plan request was based on a dredge volume of 50,000 $m^3$ (as opposed to 78,000 $m^3$ which is included in this marine licence application). However, OSPAR Guidelines for the Management of Dredged Material[1] recommend 4-6 samples for dredges of 25,000 - 100,000 $m^3$ and, therefore, the sampling conducted for the project remains in line with the guidelines. The sample stations are located within or close to each dredge area and appear to be spatially distributed to correspond to areas where larger volumes of dredging are required. Samples were also taken at 1 m depth intervals to depths of 3 m to 5 m. The sampling is therefore considered broadly representative of the proposed dredge areas and depths.

9. The particle size analysis (PSA) was undertaken by Benthic Solutions Ltd. This is not an NRW validated laboratory for PSA (however, it is validated by the Marine Management Organisation for PSA in England). The chemical analyses were undertaken by SOCOTEC, which is approved by NRW to undertake these analyses in support of marine licence applications.

[1] https://www.ospar.org/documents?v=33037

10. The results of the trace metal analysis show that concentrations were below Cefas Action Level 1 (AL1) in the majority of samples. Cefas AL1 was exceeded in some samples/depths for cadmium (Reclamation Area), mercury (Reclamation Area, Area H), nickel (all sample stations), lead (Reclamation Area, Area H), and zinc (Reclamation Area, Area H).

11. Sample VC-003 2.90 – 3.00m ES3 in the Reclamation Area (sample depth 2.9 m to 3 m) had elevated concentrations of zinc. The measured concentration is 907 mg/kg which is above Cefas Action Level 2 (AL2) (800 mg/kg). Therefore, material from this sample location and depth would not be considered suitable for disposal at sea. The Applicant states in Section 11.10.2 of Chapter 11 of the ES*: "key mitigation for the dredging activities is to avoid the disturbance of the layer of contamination found at 3 metre depth (-3.43m to -3.53m C.D). The design has been developed to ensure that the contaminated sediments at 3 metre depth will not be disturbed when the land reclamation activities are being undertaken. The section in Figure 11.3 demonstrates that the design and the approximate extent of material to be removed will avoid this contamination at depth."* However, according to the 'Marine Licence Overall Dredge Layout' drawing (Figure 1), the vibrocore sample location is positioned outwith the area of dredging required for the revetment toe installation (located approximately 20 m north and west). There is therefore some uncertainty on whether VC-003 is representative of the area to be dredged, and the extent of contamination. Approximately 7,400 $m^3$ of material is required to be dredged from this location. Furthermore, Sample VC-003 1.90 – 2.00m (1 m above the contaminated layer) has concentrations of zinc and lead above Cefas AL1, which suggests contaminated material may also be present above 3 m depth. Based on this, additional sampling at regular depth intervals is recommended within the area to be dredged for the revetment toe installation to determine extent and depth of contamination, and suitability of the material for disposal at sea. Alternatively, on a precautionary basis, the Applicant could consider restricting dredge material below 2 m depth within the Reclamation Area from disposal at sea.

12. Organotins were all below the limit of detection (LOD) and, therefore, are not of concern for dredging and disposal at sea.

13. With respect to PAHs, concentrations were generally either below the LOD, below Cefas AL1, or marginally exceeding AL1 (there is currently no Cefas AL2 for PAHs). However, VC-003 1.90 – 2.00m ES2 (Reclamation Area) and VC-009 0.90 – 1.00m ES1 (Area H) exceeded AL1 for most individual PAHs. In order to better understand the level of PAH contamination, the effects-range approach from Gorham-Test *et al.* (1999[2]; also in Long *et al.* 1995[3]; 1998[4]) can be applied. The Gorham-Test approach calculates the sum total of low-molecular weight (LMW) and high-molecular weight (HMW) PAH content in each sample, then compares these values to observed effect-ranges. If a sum total value is below or around the effects-range low (ERL), then the risk is likely low, whilst if a sum total value is above the effects-range medium (ERM), then the risk is higher with more likelihood of environmental harm occurring. However, it is important to note that these are not agreed ALs.

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2 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.

3 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.

4 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.

14. For both LMW and HMW PAHs, VC-009 0.90 – 1.00m ES1 (Area H) far exceeded the ERM (see Figure 2 and Figure 3). Therefore, material represented by this sample from Area H would be considered higher risk to the environment and is potentially not suitable for disposal at sea. We recommend that additional sampling is undertaken within Area H to ascertain whether the concentrations observed at VC-009 0.90 – 1.00m ES1 are anomalous (i.e., a "hotspot" of localised contamination), or whether they are representative of the area as a whole. If further sampling data shows a localised area of contamination, this may support a case for a smaller dredge area or depth to be restricted from disposal at sea. Alternatively, material down to 1.9 m depth in Area H (which is the next sample depth with acceptable concentrations of PAHs for disposal at sea) should be restricted from disposal at sea.

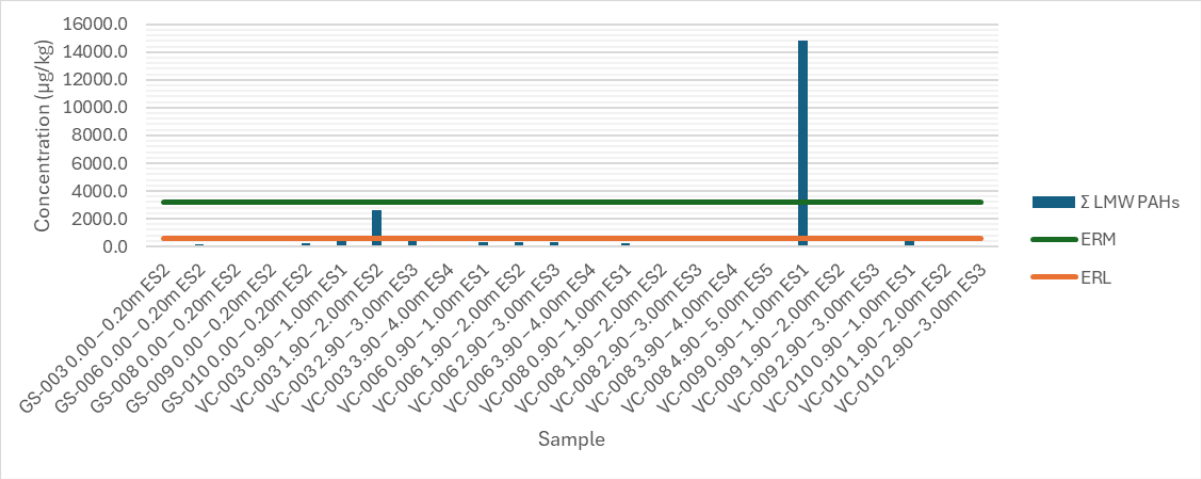


**Figure 2. Sum of low molecular weight (LMW) polycyclic aromatic hydrocarbons (PAHs) compared to effects-range low (ERL) and effects-range medium (ERM)**

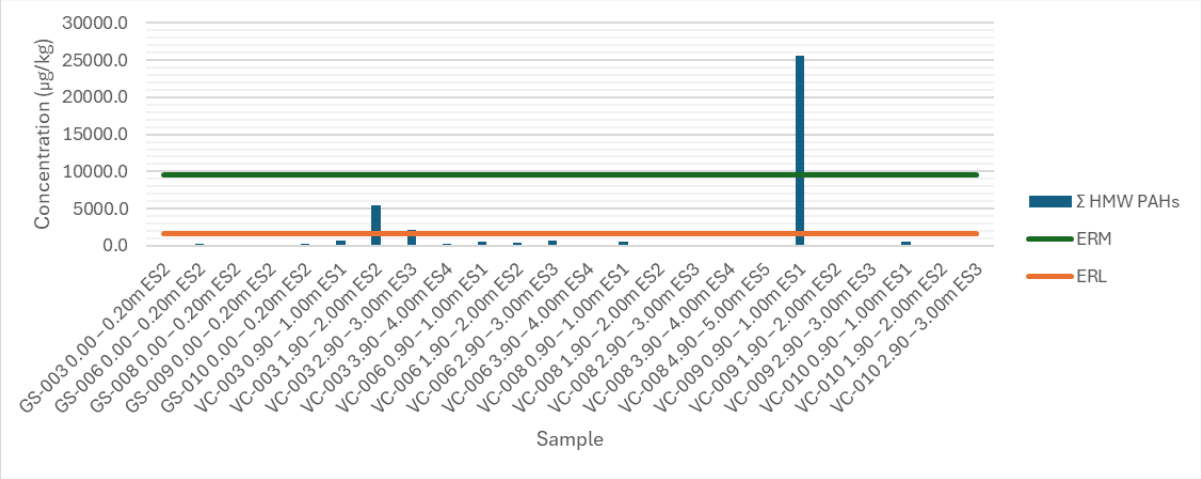


**Figure 3. Sum of high molecular weight (HMW) polycyclic aromatic hydrocarbons (PAHs) compared to effects-range low (ERL) and effects-range medium (ERM)**

15. Concentrations of PCBs were low, mostly below the LOD or below AL1 for the sum of International Council for the Exploration of the Sea (ICES) 7 and sum of 25 congeners. Only two samples (VC-003 0.90 – 1.00m ES1 (Reclamation Area) and VC-009 0.90 – 1.00m ES1 (Area H) exceeded Cefas AL1. On the basis of PCB concentrations, the material is considered suitable for disposal at sea.

16. OCP concentrations were also low. Both dieldrin and dichlorodiphenyltrichloroethane (DDT) were below the respective AL1s (with the exception of VC-009 0.90 – 1.00m ES1 (Area H) for DDT). The majority of other organochlorine pesticides tested were below the LOD. OCP concentrations are not considered to preclude disposal at sea.

## Summary

17. In summary, the results indicate that the majority of material proposed to be dredged as part of the Stena Line Linkspan Replacement in Fishguard project is acceptable for disposal at sea. Material below 2 m depth within the Reclamation Area, and material up to 1.9 m depth within Area H presents a potentially unacceptable risk due to elevated concentrations of zinc and PAHs. It is therefore recommended that:

    - Additional sampling is conducted within the dredge area required for the revetment toe installation (Reclamation Area) and around VC-009 (Area H). This is required to better understand the extent and depth of contamination and determine the suitability of material within the Reclamation Area and Area H for disposal at sea; or
    - Material dredged below 2 m depth within the Reclamation Area, and material up to 1.9 m depth within Area H is excluded from disposal at sea if a licence is granted.

18. This advice is based solely on the information provided in the marine licence application. ABPmer reserves the right to request further sampling/analysis should any information come to light that differs from that information submitted in the marine licence application.

Yours sincerely

**Jamie Oaten**
**Principal Environmental Consultant**