Note / Memo

HaskoningDHV UK Ltd.
Industry & Buildings

To:	Marine Management Organisation
From:	Erin Snaith
Date:	03 March 2022
Copy:	Joshua Riley; Jamie Ellis; Steven Rayner; Matt Greaves.
Our reference:	PC1084-RHD-SB-EN-NT-EV-1124 P03
Classification:	Open

Subject: **South Bank Phase 1 (MLA/2020/00506) Scheme of Monitoring**

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1 Introduction

South Tees Development Limited (STDL) has a marine licence for Phase 1 of the South Bank Quay project (reference MLA/2020/00506).

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.

Reason: To monitor impacts to water quality during dredging.

Condition 5.2.9 of the marine licence 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.

Reason: To maintain, improve and develop all salmon, trout, lamprey, smelt and freshwater fisheries, under the Salmon and Freshwater Fisheries Act. 1975 (SSFA) as modified by the Marine and Coastal Access Act, 2009.'

This Scheme of Monitoring has been prepared to discharge Condition 5.2.7 of the marine licence and to close out return 'MLA/2020/00506/R8' on the Marine Management Organisation's (MMO's) Marine Case Management System (MCMS).

This Scheme of Monitoring also details how Condition 5.2.9 of the marine licence will be adhered to, should dredging be undertaken during July and August (further detail provided in Section 3).

The proposed approach to monitoring prior to, during and post completion of dredging activities is set out below.

2 Proposed monitoring

PD Teesport (PDT) has a water quality monitoring buoy located at Tees Dock, approximately 10m upstream of the Harbour Master's Landing. The monitoring buoy records dissolved oxygen (DO) concentrations in mg/l and turbidity in Formazin Turbidity Unit (FTU).

It is considered that the data which has been (and continues to be) recovered by PDT's monitoring buoy provides a comprehensive baseline understanding of DO and turbidity in the vicinity of the dredge footprint. It is understood from discussions with PDT that the monitoring buoy has been in place for a number of years and therefore provides a long term dataset which will capture the natural variability in DO and FTU within the Tees. STDL has consulted with PDT prior to submission of this Scheme of Monitoring, who have confirmed that the monitoring data can be utilised for the South Bank Quay project.

To supplement the existing dataset, it is proposed that two monitoring buoys are 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 (discussed further below).

The buoys will house turbidity monitoring systems which provide the data in real time. Data will be automatically transmitted from each buoy to a secure system online for access avoiding the need to physically recover the buoy to retrieve the data.

The monitoring buoys are proposed to be positioned in accordance with the following parameters (actual monitoring locations will be subject to agreement with PDT):

- 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).

The proposed monitoring locations (indicatively shown in Figure 1 and Figure 2 against the predicted maximum enhanced areas of suspended sediment concentrations from the dredge) were selected based on the results of the sediment plume modelling that was undertaken as part of the Environmental Impact Assessment (EIA) (the outputs of which are presented in the EIA Report which supported the marine licence application (Royal HaskoningDHV, 2020)). The monitoring sites are focussed on the dredging at the proposed quay as that is where the majority of the dredging is occurring.

It should be noted that it is not practicable to locate monitoring buoys within the dredge footprint as they would have to be removed to undertake the dredging works, therefore the monitoring location is proposed to be located close to the boundaries of the dredge footprint (noting that ultimate locations will be determined through agreement with PDT).

The EIA Report (Royal HaskoningDHV, 2020) predicted that sediment suspended within the dredging plumes will fall to the riverbed, either soon after disturbance or spillage occurring during the dredging operation (for coarser-grained sediment fractions), or at a point in time within a few minutes to a few hours after this if it is carried in suspension by the prevailing currents (for finer-grained sediment fractions) (Royal HaskoningDHV, 2020). As a result, it is considered that one week of monitoring post completion of the dredge is adequate to illustrate a return to baseline conditions.

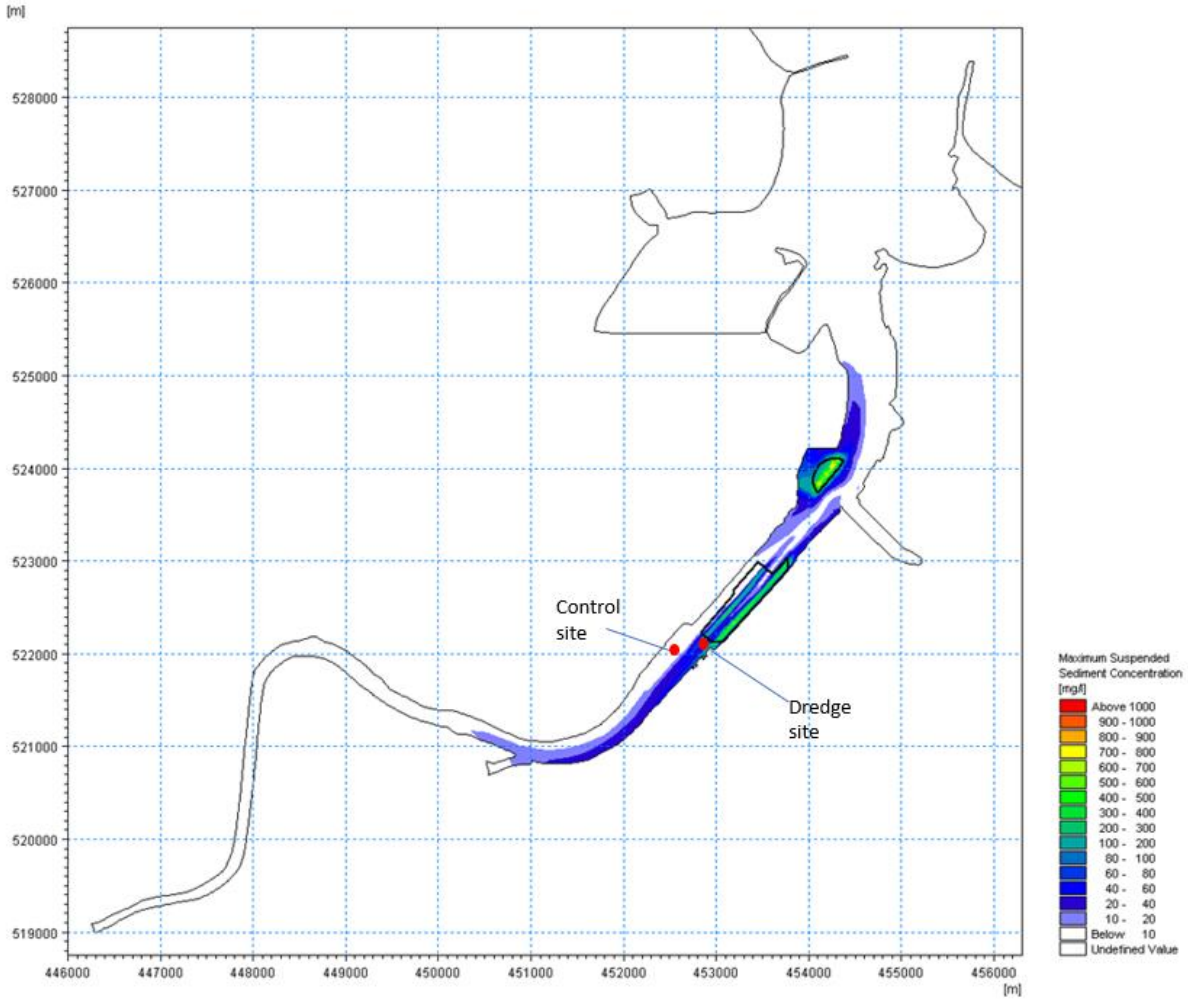

Figure 1 Maximum enhanced suspended sediment concentrations (near-bed layer) arising from dredging activities during the capital dredge campaign (Royal HaskoningDHV, 2020). Proposed dredge areas are shown in black. Indicative locations of the two monitoring buoys are shown in red (noting that these are to be agreed with the PDT and are therefore subject to local change).

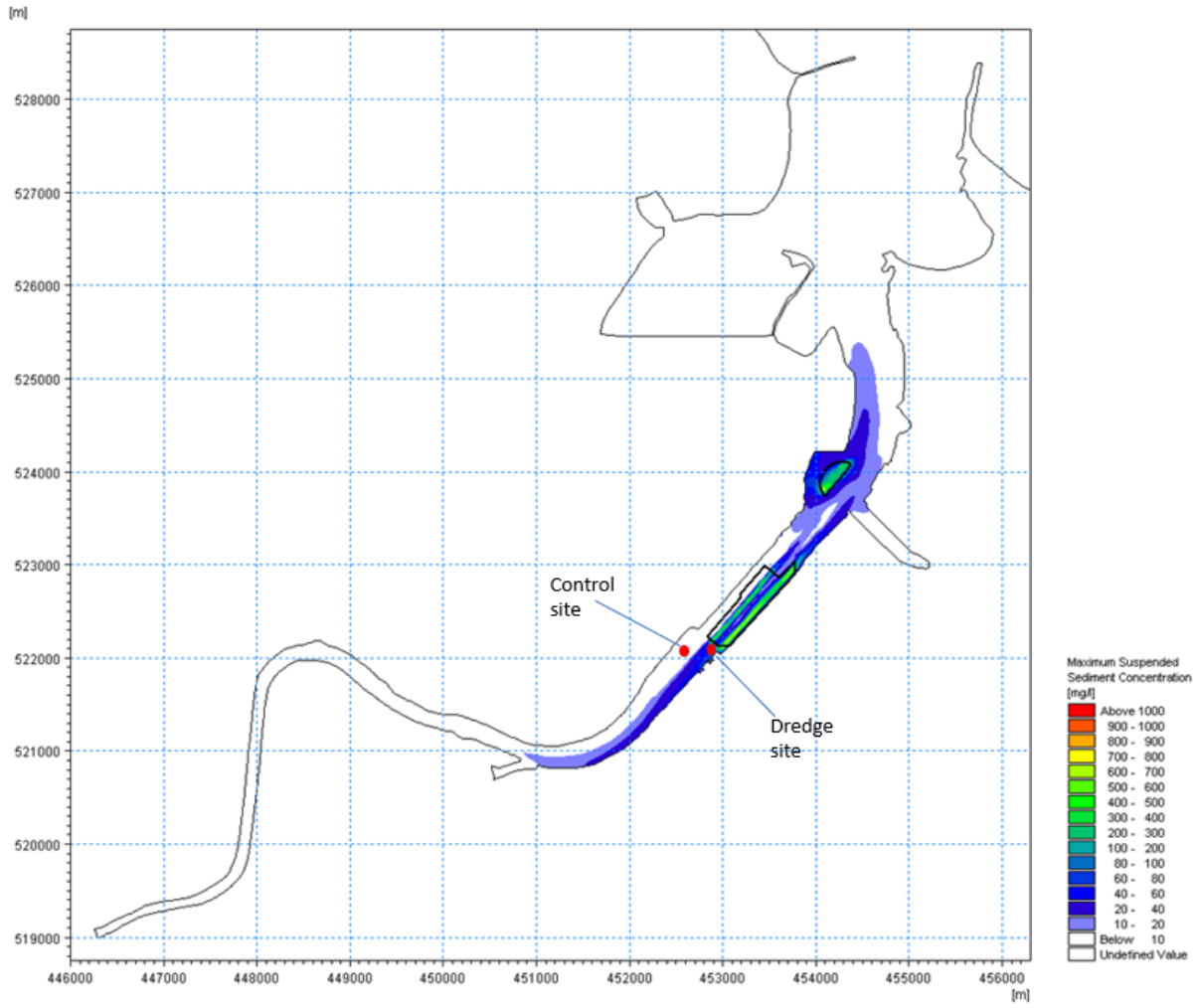

Figure 2 Maximum enhanced suspended sediment concentrations (near-surface layer) arising from dredging activities during the capital dredge campaign (Royal HaskoningDHV, 2020). Proposed dredge areas are shown in black. Indicative locations of the two monitoring buoys are shown in red (noting that these are to be agreed with the PDT and are therefore subject to local change).

3 Compliance with Condition 5.2.9

As noted in Section 1, Condition 5.2.9 of the marine licence requires dredging to temporarily pause should DO drop by 1mg/l during July and August (assuming STDL reaches agreement with the MMO to dredge during these specific months).

If STDL reaches agreement with the MMO to dredge in July and August, the real time data from the two monitoring buoys will be reviewed to determine if there has been a drop of 1mg/l in DO.

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.

If 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), we 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.

4 Conclusion

This Scheme of Monitoring has been completed to discharge Condition 5.2.7 of the South Bank Quay Phase 1 marine licence (L/2021/00506). It has also been produced to illustrate how STDL would adhere to Condition 5.2.9 of the marine licence, should agreement with the MMO be reached to dredge during July and August. We request that the MMO reviews the information set out above and confirms whether Condition 5.2.7 of the marine licence has been appropriately discharged, and that the approach set out in Section 3 with regard to reductions in DO (applicable to Condition 5.2.9) is acceptable.

5 References

Royal HaskoningDHV (2020). South Bank Quay EIA Report.