

28 September 2026

Paul Purdon  
Executive Director Environment and Heritage  
Department of Lands, Planning and Environment

By Email: [environmentalregulation@nt.gov.au](mailto:environmentalregulation@nt.gov.au)

Dear Mr Purdon

**Re: Response to Direction to Provide Additional Information (Regulation 40) – Darwin Port Maintenance Dredging Campaign**

This letter responds to each item of further information identified in Attachment A to the Direction, under the headings Scope of the Proposal and Additional Information. The responses draw on the Darwin Port Maintenance Dredging Works – Dredging and Dredge Material Management Plan (24 April 2025) (the DMP) and its Appendix A (NT EPA Environmental Impact Assessment Guideline Screening Tool for bed levelling / sweep bar works).

## 1. Scope of the Proposal

**Direction Item 1:** Clarify the scope of the proposal including the volume estimates for dredging and bed levelling (this is to be consistent across all referral documents).

**Response:** The scope of the proposed action comprises one-off maintenance dredging at eight discrete areas across the Marine Supply Base (MSB) berths and turning area, East Arm Wharf (EAW) berths, and Fort Hill Wharf (FHW). Based on the November 2024 hydrographic survey (Section 4.1 and Table 4-1 of the DMP), the estimated total volume requiring removal by maintenance dredging and bed levelling was approximately 30,000 m<sup>3</sup> (inclusive of a 300 mm over-dredge allowance).

Of the eight areas, only four are suitable for the less invasive bed levelling maintenance, the remainder will require dredging (by cutter suction dredge, CSD), and one (EAW Berth 2) can be maintained by a combination of the two methods, with the bed-levelled component at that location capped at 1,000 m<sup>3</sup>.

The confirmed volumes from Table 4-1 of the DMP, are:

| Site                             | Base level (m LAT) | Design dredge / bed levelling volume (m <sup>3</sup> ) | Dredge volume incl. over-dredge (m <sup>3</sup> ) |
|----------------------------------|--------------------|--------------------------------------------------------|---------------------------------------------------|
| MSB Berth 1                      | -8.7               | 578                                                    | 1,655                                             |
| MSB Berth 2 & 3                  | -7.7               | 848                                                    | 1,938                                             |
| MSB turning area                 | -7.7               | 1,309                                                  | 6,068                                             |
| MSB entrance                     | -7.7               | 961                                                    | 1,430                                             |
| East Arm Wharf Berth 1           | -12.0              | 283                                                    | 865                                               |
| East Arm Wharf Berth 2           | -13.5              | 8,137                                                  | 12,438                                            |
| East Arm Wharf bulk liquid berth | -12.0              | 413                                                    | 2,117                                             |
| Fort Hill Wharf                  | -10.0              | 2,765                                                  | 4,237                                             |
| <b>TOTAL</b>                     |                    | <b>15,295</b>                                          | <b>30,748</b>                                     |

These figures reflect the 2024 hydrographic survey, the 2025 survey found that there were no significant changes following Tropical Cyclone Fina. Prior to commencing the proposed maintenance dredging campaign additional hydrographic surveys will be completed to confirm dredge volumes.

**Direction Item 2:** *If it is confirmed that bed levelling works are not within scope of this referral, provide clear justification why the bed levelling works that are to be undertaken as part of the maintenance dredging campaign do not have the potential to have significant impacts on the environment. This is likely to require the identification of mitigation measures to avoid potential significant impacts from the cumulative effects of bed levelling and dredging-related works in the vicinity of South Shell Island (e.g. timing related to works for the Darwin Ship Lift Project).*

**Response:** Darwin Port confirms that bed levelling (sweep bar) works are not included within the scope of this referral. This position, and the justification for it, is set out in Section 2.1 of the DMP, which records that Darwin Port applied the NT EPA pre-referral screening tool (Environmental Impact Assessment Guideline for Proponents: Referring a Proposal to the NT EPA, NT EPA 2022) specifically to the action of sweep bar operations. The completed screening tool is provided at Appendix A to this letter.

The justification for excluding bed levelling from the referral rests on three factors, each addressed in Section 2.1 of the DMP:

- Short duration: bed levelling campaigns are limited to a maximum of two weeks each, and are undertaken on an as-needs basis (for example, following storm or cyclone deposition events) rather than continuously;
- Small volumes: individual bed levelling campaigns commonly involve less than 1,000 m<sup>3</sup> per area, and
- Clean material: sediment is assessed against National Assessment Guidelines for Dredging (NAGD, Commonwealth of Australia 2009) screening levels to confirm it is clean prior to redistribution.

On this basis, the DMP concludes that sweep bar operations do not have the potential to cause a significant impact to the environment and are correspondingly excluded from the quantitative risk assessment presented in Section 7 of the DMP, which addresses the CSD dredging component of the proposal only.

Darwin Port acknowledges the Direction's specific concern regarding the potential for cumulative impacts due to works in the vicinity of South Shell Island, including in relation to the timing of the adjacent Darwin Ship Lift Project. This concern is addressed in detail in Section 2 of this letter (Additional Information), which sets out:

- the mitigation and management measures, principally timing avoidance, and
- the Water Quality Environmental Management Framework (EMF) and its reactive turbidity trigger and response regime (Section 8.2 of the DMP).

Both of which Darwin Port will apply to avoid or minimise cumulative effects.

## 2. Additional Information

**Direction Item 1:** *Describe and explain the potential cumulative impacts of the proposed dredging and bed levelling works on the environment including the points below: Provide a schedule of works taking into consideration other current and future dredging works in Darwin Harbour. This may require consultation and collaboration with other dredging operators (e.g. Darwin Ship Lift).*

**Response:** Impacts to environmental receptors from the proposed works are assessed in Section 5.3 (existing environment) and Section 6 (sediment plume modelling) of the DMP. The primary sensitive receptors considered are the hard coral and filter-feeder communities around South Shell Island, located near the MSB channel and turning area. It is important to note that the quantitative sediment plume modelling in Section 6 of the DMP (Williams 2017, based on AIMS methodology) was undertaken for the CSD dredging component of the works; the bed levelling component is assessed qualitatively via the screening process described in Section 1 above, reflecting its comparatively minor impact and short duration.

Environmental monitoring during concurrent capital dredging works undertaken by Darwin Port and INPEX in 2012 and 2014 recorded some reduction in hard coral cover at South Shell Island monitoring sites, although no statistically significant impact was recorded at nearby filter-feeder communities over the same period. This history informs Darwin Port's approach to scheduling and managing the current proposal, as set out below.

### Schedule of works and other Darwin Harbour dredging activity

The proposed maintenance dredging does not yet have a fixed commencement date. Darwin Port's current intention is to schedule works to avoid the wet season where practicable, and to confirm final timing only once it has consulted with the operators of other current and reasonably foreseeable dredging-related activity in the harbour, consistent with the approach set out below.

Darwin Port has reviewed the NT EPA public register and consulted publicly available project information to identify other current and reasonably foreseeable harbour-related works with the potential to contribute to cumulative impacts at South Shell Island. The following projects have been identified:

- Darwin Ship Lift and Marine Industries Project: capital dredging reported complete as of September 2025.

- INPEX Maintenance Dredging Program: holds an approved five-year maintenance dredging program; no campaign yet reported as undertaken under that approval.
- Darwin Pipeline Duplication Project: harbour pipeline trenching works reported substantially complete in 2024–25.
- HMAS Coonawarra: capital dredging works with an ongoing maintenance dredging approval (works recur approximately every five to seven years).
- Mandorah Marine Facilities: ferry berthing capital dredging works, reported complete in Q2 2025.
- Australia-Asia PowerLink (Sun Cable): subsea cable jet-trenching through Shoal Bay; approved, but not expected to commence before 2028, subject to final investment decision.
- Northern Territory Government's Middle Arm Sustainable Development Precinct: remains in strategic environmental assessment; no construction or dredging schedule yet confirmed.

Darwin Port will directly consult and, where appropriate, collaborate with the proponents of active or imminent works identified above, in particular the Darwin Ship Lift Project, given its proximity to South Shell Island prior to finalising any maintenance dredging schedule, to confirm current status and avoid concurrent works in the vicinity of the Island. This consultation forms part of the adaptive scheduling and management approach described under Item 2 below.

**Direction Item 2:** *Describe and explain how cumulative impacts to sensitive receptors, particularly in relation to South Shell Island, will be avoided or mitigated and appropriately managed including avoidance schedule of works to show (timing of dredging / bed levelling, mitigation (best practice etc.).*

**Response:** The DMP's sediment plume modelling (Section 6.6–6.7.1) indicates that the hard coral and filter-feeder communities around South Shell Island are predicted to lie within the Zone of Moderate Impact during dredging operations, in both the Dry and Wet Seasons. Consistent with the WA EPA (2016) definitions adopted in the DMP (and referenced in the NT EPA Guidelines, NT EPA 2013), this means damage to benthic habitat and mortality of benthic biota may occur within the zone, but any disturbed areas are predicted to recover, with no long-term modification of benthic habitat expected.

The DMP's more detailed assessment of the suspended sediment concentration (SSC) time series at South Shell Island (Section 6.7.1) found that the relevant benthic tolerance threshold is predicted to be exceeded on only eight days during Dry Season dredging and on only three days during Wet Season dredging, out of a campaign lasting two to three weeks. On this basis, it is highly unlikely that short-term elevations in SSC of this nature would result in mortality within the South Shell Island communities, and that the risk of turbidity-related impact during the Wet Season, in particular, is negligible.

To manage this risk, Darwin Port will apply the following measures, drawn from Section 8.2 of the DMP.

### Timing avoidance

Darwin Port will schedule maintenance works, so far as practicable, to avoid concurrency with other active dredging or disposal operations in the vicinity of South Shell Island. In particular, any future works associated with the Darwin Ship Lift Project, based on direct consultation with the relevant proponents as described above.

### Reactive turbidity trigger values (Section 8.2.2)

Seasonal turbidity trigger values have been established for the South Shell Island (SSI-West) monitoring site, based on long-term water quality data (URS 2011) and the SSC tolerance limits for benthic communities identified in Section 6.5 of the DMP:

- Wet Season (November to April): dredging-related SSC to be maintained below 25 mg/L, applied as a turbidity trigger of 21.2 NTU.
- Dry Season (May to October): dredging-related SSC to be maintained below 10 mg/L, applied as a turbidity trigger of 3.5 NTU.

### Water quality monitoring and response to trigger exceedance (Sections 8.2.3–8.2.4)

Turbidity will be monitored at South Shell Island and at reference and down-current sites relative to the dredging and disposal locations. Where a seasonal trigger value is exceeded at the SSI-West site, this is reported to Darwin Port within 24 hours, additional monitoring and corrective actions are implemented within the same 24-hour period, and an attributability assessment (to determine whether the exceedance is attributable to dredging or spoil disposal activity, as opposed to natural causes such as storm activity) is completed within three business days. Where the exceedance is attributable to the works, corrective actions continue until turbidity returns below trigger levels.

### Inherent operational management measures (Section 8.2.5)

- Dredging is undertaken close to shore in areas afforded some protection from tidal currents;
- A single, static CSD is used with the suction pipe directly behind the cutter head, maximising feed to the suction pipe and minimising release of sediment to the water column;
- Cutter speed is kept as low as practicable, with the cutter disengaged for much of the time given the unconsolidated nature of the material; and
- Monitoring trends are used adaptively: for example, to schedule dredge maintenance or relocation to coincide with tidal states associated with lower migration of plumes towards South Shell Island.

These measures are collectively documented as the Water Quality Environmental Management Framework (EMF) at Section 8.2 (Table 8-1 and Table 8-2) of the DMP.

**Direction Item 3:** *To ensure levels of turbidity and sedimentation are managed to avoid and mitigate cumulative impacts to sensitive receptors, demonstrate that:*

*a) The dredging and bed levelling works will be conducted in accordance with best practice*

**Response:** The DMP has been prepared with reference to recognised international dredging and sediment management best practice, including:

- PIANC 2006, Environmental Risk Assessment of Dredging and Disposal Operations. World Association for Waterborne Transport Infrastructure (PIANC) Environmental Commission Report of WG10, October 2006.
- PIANC 2009, Dredging Management Practices for the Environment: A Structured Selection Approach. World Association for Waterborne Transport Infrastructure (PIANC) EnviCom Working Group 100, January 2009.
- CEDA 2011, Environmental Control on Dredging Projects. Central Dredging Association Information Paper, June 2011.
- CEDA 2015, Integrating Adaptive Environmental Management into Dredging Projects. Central Dredging Association Position Paper, March 2015.
- National Assessment Guidelines for Dredging (NAGD). Commonwealth of Australia, 2009.
- WA EPA Technical Guidance – Environmental Assessment Guideline for Protection of Benthic Communities and Habitats. Western Australian EPA, 2016 (definitions of Zone of High Impact, Zone of Moderate Impact and Zone of Influence adopted in Section 6.6 of the DMP).

Consistent with this guidance, the DMP applies a structured hierarchy of avoidance, minimisation and management measures (Section 8), including the operational and monitoring measures summarised under Item 2 above, and Darwin Port will engage suitably qualified and experienced contractors and consultants to undertake the works and associated monitoring in accordance with the DMP and the Darwin Port Environmental Management System (based on ISO 14001:2015, Section 3 of the DMP).

**Direction Item 3:** *To ensure levels of turbidity and sedimentation are managed to avoid and mitigate cumulative impacts to sensitive receptors, demonstrate that:*

*b) Alternative disposal options have been considered including alternative methods and locations*

**Response:** Sections 4.7 (Harbour disposal) and 4.8 (Onshore disposal) of the DMP set out the disposal options assessed for dredged material, on a site-by-site basis:

#### Onshore Disposal

Onshore disposal (existing East Arm Wharf decant ponds) is the preferred option for material dredged from the MSB wharf and turning basin areas (Section 4.8.1), due to ready accessibility without impacting shipping movements or other East Arm Wharf operations, and its established use for spoil from previous dredging programs in the precinct, including the MSB, the East Arm barge ramp and the Darwin Ship Lift Project. In the unlikely event that potential acid sulfate soils (PASS) are detected during geochemical assessment of the

dredge material, spoil will instead be placed at an alternative onshore location approximately 600 m east of the MSB to avoid exposure of PASS to oxidising conditions.

#### Offshore Disposal

Harbour (offshore) disposal has been adopted for material dredged or bed-levelled from East Arm Wharf and Fort Hill Wharf, as this material cannot be safely, economically or practically piped to the decant ponds without crossing shipping channels and critical wharf operational areas (Section 4.8.1). This material will be placed approximately 500 m from the relevant wharf (approximately 300 m from the end of the MSB channel), across a defined disposal footprint (100 m wide by 800 m long) aligned to the tidal axis, to avoid mounding of material.

Sediment transport modelling of candidate harbour disposal locations was undertaken (Section 6.3 of the DMP), and the locations shown in Figure 4-6 of the DMP were selected on the basis that they demonstrated improved dilution of turbid plumes relative to alternative locations considered.

Sediment sampling and analysis undertaken in March 2025 across the MSB, East Arm Wharf, Fort Hill Wharf and the MSB entrance channel (Section 5.2.3.4 of the DMP) confirmed that contaminant concentrations are consistently low across all analytes tested, with 95% upper confidence limits below the relevant NAGD (2009) screening levels, other than a naturally occurring (geological) elevation in arsenic at the MSB entrance channel. No organotins were detected, total petroleum hydrocarbon concentrations were low, and the material was confirmed to have low-risk potential acid sulfate soil (PASS) properties. On this basis, the DMP concludes that sediment from the tested port locations is suitable for open water disposal, including bed levelling and sweeping-related activities.

### **3. Summary**

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Darwin Port trusts that the information provided above, together with the enclosed amended DMP (Attachment A) and NT EPA screening tool assessment for bed levelling works (Attachment B), addresses the items of further information identified in Attachment A to the Direction, and provides the NT EPA with sufficient information to properly consider the referral. Darwin Port remains available to provide any further clarification the NT EPA may require.

Please contact the undersigned should you have any questions regarding this response.

Sincerely

Anna Wilkins  
Sustainability and Project Approvals Lead.