

# Warrenpoint Port

## Maintenance Dredging 2024-2027

### Monitoring Plan



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Project Nr

**642**

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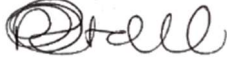


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**Client:** Warrenpoint Harbour Authority  
**Project:** Warrenpoint Port - Maintenance Dredging 2024-2027  
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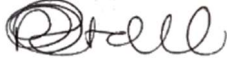
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## **1 Introduction**

- 1.1.1 Warrenpoint Harbour Authority, the operators of Warrenpoint Port, are seeking a new marine licence to dispose of dredged material arising from maintenance dredging in the period 2024-2027. Maintenance dredging is required to conserve safe water depths for navigation and berthing in the port and its approaches.
- 1.1.2 The scope of the future maintenance dredging and disposal of dredged material in the period 2024-2027 is expected to be similar to that in the period 2020-2023. Accordingly, maintenance dredging is likely to be undertaken using a trailing suction hopper dredger (TSHD) supported by a bed leveller / plough dredger, and potentially a backhoe dredger or small grab hopper dredger, and is likely to result in a maximum of 805,000 tonnes of dredged material (including gravel, sand, silt and clay) being deposited in the sea at the Warrenpoint B disposal site.
- 1.1.3 This document provides a plan for monitoring to be undertaken by Warrenpoint Port during the future maintenance dredging and disposal of dredged material in the period 2024-2027. The results of historical monitoring are discussed and utilised to develop the monitoring plan.

## **2 Sediment Transport and Sedimentation Characteristics**

- 2.1.1 Sediment transport and sedimentation in and around Warrenpoint Port are predominantly affected by storm activity over a period of time and, in particular, the resulting wave conditions and, to a lesser extent, rainfall conditions.
- 2.1.2 Storm activity increases the wave (including swell) conditions within the wider Carlingford Lough area that can remobilise and suspend fine-grained sediment in the water column. Tidal currents on incoming flood tides transport the suspended sediment up the lough and deposit it onto the bed of the dredged deep-water areas where their velocities are weaker. Tidal currents on incoming flood tides have more energy on spring tides than on neap tides, so have more potential to transport sediment from the lough and deposit sediment within Warrenpoint Port. Storm activity also increases the amount and intensity of rainfall in the River Newry catchment and, therefore, influences the amount of sediment that is flushed into and transported down the river towards Warrenpoint Port. The potential for river flows to transport the suspended sediment downstream and deposit it within Warrenpoint Port depends on the state and condition of the tidal state at the time of any fluvial input; with a higher potential occurring if a high river flow coincides with a low state of the tide because this could weaken flow velocities and increase sedimentation rates.
- 2.1.3 Overall, wave activity and, to a lesser extent, flash flooding during storm events can significantly increase sediment transport and sedimentation rates within Warrenpoint Port. This phenomenon is exacerbated by the dominant flood tidal currents within Warrenpoint Port, which means that the incoming flood tidal currents have more energy than the outgoing ebb tidal currents and, therefore, remobilised sediment within Warrenpoint Port tends not to be transported downstream beyond the harbour area and into the lough. These sediment transport and sedimentation characteristics have been observed on a number of occasions over many years.



### **3 Dredging Programme**

- 3.1.1 In recent years the Warrenpoint Port has established a robust sedimentation monitoring programme to determine the characteristics of loss of depth across the harbour area and inner access channel. Based on the results of this initiative, a revised maintenance dredging strategy was developed and implemented from 2020 to 2023 to ensure that safe navigational levels can be maintained to a high standard in accordance with the mandate of Warrenpoint Port (given its Trust Port status). Dredging planned for 2023 has unfortunately been delayed and it is expected that a deferred dredge campaign will be completed during February and March 2024.
- 3.1.2 The revised maintenance dredging strategy will be taken forward from 2024 to 2027 which means that dredging will be undertaken more frequently but with lower volumes of sediment being removed, transported and disposed of offshore at the Warrenpoint B disposal site. This ‘little and often’ approach is likely to result in annual dredging campaigns that are likely take place in late spring or early summer. The reasoning for this approach is to remove the sedimentation caused by storm activity over winter and undertake dredging during better weather conditions to reduce delays to the works. The annual campaigns will predominately focus on the operational area of Warrenpoint Port inside the breakwater; the inner approach channel be dredged less frequently.
- 3.1.3 Whilst the sedimentation rates within the harbour cannot be foreseen, the following volumes (converted using 1.4t/m<sup>3</sup>) of dredged material are anticipated over the future maintenance dredging period:
- |                          |                 |
|--------------------------|-----------------|
| April 2024 to March 2025 | 70,000t         |
| April 2025 to March 2026 | 120,000t        |
| April 2026 to March 2027 | <u>400,000t</u> |
| Total                    | 590,000t        |
- 3.1.4 However, in the past, occasional extreme storm events have increased sedimentation and the volumes to be dredged in order to maintain water depths. Therefore, in addition to the volumes identified above a contingency is required should such event(s) occur. This approach is consistent with previous approaches and helps to ensure the marine licence for the disposal of dredged material is sufficient to cover such eventualities and avoids the needs for licence variations.

### **4 Proposed Monitoring**

- 4.1.1 Monitoring of dredging and disposal activities to determine the potential for environmental impacts has been undertaken for many years. Monitoring of dredging activity is focussed on the harbour and inner approach channel within Warrenpoint Port. Monitoring of disposal activity is focussed on the Warrenpoint B disposal site.
- 4.1.2 The follow paragraphs describe the monitoring proposed for the dredging and disposal activities associated with the maintenance dredging campaigns from 2024 to 2027.

#### Monitoring of Dredging Activity

- 4.1.3 Monitoring of dredging activity during a maintenance dredging campaign will comprise:
- Bathymetric surveys will be undertaken of the area to be dredged before, during and after the dredging works.
  - Sediment samples will be acquired upstream and downstream of the dredge area, before and after the dredging works, and will be retained for a minimum of 3 months and made available for testing if required.



- Blue mussel, *Mytilus edulis*, samples will be acquired upstream and downstream of the dredge area, before, during and after the dredging works, and will be analysed for the following PAHs: benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene and chrysene.
- Total Suspended Solids (TSS) concentrations will be monitored in real-time (using a turbidity correlation) at an agreed location within the Inner Harbour, and the concentrations recorded shall not exceed 300mg/l for durations longer than 6 hours, and/or shall not exceed 600mg/l at any time. TSS concentrations shall also be compared to the permanent AFBI monitoring buoy as a reference and levels exceeding 10% of the 90 percentile of background (71mg/l) for greater than 6 hours shall not be permitted.
- Dissolved oxygen (DO) concentrations will be monitored in real-time at an agreed location within the Inner Harbour, and dredging works shall cease if DO concentrations fall below 4mg/l and shall not commence again until DO concentrations have increased to 5mg/l if dredging works are identified as the cause for DO reductions.

#### Monitoring of Disposal Activity

- 4.1.4 Monitoring of disposal activity during a maintenance dredging campaign will comprise:
- A bathymetric survey will be undertaken to monitor the bed level within the disposal site before commencement and on completion of disposal operations.
  - A photography/video survey and grab sample of the benthos will be undertaken within the disposal site before commencement and on completion of disposal operations.