

Tayla Hobson

From: Jeremy Rose
Sent: Tuesday, 09 September 2025 12:09
To: Kelly Gilmour; Tayla Hobson
Subject: Fw: Milnerton lagoon - dumping at sea?

Regards,

Jeremy Rose

Environmental Consultant
Infinity Environmental

084 055 5678
021 834 1600

From: Jessica Mans <JeMans@dffe.gov.za>
Sent: Tuesday, September 9, 2025 12:04 PM
To: Jeremy Rose <jeremy@infinityenv.co.za>
Subject: Re: Milnerton lagoon - dumping at sea?

Hi Jeremy

I can confirm that given the information currently available to us, a Dumping at Sea permit would be required for Option 2.

Regards
Jessica

From: Jeremy Rose <jeremy@infinityenv.co.za>
Sent: 08 September 2025 14:23
To: Jessica Mans <JeMans@dffe.gov.za>
Subject: Re: Milnerton lagoon - dumping at sea?

Hi Jessica,

Hope you're well. We received Rueben's confirmation for the CWDP requirements this morning - just wondering if there will be a similar confirmation for the dumping at sea regulations?

Regards,
Jeremy Rose

Environmental Scientist | E.A.P., Pr.Sci.Nat.

 **Infinity**
Environmental

jeremy@infinityenv.co.za
C: 084 055 5678
T: 021 834 1600
Collingwood Building, Black River Park
2 Fir Street, Observatory 7925

From: Jessica Mans <JeMans@dffe.gov.za>
Sent: Friday, August 15, 2025 9:30 AM
To: Jeremy Rose <jeremy@infinityenv.co.za>
Subject: Re: Milnerton lagoon - dumping at sea?

Hi Jeremy

Please see attached Dumping at Sea Regulations, dredged material application form and application guideline.

Kind regards
Jessica

From: Jeremy Rose <jeremy@infinityenv.co.za>
Sent: 13 August 2025 10:01
To: Jessica Mans <JeMans@dffe.gov.za>
Subject: Milnerton lagoon - dumping at sea?

Hi Jessica,

Thanks for the chat! As discussed we are exploring options for dredge spoil disposal and would be keen to hear your thoughts on this.

Invite to Monday's meeting to follow.

For interest and background (it's a big document) the pollution remediation options including dredging are covered in the below Remediation Plan.

[2023-06-12_MilnertonLagoonRehabilitationPlan_Final.pdf](#)

Regards,
Jeremy Rose

Environmental Scientist | E.A.P., Pr.Sci.Nat.

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20 August 2025

Department of Forestry, Fisheries and the Environment
Oceans and Coasts Branch
Victoria and Alfred Waterfront
Cape Town 8001

Attention: Mr. Rueben Molale, Ms. Tabisile Mhlana, Ms. Jessica Mans, and Mr Ryan Peter

By email: RMolale@dfef.gov.za
JeMans@dfef.gov.za
tmhlana@dfef.gov.za

REMEDICATION OF THE MILNERTON LAGOON IN THE DIEP RIVER ESTUARY: PROPOSED DREDGING METHODOLOGY AND SEDIMENT QUALITY DATA TO SUPPORT DETERMINATION OF AUTHORISATIONS REQUIRED UNDER THE NATIONAL ENVIRONMENTAL MANAGEMENT: INTEGRATED COASTAL MANAGEMENT ACT, 2008 (ACT NO. 24 OF 2008), AS AMENDED

Dear Mr. Molale, Ms. Mhlana, Ms. Mans and colleagues,

1. We refer to our consultation meeting with your Department and the provincial Department of Environmental Affairs and Development Planning, and the Department of Water and Sanitation, on 18 August 2025. We further refer to your guidance provided on 30 May 2023 with reference 2023/Milnerton Lagoon Remediation.
2. The City of Cape Town ('City') proposes to dredge the lower section of the Milnerton Lagoon (between 33.8777 S, 18.4899 E and 33.8895 S, 18.4848 – refer to Locality map image below indicating position of proposed dredging site) as part of its efforts to remediate pollution in the lagoon. The proposed dredging aims to improve tidal exchange, reduce organic sediment accumulation, and restore estuarine functioning.
3. Infinity Environmental (Pty) Ltd ('Infinity') request confirmation from DFFE: Oceans and Coasts on whether the proposed dredging, if it were to include the discharge /disposal of the fine sediment fraction of the bed sediments to the estuary mouth, is likely to require either a Coastal Waters Discharge Permit (CWDP) contemplated under Section 69 of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008), as amended (NEM:ICMA), and/or a Dumping at Sea Permit under Sections 70–71 of the NEM:ICMA.
4. In addition, and without prejudging the outcome of any assessments required, we request the Department's preliminary guidance on whether the proposed methodology – particularly Option 2 as outlined below – would be regarded as suitable for authorisation under the applicable process, taking into account the sediment quality data presented in Part B of this letter.
5. This letter is separated into three major parts – Part A provides the methodology proposed for the intended lagoon dredging; Part B provides information on the existing data concerning quality of sediment within the lagoon and Part C is a conclusion and request for departmental input.

Introduction & Background context

- The bed of the lower Milnerton Lagoon is sandy, with grain sizes and specific gravity characteristic of marine-derived sediments. It also contains, in varying quantities, finer sediments derived from its catchment, and with a generally higher organic content. These sediments are intermixed with the naturally occurring sands.
- The primary purpose of dredging the Milnerton Lagoon is to improve water quality by facilitating increased tidal exchange. Recent monitoring data confirms that only when adequate flushing of the lower estuary by tidal flows occurs do oxygen concentrations return to levels conducive to the survival of aquatic organisms, and the odour and other negative consequences of an anoxic system reduce to acceptable levels.
- Dredging may, depending on the method implemented, also target the removal of the finer organic portion of the bed sediments, in an effort to reduce the sediment oxygen demand and further improve oxygen concentrations in the water column.

PART A: Proposed dredging methodologies

At its core, the aim of the proposed dredging is to establish a primary channel that concentrates river inflows into a single, more easily flushed pathway while also allowing tidal seawater to penetrate further upstream, gradually replacing stagnant freshwater inputs. The intention is not to deepen the entire lagoon, but rather to relocate dredged material within it to create intertidal sandbanks and mudflats (as shown in **Figure 1** below). These exposed areas would receive light and air, enabling organic material to break down under oxygenated conditions. This would prevent the build-up of an anoxic layer typical of deeper, stagnant waters. In essence, the approach is to concentrate flows into a channel while redistributing material to form intertidal banks that support natural decomposition and improve lagoon health.

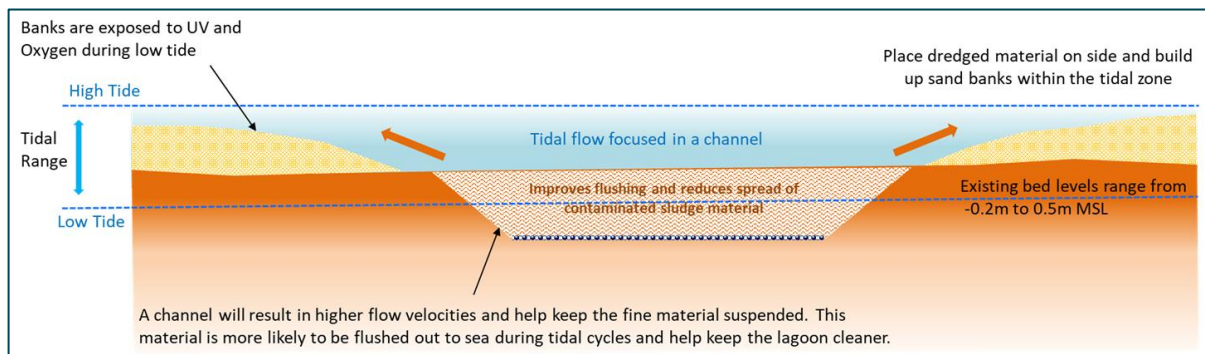


Figure 1: Schematic of proposed dredging showing a concentrated channel to improve tidal flow and deposition of dredged material onto intertidal sandbanks.

Two dredging options are under consideration, as were presented in the meeting held on 18 August 2025 to discuss remediation options within the Milnerton lagoon:

- Option 1 – Dredging with No Offshore Disposal:** Reshape the lagoon by dredging a channel and placing material on the sides within the tidal zone. This approach improves hydrodynamic flows and creates intertidal sandbanks for natural oxygenation. It has low costs, no off-site disposal requirements, and minimal public impact but may face opposition for leaving organics within the system.
- Option 2 - Dredging with Cyclone Separation and Disposal at Lagoon Mouth:** Dredge using a suction dredger with cyclone separation. Clean sand is returned to the lagoon banks, while finer organic-rich sediments are discharged at the lagoon mouth during outgoing tides for removal to sea. This approach reduces sediment oxygen demand and increases flushing efficiency, though it has slightly higher costs and short-term public impacts.

Both methods are designed to improve tidal exchange, reduce organic loading, and restore estuarine health, but each carries different levels of cost, risk, and benefit – and are described in greater detail below:

Option 1

This option proposes dredging approximately 30 000 m³ of sediment to reshape the lagoon and establish a concentrated channel that enhances tidal flushing and helps maintain an open mouth. The dredged material would be deposited along the channel edges within the tidal zone, forming sandbanks and mudflats exposed to oxygen and sunlight. These intertidal banks would encourage natural decomposition of organic matter, thereby reducing the build-up of anoxic sludge in stagnant areas. Concentrating flows into a defined channel would also limit the spread of contaminants, increase scour, and allow seawater to penetrate further upstream, improving water quality and lagoon functioning. The works are expected to take around five months and would not require off-site disposal.



Figure 2: Dredging option 1 schematic – dredging proposal without deposition of material offshore or within the estuary mouth.

Option 2

In addition to dredging a channel, this option would use a cyclone to separate 'clean' sand from fine, organic-rich sediments. The clean sand would be returned to the lagoon banks to form intertidal sandbanks, while the finer fraction – typically associated with higher organic loads, greater oxygen demand, and contaminants – would be discharged at the lagoon mouth on outgoing tides. This approach provides two key benefits: improved tidal flushing through channel creation and selective removal of finer sediments from the system, thereby reducing organic accumulation and oxygen depletion.

By targeting the removal of fines, this method could reduce the system's organic load by about 25 %, lowering oxygen demand and improving water circulation. It also maintains sandbanks within the tidal range, which naturally support oxygenation through cycles of wetting and drying. Costs are higher than Option 1, and the costs and benefits are being weighed up.

For Option 2 a cutter-suction type dredger is considered the appropriate type for the removal of the contaminated material. A cutter-suction dredger is a hydraulic dredging machine with a rotating cutter head, which loosens and breaks up the material on the estuary bed, riverbed, or

lagoon floor. Once loosened, the material is sucked up by a submersible dredge pump together with water, creating a slurry. The slurry is then transported through a series of floating and shore pipelines to a designated placement area. By continuously cutting, sucking, and pumping, the cutter-suction dredger can dredge efficiently in a controlled manner. The dredger usually works while anchored in place, using a spud system (i.e., anchoring and positioning mechanism) and winches to move laterally and progressively cut channels or deepen areas. The cutter-suction dredgers can be either diesel or electric driven and should be able to effectively pump the dredged slurry to the lagoon mouth for Option 2.

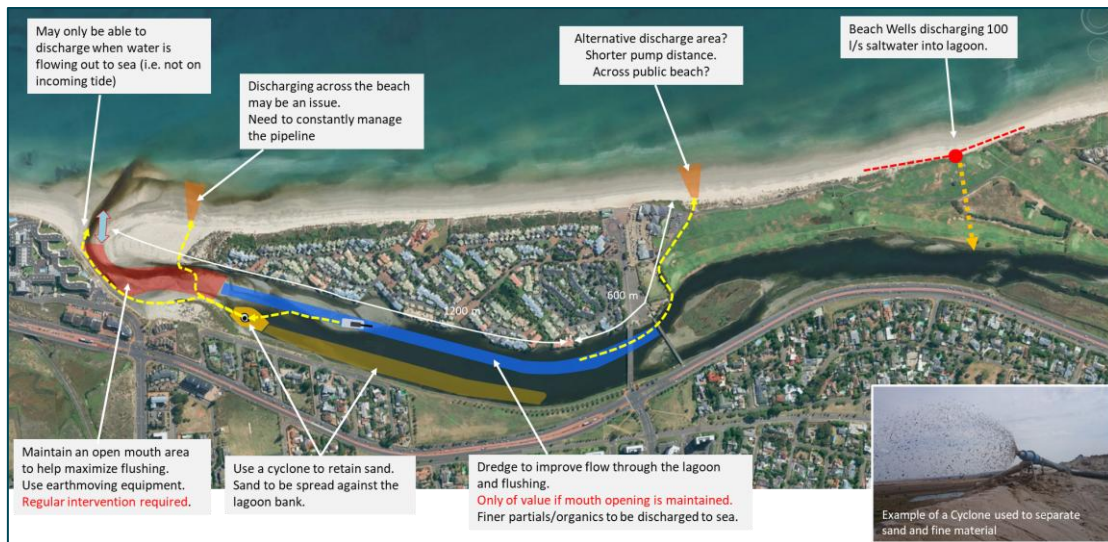


Figure 3: Dredging option 2 schematic – dredging proposal with deposition of material into estuary mouth.

PART B: Information on Sediment quality data within the Milnerton Lagoon

Difference in sediment volumes post-flood events

The health of the lagoon was significantly improved after the 2023 and 2024 winter flood events (4 floods in 2023 and 8 in 2024) due to scouring and flushing of a large portion of the fine organic sediment from the lagoon. An estimated 110 000 m³ nett volume of material was washed out to sea, based on the difference between the bathymetric surveys conducted in November 2022 and November 2024 (refer to **Figure 5** below). The lagoon mouth was also scoured open allowing for better flushing of the lower section of lagoon, and at low tides the lagoon bed was exposed to free oxygen and sunlight.

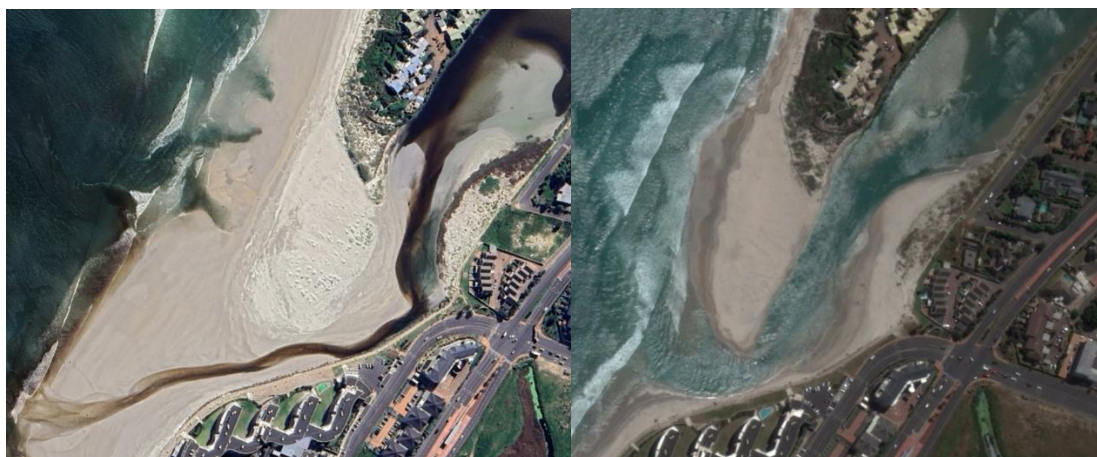


Figure 5: Examples of tidal interchange difference associated with mouth state and flow rates in the river. Left: Limited tidal flushing during dry summer months. Right: Improved tidal flushing during wet winter months.

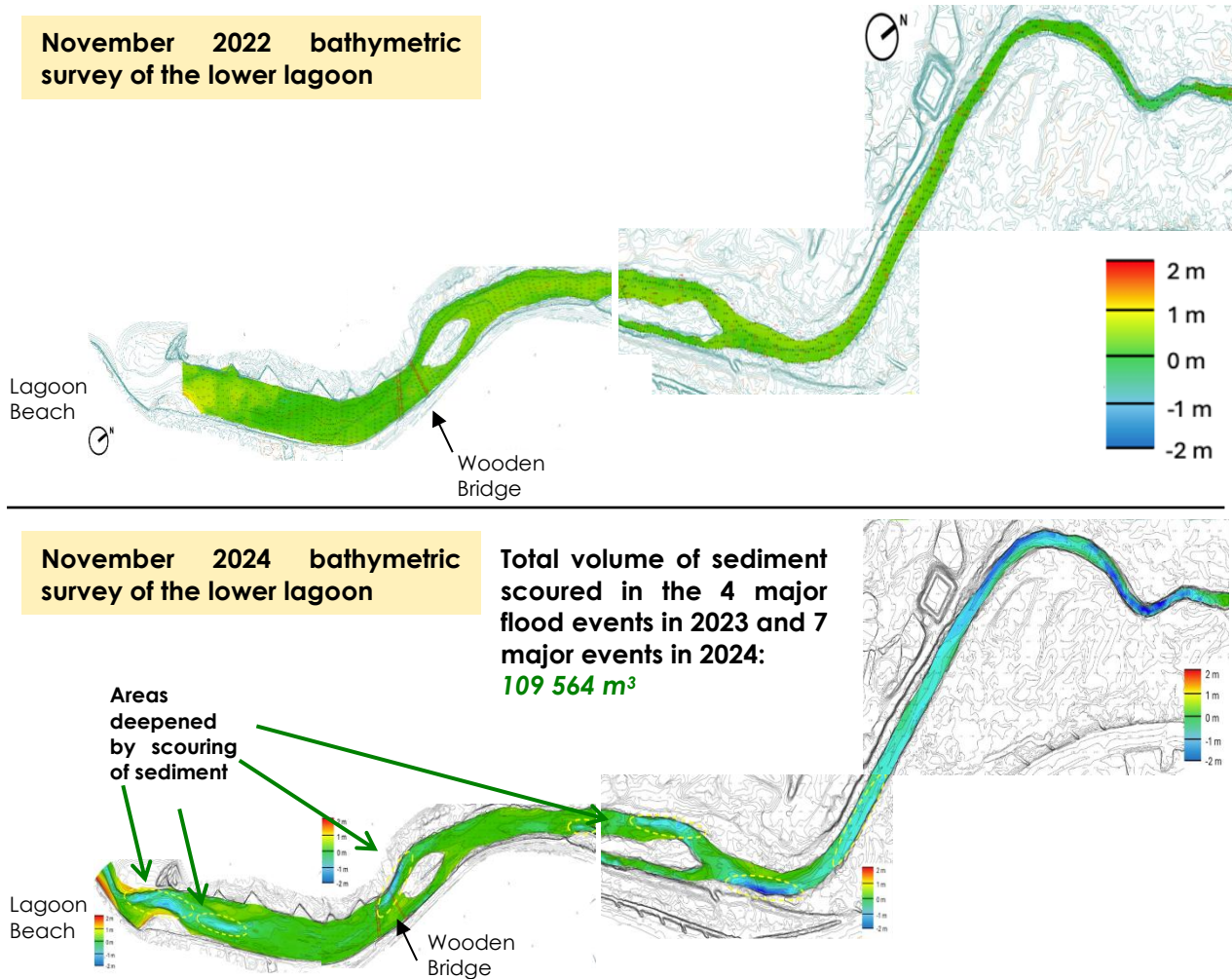


Figure 4: Sediment volume change in the lower lagoon between years 2022 and 2024.

Sediment particle size and organic content

The sediment in the Diep River estuary is composed largely of sand. In a 2021 assessment, the contribution of mud to the bulk weight of sediment sampled in the estuary generally increased with distance upstream of the estuary mouth (Gihwala et al., 2021). Samples analysed from the area surrounding the Wooden Bridge between 2021 and 2023 have consistently been made up of less than 10 % mud by weight, with more than 90 % classed as sand or gravel (see **Figure 6**).



Figure 6: Sediment cores from the area near the Wooden Bridge (top) and near the mouth (bottom) in February 2023.

Sediment quality

Numerous studies on chemicals in water or sediment have been performed in the Diep River and estuary. The CSIR (2015) defined baseline metal concentrations for sediment sampled in rivers, wetlands, and estuaries in Cape Town, and used the concentrations to identify metal enriched/contaminated sediment. In 2015, the CSIR found that sediment from a rural section of the Diep River (upstream of the estuary) contained several metal contaminants, while sediment samples taken from within the estuary itself did not show this contamination.

Gihwala et al. (2021) found that trace metal accumulation in sediments was higher further upstream in the Diep River Estuary, particularly near the Blaauwberg Bridge and beyond the Otto du Plessis Bridge. In most cases, metal concentrations increased with the proportion of fine mud in the sediment, which is a typical pattern even in uncontaminated systems. The study reported that some parts of the estuary showed contamination by cadmium, mercury, lead, and zinc. However, in the lagoon downstream of Woodbridge Island, concentrations of these metals were within guideline values for the Benguela Current Large Marine Ecosystem (BCLME) and remained below the Effects Range Low thresholds set by Long et al. (1995) for sediment quality in North America.

Samples collected in the lower lagoon in November 2023 as part of the dredging investigations were tested for trace metals as well as a full suite of organic and other contaminants. These samples were specifically targeted to include the areas of highest accumulation of fine sediments. In these samples, metals were all below the values set out in the National Action List used to make decisions on the suitability of dredged material for UOD in South African coastal waters (refer to **Figure 7**) and also well below sediment quality guidelines for the BCLME region as established in CSIR (2006) and the slightly more conservative Effects Range Low thresholds set out in Long et al. (1995). While the contamination of estuaries with trace metals and organic contaminants will continue to require periodic monitoring and assessment, guideline values for chronic and acute ecological impact are not currently exceeded and available data do not suggest that metal contaminants are a significant driver of ecological impact in the Milnerton Lagoon.

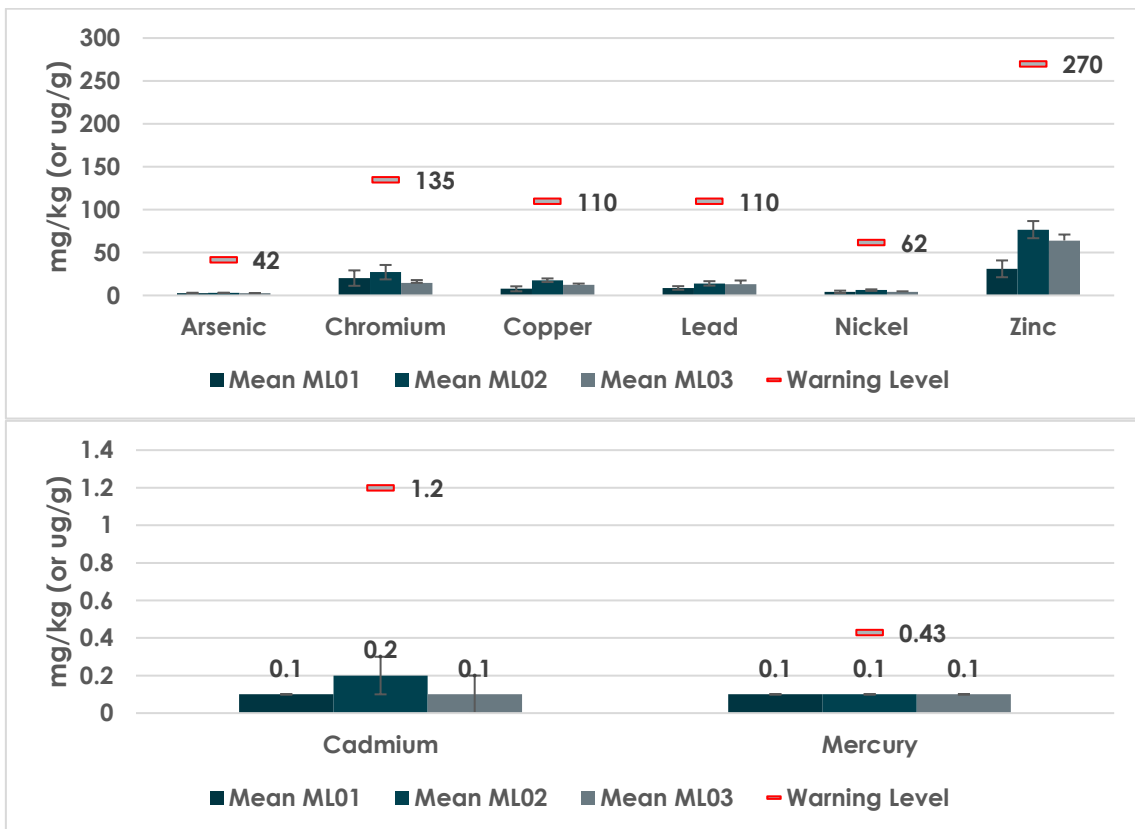


Figure 7: Comparison of trace metal content at three sites in the lower lagoon in November 2023 against the National Action List used to make decisions on the suitability of dredged material for UOD in South African coastal waters

PART C: Departmental input required to confirm applicable due process in terms of NEM:ICMA

Applicable Permits

Section 69(1) of the National Environmental Management: Integrated Coastal Management Act, 2008 (NEM:ICMA) prohibits the discharge of effluent originating from a source on land into coastal waters or an estuary without authorisation. Effluent is defined in Section 1 as “any liquid discharged into the coastal environment as waste.” While the proposed dredging may generate runoff or eluent water, its source would be the lagoon itself rather than a land-based activity. We therefore request confirmation from DFFE: Oceans and Coasts as to whether the proposed dredging falls under Section 69 of NEM:ICMA.

At the same time, the disposal of dredged material – a slurry of eluent and organic-rich sediment discharged via floating pipeline at the lagoon mouth on outgoing tides – may fall within the definition of “dumping at sea” in terms of Section 71(3) of NEM:ICMA. We therefore request the Department’s guidance as to whether the proposed dredging requires approval under Section 71 of NEM:ICMA.

Conclusion

The City intends to remove accumulated organic sediments from the Milnerton Lagoon, which have contributed to low oxygen levels, elevated hydrogen sulphide, degraded water quality, and a decline in biodiversity, recreational use, and amenity.

It has been proposed that dredging only proceed once oxygen levels in the lower lagoon begin to show recovery, ensuring that the intervention coincides with improvements in upstream water quality. This timing would maximise ecological benefit, giving the lagoon a ‘head start’ toward recovery rather than undertaking dredging while pollution inputs remain unchanged. The proposed dredging and deposition along the tidal zone banks (and at the lagoon mouth for Option 2) is therefore designed as a medium- to long-term remediation measure (not a short-term measure as was originally proposed in the 2023 Remediation Plan) and has been prioritised and budgeted accordingly.

We therefore request your Department’s guidance and confirmation on the applicable permitting pathway under NEM:ICMA to enable the City to proceed with the appropriate authorisation process and acquire the necessary statutory approvals. Additionally, the City requires the Department’s input and foresight as to whether the proposed methodology – particularly Option 2 – would be regarded as suitable for authorisation under the applicable permitting pathway, taking into account the sediment quality data presented in Part B of this letter.

We trust the above provides the necessary background and information to ensure the Department can provide the requested input. We confirm our availability to further discuss the queries set out herein with your Department, at the earliest opportunity.

Thank you for your attention to this matter – we look forward to hearing from you. Please contact the undersigned at 084 055 5678 or jeremy@infinityenv.co.za should you have any queries or concerns regarding this correspondence.

Sincerely,



Jeremy Rose E.A.P. Pr.Sci.Nat.

Infinity Environmental (Pty) Ltd.



Tayla Hobson