ntepa Northern Territory Environment Protection Authority

Statement of Reasons

DARWIN PORT OPERATIONS PTY LTD – DARWIN PORT MAINTENANCE DREDGING

PROPOSAL

Darwin Port Operations Pty Ltd (the Proponent) submitted three applications (PA2017/0145, PA2017/0146, PA2013/0048) under the *Planning Act* to account for ongoing maintenance dredging at Marine Supply Base, Fort Hill Warf and East Arm Wharf. On 10 July 2017, the Environment Division of the Department of Environment and Natural Resources wrote to the Proponent to advise that the Proposal outlined in the planning applications, would be considered as a Notice of Intent (NOI) under the *Environmental Assessment Act* (EA Act).

The Proposal is for ongoing maintenance dredging campaigns at existing dredged basins. The campaigns would target unconsolidated sediment (e.g. clay, silt, sand) from Fort Hill Wharf, East Arm Wharf and the Marine Supply Base. Dredging would occur in the berths at the Marine Supply Base (berths 1. 2 and 3) and East Arm Wharf (Berths 1, 2 and bulk liquid), the Marine Supply Base turning area and entrance and an area adjacent to the face of, and extending northeast of Fort Hill Wharf. The intent of the dredging is to maintain the required depth for safe vessel access and port operations. The first maintenance dredging campaign proposed in this program would occur in 2018, and target an estimated total volume of approximately 8000 cubic metres (m^3) of sediment over an area of 12.5 hectares (ha).

Figure 1. Potential dredging and disposal areas.

Immediate and future maintenance dredging campaigns would be largely undertaken during the Wet season and would likely require three days at each location over a two to three-week period. The proposal addresses maintenance dredging required between 2018 and 2024.

The Proposal would use a cutter suction dredge which would dredge sediment from the seabed and pump it to designated disposal sites. The total footprint of the proposed spoil disposal areas would be 7.2 ha in size. The maintenance dredging works would remain within the original depth and size of the previously dredged footprint.

The frequency and volume of future maintenance dredging campaigns would depend on the rate of sediment accumulation at the three locations and be informed by hydrographic surveys. The Proponent estimates that the berth pockets at East Arm and Fort Hill Wharves would require maintenance dredging at minimum intervals of six years. Maintenance dredging at the Marine Supply Base would be required at minimum intervals of three years.

Dredge spoil from East Arm Wharf and Fort Hill Wharf would be disposed of in areas approximately 500 m from the wharves (Figure 1). Dredged spoil would be pumped through a floating pipeline to the disposal location where it would be discharged. Spoil from the Marine Supply Base would be disposed of into the spoil disposal ponds at East Arm Wharf until such time as the ponds no longer have storage capacity. Once the storage capacity is exceeded or Potential Acid Sulfate Soils (PASS) are detected, spoil would be disposed of approximately 600 m east of the Marine Supply Base.

Further information was requested on 10 July 2017 to inform the NT EPA's decision. The Proponent responded to the further information request on 1 February 2018 with the submission of the Long Term Dredging Management Plan (LTDMP).

CONSULTATION

The notifications and further information (the Proposal) have been reviewed as a notification under the EA Act in consultation with Northern Territory Government (NTG) advisory bodies (see Attachment A) and the responsible Minister, in accordance with clause 8(1) of the Environmental Assessment Administrative Procedures.

JUSTIFICATION

The Notice of Intent and further information was assessed against the NT EPA's environmental factors and objectives. Review by the NT EPA and NTG advisory bodies identified potential for significant impacts to the key environmental factors of Terrestrial flora and fauna, Marine flora and fauna; Benthic habitat and communities and Marine Environmental Quality.

1. Terrestrial flora and fauna

Objective: Protect NT's flora and fauna so that biological diversity and ecological integrity are maintained.

Important foraging habitat for wading and migratory shorebirds occurs in Darwin Harbour and the East Arm Wharf. Migratory shorebirds occur throughout the mangroves and saline wetlands in Darwin Harbour. Surveys have identified that the East Arm Wharf (dredge spoil ponds) seasonally supports nationally significant numbers of some migratory shorebird species. If maintenance dredging was to occur during the Wet season it is likely that migratory birds would be present. Dredging and spoil disposal would generate noise and new activities which could disturb migratory shorebirds roosting and foraging in Darwin Harbour particularly around the East Arm Wharf and Marine Supply Base.

The highest value habitat for migratory shorebirds and waders is Pond D at the East Arm Wharf. Maintenance dredging would involve the disposal of some spoil into Pond E (north) and Pond K at East Arm Wharf. The Proposal does not involve any works in Pond D and the disposal of spoil and tail water in Pond K is unlikely to disturb or alter the quality of roosting habitat. The NT EPA acknowledges that East Arm Wharf is an operational port with existing industrial noise. The temporary increase in noise and activity during the proposed action is unlikely to have a significant impact.

The NT EPA is satisfied that the environmental objective for Terrestrial flora and fauna is likely to be met.

2. Marine flora and fauna

Objective: Protect marine flora and fauna so that biological diversity and ecological integrity are maintained.

Port Darwin has significant environmental values relating to marine flora and fauna. Three species of marine turtle (*Chelonia mydas*, *Eretmochelys imbricata*, *Natator depressus*) the dugong (*Dugong dugon*) and three dolphin species (*Orcaella heinsohni*, *Tursiops aduncus*, *Sousa sahulensis*) are known to occur or regularly visit Darwin Harbour for foraging.

A review of the NOI and further information identified the following potential impacts and risks to the environment, associated with the Proposal:

- potential impacts from vessel interaction and underwater noise on marine megafauna such as turtles, dugongs and cetaceans
- potential impacts to foraging habitat for marine megafauna which includes coral, seagrass and mangrove habitats due to elevated suspended sediments and sedimentation.

The Proponent has committed to implementing a Protected Species Management Framework to avoid physical interactions with marine megafauna. In particular, the framework includes the requirement for a marine fauna observer who would be responsible for monitoring observational and exclusion zones during dredging and spoil disposal activities. Comments from the Department of Environment and Natural Resources recommend that the observation period for marine megafauna be extended from 10 to 20 minutes to account for the range of average turtle dive durations. This is particularly relevant in the depth of water where dredging would occur (25 m). The NT EPA supports this approach and has recommended that the Proponent update the procedures for the observance and exclusion zones in the LTDMP.

Dredging and spoil disposal activities will generate noise and vibration in the marine environment. During dredging and spoil disposal activities megafauna would be expected to temporarily relocate away from the targeted area. It is acknowledged that the dredging and spoil disposal activities would be short-term and localised and the East Arm Wharf, Fort Hill Wharf and Marine Supply Base are operational areas subject to regular noise and vibration from vessels.

The potential impact on foraging habitat for marine megafauna are discussed under Benthic habitats and communities below.

The NT EPA is satisfied that the environmental objective for marine flora and fauna is likely to be met.

3. Benthic habitats and communities

Objective: Protect benthic habitats and communities so that biological and functional diversity and ecological integrity are maintained.

Port Darwin comprises a range of benthic communities and habitats including extensive areas of mangroves and tidal mudflats, soft and hard corals as well as seagrass and algae. Surveys identified areas of hard coral communities and filter-feeding communities in benthos around East Arm Wharf. These include:

- hard coral communities associated with South Shell Island
- soft coral and filter-feeding communities associated with Old Man Rock
- seagrass meadows.

Dredging and spoil disposal activities would disturb benthic habitat resulting in the suspension of marine sediment. Suspended sediments reduce the available light penetrating the water column and impact filter feeding organisms by clogging and damaging feeding and breathing structures. The deposition of suspended sediments can smother benthic and intertidal habitats and communities which are important foraging and roosting habitat for migratory shorebirds.

Modelling of sediment transport was undertaken on behalf of the Proponent by the Australian Institute of Marine Science (AIMS) to determine areas of potential impact. The results of the assessment identified the 'Zone of Moderate Impact' where there is potential for mortality to benthic biota (Figure 2). Within this zone, impacts and mortality of benthic biota may occur primarily due to increased turbidity.

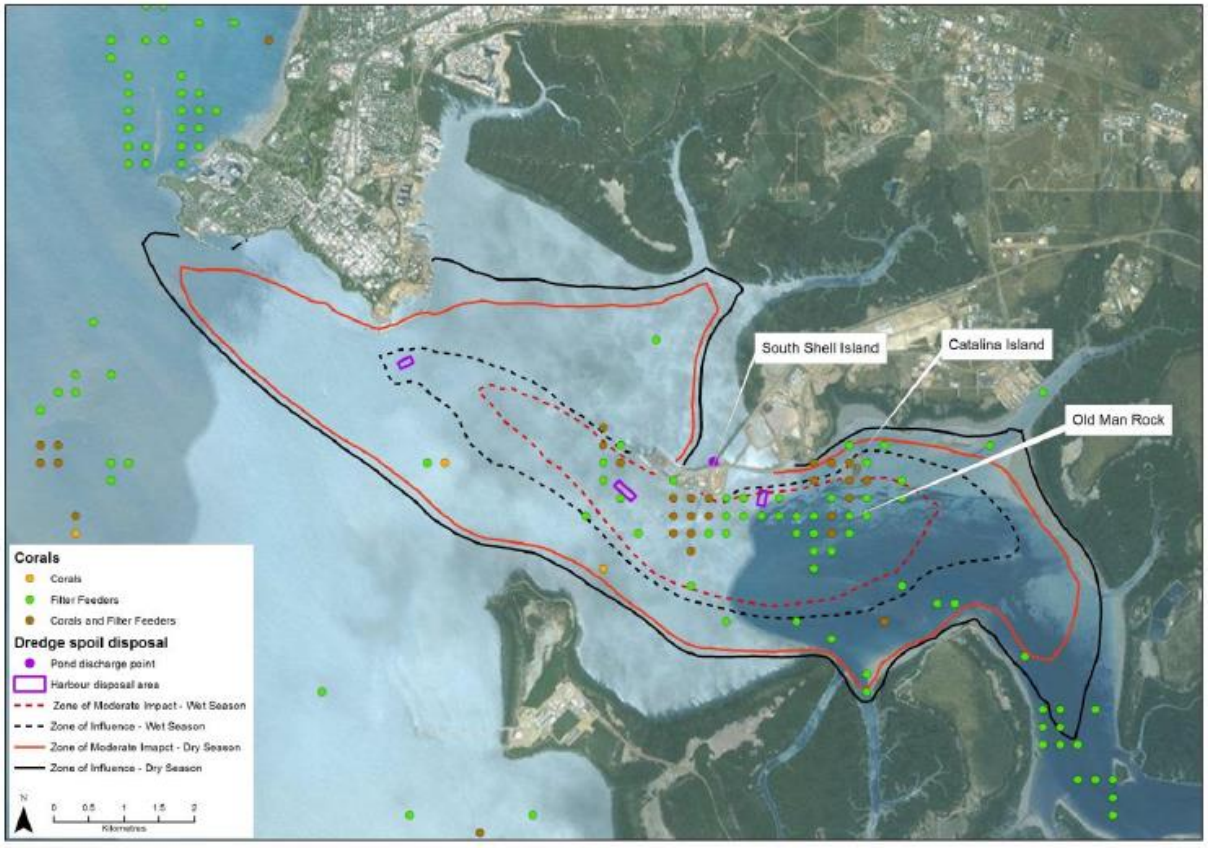

Figure 2 – Zone of moderate impact and influence for Dry season and Wet season dredging operations in relation to benthic habitats and communities.

The results from sediment transport modelling indicate that net sedimentation within the Harbour would be <2.5 mm with peak sediment deposition at South Shell Island predicted to be 0.55 mm. The results of the modelling indicate that dredging and disposal are unlikely to have a significant impact on benthic habitats and communities.

Hard coral and filter-feeding communities around South Shell Island lie within the modelled 'Zone of Moderate Impact'. The Proponent has identified 'tolerance limits' which are consistent with previous dredging operations around East Arm Wharf and based on the 95th percentile of the background suspended sediment concentrations. The Proponent predicts that if dredging was to occur during the Dry season, the 'tolerance limit' (10 mg/L suspended sediment concentration) would be exceeded on eight days during dredging and the two days following. During the Wet season, the tolerance limit (25 mg/L suspended sediment concentration) would be exceeded on three days during dredging.

Known seagrass sites, not shown on Figure 2, occur near the modelled 'Zone of Influence' for the Dry Season. It is not known if these sites are important dugong foraging habitat. The Department of Environment and Natural Resources (DENR) recommended that seagrass meadows should be mapped and assessed for their importance to dugong, prior to any permit being given for dredging to occur in the Dry Season. The NT EPA supports DENR's recommendation.

The Proponent has prepared a LTDMP and a Water Quality Environmental Management Framework that identifies trigger values for sensitive benthic habitats and communities and includes plume monitoring and reporting. The Proponent has committed to undertaking internal audits of the mitigation and management measures in the LTDMP. The internal audits would identify the effectiveness of the LTDMP in mitigating impacts.

The NT EPA is satisfied that potential impacts and risks to benthic communities and habitats can be adequately managed through the implementation of the LTDMP and the Water Quality Environmental Management Framework.

The NT EPA is satisfied that its environmental objective for benthic communities and habitats is likely to be met.

4. Marine environmental quality

Objective: Maintain the quality and productivity of water, sediment and biota so that environmental values are protected.

Baseline monitoring by the Department of Environment and Natural Resources found that the overall water quality in Darwin Harbour is generally in very good condition. There is large natural variability in some water quality parameters (e.g. salinity and turbidity) due to seasonal effects and large tides. Darwin Harbour naturally has high turbidity year round with Wet season generally much higher than the Dry.

The main impacts to water quality would be the mobilisation of sediments in the water column during dredging and spoil disposal. Disturbed sediments can result in the mobilisation of nutrients, toxicants and PASS. Depending on the extent of the change to water quality there may be the loss of aquatic biota, increased stressors on organisms (natural or anthropogenic) and the bioaccumulation of toxicants.

Increases to suspended sediment concentrations would be temporary during dredging activities with limited periods when suspended sediment concentrations would exceed the 95th percentile. To limit any adverse impacts during these exceedances, the NT EPA recommends that dredging be conducted only during the Wet season when turbidity levels are naturally higher.

Dredge spoil and decant water (stormwater and tail water) is proposed to be discharged into the dredge spoil ponds (Pond K) at East Arm Wharf and may contain toxicants and PASS. Where toxicants and PASS are exposed to the atmosphere there is a risk of acidification of the sediments. The Proponent has prepared a Water Quality Environmental Management Framework for the dredge spoil decant ponds to manage, monitor and respond to the risk.

Where there is an identified risk of PASS coming into contact with the atmosphere, spoil may be disposed of in the Harbour to the east of the Marine Supply Base.

While the impacts to the marine environment are not considered significant, there are potential impacts and risks that need to be addressed. The Proponent will require approval under the *Planning Act* and a Waste Discharge Licence under the *Water Act*. The NT EPA has recommended that the Development Consent Authority ensure that the deemed permit and Development Permit variation includes requirements for turbidity monitoring. Such requirements should be identified and implemented to the satisfaction of DENR prior to the granting of the necessary Licences and Permits.

The NT EPA notes that there may still be some uncertainty around the modelling and successful implementation of the LTDMP. The NT EPA recommends that the Controller of Water Resources considers this level of uncertainty when deciding an appropriate timeframe for the Waste Discharge Licence.

The NT EPA is satisfied that the Proposal is likely to meet its objectives for marine environmental quality.

Cumulative impacts

In addition to the dredging proposed by the Proponent, there are a number of other dredging campaigns proposed for Darwin Harbour. The NT EPA considers that there is some uncertainty with respect to the potential cumulative impact and that a long-term biological monitoring program to improve understanding of cumulative impacts is required.

The NT EPA views cumulative environmental impacts in Darwin Harbour, and the associated need for long-term environmental monitoring programs as a shared responsibility of relevant government agencies and Proponents undertaking activities in the Harbour (and its catchment) that may have cumulative environmental impacts and risks. In this regard, the development of such programs should be informed by the best available science.

The NT EPA considers that potential environmental impacts and risks associated with the Project can be adequately managed through regulatory processes under the *Planning Act* and the *Water Act*, and the implementation of mitigation measures detailed in the LTDMP. Comments from NTG advisory bodies have been provided to the Proponent and the NT EPA has provided recommendations to ensure that potential impacts on the environment are minimised and obligations under relevant legislation can be met.

Conclusion

The NT EPA considers that significant environmental impacts are unlikely due to the small spatial footprint and volume of the proposed dredging which is within in a previously dredged footprint. Conducting maintenance dredging works only during the Wet Season and implementation of the LTDMP with associated monitoring and reporting would ensure that the potential impacts and risks of the Proposal are avoided or managed.

The Proponent has committed to undertaking internal audits during dredging works to further inform the adequacy of the LTDMP. The internal audits would provide an important mechanism for periodically reviewing and improving the LTDMP.

The NT EPA considers that the potential environmental impacts and risks associated with the Project are not significant and that the Project does not require assessment under the EA Act.

Comments from NTG advisory bodies have been provided to the Proponent and the NT EPA has provided recommendations to the Proponent and Consent Authority to ensure that potential impacts on the environment are minimised and responsibilities under the legislation can be met.

DECISION

The proposed action, by Darwin Port Operations Pty Ltd, has been examined by the NT EPA and preliminary investigations and inquiries conducted. The NT EPA has decided that the potential environmental impacts and risks of the proposed action are not so significant as to warrant environmental impact assessment by the NT EPA under provisions of the *Environmental Assessment Act*. However, the proposed action will require assessment and approvals under the *Planning Act* and the *Water Act* to ensure the environmental issues associated with the proposed action are effectively managed.

This decision is made in accordance with clause 8(2) of Environmental Assessment Administrative Procedures, and subject to clause 14A the administrative procedures are at an end with respect to the proposed action.

DR PAUL VOGEL

CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

13 MARCH 2018

Attachment A: Northern Territory Government Advisory bodies consulted on the Notice of Intent

Department	Division
Department of Environment and Natural Resources	Flora and Fauna Water Resources Weeds Environment Bushfires NT Rangelands
Department of Infrastructure, Planning and Logistics	Lands Planning Infrastructure Transport
Department of Primary Industry and Resources	Fisheries Mining Compliance Petroleum Primary Industry
Department of Tourism and Culture	Heritage Tourism NT Arts and Museums Parks and Wildlife
NT Police, Fire and Emergency Services	Business Improvement and Planning
Department of Health	Environmental Health Medical Entomology
Department of Trade, Business and Innovation	Economics and Policy Strategic Policy and Research
Department of Housing and Community Development	Maintenance Planning Housing supply
Power and Water Corporation	
Aboriginal Areas Protection Authority	Technical
Department of the Attorney-General and Justice	Commercial Division NT Worksafe
Land Development Corporation	
Department of the Chief Minister	Economic and Environmental Policy