MLA/2025/00263 – Tees and Hartlepool Maintenance Dredging and Disposal Licence Renewal

Representation from North East Marine Research Group (NEMRG)

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1 Introduction

NEMRG have analysed MLA/2025/00263 Marine Licence application. This document contains NEMRG's representation on items raised by the application which need to be addressed in the licence and recommendations for future introduction of a dredging environmental management plan and beneficial use of dredged material management plan.

This document is supported by two documents which provide further details of why this representation is being made: "Report of the Investigation of the Sediment Quality Data from L/2015/00427/7(MLA/2015/00088)"[1]; "Best Practices for Environmentally Responsible Maintenance Dredging in the River Tees: An Integrated Framework for TSHD Operations"[2].

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2 Summary

To improve the environment in the River Tees, the North East Marine Research Group (NEMRG) proposes several key changes to current dredging operations, advocating for a precautionary approach rather than continuing established practices.

The key changes which should happen to dredging in the River Tees are:

Eliminate or severely restrict overspilling during dredging operations:

- Trailing hopper suction dredgers (TSHDs) should operate with **0% overflow** as TSHDs are the least appropriate dredgers to use in contaminated rivers such as the Tees[3].
- If overspilling is permitted, it should **only occur on an ebbing tide** and below the point in the river where sediment is allowed to be carried to sea, to prevent fine sediment from being trapped within the River Tees sediment trap[4,5].
- Overspilling upstream of 2km from South Gare should be suspended, as any fine material will redeposit within the river[4,5].
- Overspilling creates a new pathway for contaminant release, which requires a proper assessment following Environment Agency guidance for surface water pollution risk, and it is not clear if such an assessment has been carried out[6,7].
- Due to the concentration of some contaminants on finer particles[8], overspilled material is more contaminated than the bulk sediment, so it should not be allowed to enter the River Tees or Hartlepool Harbour.

Enhance and ensure consistency in sediment analysis and sampling:

- **More frequent sediment analyses for Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), and Brominated Diphenyl Ethers (BDEs) should be conducted**.
- A further sampling programme after April 2025 is needed to provide confidence in the real contamination state of the River Tees[9], as past sampling variations suggest major contamination events are occurring[1,10].
- Sampling must be performed **before, during, and after dredging operations**, with specific limits set on the level of contamination spread that is allowed before dredging is suspended. Any contamination found should have specified remediation.
- The current reliance on 143 samples over 10 years for over 25 million tonnes of material is insufficient to satisfy OSPAR guidelines[11,12], and the individual data sets are inconsistent, making objective comparisons difficult[1]. New, complete sample sets are essential.
- NEMRG has identified contamination concentrated in River Tees sediment small particle fraction[1] and OSPAR guidelines state that any analysis of contaminated sediment should consider the **surface area of sediment particles**, as hydrophobic contaminants like PCBs

and PAHs are adsorbed onto particle surfaces and are concentrated on smaller particles, meaning the level of contamination can not be assessed from just the overall weight of sediment.

Adopt a precautionary and beneficial environmental management approach:

- The approach to dredging should be **precautionary**, especially given the significant marine catastrophe of the crustacean die-off and the continuing mortality of seal pups, the causes of which are not fully understood.
- Instead of assuming existing practices are acceptable, dredging operations should be adapted to **minimise disturbance and maximise the chance of recovery for the marine ecosystem**.
- The possibilities and technology for extracting dredged material without spillage and depositing it in lined landfill sites must be urgently explored, rather than redistributing it offshore.
- The dredging disposal strategy should proactively **search for beneficial uses for the dredged material**.
- Acknowledging the River Tees's industrial use, there is an opportunity for PD Ports to be creative in the disposal of dredged material.

Improve operational transparency and assessment:

- The application should include detailed maps of geographical locations and any excluded dredge areas.
- A scoping exercise is necessary to consider the full influence of the material released during overspill from TSHDs.
- The assessment of environmental impacts must include the upto 25% of dredged material that is released back into the river at dredge sites, not just the material disposed of at sea.
- It should be noted that the River Tees is an intensively developing area, and chemical contamination can vary significantly, meaning that material disposed of at any time may differ from previous analyses.
- As dredging is underway data of the composition of sediment being dredged by time and location should be recorded over at least one year to confirm that samples taken in a location are representative of the sediment that is dredged.

By implementing these changes, NEMRG believes that the status of the water bodies in the River Tees would be improved, moving away from a providential approach that accepts past practices despite clear environmental concerns.

3 Reasons for Necessary Changes

The North East Marine Research Group (NEMRG) advocates for significant changes to dredging in the River Tees, basing these requests on detailed analysis and observations of past and current practices, sediment quality data, and the state of the marine environment. The evidence supporting these requested changes is comprehensive[1]:

1. Elimination or Severe Restriction of Overspilling During Dredging Operations:
    1. **Contaminant Release Pathway**: Overspilling creates a new pathway for the release of contaminants from sediment into the water column. It is not evident that a proper assessment following Environment Agency guidance for surface water pollution risk has been conducted for this new discharge pathway.
    2. **Concentration of Contaminants**: Overspilled material is concentrated with finer particles. These smaller particles have a higher surface area to volume ratio, and hydrophobic contaminants like Polycyclic Aromatic Hydrocarbons (PAHs) and Polychlorinated Biphenyls (PCBs) adsorb onto these surfaces, meaning overspilled material is **more contaminated than the bulk sediment**[8]. For example, 90% of HMW/hydrophobic PAH and PCB contamination can be associated with just 25% of the dredged material that is overspilled[1].
    3. **Exceeding Disposal Limits**: Calculations show that overspilled sub-5µm and sub-1µm fractions often **exceed internationally accepted levels for safe disposal at sea** under the OSPAR convention[1]. This indicates that the overspill being released into the river presents an ongoing toxic hazard.
    4. **Sediment Trap Effect**: The lower Tees Estuary acts as a trap for both marine and fluvial sediments, with generally low flow speeds that are insufficient to re-erode deposited sediments. Finer sediments penetrate further up the estuary, and most sediment entering the system will settle out. Any overspill of fine material from dredgers operating upstream of 2km from South Gare **will redeposit within the river**, effectively making this area act like a closed harbour for fine sediments.[4,5]
    5. **Increased Dredging Requirement**: Overspilling, while appearing to increase dredging efficiency in the short term, actually **increases the amount of material required to be dredged** in the long term to maintain navigation channel depths, as the overspilled material redeposits with the dredge footprint.
    6. **Crustacean Die-off and Seal Pup Mortality**: The precautionary principle should be applied given the unexplained mass crustacean die-off in 2021[13] and the continuing high morbidity and mortality of harbour seal pups in the Tees Estuary[14], particularly in 2024. High levels of PCBs found in seal pups' blubber suggest maternal transfer via milk, possibly linked to the ingestion of PCBs by mothers eating prey which have been exposed to the overspill from dredgers. This highlights the urgent need to explore

technologies for extracting dredged material without spillage and ideally depositing it in lined landfill sites.

2. Enhanced and Consistent Sediment Analysis and Sampling:
    1. **Insufficient Current Analysis**: The supplied sediment analyses are **insufficient to assert that dredging will maintain or increase the environmental status** of the River Tees.
    2. **Missing and Inconsistent Data**: The application relies on only 143 samples over 10 years to represent over 25 million tonnes of material, which is roughly 5 samples per million tonnes. There are significant **inconsistencies and missing fundamental measurements** across data sets, such as total organic carbon, total hydrocarbon, PCBs, BDEs, and organochlorines in various years. This makes objective comparison impossible and severely impacts the ability to understand the system and minimise environmental risks.
    3. **Variability in Contamination**: The variation seen between 2023 and 2024 sampling suggests that **major contamination events are occurring** in the River Tees, rendering extrapolation of sampling over multi-year periods unsafe. New sampling for any future marine licence was explicitly required by the MMO on April 1, 2025[9].
    4. **Importance of Surface Area Analysis**: Contaminants like PCBs and certain PAHs are **adsorbed on the surface of sediment particles**, not necessarily correlated with organic matter. Therefore, analysing contaminant concentrations based solely on weight is insufficient; analysis should **consider the surface area of sediment particles**, as smaller particles (which dominate overspill) have a disproportionately higher surface area and thus carry a greater fraction of adsorbed contamination.
    5. **Pre-, During, and Post-Dredging Sampling**: Learning from the South Bank Quay exclusion zone dredge, where significant contamination spread occurred, **sampling must be carried out before, during, and after dredging operations**, with specific limits set on the allowed level of contamination spread.
2. Adoption of a Precautionary and Beneficial Environmental Management Approach:
    1. **Shift from "Providential"**: The current approach to dredging is best described as "providential" – assuming that because an activity has occurred for a long time, it is acceptable to continue without re-evaluation. This approach **ignores recent major environmental damage** such as the crustacean die-off and seal pup mortality.
    2. **Minimising Disturbance and Maximising Recovery**: A precautionary or beneficial approach should be adopted to **minimise disturbance and maximise the chance of recovery for the marine ecosystem**, especially given its currently "disrupted and fragile" state.
    3. **Explore Alternative Disposal**: The possibilities and technology for extracting dredged material without spillage and **depositing it in lined landfill sites must be explored**

urgently, rather than continuing to redistribute it offshore where it may affect the food chain.

4. **Beneficial Use Strategy**: The dredging disposal strategy should proactively **search for beneficial uses for the dredged material**, rather than viewing the industrial use of the estuary as a barrier to environmental improvement.

3. Improved Operational Transparency and Assessment:
    1. **Missing Geographical Information**: The application and baseline documents lack detailed maps showing geographical locations and excluded dredge areas, which are essential for full context and understanding.
    2. **Incomplete Environmental Assessment**: The assessment of environmental impacts **must include the upto 25% of dredged material that is released back into the river** at the dredge sites as overspill. Current assessments often only consider the material disposed of at sea. A scoping exercise is needed to consider the full influence of this overspill material.
    3. **Variability of Contamination**: The River Tees is an intensively developing area, and chemical contamination is not homogeneous and **can vary significantly over time and location**, meaning that material disposed of at any time may differ considerably from previous or subsequent analyses. This necessitates a more rigorous and less assumed approach to contamination trends.

4 Necessary Fundamental Changes to the Tees Maintenance Dredging Protocol

The "NEMRG Tees Dredging Environmental Best Practices"[2] document provides a comprehensive framework for enhancing environmental protection in the River Tees' maintenance dredging, advocating for a dynamic and adaptive process beyond mere regulatory compliance. It specifically suggests changes to the dredging process outlined in the “Tees MDP Baseline Document May 25[15]" across immediate, medium-term, and long-term horizons.

Here are the key changes advised:

4.1 Immediate Actions (0-2 Years)

4.1.1 Formal Adoption of a Dynamic Planning Calendar:

Current Practice: The "Baseline Document" notes that some temporal restrictions are in place, such as avoiding dredging in July and August to protect migrating salmon and restricting operations around low tide in winter for feeding birds. However, the "Best Practices" document describes these as "piecemeal".

Advised Change: PD Ports should formally adopt a **comprehensive Annual Calendar of Ecological Sensitivity**. This calendar would consolidate all known ecological sensitivities into a risk-based, colour-coded system (Critical/High/Medium/Low sensitivity). This will enable **proactive scheduling of dredging campaigns** to minimise conflicts with critical wildlife periods, such as the harbour seal pupping season (June-July) and peak waterbird feeding times (winter low tides). This plan should be a public document, agreed upon with Natural England and the Marine Management Organisation (MMO).

4.1.2 Implementation of an Adaptive Turbidity Monitoring Program:

Current Practice: The "Baseline Document" references plume modelling for disposal operations, indicating that dispersion is quick and effects are localised to the disposal site, suggesting minimal off-site impact. However, it does not describe a real-time, adaptive monitoring system for turbidity during dredging.

Advised Change: An **adaptive management program for turbidity** must be implemented immediately. This requires deploying **real-time turbidity and Total Suspended Solids (TSS) sensors** both upstream and downstream of active dredging operations. Crucially, this data must be linked to a **pre-agreed, three-tiered system of operational trigger levels** (Alert, Action, and Stop-Work), developed in consultation with Cefas and Natural England based on the known tolerances of local sensitive receptors. This system would empower dredger operators to make real-time adjustments, such as slowing down or pausing work, to keep turbidity plumes within acceptable environmental limits.

4.1.3 Technological Audit and Upgrade for Sediment Control:

Current Practice: The "Baseline Document" highlights PD Teesport's investment in the new "Emerald Duchess" Trailing Suction Hopper Dredger (TSHD), noting its sophisticated diesel-electric hybrid propulsion, battery pack, and use of Hydrotreated Vegetable Oil (HVO) for reduced emissions, and that the existing "Heortnesse" underwent refurbishment for improved dredge management and reduced emissions.

Advised Change: Despite these advancements, the "Best Practices" document states that these innovations primarily address atmospheric emissions and decarbonisation, **not the most pressing local risks of sediment resuspension, turbidity, and contaminant mobilisation**. A **full engineering audit of both the new "Emerald Duchess" and the existing "Heortnesse"** should be conducted. Investment should be prioritised for retrofitting the **best available technology for sediment and turbidity control**, such as environmentally friendly overflow systems (e.g., near-bed discharge pipes) and advanced, precision drag heads to minimise sediment resuspension at the source.

4.2 Medium-Term Strategy (2-5 Years)

4.2.1 Commission a Comprehensive Beneficial Use Feasibility Study:

Current Practice: The "Baseline Document" indicates that PD Teesport is already engaging in the beneficial use of dredged material, providing it to the River Tees Trust for habitat improvement, such as the installation of a 'green-wall' and reprofiling areas using geotextile bags filled with dredged material.

Advised Change: PD Ports, in partnership, should commission a **full-scale feasibility study for a Beneficial Use of Dredged Material (BUDM) Program**. This study should initially focus on segregating and utilising the **clean sand dredged from the outer channel** (seaward of chart area 9) for local **beach nourishment** or as a **commercial construction aggregate**. The study must address logistics, dewatering requirements, costs, potential markets, and the necessary regulatory pathways to reclassify this material as a product rather than a waste.

4.2.2 Re-evaluate Dredging Technology for Contaminated "Hotspots":

Current Practice: The "Baseline Document" details that Trailing Suction Hopper Dredgers (TSHDs) are the primary vessels used, and while material from the Billingham Reach area was temporarily excluded due to high contaminant levels, it was later deemed suitable for sea disposal after further sampling.

Advised Change: A formal review, led by PD Ports and advised by Cefas, should assess the **suitability of continuing to use TSHDs in the historically contaminated, silty upper reaches of the estuary** (e.g., near Billingham Reach). The "Best Practices" document highlights that the OSPAR Commission ranks TSHDs as the **least suitable technique for dredging contaminated**

sediment due to dispersal and mixing. This review should explore the operational and economic viability of using **more precise, lower-dispersal dredging methods** (e.g., environmental clamshell dredgers, auger dredgers) for targeted "hotspot" management, moving towards a "right tool for the right job" approach.

4.2.3 Develop and Publish a Formal Dredging Environmental Management Plan (DEMP):

Current Practice: PD Teesport operates under an Environmental Management System (EMS) meeting ISO14001 requirements, the International Safety Management Code for ships, and has an oil spill contingency plan.

Advised Change: To enhance transparency and formalise commitment to best practice, PD Ports should **develop and publish a comprehensive DEMP**. This public document should codify all environmental management procedures, including the Ecological Calendar, the adaptive turbidity monitoring protocol, trigger levels, mitigation measures for all designated species, contaminant management protocols, and the phased strategy for BUDM. This would serve as a single, accountable framework for all dredging-related activities.

4.3 Long-Term Vision (5+ Years)

4.3.1 Establish a Tees Estuary Partnership for Sediment Management:

Current Practice: The "Baseline Document" mentions current beneficial use initiatives but does not detail a broad partnership for a circular sediment economy.

Advised Change: Building on the BUDM feasibility study, a **formal partnership** should be established to create a functioning **regional market and logistical chain for beneficially used dredged material**. This partnership should include PD Ports (supplier), local authorities, coastal protection agencies, the construction industry (end-users), and regulators (MMO, Environment Agency) to overcome barriers and create a self-sustaining circular sediment economy.

4.3.2 Invest in a Pilot Project for Silt Treatment and Habitat Creation:

Current Practice: The "Baseline Document" acknowledges legacy contamination in the inner estuary sediments. The "Best Practices" document identifies this contamination as the single greatest barrier to broader beneficial use.

Advised Change: The partnership should seek funding for and invest in a **pilot project to test and validate technologies for treating contaminated silts** to render them safe for habitat creation. A successful pilot could unlock the potential to use large quantities of dredged silt to actively restore saltmarsh and mudflat habitats lost to historical development, directly contributing to the enhancement of designated ecological sites.

4.3.3 Integrate Sustainable Dredging into Core Port Strategy:

Current Practice: PD Teesport has an Environmental, Social and Governance (ESG) strategy with a commitment to increasing biodiversity and aims to become the "UK's most sustainable port company".

Advised Change: The principles and practices outlined in the DEMP and the BUDM strategy must be **fully integrated into the highest levels of the port's strategic planning**. This includes embedding them within future iterations of the Port's Master Plan, Marine Safety Plan, and corporate ESG strategy, ensuring environmentally responsible dredging is a core, non-negotiable component of the port's vision.

5 Observations from Application Form

MLA/2025/00263 Application Form[16].

Page 10 Proposed Mitigation – no mention is made of any mitigation to deal with the upto 25% of dredged material which is overspilled and resuspended by the dredgers at the dredge sites. Due to the fact that overspilled material will be concentrated towards the finer fraction of the dredged sediment it will be more contaminated than the bulk sediment analysis has detailed. As such overspilling should not occur in order to ensure that the dredged material is disposed of at sea rather than in the River Tees / Hartlepool Harbour.

NE-BIO-1, 2, 3 – often this licence application takes a providential rather than precautionary approach to biological impacts of dredging, basically stating that because the activity has been carried out for considerable time it is acceptable for it to continue unchanged. No consideration is made of the possibility to improve the marine environment by adapting dredging operations to minimise disturbance to the marine environment. For example, only dredging on an ebbing tide to ensure that overspilled dredged material has the best chance of being flushed from the estuary, changing away from overspilling as being standard operational procedure. While the dredging activity may be similar to that which has been carried out previously, since the last licence application there has been a major marine catastrophe in the marine environment, this has left the local marine ecosystem disrupted and fragile, as such a precautionary / beneficial approach should be taken to maintenance dredging to maximise the chance of recovery of the marine ecosystem.

6 Comments on 2025 Tees Maintenance Dredge Protocol (MDP) Baseline Document – Renewal Application for Maintenance Dredging L/2015/00427/7

The licence application is based on the material supplied in the 2025 Tees Maintenance Dredge Protocol (MDP) Baseline Document – Renewal Application for Maintenance Dredging L/2015/00427/7[15].

6.1 Section 1.1 Maintenance dredging and disposal

Error - "*The marine licence, however, only permits disposal to sea because PD Teesport Limited, as a statutory harbour authority, meets the exemption within Section 75 of the Marine and Coastal Access Act 2009 relating to dredging activities.*"

PD Teesport Limited, even as a statutory harbour authority, does not meet the exemption within Section 75 of the Marine and Coastal Access Act 2009 relating to dredging and disposal activities, as the disposal site is not in surface waters and so it contravenes the additional conditions 2A specifically "that the activity involves the relocation of sediments inside surface waters".

So as PD Teesport Limited does not meet the criteria for exemption within Section 75, does this mean that the marine licence should not permit disposal at sea?

Suggested correction - "*The marine licence, however, does not permit disposal to sea because PD Teesport Limited, even as a statutory harbour authority, does not meet the exemption within Section 75 of the Marine and Coastal Access Act 2009 relating to dredging activities.*"

Table 1.1 makes little of a major error in the previous licence application MLA/2015/00088 – June 2022 Variation 6, where the quantities of material to be disposed of at sea were incorrectly stated in the application as 10% of the real quantities. This should be acknowledged in Table 1.1 as "a factor of 10 admin error in licenced volumes" or "an order of magnitude error in licenced volumes", only corrected after 7 years into the 10 year licence.

The admin error allowed people who genuinely believed that the figures were correct to be belittled as conspiracy theorist when they stated that the UKD Orca had dredged over 25% of PD Ports annual dredged volumes. This error contributed to the loss of trust and breakdown of working relationships between regulators, local authority and local interest groups. It has also contributed to the obfuscation of any contribution that maintenance dredging may have made to the crustacean die-off.

"*The presumption in assessing any potential consequences of maintenance dredging activity is that dredging will continue in line with the established practice (described herein). The baseline document also presumes that existing practice is part of the functioning of the existing system given the timeframe over which it has occurred and continues to occur.*" This needs to be weighed against any environmental damage which is / has occurred, especially major events such as the crustacean

die-off and continuing mortality of seal pups. Basically the functioning of the system can not be taken for granted, which this document does.

6.2 Section 1.3 Updates to the MDP Baseline Document

The lack of noticeable impact of the maintenance dredging works both ways, while no additional negative impacts have been proven, equally no positive impacts of dredging have been seen and because of the continuous nature of dredging over more than 100 years, we have no idea about the baseline negative impact the current dredging operational approach is having.

It should be noted that from the start of the licence until 2022, the updates to the MDP Baseline Document were reporting dredged volumes that were 10x more than the erroneous quantities present in the L/2015/00427/1-5, the licence was only corrected in 2022. It is surprising that there was no regulatory comeback to this apparent 10x over-dredging.

6.3 Section 1.4 Purpose of this document

As this document is stated as a revisit of the full baseline, it would have been helpful if a number of detailed maps where contained within it providing details of the geographical location of place names used within the document, for example a map of excluded named dredge areas is required. Also shape files should have been included to define these areas or to the application whose responses defined these areas.

6.4 Section 2.3 Dredging methods

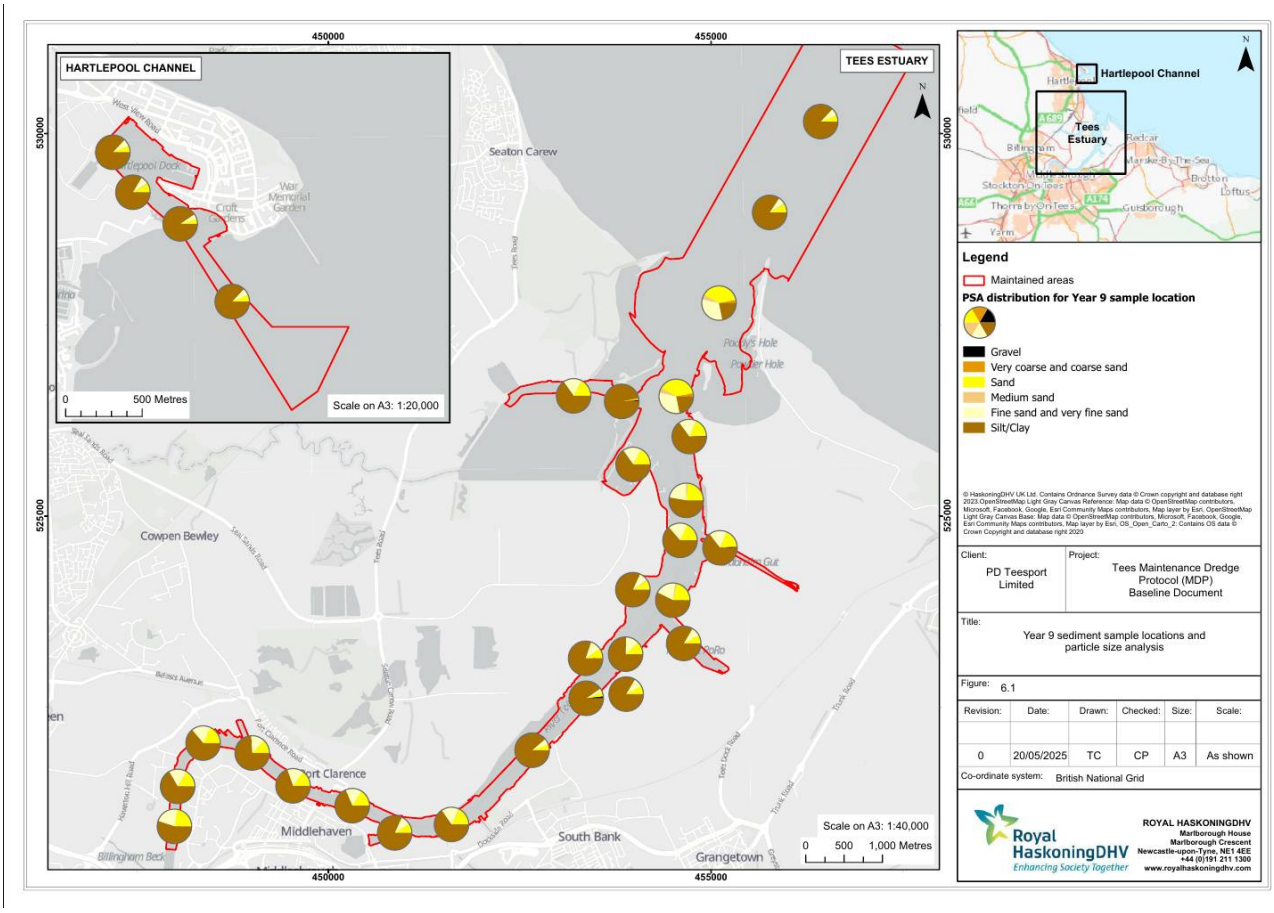

Illustration 1: Figure 6.1 from 2025 MDP Baseline Document

Figure 6.1 contradicts the statements about a progression of sediment particle size throughout the River Tees, as Figure 6.1 shows that except for 2 samples all samples are predominantly silt / clay and the 2 samples are predominantly silt / clay combined with fine / very fine sand. Experience over the duration of L/2015/00427 that each sample has shown a different distribution of sediment composition, but rather than supporting the statement of a progression this just highlights how complex the processes in the River Tees are.

The alternative interpretation it is incorrect to use Figure 6.1 to infer the sediment composition of the dredged material along the river, as it is derived from surface sampling. These sample may differ from the sediment in the region where they are taken, possibly just being a snapshot of a series of very dynamic process which result in continuous changes in the surface layer of the river bed. In which case the overall progression of dredged sediment sizes may be as expected (as experienced when dredging?), **however this would mean that the samples taken are not representative of the material being dredged and negate any conclusions based on the sediment quality data**.

Similarly while some samples taken in the higher reaches have shown lower levels of organic mater in general, apart from Hartlepool a range of organic carbon levels have been seen across the whole dredged area.

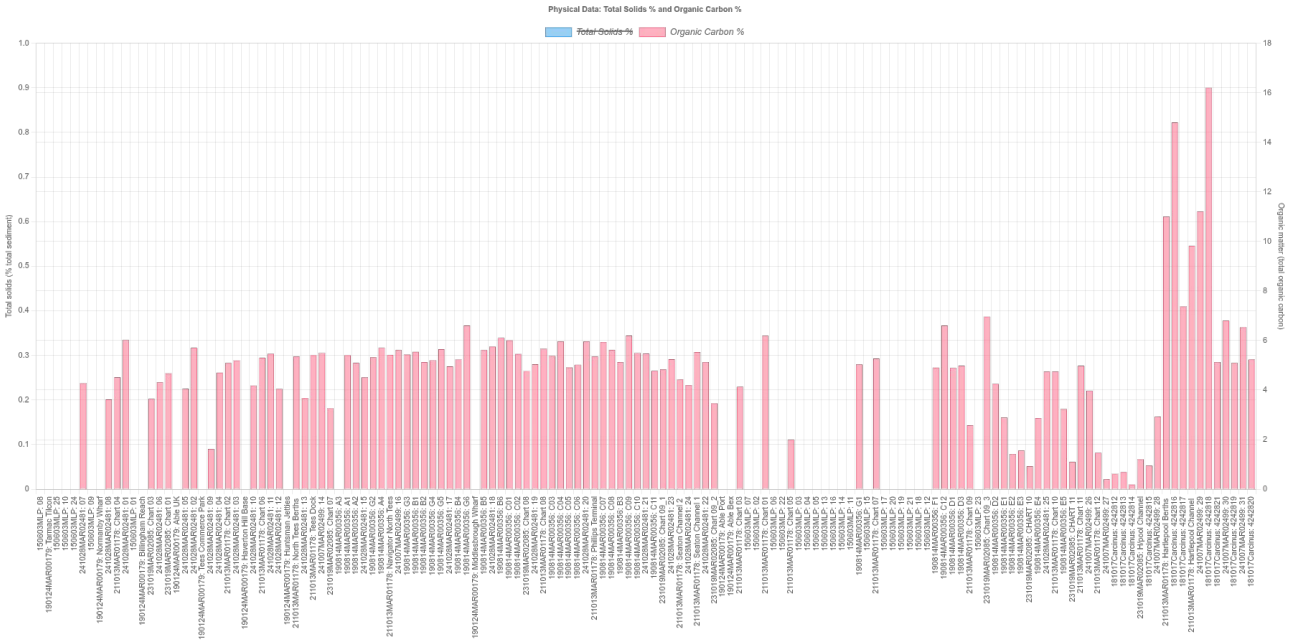

Figure 1: Organic matter (total organic carbon) as measured on all samples from 2015 - 2024

Figure 1 shows all organic carbon levels measured as part of MLA/2015/00088 plotted in latitude order, so to the left is upstream (Reach/Chart 0) and to the right is downstream (Reach/Chart 12) and Hartlepool.

Do these variations just reflect the fact that all the samples have been taken from the surface of the river bed? **So the samples are unlikely to be representative of the underlying sediment types**, so unlikely to even show trends identifiable with long term sedimentation within the water system, but **instead reflect short term effects**, such as the recent system level changes in water flow, such as high flows coming downstream or high flows caused by storms at sea. It also likely that as both the River Tees and Hartlepool are continuously dredged, the overspill of fine particles (silt / clay and very fine / fine sand) will ensure local refining of the sediment with larger particle fractions being taken to sea and smaller particles being deposited from the overspill.

In order to confirm whether the samples used for licencing are representative of the material that is dredged, **PD Ports should be required to compile a dataset of the fractions of materials dredged at different locations within the River Tees**. Such a dataset would not only confirm that the sampling is representative of dredging, but also identify any temporal trends. This data may already have been recorded or could be obtained as the type of material being dredged is an essential parameter to ensure efficient dredging is occurring.

The transport of sediment within the River Tees was covered extensively in the *Tees Entrance Channel Study – Part 1 – Conceptual Model of Estuary Processes*[5] and the role of dredging in

dispersing finer sediments is addressed in *ABPmer 2005 Tees Maintenance Dredging Baseline Document*[4]. The 2005 document also described the sediment transport processes within the Tees as:

"4.5.2.2 Sediment transport

There are a number of sources of sediments within the estuary system which together make up the sediment budget and therefore contribute to the sediment transport system. These include:

- *Movement in from Tees Bay due to littoral drift, onshore/offshore movement primarily from wave activity and material moving in and out with the flows either in suspension or as bed load;*
- *Fluvial sediment washing down from the river catchment, primarily during flood conditions;*
- *The net impact on the bed of the estuary itself, caused by erosion and deposition of both intertidal and subtidal areas. This will be influenced by the direct removal of sediment by dredging and agitation of material to the water column caused by the dredging process itself;*
- *Discharges of sediment to the system."*

Experience of the likely extensive contamination of the river bed by the relatively small exclusion dredge carried out as part of the construction of the South Bank Quay, showed how dredging can be the dominant factor in controlling the contaminant level within part of the river[10]. The maintenance dredge overspill being over 100,000 cubic metres per year will be a major component of the finer material depositing on the river bed. The nature of dredging moving around the river will mean this the extent of this effect will vary depending on where dredging is occurring or has recently occurred.

6.5 Section 2.3.1 Suction dredging

The introduction of the Emerald Duchess has a number of environmental benefits as noted.

However, the Emerald Duchess while injecting overspill below the keel appears to have no features to reduce overspill. The Emerald Duchess does not appear to have any "faunal-friendly" features incorporated in its draghead design.

Both the Heortnesse and the Emerald Duchess are trailing suction hopper dredgers (TSHDs) and as such operate normally with overspill from the top of the hopper, this results in the plume seen around the dredgers when in operation. Why is overspill not considered in this document?

It is a matter of public record that the UKD Orca, a TSHD, overspilled and resuspended 50,000 tonnes of sediment while it removed 150,000 tonnes from reaches 10, 11 and 12 in autumn 2021[13].

The environmental impact of the contamination within the fine sediment released via the overspill is not considered in this document.

6.6 Section 2.4 Dredge volumes

While figure 2.3 shows that dredge volumes are considerably lower than early in the 21st century, during the previous dredge licence volumes appear to vary around 600,000 cubic metres, as opposed to 1 million cubic metres early in the century. This means that the overspilled resuspended sediment is likely to have reduced from over 300,000 cubic metres to over 200,000 cubic metres.

6.7 Section 3 Disposal Strategy

It is interesting to note that the sediment results shared, do not tally with the issues raised for water quality of the Tees see Section 7.5. The efforts should be specifically made to reduce the entry of these chemicals into the River Tees and as dredging through overspilling is one of the major dischargers of contaminated water, further analysis is needed to show that overspilling is not a source of these chemicals.

6.8 Section 3.1 Disposal locations and quantities

While 75% of the dredged material is disposed at the sea, the 25% of material which is overspilled is effectively disposed of at the site of dredging so within the river or near coastal waters. This overspilled material will be a sub-set of the dredged material being predominantly fine particles which are slow to sediment and so carried out of the dredger hopper. In order to ensure the environment is protected and to comply with OSPAR specific analysis of the finer material is required to measure the contamination being dumped at the sites of dredging.

6.9 Section 3.2 Sediment quality data

A map should be included in this section to show the positions of the river currently excluded from dredging. In order to provide full context Table 3.2 should include information on the pre-licence sampling carried out for MLA/2015/00088, apparently data was only supplied for the River Tees, as 2015 data for Hartlepool has not been found.

Error: Table 3.2 – the 2018/2019 mid licence sample refers to MAR01178 which was sampled in 2021, the correct data should be MAR00179 V3.

A detailed analysis of the sediment quality data used to support MLA/2025/00263 has been made in the associated document MLA/2025/00263 – Report of the Investigation of the Sediment Quality Data of L/2015/00427/7[1].

6.10 Section 3.4 Mechanism of disposal

This section only details the disposal mechanism used for at least 75% of the dredged material.

The other 25% of dredged material is disposed of by overspill during the dredging by the trailing suction hopper dredgers, this is standard operation and is detailed in Annex D.5 of the report by the DEFRA convened "*Independent Expert Assessment of Unusual Crustacean Mortality in the North-east of England in 2021 and 2022*". The Annex takes a providential approach to the risk caused by

the resuspended sediment, stating that all the resuspended sediment would have been swamped by the sediment resuspended by the storm which happened after the UKD Orca dredge had been completed. The precautionary approach would have been ask what had this highly contaminated resuspended sediment been doing during the 10 day of 24 hour dredging before the storm occurred. Sadly, this was not addressed in the report.

7 Comments on *Tees Maintenance Dredging Water Environment Regulations (WER) Compliance Assessment* (WER Compliance Assessment May 25.pdf)

7.1 Section 1 Introduction

The start of this document[17] is disappointing and seems to ignore what should be the guiding precautionary principle when dealing with the potential of environmental damage:

"Whilst consideration of the requirements of the Environment Agency's 'Clearing the Waters for All' guidance have been made, it should be noted that the activity has been ongoing for many years. Given there have been no significant changes to the dredge volumes and disposal arrangements throughout the last ten years, the ongoing dredging activity is considered to be accounted for within the baseline sampling undertaken to determine the status classification of the water bodies within which these activities occur."

This providential rather than precautionary approach ignores the mass crustacean die-off, the cause of which is still not known, having only be been found as likely as not to have been caused by a disease. So even if there has been no significant change in "dredge volumes and disposal arrangements", there has been a considerable change in the environment.

There have also been changes to the application of these regulations which do not appear to have been fully taken into account.

7.1.1 Section 2.1 Detail of dredging and disposal activities

It is incorrect to state under the brief description of the activity that: *"…. the marine licence only permits disposal to sea because the port, as a Statutory Harbour Authority, meets the exemption within Section 75 of the Marine and Coastal Access Act 2009 relating to dredging activities." Disposal of up to a maximum of 2,889,700 tonnes wet weight per year is permitted."* NEMRG understand, that as the Tees Inner (Tees Bay A) disposal site is 3 nautical miles from the river estuary, it is not classified as surface waters, so this exemption does not apply as the disposal (relocation) is not taking place in "surface waters", but in the North Sea which is governed by the international OSPAR convention[18,19].

Further, the statement that "*Dredging is undertaken using Trailing suction hopper dredgers (TSHD) and a plough dredger. Disposal occurs at the disposal site via bottom door release and is placed in different areas of the disposal site by month to avoid mounding of material at the disposal site.*" This statement while being correct on a superficial level is providential rather than precautionary as around 25% of the dredged material will be released (dumped) as overspill from the TSHD at the point of dredging, this process was detailed by PD Ports in submissions reported in the report off the Independent Expert Assessment of Unusual Crustacean Mortality in the North-east of England in 2021 and 2022[13].

Under “use of release of chemicals” it needs to be noted that due to the River Tees being an intensively developing area measurement of chemical contamination every 3 years at a limited number of locations means that as contamination events may happen any time and contamination is not homogeneous over the wide area being dredge, the material being disposed of at any time may vary significantly from the previous chemical analysis or the next chemical analysis.

7.2 Section 3.3 Water bodies for assessment

Bearing in mind that with the current operational practices of the PD Ports trailing hopper suction dredgers (THSD) around 25% of the dredged material is released back into the river at the dredge sites, only 75% of the dredged material is being considered as only disposal at the disposal site is considered *“Figure 3-1 shows that the disposal site is not directly located within a water body. The pathway for effects would therefore be limited to the extent of any sediment plume and subsequent deposition.”* A further assessment needs to be carried out which covers the dredged material which does not get to the disposal site.

7.3 Section 4 Stage 2 Scoping

A scoping exercise needs to be undertaken considering the influence of the material released in the overspill from TSHDs when dredging.

7.4 Section 5.1.1 Hydromorphology

Surely other things need to be considered than *“The most recent major anthropogenic influence on the Tees has been the construction of the Tees Barrage in the mid-1990s which impounded 18km of formerly tidal estuary.”* The construction of the South Bank Quay, development of Teesworks including the construction of a new intertidal waterway and the multiple new capital dredge projects which have happened since 2015, need also to be considered. While none of these are significant as the Tees Barrage, they will all have an effect on the local transport / sedimentation of the water within the river.

“As a result, the current industrial use of the estuary is acknowledged throughout the objectives for the water body alongside recognition that action to get to good ecological status would have a significant adverse impact on current use of the water body.” Isn’t this an opportunity for PD Ports to be creative in the disposal of the 2million cubic metres per annum of dredged material which is taken from the River Tees.

There should be mention of the transport of material within the River Tees, which means that all resuspended sediment 2km upstream of South Gare is deposited upstream[4], with local siltation areas for resuspended sediment such as Billingham Reach.

7.5 Section 5.1.2 Water quality

The chemicals downgrade the status of the water bodies are:

- Tees coastal: PBDEs and mercury
- Tees transitional: PBDE, benzo(g,h,i)perylene, mercury, TBT and cypermethrin.

7.6 Section 5.1.2.1 Physico-chemistry water quality parameters

It is acknowledged that "*Maintenance dredging releases suspended sediment into the water column and therefore sediment levels in the water column are likely to be elevated during dredging activities given the relatively low background concentrations in the estuary outside of storm conditions (RHDHV, 2025*[15]*).*", but this has been ignored as far as pathways to ecological effects etc..

"*Sediment plume modelling undertaken to inform the NGCT project (Royal HaskoningDHV, 2006 and 2020) presents predicted outputs for dredging a much greater amount of material – 4.8million m3. For this much larger amount of material, the modelling indicated that the largest rise in peak suspended sediment concentrations (up to 1,000mg/l above background) occurs within the immediate vicinity of the dredger. Immediately outside, concentrations of suspended solids are noted to be significantly less - approximately 25mg/l above background. Given the significantly less volume of material to be dredged during maintenance dredging, any resulting plume is also likely to be significantly less and restricted to the near vicinity of the dredger, particularly when dredging coarser sediments such as sand at the estuary mouth.*" This is an over-simplistic approach to the hazard presented by suspended sediments from maintenance dredging for 3 reasons:

1. As previously stated around 25% of the dredged material is released during dredging and in the overspill from TSHDs. The overspill will be enriched with the finer material from the dredged sediment as it settle more slowly and thus will settle more slowly, so even if dispersed more rapidly will travel furthest from the dredge site.
2. As hydrophobic contaminants such as PCBs, PAHs, etc. will be adsorbed on the surface of sediment particles, they will be concentrated on the smaller particles which have the highest surface area to volume ratio and as such even relatively low sediment concentrations will carry considerable contaminant loads.
3. Maintenance dredging is carried out over the entire area of the river and as such impacts many fragile locations, contrasted with a capital dredge which is located at single location within the river.

7.7 Section 5.1.2.2 Chemisty

While analysis of sediments are considered suitable for disposal at sea, the fine material which is released in the overspill from TSHD has not been analysed, but it is known from first principles to be more heavily contaminated in hydrophobic organic components such as PCBs, PAHs and other hydrophobic organic chemicals. No specific analysis of the likely impact of contaminated fine

particles is included and with contamination measured based on weight rather than surface area, it must to be considered to have been missed by the scope of this whole document.

7.8 Section 5.3 River basin management plan (RBMP) measures

"*Dredging and disposal is managed as efficiently as possible and only carried out when and where required. Disposal is managed to avoid build up of sediment at the disposal site through zoning, although noting this activity is not located within this water body*"

This statement is not aspirational, as such no improvement in the waterbody over the next 10 years can be expected and nothing is being done to reduce the chance of a similar catastrophe as the crustacean die-off in 2021 occurring.

- Dredging disposal strategy – proactively search for beneficial uses for the dredged material
- Reduce impact of dredging
- Reduce sediment resuspension – operate with 0% overspill or a measured overspill density of <1.01tonnes per cubic metre
- Retime dredging or disposal – only dredge during ebbing tide
- Sediment management
- Dredge and disposal site selection
- Manage disturbance

NEMRG's Best Practices for Environemtnally Responsible Maintenance Dredging in the River Tees would be a good starting point to make dredging's contribution to improving the River Tees a positive force as part of PD Ports embracing their being Serious about Sustainability initiative[20].

7.9 Section 5.5 Ability of water bodies to achieve objectives

The adoption of the suggestions in this document for section 5.3, specifically NEMRG's Best Practices for Environemtnally Responsible Maintenance Dredging in the River Tees, would result in improvements in the water bodies' status.

8 North East Marine Research Group

The North-East Marine Research Group (NEMRG) is an informal group of fishers from the North East Fishing Collective, academics from Durham, Newcastle, and Hull Universities, and interested individuals including representatives of community organisations including Climate Action Stokesley & Villages and Reclaim Our Sea and the Fishmongers' Company's Fisheries Charitable Trust.

Together the group works:

- *to understand the cause of the Tees Estuary ecocide event of September 2021*
- *to understand persistent issues occurring in the marine ecosystem*
- *to provide information relevant to sound environmental governance to properly safeguard the Tees environment, wider marine ecosystem, and the industries that rely on it.*

9 References

(1) Gibbon, S. *MLA/2025/00263 – Report of the Investigation of the Sediment Quality Data of L/2015/00427/7*; 2025.

(2) Gibbon, S. *Best Practices for Environmentally Responsible Maintenance Dredging in the River Tees: An Integrated Framework for TSHD Operations*; North East Marine Research Group, 2025.

(3) OSPAR Commission. *Environmental Impacts to Marine Species and Habitats of Dredging for Navigational Purposes*; Biiodiversity Series; OSPAR Commission. https://www.ospar.org/documents?v=6987 (accessed 2025-08-04).

(4) PD Teesport. *Tees Maintenance Dredging Baseline Document*; R345/1; PD Teesport, 2005; p 59.

(5) ABP mer. *Tees Entrance Channel Study Part 1 - Conceptual Model of Estuary Processes*; R.972; ABP mer, 2002; p 103.

(6) Environment Agency. *Water Framework Directive Assessment: Estuarine and Coastal Waters*; 2023. https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters (accessed 2025-08-04).

(7) Environment Agency. *Surface Water Pollution Risk Assessment for Your Environmental Permit*; 2025. https://www.gov.uk/guidance/surface-water-pollution-risk-assessment-for-your-environmental-permit (accessed 2025-08-04).

(8) *Sediment-Associated Contaminants*. US Geological Service. https://www.usgs.gov/mission-areas/water-resources/science/sediment-associated-contaminants (accessed 2025-08-04).

(9) Marine Management Organisation. MLA2015000886_R11.1 Decision Letter - L/2015/00427/7 Mid Licence Sediment Sampling Review Resubmission – Condition 5.2.3, 2025.

(10) Royal HaskoningDHV. *MLA/2020/00506 Condition 5.2.11 Note P03*; PC1084-RHD-SB-EN-ME-EV-1145; Royal HaskoningDHV, 2023; p 75.

(11) OSPAR Commission. *OSPAR Guidelines for the Management of Dredged Material at Sea - Agreement 2014-06*; 2024; p 32.

(12) OSPAR Commission. *CEMP Guidelines for Monitoring Contaminants in Sediments - OSPAR Agreement 2002-16*; 2002.

(13) Henderson, G.; Bresnan, E.; Brooke, J.; Davidson, K.; Dearnaley, M.; Fitzsimons, M.; Ford, A.; Galloway, T.; Halsall, C.; Horton, T.; Inall, M.; Scott, M.; Wilcockson, D. *Independent Expert Assessment of Unusual Crustacean Mortality in the North-East of England in 2021 and 2022*; DEFRA, 2023; p 66.

(14) Wilson, S. C.; Bunce, S.; Crawford, I.; Hardy, J.; Wise, R. *Tees Estuary Seal Study (TESS) II Health and Welfae - Tees and North-East Harbour Seal Pup Morbidity 2024*; 2025.

(15) Royal HaskoningDHV. *2025 Tees Maintenance Dredge Protocol (MDP) Baseline Document - Renewal Application for Maintenance Dredging L/2015/00427/7*; PC6304-RHD-XX-XX-RP-X–0001; Royal HaskoningDHV, 2025.

(16) PD Ports. MLA_2025_00263-APPLICATION-FORM, 2025. https://marinelicensing.marinemanagement.org.uk/ (accessed 2025-08-04).

(17) Royal HaskoningDHV. *Tees Maintenance Dredging Water Environment Regulations (WER) Compliance Assessment Renewal Application for L/2015/00427/7*; PC6304-RHD-XX-XX-RP-X–0001; Royal HaskoningDHV. https://marinelicensing.marinemanagement.org.uk/ (accessed 2025-05-04).

(18) *Marine Licensing Exempted Activities*; 2024. https://www.gov.uk/government/publications/marine-licensing-exempted-activities/marine-licensing-exempted-activities--2 (accessed 2025-08-04).
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