Note / Memo

HaskoningDHV UK Ltd.
Industry & Buildings

To:	Marine Management Organisation
From:	Royal HaskoningDHV
Date:	18 May 2022
Copy:	Josh Riley; Matt Greaves; Paul Salmon; Blair Davies
Our reference:	PC1084-RHD-SB-EN-NT-EV-1127
Classification:	Project related

Subject: **MLA/2020/00506/R8 - Response to Consultation Comments on Scheme of Monitoring**

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1 Introduction

South Tees Development Limited (STDL) have a marine licence for Phase 1 of the construction of a new quay at South Bank in the Tees estuary ('the project') (L/2021/00333/1). The licence permits the disposal of dredged material from Phase 1 of the project, a capital dredge of the Tees Dock turning circle, the capital dredge of the channel and berth pocket, the demolition of existing infrastructure and the placement of rock within the berthing pocket.

For the reason '*To monitor impacts to water quality during dredging*', condition 5.2.7 of the marine licence states:

The dredging activities approved by this licence may not commence until such a time as a scheme of monitoring has been submitted to, and approved in writing by, the Marine Management Organisation. This must be submitted at least 10 weeks prior to the commencement of activities.

The scheme shall include:

- *Baseline assessment prior to commencement.*
- *Programme to monitor dissolved oxygen levels and turbidity (where appropriate)*
- *Programme of post-implementation monitoring. The scheme must be fully implemented and subsequently adhered to, in accordance with the timing/phasing arrangements embodied within the scheme, or any details as may be subsequently agreed, in writing by, the MMO.*

If it is deemed that any parts of this scheme are no longer required, written representation must be submitted to MMO for written confirmation prior to dredging works commencing.

In order to discharge this condition, STDL submitted a Scheme of Monitoring to the Marine Management Organisation (MMO). In addition to addressing condition 5.2.7 of the marine licence, the first submission of the Scheme of Monitoring to the MMO included provisions to satisfy condition 5.2.9, which states:

If permission is granted by the MMO to undertake dredging operation during 1st July to 31st August (inclusive), dissolved oxygen levels must be monitored prior to the dredging activity, as a minimum, monitored every hour during the dredging activity. If a drop of 1m/g of dissolved oxygen is observed, than the dredging activity must temporarily pause for a period of 6 hours (a tidal cycle) or until the reading

returns to the previously observed level. Recorded data must be shared with the Environment Agency upon completion of the licensed activities, no later than 10 working days after their completion.

The MMO must be sent a copy within 7 days of the data being issued.

During the course of determining this licence return, MMO issued the Scheme of Monitoring to the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and the Environment Agency for comment. In the comments received, it is clear that conflating the general water quality monitoring required under condition 5.2.7 and the specific water quality monitoring within the seasonally restricted period (July and August) required under condition 5.2.9 in the STDL submission has confused matters. Further complicating matters is that a subsequent submission to the MMO of the Monitoring Plan superseded the proposed monitoring strategy to satisfy condition 5.2.9 set out within the Scheme of Monitoring.

To simplify this, STDL have prepared a revised Scheme of Monitoring to address condition 5.2.7 of the marine licence only. In doing so, the updated Scheme of Monitoring now only proposes a strategy for general water quality monitoring which applies to the entire duration of dredging.

To satisfy condition 5.2.9, at this time STDL confirm that no dredging will be undertaken during July and August 2022. In the event that dredging is required during July and / or August 2023, STDL may apply to discharge condition 5.2.9 of the marine licence in the future.

In light of this, the rest of this note provides direct responses to the consultation comments received from both Cefas and the Environment Agency regarding the Scheme of Monitoring.

2 Response to Consultation Comments

Table 2.1 and **Table 2.2** sets out the specific comments raised by Cefas and the Environment Agency respectively with regard to the Scheme of Monitoring and STDL's response. It should be noted that only comments pertinent to the technical aspects of the Scheme of Monitoring have been responded to in each table. Comments for which it is considered not appropriate for STDL to respond to (i.e. those directed to MMO on the process of determining the marine licence, such as regarding consultation practices), or where no further comment is considered necessary, have been responded to with 'No comment'.

Table 2.1 Responses to specific comments raised by Cefas regarding the Scheme of Monitoring

Cefas Comment	STDL Response
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 fish and fisheries. 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, shellfisheries, or underwater noise as, whilst these are within Cefas' remit, they are outside my area of specialism.	Noted. No further comments have been seen from Cefas regarding advice on benthic ecology, marine processes, shellfisheries or underwater noise and so this response only responds to comments received in relation to fish and fisheries.
Document reviewed South Bank Phase 1 (MLA/2020/00506) Scheme of Monitoring. Royal HaskoningDH UK Ltd. 03 March 2022.	It is noted that the Scheme of Monitoring attempted to address two conditions on the marine licence simultaneously (condition 5.2.7 and condition 5.2.9), regarding general water quality monitoring and real-time measuring of parameters against the specified stop thresholds respectively. The measures proposed within the Scheme of Monitoring for the real-time monitoring of parameters against the stop thresholds have since been superseded by measures presented within a follow-up submission to Marine Management Organisation (MMO), the Monitoring Plan, which aimed to satisfy condition 5.2.8 and condition 5.2.9 of the marine licence. Condition 5.2.8 and condition 5.2.9 only apply to dredging undertaken within the months of July and August. It is felt that conflating these two within the Scheme of Monitoring has confused matters. As such, a revised Scheme of Monitoring has been submitted which focusses solely on general water quality monitoring required to discharge condition 5.2.7. To satisfy condition 5.2.9 at this time, STDL confirm that no dredging will be undertaken in July and August of 2022 and are therefore no longer seeking to discharge condition 5.2.9 of the marine licence, with regard to a mechanism for real-time observation of Dissolved Oxygen against the specified stop thresholds. As such, the Scheme of Monitoring has been revised to address condition 5.2.7 only, with regard to general water quality monitoring.

Cefas Comment	STDL Response
To the attention to the MMO case officer only: In regard to this consultation, I would like to highlight the following points related to the case history and current stance of advice on salmonids within the Tees: i. Please note that our previous recommendations[1] were related to avoiding piling and dredging works during key migratory periods for salmonids (i.e., from late March to August – please see **Annex 2** for further details) due to outstanding uncertainties of multiple dredging and piling activities occurring simultaneously within the Tees estuary as the consequences to salmon populations resulting from potential impacts (e.g., increased suspended sediment concentrations, poor water quality and underwater noise causing an acoustic barrier to fish movement) remain unknown (see **Annex 2**).	Noted. STDL consider that the commitment not to dredge within July and August of 2022 will, in part, address the concerns regarding the potential impact of cumulative activities upon migratory salmonids within the Tees.
ii. Thereafter, to the best of my knowledge, Cefas SEAL advisors were consulted by the MMO and provided a response[1] to a request from Royal Haskoning, the consultant for STDL, to conduct dredging during the seasonal restriction stipulated in the Marine Licence conditions. However, it should be noted that Cefas fisheries advisors were not party to this Consultation or further consultations on this issue. Therefore we have not had the opportunity to advise on the appropriateness of these conditions.	No comment.
iii. The SEAL case officer did liaise with fisheries advisors during their last consultation in March[2] to seek our thoughts. Risks to salmon receptors were highlighted, additional mitigation measures were recommended, and further information was requested. However, to the best of my knowledge, we have not received further response to this.	No comment.

[1] Advice reference MLA/2020/00506/1 L/2021/00333/1 dated 1st March 2022 by Joe Perry.

Cefas Comment		STDL Response
iv.	Therefore, based on our current knowledge and the evidence presented at this stage (**Annex 2**), it is unclear whether the cumulative noise and SSC from simultaneous dredging and piling operations are likely to cause an acoustic/physical barrier and behavioural effects to migratory fish that may prevent or delay migration. In this regard, base on the strong likelihood and risk of the proposed dredging/piling activities to overlap with the peak salmon migration, I cannot support either the dredging works being conducted during peak migration times for adult salmonids in the Tees, nor the proposed monitoring.	Noted. STDL consider that the commitment not to dredge within July and August of 2022 will, in part, address the concerns regarding the potential impact of cumulative activities upon migratory salmonids within the Tees.
v.	Furthermore, in response to Cefas fisheries advisors' recent requests for restrictive conditions to be included on marine licences involving piling for construction projects on the River Tees, the MMO have drafted a marine licence for the Conservancy Wharf application which also incorporates restrictive conditions, to mitigate impacts to fish receptors, in line with those of other Tees projects. Please see **Annex 3** for a description of the relevant draft licence conditions. In regard to dredging works, as previously recommended, the MMO may wish to liaise with other developers in the Tees and agree a programme of dredging works to minimise disruption to the River Tees salmonids peak migration periods.	No comment.
vi.	However, whilst we do not support dredging activities to be undertaken within the Tees during the peak migration times (May, July-August) for those protected and sensitive species such as salmon and European eel, I have provided a brief response to your questions below. Please note that specific requirements and best practice related monitoring of dissolved oxygen levels falls outside my remit as a fisheries advisor.	Noted. Please see below for responses to comments received from Cefas in relation to specific questions posed by the MMO.
Monitoring **MMO Question 1. Are the objectives of the monitoring set out appropriately within the report?**		Noted.

Cefas Comment	STDL Response
Yes, the objectives of the monitoring are clearly stated within the document provided for review. For instance, STDL is proposing using the data collected by PD Teesport (PDT) who have a water quality monitoring buoy located at Tees Dock which records dissolved oxygen (DO) concentrations in mg/l and turbidity in Formazin Turbidity Unit (FTU). Additionally, STDL is proposing to supplement this data with two monitoring buoys installed one week prior to dredging commencing to recover baseline readings. The monitoring buoys will remain in place during the dredging and for one week after dredging has been completed.	
MMO Question 2. Are the specifications for the survey appropriate and follow best practice where available? As the monitoring is designed to monitor DO and FTU this is beyond my expertise as a fisheries advisor.	Noted.
Major Comments Please note that fisheries advisors were not party to defining the scope of the proposed monitoring of DO and its inclusion in the ML conditions. In my opinion the monitoring is neither suitable or sufficient to prevent or reduce significant impacts to sensitive fish receptors. I defer to colleagues with specialisms in coastal process and sediment plan monitoring to comment on the appropriateness of DO monitoring specifications related to their expertise.	It is noted that the aim of the revised Scheme of Monitoring is now solely to satisfy condition 5.2.7, with regard to general water quality monitoring throughout the entire dredge campaign. This is in no way related to monitoring required for dredging undertaken during the embargo period of July and August, as required by condition 5.2.9 of the marine licence. To satisfy condition 5.2.9 at this time, STDL confirm that no dredging will be undertaken within July and August of 2022.
MMO Question 3. Are the specifications for the survey appropriate for addressing the objectives of the monitoring? Generally, yes. I note that two monitoring locations close to the boundaries of the dredge footprint have been proposed based on the results of the sediment plume modelling that was undertaken as part of the Environmental Impact Assessment (EIA): • Control site: upstream of the proposed Phase 1 quay dredge footprint (outside of the dredge footprint and outside of the predicted zone of influence of the sediment plume). • Dredge site: adjacent to the dredge footprint at the proposed quay (within the zone of influence of the sediment plume).	It is noted that the Environment Agency has requested further monitoring locations. This request will be honoured by STDL and the revised Scheme of Monitoring has been updated accordingly. Please refer to the corresponding responses to the Environment Agency's comments.

Cefas Comment	STDL Response
I note that the Applicant has considered that one week of monitoring post completion of the dredging is adequate to illustrate a return to baseline conditions.	
Minor comments (all below) It is not clear how the monitoring will be used to enforce a moratorium on dredging during the 1st July to 31st August monitoring period. Further clarification from the Applicant is required with respect to the compliance with Condition 5.2.9. It appears from the text that dredging would not be stopped if DO levels at both the Dredge site and the Control site drop by 1 mg/l. The condition states that: "a *pause in dredging is required due to a drop in DO of 1mg/l or more between the two monitoring buoys and the DO does not return to baseline levels after six hours (a tidal cycle), they will request permission to re-commence dredging*. The reason being that *there are a number of factors that could cause a reduction in DO within the estuary which may not be linked with the proposed dredging, and which are beyond the control of STDL, and therefore waiting for the DO levels to return to baseline conditions prior to re-commencing dredging may unnecessarily restrict the works*. The Applicant states that: *"To meet the requirement, it is proposed that comparisons of DO levels are made between the two monitoring buoys to determine if there has been a drop in DO levels of 1 mg/l at the Dredge site in comparison to the Control site. If DO levels of 1 mg/l dropped at both the Dredge site and the Control site then dredging wouldn't stop as this indicates there are external factors influencing the drop in the DO levels which are not related to the dredge".* However, it is not clear that the Applicant's monitoring proposal would meet this condition. I understand there may have been a typographic error in above text, though my understanding of the monitoring is that dredging would cease if DO drops to levels which are considered to negatively affect fish receptors in the area or fish migrating towards spawning/nursery grounds. Please could the Applicant clarify if this would be the case?	STDL note that the proposed monitoring set out within the Scheme of Monitoring with respect to dredging within the embargo period (July – August), as required by condition 5.2.9 of the marine licence, has been subsequently superseded by a different approach set out within a Monitoring Plan submitted to MMO at a later date. To avoid conflating condition 5.2.7 and condition 5.2.9 of the marine licence, the Scheme of Monitoring has been revised to address condition 5.2.7 only. At this time, to satisfy condition 5.2.9 of the marine licence, STDL confirm that no dredging will be undertaken within July and August of 2022.

Cefas Comment	STDL Response
In my opinion, if DO were not to return to 'normal levels', I recommend dredging should not be permitted as this will add another source of impact to migrating salmonids during the sensitive season.	
Regarding compliance with condition 5.2.9., it is proposed that comparisons of DO levels are made between the two monitoring buoys to determine if there has been a drop in DO levels of 1 mg/l at the Dredge site in comparison to the Control site. It appears from the monitoring proposal that if DO levels at both the Dredge site and the Control site drop by 1 mg/l, dredging would not be stopped as the Applicant justifies continuation of dredging based on their opinion that external factors not related to dredging would influence any reduction in DO levels. However, when reviewing the dredge and control site locations (Figure 1), both sites are relatively close to each other, and to the dredging activity. Therefore, in my opinion there should be at least a couple of additional control sites to confirm the same level DO reduction to support the Applicant' conclusion of external factors influencing the drop in DO levels.	Please refer to the above response, in which STDL confirm that dredging will not be undertaken within July and August of 2022.
Furthermore, it is not clear how the baseline/'normal levels' DO levels within the Tees have been/will be established. This is important for cumulative effects (and for the comments above) which have not been taken into consideration. In my opinion, due to the number of dredging activities occurring in the Tees at the moment, including regular maintenance dredging undertaken under the Harbour Revision Order (HRO) held by PDT, careful consideration should be given to dredging/piling operations occurring simultaneously in the Tees.	Please refer to the above response, in which STDL confirm that dredging will not be undertaken within July and August of 2022. As such, there will be no overlapping of dredge campaigns between STDL and PDT during this sensitive period for salmon migration.
As per comment 13, the Applicant suggests that '*one week of monitoring post completion of the dredging is adequate to illustrate a return to baseline conditions'*. However, when considering the worst-case scenario (i.e., maximum enhanced SSCs) from the four modelled dredging phases set out in Section 6 of EIA report[2], the maximum area affected by increased SSC includes the entire width of the	Due to the seasonal restriction on dredging activities within July and August (i.e. the dredging embargo) and the requirement to progress with dredging the area known to be contaminated, STDL are unable to commit to monitoring for more than one week prior to commencement of dredging activities. However, STDL will deploy monitoring buoys as soon as possible in advance of the proposed dredging

[2] South Bank Quay, EIA Report, Royal Haskoning DHV, 6 November 2020

Cefas Comment	STDL Response
Tees meaning that there is the potential for a cross-sectional area of the river to be influenced. Further, the EIA report concludes that the plume effects arising from dredging will be observed throughout the whole dredging continuous period of 4 months. Therefore, at this stage, I cannot support that one week is enough time for the Tees to returning to baseline conditions.	works with a minimum of one weeks' data collection prior to the commencement of activities. The monitoring buoys will remain in-situ for a minimum of one week following completion of the dredging activities. It is anticipated that monitoring during this timeframe will supplement any baseline data collected prior to commencement of dredging activities.
MMO Question 4. Is there a need to continue each piece of monitoring or can some parts be terminated? N/A at this stage as the document reviewed is related to the proposed monitoring scope.	No comment.
MMO Question 5. Are any changes to the proposed monitoring programme needed? Please refer to previous comments 13-17 as there are some concerns regarding the proposed monitoring which should be considered by the MMO. Consideration by the MMO should be given to how the proposed monitoring will be committed to by the Applicant and compliance monitored by the MMO.	No further comment.
MMO Question 6. Minor presentational comments if they affect the conclusions or overall confidence in the findings None.	No comment.

Table 2.2 Responses to specific comments raised by the Environment Agency regarding the Scheme of Monitoring

Environment Agency Comment	STDL Response
Condition 5.2.7 We have reviewed the provided document (South Bank Phase 1 (MLA/2020/00506) Scheme of Monitoring) and **do not recommend** the discharge of condition 5.2.7 at this present time as it does not meet our expectations regarding the amount of monitoring that is needed. Below are specific points we would like to see improved/included:	Noted. STDL have submitted a revised Scheme of Monitoring to address the requests of the Environment Agency with respect to additional monitoring locations, recording at both 1m above the estuary bed and 1m below the surface, and including monitoring of temperature and salinity. Responses to each of the Environment Agency's specific comments is set out below.
• The document mentions that the buoy belonging to PD Teesport will be used as baseline data. It is mentioned that it is 10m upstream of the Harbour Master's Landing. We would like to get confirmation of where this buoy is, for example a grid reference or a map, so we can determine how representative of the site this will be.	As mentioned above, a revised Scheme of Monitoring has been submitted which includes an updated figure illustrating the location of the buoy belonging to PD Teesport. The coordinates of this buoy are also provided within the revised Scheme of Monitoring (see section 2.3).
• We expect to see more than two monitoring buoys deployed. We recommend that four monitoring buoys would be needed. One buoy would be us as a control as mentioned in the document (outside of the zone of disturbance), one buoy would be close to the western/upstream extent of the quay dredge, one would be near to the eastern/ downstream side of the dredge and one would be near to the turning circle/ other area to be dredged.	STDL accept the Environment Agency's request for additional monitoring locations and have provided an amended figure within the revised Scheme of Monitoring.
• The document only mentions monitoring turbidity. Dissolved oxygen is not mentioned in section 2. We would expect the applicant to monitor dissolved oxygen as well as turbidity. We would also like to see temperature and salinity measured at the four buoys. These are standard suites on many monitoring devices and therefore, should be able to be implemented.	This is an unintentional omission in Section 2 of the Scheme of Monitoring. The intention is to monitor for dissolved oxygen and turbidity, in compliance with the wording of condition 5.2.7 of the marine licence. This has been amended in the updated Scheme of Monitoring submitted.
• *Stop thresholds* - We expect the difference in readings between the control buoy and buoys within the zone of influence of the activity to be	It is noted that the Scheme of Monitoring attempted to address two conditions on the marine licence simultaneously (condition 5.2.7 and condition 5.2.9), regarding

Environment Agency Comment	STDL Response
monitored. For dissolved oxygen, as with condition 5.2.9, if the influenced figure drops 1mg/l below the control we expect the activity to stop until it returns to within this 1mg/l range. For the other determinants, if the figure at the influenced buoy is outside of 10% difference with the control buoy, we expect activities to stop until these return to within 10% of the control level.	general water quality monitoring and real-time measuring of parameters against the specified stop thresholds respectively. As per condition 5.2.9 of the marine licence, the stop thresholds only apply to dredging undertaken within the months of July and August. It is felt that conflating these two within the Scheme of Monitoring has confused matters. As such, a revised Scheme of Monitoring has been submitted which focusses solely on general water quality monitoring required to discharge condition 5.2.7. To satisfy condition 5.2.9 at this time, STDL confirm that no dredging will be undertaken in July and August of 2022 and are therefore no longer seeking to discharge condition 5.2.9 of the marine licence, with regard to a mechanism for real-time observation of Dissolved Oxygen against the specified stop thresholds. As such, the Scheme of Monitoring has been revised to address condition 5.2.7 only, with regard to general water quality monitoring.
• The document does not mention at which level the monitoring will happen, for example at the surface, 1m below the surface. We would expect the monitoring to be undertaken at 1m above the estuary bed (and also 1m below surface-please see Fisheries section below).	The revised Scheme of Monitoring now includes for monitoring at both 1m above the estuary bed and 1m below the surface at each of the monitoring locations. However, should the requirement to monitor 1m below the surface no longer be required due to the agreement not to dredge in July and August 2022 please advise accordingly.
• We would request that the buoys are installed longer than one week prior to the commencement of the dredging activity. This will provide more site specific background data rather than relying on data collected by the PD Teesport buoy.	Due to the seasonal restriction on dredging activities within July and August (i.e. the dredging embargo) and the requirement to progress with dredging the area known to be contaminated, STDL are unable to guarantee they can honour this request. However, STDL will deploy monitoring buoys as soon as possible in advance of the proposed dredging works with a minimum of one weeks' data collection prior to the commencement of activities. The monitoring buoys will remain in-situ for a minimum of one week following completion of the dredging activities. It is anticipated that monitoring during this timeframe will supplement any baseline data collected prior to commencement of dredging activities.

Environment Agency Comment	STDL Response
• **Fisheries** – The applicant should undertake dissolved oxygen monitoring at the surface (1m below surface) for smolt migration impact mitigation. We would request that monitoring is undertaken for longer than one week prior to the commencement of the dredging activity. For the stop thresholds, we expect the difference in readings between the control buoy and buoys within the zone of influence of the activity to be monitored. For dissolved oxygen, as with condition 5.2.9, if the influenced figure drops 1mg/l below the control we expect the activity to stop until it returns to within this 1mg/l range.	At the monitoring locations, STDL accept monitoring of the agreed physio-chemical water quality parameters at both 1m below surface and 1m above the estuary bed. However, should the requirement to monitor 1m below the surface no longer be required due to the agreement not to dredge in July and August 2022 please advise accordingly. As aforementioned, STDL have confirmed that no dredging will now be undertaken in July-August of 2022 and are therefore no longer seeking to discharge condition 5.2.9 of the marine licence, with regard to a mechanism for real-time observation of Dissolved Oxygen against the specified stop thresholds. As such, the Scheme of Monitoring has been revised to address condition 5.2.7 only, with regard to general water quality monitoring.