Centre for Environment Fisheries & Aquaculture Science

Cefas

MARINE AND COASTAL ACCESS ACT (2009) FORMAL REQUEST FOR SAMPLING ADVICE TO DELINEATE OBSERVED CONTAMINANT LEVELS AT TEES SOUTH BANK, MIDDLESBOROUGH.
REF: MLA/2020/00506

From: Joe Perry
Cefas, Lowestoft Laboratory
Date: 29th July 2021
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To: Philippa Koomson - MMO (by MCMS)
Cc: Fern Skeldon

1. With reference to your request for advice regarding further sampling and analysis for Tees South Bank as of 15th July 2021, please find my advice below and a sample plan form attached in my capacity as advisor for dredge and disposal.

2. Cefas provide advice to MMO on sampling plans for marine licence applications to ensure that there is sufficient evidence on sediment quality to undertake an assessment of potential impacts on the marine environment prior to issuing a Marine Licence. This may include characterisation of dredge areas or of areas where other activities are likely to lead to the mobilisation of sediments. To enable us 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, we require sediment samples to be provided for analysis.

3. In providing this advice, I have used 2.5 of the allocated 3.75 hours, with time booked to MLA/2020/00506.

Description of the project

4. South Tees Development Corporation (STDC) is proposing to construct a new quay on the South Bank in the Tees estuary. It is envisaged that the new quay would be utilised predominantly by the renewable energy industry, as well as supporting more general industrial and storage/distribution activities. The applicant proposes to conduct a capital dredge to remove approximately 1,800,000 m³ of material from the Tees Dock turning circle and parts of the existing navigation channel, the latter of which will also be dredged to form a deeper berth pocket. Existing depths vary across the dredge areas, ranging from 5.7 to 13 m below Chart Datum (bCD), and the target dredge depth ranges from 11 m bCD for most areas, to 15.6 m bCD for the berth pocket only. The applicant anticipates that trailer suction hopper dredging (TSHD) and backhoe would be used to remove soft and hard material (mudstone) respectively. Once dredged, the applicant intends to dispose of dredged material at Tees Bay C (TY150) disposal site.

5. Advice has been provided at multiple stages of the application process, including the first presentation of the application (Joe Perry, 8th February 2021), the presentation of sample data (Jemma Lonsdale, 6th April 2021) and the presentation of outstanding sample data (Joe Perry,

18th June 2021). In the second consultation, Cefas recommended the exclusion of the area around sampling borehole number 34, due to observed levels of metals and hydrocarbons exceeding Action Level 2 (AL2) and the Effects-range median (proxy for AL2) respectively, and levels of polychlorinated biphenyls which were close to the proposed action level in the most recent action level review.

6. The applicant now proposes to undertake further sampling to delineate the spatial extent of the elevated contaminant levels observed at borehole 34 (B34). This advice minute considers the applicant's proposal.

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Sampling required

7. In accordance with the recommendations of the OSPAR Guidelines for the Management of Dredged Material[1], 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.

8. The applicant has proposed **nine sample stations** in total, comprising:

- One repeat sample at B34
- Four samples encircling B34 to constitute an "inner circle"
- Four samples encircling the "inner circle" to constitute an "outer circle"

9. Of these samples, the applicant proposes to recover samples from all nine stations, but to initially analyse only the repeat sample at B34, and the inner circle. They propose that the outer circle will not be sampled "*should the results from the first 5 come back clean*". There are no OSPAR guidelines as to the recommended number of sample stations for this type of sampling (i.e. to delineate the spatial extent of elevated contaminant levels), though the more samples that are taken, the greater the representation there will be of the area. I find the proposed number of sample stations to be acceptable.

10. The locations of the stations should be representative of the proposed exclusion area.

11. **Minor comment:** I understand the applicant's intention behind the use of "*clean*", however, this term typically denotes results which show levels below the lower action level (or proxy action level) in areas with few past and present pollution sources. In this regard, and particularly with regard to the Tees, it is unlikely that the samples will show the sediment to be clean. More appropriately wording would be, "*should the results show levels to not be unacceptable*". Herein, I recommend that the applicant presents the first dataset (i.e. B34 and the inner circle) to the MMO for review by Cefas, at which point, if the results presented do not show unacceptable levels, Cefas can recommend whether the outer circle of samples need be sampled.

[1] http://www.ospar.org/documents/dbase/decrecs/agreements/14-06e_dredged%20material%20guidelines.doc

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12. The applicant proposes to take samples at the seabed surface (0 m), and at 1 m depth intervals until consolidated Mercia Mudstone is reached (which, as per previous advice detailed in point 5, does not require sampling). I find this acceptable.

13. 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;
- A map/chart detailing the sample locations.

14. The applicants chosen laboratory service should provide specific sampling instructions, however Cefas would expect that in all circumstances 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 they should be FROZEN and remain in the freezer until they can be dispatched. Samples should be dispatched in a cool box.

15. Samples should be kept until the licences have been issued in case any further testing is required.

Analysis Required

16. The applicant proposes the following analyses:

- Heavy metals and arsenic (As)
- Polycyclic Aromatic Hydrocarbons (PAHs), including Total Hydrocarbon Content (THC)
- Polychlorinated Biphenyls (PCBs)

17. Given the purpose of the proposed sampling, in that it seeks to delineate the extent of elevated contaminant levels, I consider the proposed analyses to be appropriate.

18. Further details can be found in Appendix 1 (sample plan form). I have detailed in the sample plan form the minimum required sample analysis to support a licensing decision, rather than the applicant's proposed regime, in case the applicant wishes to amend their sampling based on my advice.

19. Any laboratory carrying out the analysis/analyses must meet the qualifying criteria as set out in the MMO guidance (https://www.gov.uk/government/publications/marine-licensing-physical-and-chemical-determinands-for-sediment-sampling).

20. 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. Where Cefas are analysing the samples, appropriate containers will be provided.

Conclusion

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21. This advice is based solely on the information provided in the sampling request, and the sampling and analysis described will be adequate to inform a consultation decision that mirrors the information in this sampling request, providing that no further issues come to light.

Joe Perry
Specialist advisor (Evidence for Marine Management and Policy)

Quality Check	***Date***
Sylvia Blake	29/07/21

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Appendix 1
Sample plan

Sample	Station	Metals	Organotins	THC	PAHs	PCBs	PDBEs	OCs	PSA
1	B34 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
2	*B34 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
3	IC1 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
4	*IC1 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
5	IC2 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
6	*IC2 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
7	IC3 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
8	*IC3 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
9	IC4 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
10	*IC4 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
11	OC1 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
12	*OC1 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
13	OC2 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
14	*OC2 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
15	OC3 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
16	*OC3 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
17	OC4 – 0m	☒	☐	☒	☒	☒	☐	☐	☐
18	*OC4 – 1m, 2m, 3m	☒	☐	☒	☒	☒	☐	☐	☐
19		☐	☐	☐	☐	☐	☐	☐	☐
20		☐	☐	☐	☐	☐	☐	☐	☐

Comments:
Stations should be representative of the proposed exclusion zone

B34 – Borehole 34
IC – Inner Circle
OC – Outer Circle

"*****" denotes samples at 1 m depth intervals as per comment in point 11

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