

Our ref: R/5683_09_Pwllheli_Harbour_JFO

Vicky Fisk
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Via Email

21 May 2026

Formal request for a sediment sample plan for Pwllheli Harbour REF: PS2607

Dear Vicky

1. With reference to your request dated 24 April 2026, for advice regarding sediment sampling for maintenance dredging at Pwllheli Harbour, please find the advice below and a sample plan form attached.
2. ABPmer provides advice to Natural Resource Wales (NRW) on sampling plans to ensure that there is sufficient evidence on sediment quality to understand potential impacts on the marine environment associated with marine licence applications and existing long-term marine licences. This may include characterisation of dredged sediment for disposal at sea or of areas where other activities are likely to lead to the mobilisation of sediments. To enable ABPmer to provide that advice, and to fulfil the UK's obligations under International Conventions in respect of disposal at sea, and the requirements of the Marine and Coastal Access Act where applicable, sediment samples are required for analysis.

Description of the Project

3. The Proposed Project relates to disposal of maintenance dredging material from Pwllheli Harbour, Gwynedd, north-west Wales to restore and maintain safe navigational depths for marina users. Pwllheli Harbour is an operational marina where dredging is permitted under the Pwllheli Harbour Act 1983; however, existing on-site disposal options are now at capacity. As a result, it is proposed that dredged material is disposed of offshore within the outer bay.
4. The dredge areas comprise an approach channel to Pwllheli Harbour, and various areas facilitating access to the marina within the harbour. Based on the information provided with the sample plan request, the volume of material to be dredged is up to 60,000 m³, over an area of 101,865 m². The maximum dredge depth required is 2.8 m locally, with average depth of 0.77 m over the dredge area.
5. The dredge material will either be beneficially reused for land reclamation purposes, or, where not possible, disposed of at sea approximately 200 m from the harbour. For disposal at sea, the material will be discharged via a pipeline. Due to operational limitations and the increased stress imposed



on the pipeline by oceanographic conditions, the discharge distance cannot exceed 200 m. Therefore, material will be disposed of within the outer bay, in close proximity to the harbour.

6. The dredge material within the harbour is comprised of colloids (5.3%), clay (22.6%), fine silt (32.1%), medium silt (16.4%), coarse silt (12.9%), fine sand (10.6%), and sand (0.1%). The material within the approach channel is reported to be made up of colloids (0.4%), clay (0.6%), fine silt (0.9%), medium silt (0.6%), coarse silt (0.8%), fine sand (63.9%), sand (32.7%), and gravel (0.3%).
7. Mrs Sarah Hattle requested a sediment sampling plan on 17 April¹ 2026. This document forms the sediment sampling plan.

Sampling Required

8. In accordance with the recommendations of the OSPAR Guidelines for the Management of Dredged Material², which were updated in 2024, samples should be taken to provide a good representation of the volume of material to be dredged. The distribution and depth of sampling should reflect the size and depth of the area to be dredged, the amount to be dredged and the expected variability in the horizontal and vertical distribution of contaminants. We also use the OSPAR guidelines to inform our advice on sampling requirements for other activities which are likely to lead to the mobilisation of sediments. Based on the information submitted (as described above), the following sampling and analysis is required.
9. ABPmer advises that 10 separate sampling stations (locations) will be required from across the dredge areas to provide adequate spatial coverage. This is in keeping with the guidelines set by OSPAR³, which recommend 9-10 stations for dredge areas measuring 50,000-100,000 m². It also allows sufficient coverage of the area that requires dredging. The distribution of sampling should be representative of the spatial extent of the areas to be dredged and evenly distributed.
10. OSPAR guidelines also recommend that samples at depth will be required where the projected depth of dredging is significant, and the volume of dredge material should be taken into consideration to determine the number of samples⁴. The application form states that the maximum dredge depth is 2.8 m, however, the average dredge depth across the area is relatively limited at 0.77 m. On this basis, samples must be taken at the surface (0 metres depth) as indicated on the sample plan form attached. Samples at depth may be required if laboratory analysis of the surface samples show elevated concentrations of contaminants to fully characterise the dredge material.
11. The following information must be included with any samples (irrespective of the laboratory to be used for analysis):
 - Clearly labelled samples;
 - Completed sample position sheet, including the latitude and longitude (decimal degrees and the projection i.e., WGS84) of each location and if core samples are required the depth at which each sample is taken;
 - Details of the method of sampling; and
 - A map/chart detailing the sample locations.

¹ The 'Request a sediment sample plan' form is dated 17/05/2026, which is assumed to be a typo
² <https://www.ospar.org/documents?v=33037>

³ **OSPAR guidance on number of separate sampling stations (locations) required by dredge area** (dredge area (m²) [number of stations (locations)]. <10,000 m² [1-3] | 10,000–50,000 m² [4–8] | 50,000 – 100,000 m² [9–10] | >100,000 m² [extra 5 per 100,000 m²].

⁴ **OSPAR guidance on number of samples required by quantity of dredged material** (amount dredged (m³) [Number of sample sites]). Up to 25,000 m³ [3] | 25,000–100,000 m³ [4–6] | 100,000 – 500,000 m³ [7–15] | 500,000 – 2,000,000 m³ [16–30] | >2,000,000 m³ [extra 10 per million m³].

12. Surface samples should be taken from the upper layer of *in-situ* sediment using a non-metallic / stainless steel scoop. To maintain the integrity of the samples please ensure that they are frozen and remain in the freezer until they can be dispatched. Please ensure the samples are dispatched in a cool box - the cool box should not be placed in any other packaging.

Analysis Required

13. Sediment analysis was last undertaken in 2023; however, the results of this analysis have not been provided as part of the sediment sample plan request and have therefore not been taken into account.

14. In light of potential sources of contamination at this location, analysis is, on this occasion, required for:

- Trace metals (Cd, Cr, Cu, Hg, Ni, Pb, Zn) + arsenic (As);
- Organotins;
- Polycyclic aromatic hydrocarbons (PAHs);
- Organochlorine pesticides (OCPs); and
- Particle Size Analysis (PSA).

15. Trace metals, organotins, and PAHs are included on the 'Primary List' under Technical Annex I of the OSPAR guidelines (Analytical Requirements for Dredge Material Assessment) which '*should be determined all cases*'. Paragraph 5.6 of the guidance also recommends '*if the list of determinants is reduced, further analysis of the complete list of determinants is advisable every five years.*' Marine operations and vessels present a potential source for these contaminants.

16. OCPs are included on the 'Secondary List' under Technical Annex I of the OSPAR guidelines (Analytical Requirements for Dredge Material Assessment) which should be determined '*based upon local information of sources of contamination (point sources or diffuse sources) or historic inputs*'. The surrounding farmland on the Llŷn Peninsula may be a local historic source of OCPs.

17. Further details can be found in Annex 1 (. Sample plan form).

18. It is recommended that the analysis is carried out following established specific dredge material testing methods. A list of laboratories which are approved for the suggested determinands is available at <https://naturalresources.wales/permits-and-permissions/marine-licensing/request-a-sampling-plan-for-a-dredge-or-disposal-marine-licence-application/?lang=en>. Any results following these methods would be acceptable to support a marine licence application or sampling required under an existing marine licence to NRW.

19. To ensure consistency between laboratories it is expected that all analysis required will be undertaken from the same sample container. It is the applicant's responsibility to ensure that sufficient sample is collected, in a single container, for all the analysis required.

Conclusion

20. This advice is based solely on the information provided in the sediment sampling plan request (SP2607) and the assumptions set out above. The sampling and analysis described will be adequate to inform a licence application that mirrors the information in this sediment sampling plan, providing that no further issues come to light and an application is submitted in a suitable timeframe. ABPmer will take a pragmatic approach to the requirement of repeat samples in relation to projects where works have not yet commenced, however, due to the dynamic nature of the marine environment and the potential for changes in the quantity and quality of sediments, there

may be a need for some sediments to be re-sampled and analysed if the project has not commenced within two years of the time of sampling.

21. Where long term licences for maintenance dredging will be applied for, additional sampling and analysis may be required throughout the duration of the proposed licence term in order to comply with the OSPAR guidelines. Required sampling will be stipulated in any granted licence.
22. ABPmer reserves the right to request further sampling/analysis should any information come to light that differs from that information submitted in this sediment sampling plan request. Any future request must clearly state this reference number.

Yours sincerely
for ABPmer

A handwritten signature in dark ink, appearing to read 'J Oaten', with a stylized, cursive script.

Jamie Oaten
Principal Marine Environmental Consultant

Annex 1. Sample plan form

Sample	Station	Metals	Organotins	THC	PAHs	PCBs	PDBEs	OCs	PSA
1	Site A - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	Site B - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	Site C - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	Site D - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	Site E - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	Site F - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7	Site G - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
8	Site H - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9	Site I - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
10	Site J - 0 m	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Stations should be evenly distributed and representative of the dredge areas.