



MARINE AND COASTAL ACCESS ACT (2008). FOLLOWUP CONSULTATION FOR THE APPLICATION FOR THE TEES SOUTH BANK DEVELOPMENT PHASES 1 AND 2 BY THE TEES SOUTH BANK CORPORATION (TSBC) AT RIVER TEES, MIDDLESBOROUGH.

Reference Number: MLA/2020/00506 (MLA/2020/00507)

From: Joe Perry
Cefas, Lowestoft Laboratory
Date: 18th June 2021
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To: Emmanuel Mulenga - MMO (by MCMS)
Cc: Fern Skeldon - MMO

1. With reference to the above application dated 21st May 2021, please find my comments and observations 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 pre-application request that are of relevance to this field. This minute does not provide specialist advice regarding benthic ecology, marine processes, fisheries, shellfisheries or underwater noise as, whilst these are within Cefas' remit, they are outside my area of specialism.
3. I have spent 7.5 hours of the allocated 7.5 hours in providing this advice, with time booked to C8167B134 (MLA/2020/00507).

Documentation reviewed (as requested):

4. MMO Results Template "MAR00825" – Tees South Bank, South Tees Development Corporation (2021) 25
5. MMO Results Template "MAR00829" – Tees South Bank, South Tees Development Corporation (2021)
6. MMO Results Template "MAR00856" – Tees South Bank, South Tees Development Corporation (2021)
7. MMO Results Template "MAR00874" – Tees South Bank, South Tees Development Corporation (2021)

Other relevant documents reviewed:

8. MMO Results Template – Northern Gateway Container Terminal, PD Teesport (2019).

Description of the proposed works

9. 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.

10. Advice was initially provided for this application at the EIA stage (Joe Perry, 1st February 2021), which considered the applicant's proposed works in relation to the OSPAR guidelines, but ultimately deferred comment until sediment sampling data would be presented. The applicant presented interim sediment sampling data for comment by Cefas (Jemma Lonsdale, 6th April 2021), which considered the results and deemed material provisionally acceptable for disposal at sea except for one sample site. The applicant has now provided the outstanding PBDE data, which the present advice minute considers in support of the licensing of the proposed works.

Comments – no questions were posed by the MMO; all comments are observations unless stated otherwise

Sampling

11. Pre-application sampling advice was sought in relation to these works (SAM/2020/00026; Charlotte Clarke, 27th May 2020). Based on the applicant's initial forecasting of likely dredge volumes (Table 1), 25 sample stations were deemed necessary to provide spatial coverage, with samples taken at 1m depth intervals down to the maximum depth at each station. This was expected to give a total of ~150 individual samples, whereas, the data provided by the applicant total 85 individual samples (20 vibrocore stations and 11 borehole stations). In this regard, the sampling conducted does not adhere to pre-application sampling advice SAM/2020/00026.
12. Within their request for sampling advice (SAM/2020/00026), the applicant noted that they would likely encounter "*mudstone*": "*mudstone*" refers to a broad group of fine-grained sedimentary rocks (Merriman *et al.* 2003). Compositions of such mudstone may be considered exempt from sediment analysis as per the OSPAR guidelines 5.2a and 5.2b¹ – and those from the Tees have indeed been deemed exempt in the past (SAM/2018/00068; Andrew Griffith, 17th December 2018). This may explain the discrepancy between the number of samples recommended and the number of samples collected, however, explicit confirmation of this from the applicant is required to ensure that the depth samples provided are an accurate representation of the dredge area.

¹ "5.2. Dredged material may be exempted from the testing... if any of the criteria below are met:

a. it is composed of previously undisturbed geological material; or

b. it is composed almost exclusively of sand, gravel or rock"

OSPAR Guidelines for the management of dredged material OSPAR 98/14/1-E, Annex 43, 1998.

Table 1. Proposed design dredge levels and volumes

Area	Existing dredge level (bCD)	Maintained dredge level (bCD)	Proposed dredge level (bCD)	design Depth (m)	Proposed Dredge Depth (m)	Proposed total dredge volume (m ³)
Part of Tees Dock Turning Circle	8.8		11		2.2	160,000
Approach channel downstream	8.5		11		2.5	250,000
Approach channel middle	7.2		11		3.8	190,000
Approach channel upstream	5.7		11		5.3	260,000
Berth pocket	2 (approximate, not maintained)		15.6		13.6	1,100,000
Total						1,960,000

Dredged material quality

13. **Major comment:** Whilst I will consider the results presented, my assessment of the risks for the whole of the dredge material is not complete until clarification is provided by the applicant concerning the discrepancy between the number of samples recommended as per comment 12.
14. As previous Cefas advice (Jemma Lonsdale, 6th April 2021) has already commented on the results for metals, organotins, PAHs and PCBs, my advice shall only comment on the PBDE results.
15. The results generally depict a broad range of PBDE levels throughout the dredge areas, with approximately half of all samples recording levels below the limit of detection (LOD) for all PBDEs. Levels generally appear consistent with what would be expected for the various BDE congeners in the River Tees, i.e. BDE138 is either below, or marginally above the LOD in all samples, whilst BDEs 47, 99 and 209 all depict higher relative concentrations than the other congeners. Figure 1 details the results for all BDE congeners except for BDEs 139, 209, 47 and 99.

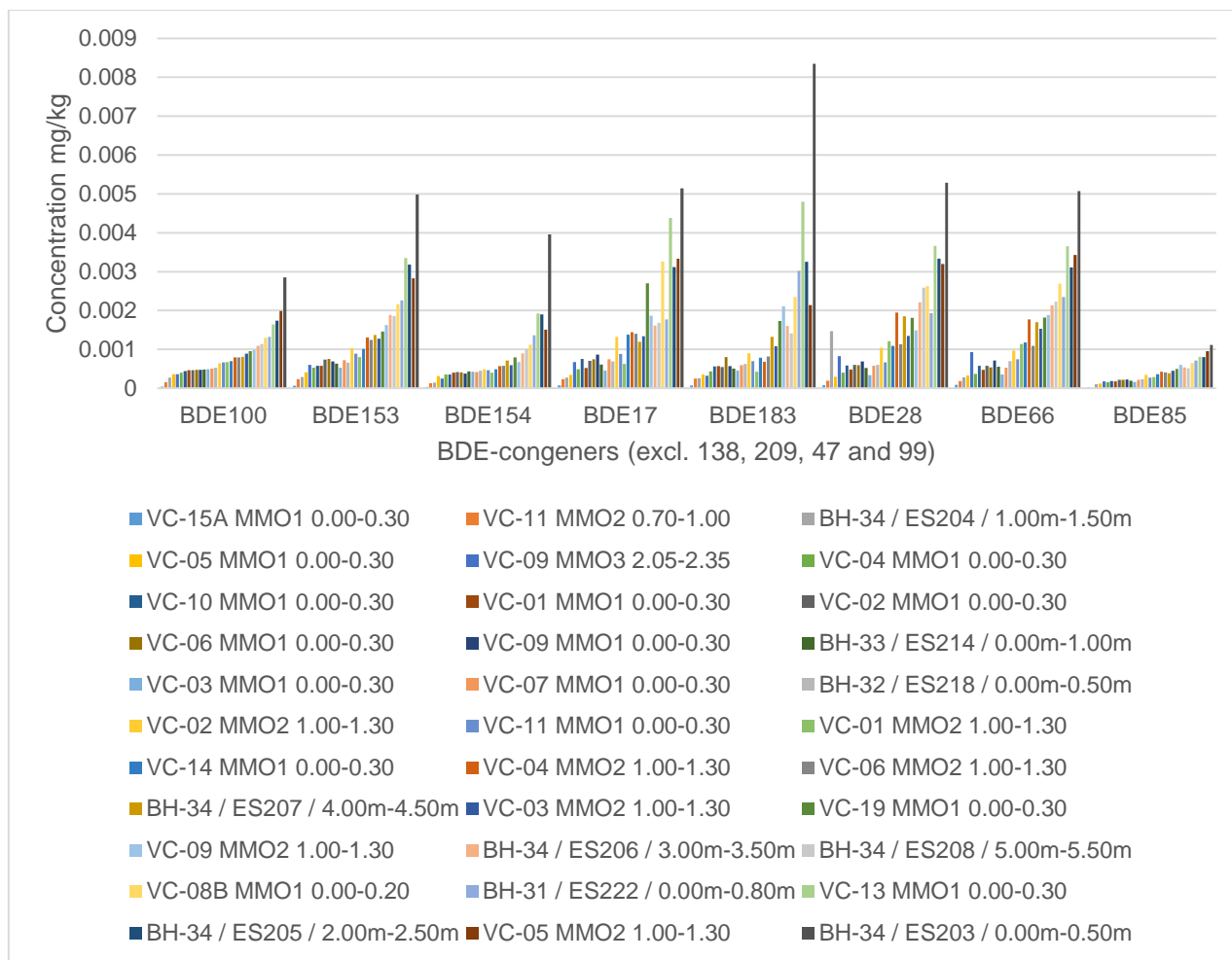


Figure 1. Bar chart depicting BDE results for congeners 100, 153, 154, 17, 183, 28, 66 and 85.

16. In the absence of any agreed UK action Levels for PBDEs, the Canadian Federal Environmental Quality Guidelines (FEQGs)² can be used to help determine the likely risk of PBDE content. These guidelines are considered to be indicative, intended to guide the regulatory process rather than being a more decisive benchmark such as for Cefas Action Level 2. FEQGs are available for BDEs 100, 153, 28, 209, 47 and 99 (Table 2).

Table 2 Canadian FEQGs for select BDEs

	FEQG µg/kg	FEQG mg/kg
BDE100	0.4	0.0004
BDE153	440	0.44
BDE28	44	0.044
BDE209	19	0.019
BDE47	39	0.039
BDE99	0.4	0.0004

² Environment Canada, 2013. Federal Environmental Quality Guidelines Polybrominated Diphenyl Ethers (PBDEs). Available at: <http://www.ec.gc.ca/ese-ees/default.asp?lang=En&n=05DF7A37-1> (Accessed 17th June 21)

17. The results in Figure 1 indicate that many results for BDE100 (median = 0.0006 mg/kg) exceed the FEQG, whilst all results for BDE153 are well below the respective FEQG. All other results (excl. BDEs 47, 99 and 209) are clearly consistent with data presented for the Northern Gateway Container Terminal (MLA/2020/00079) and Tees and Hartlepool Maintenance Disposal Licence (MLA/2015/00088/4) in the surrounding area, and therefore, whilst there is limited resource with which to judge PBDE results, the results (excl. BDEs 47, 99 and 209) do not preclude material from disposal at sea at this time.
18. BDEs 47, 99 and 209 are typically observed at higher concentrations relative to all other BDEs, particularly in the Tees. Figure 2 details the results for BDEs 47 and 99, whilst Figure 3 details the results for BDE 209.

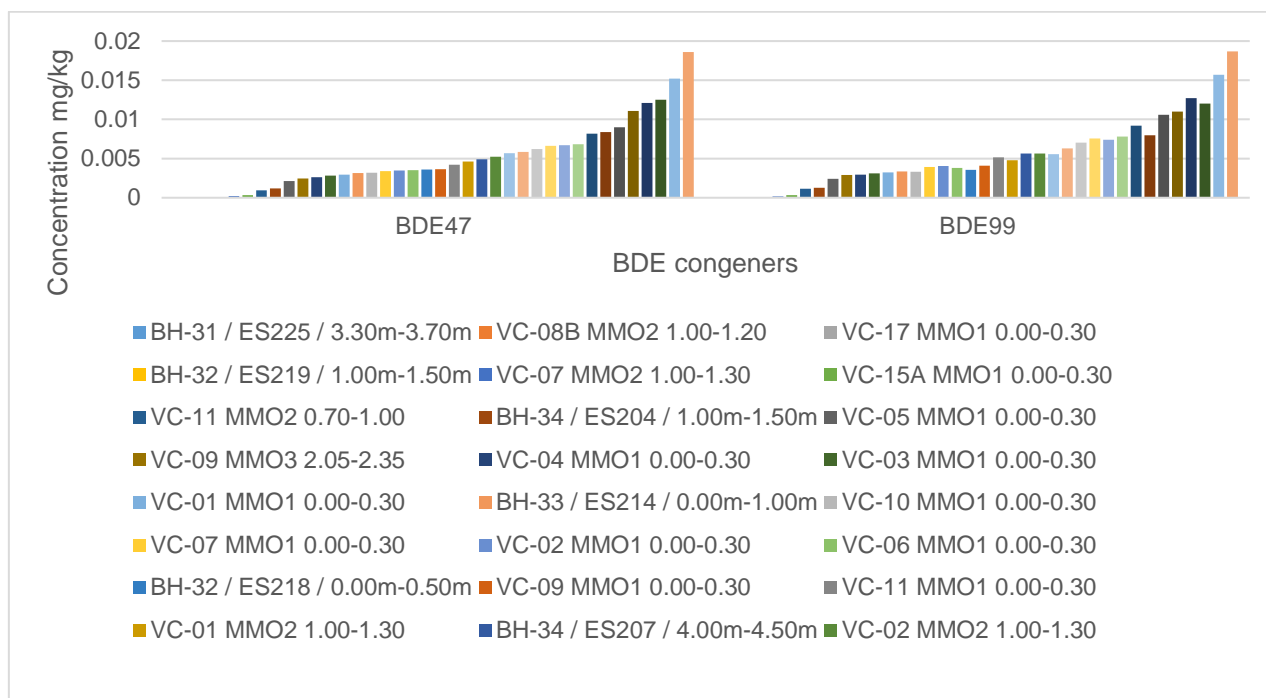


Figure 2. Bar chart depicting BDE results for congeners 47 and 99

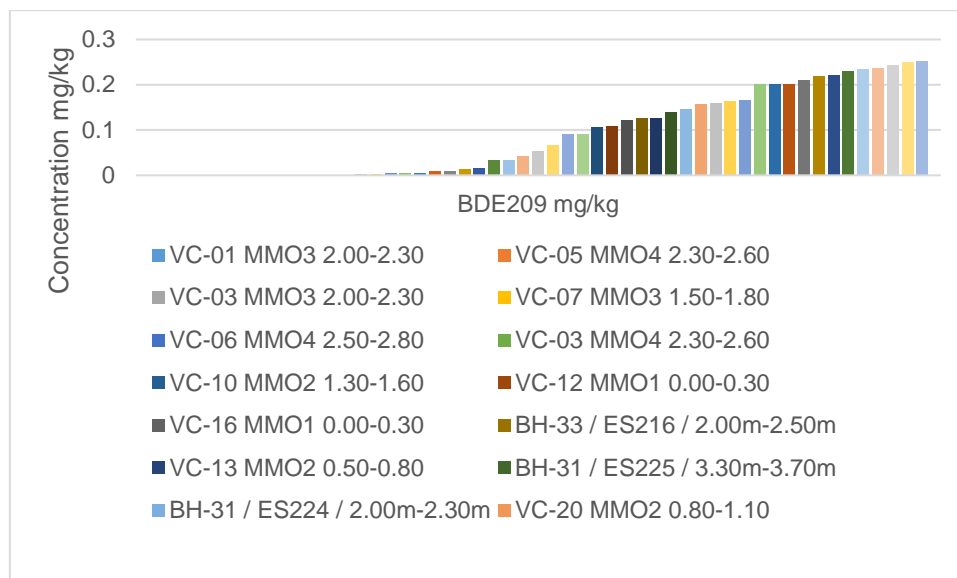


Figure 3. Bar chart depicting BDE results for congener 209

19. Figure 2 indicates that results for BDE 47 are all well below the FEQG, whilst most results for BDE 99 are above the respective FEQG. Results for BDE 209 show a mix of results below and above the respective FEQG. In comparison to previous PBDE data from the surrounding area (MLA/2020/00079 and MLA/2015/00088/4), the BDE 47 and 99 results appear largely consistent, whilst BDE 209 results appear generally lower. In this regard, the results do not preclude material from disposal at sea at this time.

Disposal site considerations

20. The applicant wishes to dispose of material to Tees Bay C (TY150). At the initial consultation (Joe Perry, 8th February 2021), it was noted that: *“the proposed disposal volume [1,800,000m³] is similar to the maximum annual volume [~1,900,000m³] received by the site, however, the length of time that has passed since the site received volumes of this magnitude [1999] should be acknowledged. There may be uncertainty concerning the likely effects on the surrounding environment from a disposal of similar magnitude, particularly given the relatively low volumes it has received in the last 20 years.”*
21. **Minor comment:** I take this point to reiterate this comment, noting that disposing of such volumes might present a risk due to any potential dispersal plume. I defer comment to relevant advisors such as Cefas fisheries and the Environment Agency.
22. **Minor comment:** I'd further reiterate comments from the initial consultation which discussed the potential cumulative risk at the disposal site should disposal activities for Tees South Bank and the Northern Gateway Container Terminal coincide, which, in the worst-case scenario, would amount to >6,000,000m³ of material being disposed. I recommend that both applicants (Tees South Bank Corporation and PD Teesport respectively) coordinate their disposal activities to ensure that disposal volumes per campaign and per year do not grossly exceed those which the site has received previously.
23. There is no evidence to determine/set a maximum disposal volume as, to my knowledge, there has been no recent assessment of the site for the disposal activities provided (e.g, potential for accumulation at the site and or plume dispersal modelling). OSPAR Returns indicate that the largest monthly disposal return was 197,259 wet tonnes (L/2013/00217/2, March 2015), with a mean monthly disposal volume of 20,397 wet tonnes. The MMO may wish to get assurances from the applicant that either the works are similar to these tonnages

or that further assessment of the likely impacts of disposal over these amounts with the nature of the material being disposed is still suitable for that site.

Summary

24. The PBDE results overall do not preclude the material from disposal at sea. However, I request clarity as to the number of samples that were taken in reference to the number recommended under SAM/2020/00026. I also recommend that the applicant coordinates their disposal activity with PD Teesport to ensure that disposal to Tees Bay C (TY150) does not grossly exceed past volumes received by the site unless additional information for assessment of the disposal activity to the site is provided.

Please do not hesitate to get in touch should you require any further clarification.

Joe Perry

Specialist Advisor (Evidence for Marine Management and Policy)

<i>Quality Check</i>	<i>Date</i>
Sylvia Blake	18/06/2021

References

Merriman, R. J., Highley, D. E. and Cameron, D. G., 2003. Definition and characteristics of very-fine grained sedimentary rocks: clay, mudstone, shale and slate. *British Geological Survey Commissioned Report*, CR/03/281N. 20pp.