Dampier Marine Services Facility

Dampier Port Authority

Report and recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia

Report 1389
March 2011

Assessment on Proponent Information
Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
21 February 2011	Level of assessment set	
17 March 2011	Proponent's final API document and additional information received by EPA	3.5 weeks
28 March 2011	Publication of EPA report (3 days after report to Minister)	1.5 weeks
11 April 2011	Close of appeals period	2 weeks

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined. It was originally intended to assess this proposal at a level of Assessment on Referral Information (ARI), however the gazetting of new Administrative Procedures necessitated a change to Assessment on Proponent Information (API).

In this case, the Environmental Protection Authority met its timeline objective of 4 weeks for the completion of the assessment and provision of a report to the Minister (following receipt of the final proponent information).

Dr Paul Vogel
Chairman
23 March 2011

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Contents

1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal by the Dampier Port Authority (DPA) to develop the Dampier Marine Services Facility (DMSF) in the Dampier Archipelago (Figure 1). The proposal expands the existing Dampier Port facilities to construct a land backed wharf, jetty, lay down areas and associated infrastructure. The proposal involves the dredging of approximately 2.2 million cubic metres (Mm^3) of material to reclaim 22 hectares (ha) of land to create the new land backed wharf and lay down areas. The jetty would extend approximately 300 metres (m) from the land backed wharf. The proposal would also impact approximately 5 ha of land adjacent to the proposed wharf for lay down areas and an access road.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- The key environmental factors identified in the course of the assessment; and
- The EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

The proponent has submitted a referral document setting out the details of the proposal, potential environmental impacts and proposed commitments to manage those impacts (DPA, 2011).

The EPA considers that the proposal, as described, can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding.

The EPA has therefore determined under Section 40 of the EP Act that the level of assessment for the proposal is Assessment on Proponent Information (API), and this report provides the EPA advice and recommendations in accordance with Section 44 of the EP Act.

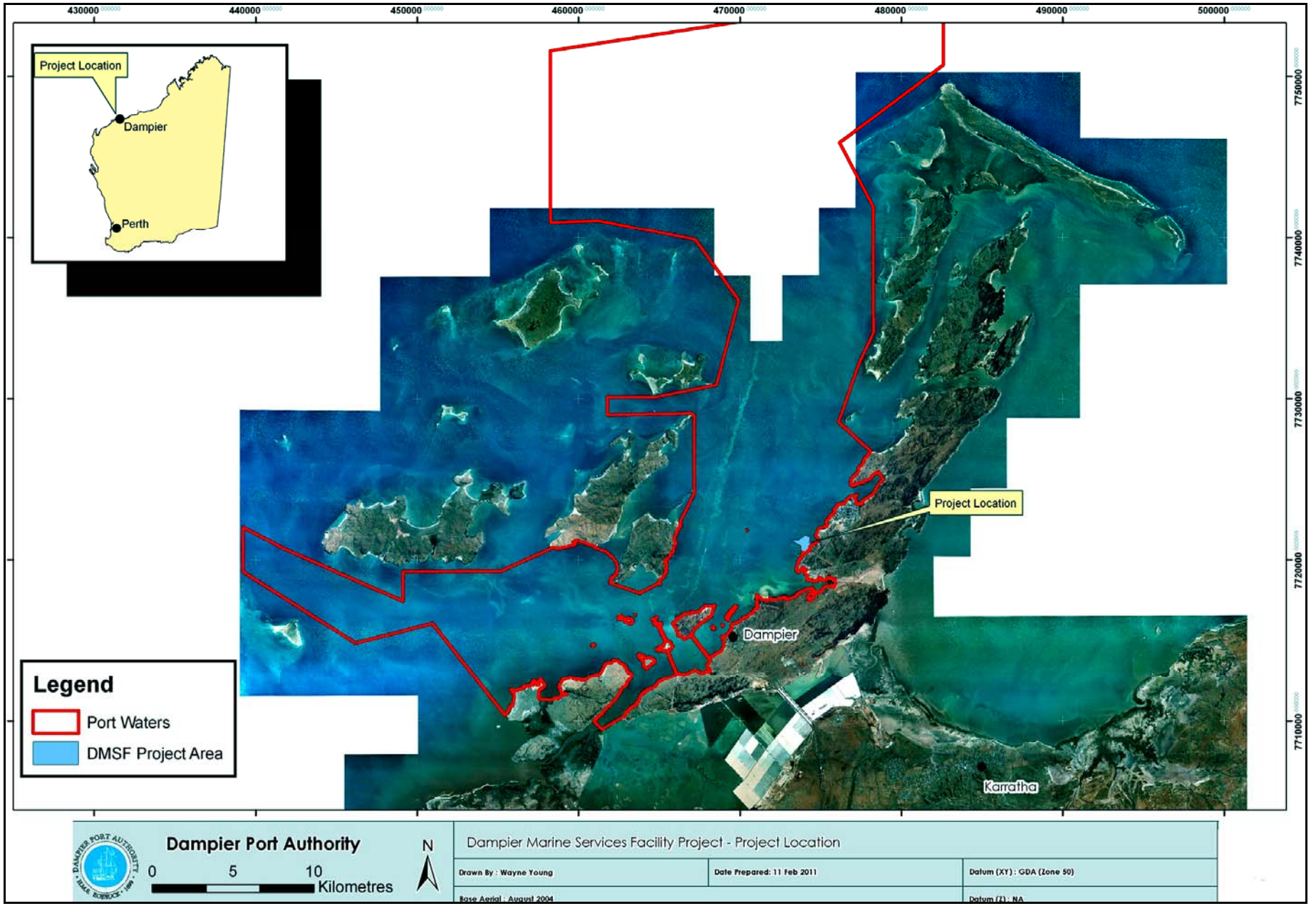

Figure 1: Regional location

2. The proposal

The DPA proposes to expand its existing wharf facilities to increase storage capacity and improve the efficiency of the port in general. The expansion involves the construction of a land-backed wharf, 300 m jetty, lay down areas, access road and associated infrastructure. The wharf and lay down area would be constructed using reclaimed material from the dredging required to improve the approach and berthing channels.

The footprint of the area to be reclaimed is 22 ha with up to 5 ha of land adjacent to the reclamation area also being developed. The dredging footprint is up to 47 ha with approximately 2.2 Mm^3 of material proposed to be dredged over a 6 to 10 months campaign. The total footprint of the proposal is up to 74 ha. Figure 1 shows the location of the proposal on the western side of the Burrup Peninsula. The general layout of the proposed facility is shown on figure 2.

The main characteristics of the proposal are summarised in the table below.

Table 1: Summary of key proposal characteristics

Element	Description
Dredging area:	up to 47 hectares over a 6 to 10 month duration.
Reclamation area:	up to 22 hectares.
Land disturbance area:	up to 5 hectares.
Area of native vegetation to be cleared:	up to 2 hectares.
Loss of coral:	direct removal of up to 5 ha of reef, possible indirect impact on up to a further 3.6 hectares.
Constructed facilities and infrastructure:	land-backed wharf including roll-on roll-off facility, outer bund wall, lay down areas and access road.

The potential impacts of the proposal are discussed by the proponent in the referral document (DPA, 2011).

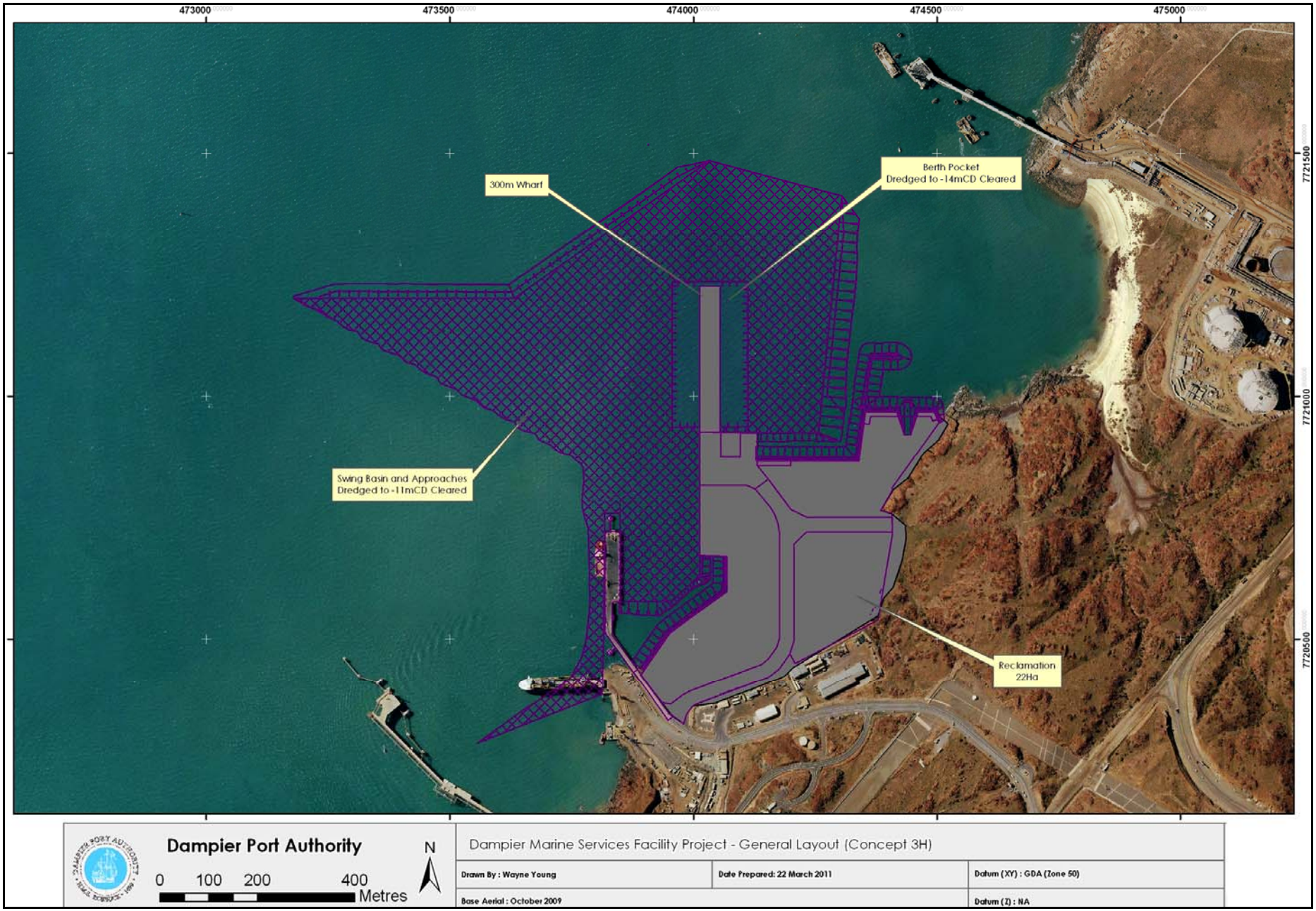

Figure 2: Proposal layout

3. Consultation

During the preparation of the API, the proponent has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted, the comments received and the proponent's response are detailed in section 3.4 of the Proponent's referral document (DPA, 2011).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

4. Key environmental factors

It is the EPA's opinion that the following key environmental factors relevant to the proposal require evaluation in this report:

(a) Benthic Primary Producer Habitat - the loss of habitat through reclamation and indirect impacts from dredging; and
(b) Flora and Vegetation – loss of up to 2 ha of vegetation within a 5 ha area to be developed on land.

The key environmental factors are discussed in Sections 4.1 – 4.2. The description of each factor shows why it is relevant to the proposal and how it would be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor. Comment on some other factors is included in Section 4.3.

4.1 Benthic Primary Producer Habitat

Description

This proposal is an expansion of the existing Dampier Port facility.

Potential impacts from the proposal include the direct removal of, and indirect impacts on corals as a result of dredging and reclamation activities.

The proponent has identified the following potential impacts to corals:

- direct loss of 4.40 ha (6% of the Management Unit) of reef with 1-10% coral cover;
- direct loss of 0.36ha (0.5% MU) of reef with 10-50% coral cover;
- direct loss of 0.18ha (0.2% MU) of reef with >50% coral cover; and
- indirect impact upon 3.57ha (4.8% MU) of reef with 1-10% coral cover.

The proponent has designated a local assessment unit (LAU) (Figure 3) for the assessment of coral habitat as required under *Environmental Assessment Guideline 3: Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment* (EAG 3) (EPA, 2009). This LAU has been adopted directly from Woodside's Pluto project, located just north of the DPA

facility. The Pluto project identified this LAU as Zone A. Through a coral survey conducted by MScience (commissioned by the DPA), the DPA has concluded that the Pluto project has had significantly less impact upon the corals than predicted. Considering this, the DPA has assumed that the Pluto project has caused zero indirect loss of corals. Consistent with the requirements of EAG 3 the proponent has estimated historical loss of the LAU to be 15.4%.

The DPA refined the sediment fate model used for the Pluto project to predict the indirect impacts of the proposed DPA dredging. The results of this modelling suggest that high Total Suspended Solids (TSS) levels (above 20mg/l) would be restricted to the immediate vicinity of the dredge and outfall discharge point of the reclamation area, with a mild plume extending up and down the coastline. Under an energetic scenario (cyclone event), some resuspension of dredged material may occur further offshore.

In view of the above the DPA has identified a zone of 'high impact' (Figure 4) where it predicts coral mortality, or long-term serious damage to coral communities would occur and these coral communities would be lost. This approach is consistent with the EPA's draft *Environment Assessment Guideline 7 – Marine Dredging Proposals* (EAG7) (EPA, 2010). This zone of 'high impact' covers those areas where coral communities would be lost as a result of direct and indirect impacts of dredging.

Assessment

The EPA's environmental objective for Benthic Primary Producer habitat is to:

- maintain the marine ecological integrity and biodiversity; and
- ensure that the proposal is consistent with EAG 3 and draft EAG 7.

The EPA notes that the DPA has considered alternative designs and locations in accordance with the Overarching Environmental Protection Principles set out in EAG 3. Being an established port facility, options for alternative locations are limited. The proposed design has the advantage of minimising the terrestrial footprint and avoiding sea dumping of dredge material through reuse in the reclamation area.

The footprint of the DPA proposal exists partially within Pluto's Zone A, an area within which 100% coral loss was expected as a result of the Pluto dredging campaign. The outcome of the Pluto project, thus far, has shown the results of model which predicted a 100% coral loss to be conservative. Within the area predicted for 100% coral loss (zone A) the MScience coral survey found that little coral mortality has occurred. The EPA notes the DPA's view that this suggests that the threshold tolerance levels used for both the Pluto project and DPA modelling are conservative and that the natural tolerance of the corals may be higher than expected.

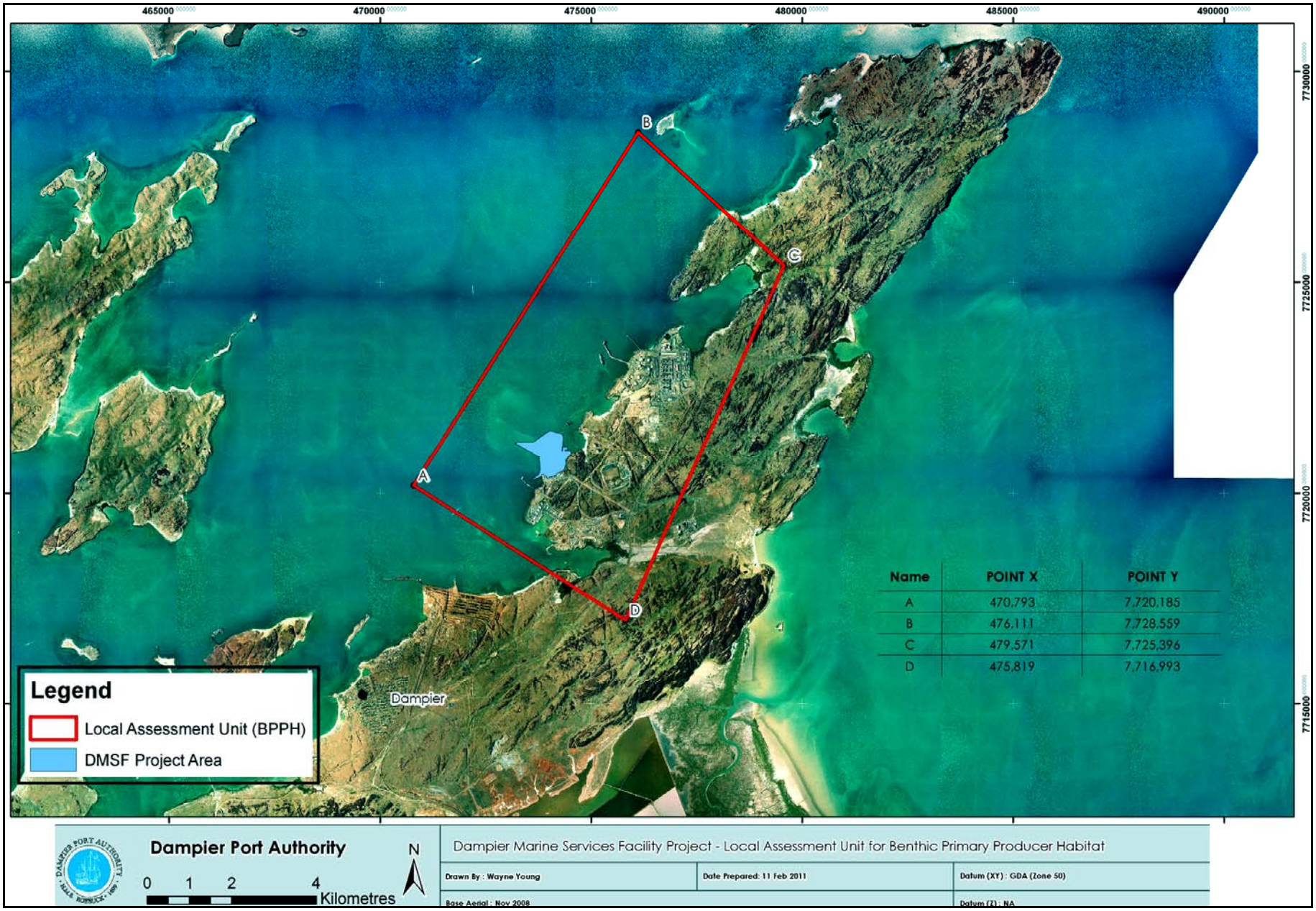

Figure 3: Local assessment unit

The EPA also understands that modelling used for the Pluto project has also generally under-predicted TSS levels in the immediate vicinity of the dredging activity but over-predicted TSS levels at increasing distances from it. The proponent's view is that this suggests that sediment drops out of suspension faster than the model predicts. Thus, while TSS levels may be higher at the site of the dredging, the sediment plume is likely to be more dilute and geographically restricted than predicted by the model. In view of this the proponent has predicted that the only corals likely to be impacted by the DMSF project are within the immediate vicinity of the proposed dredging, of which the majority would be directly removed through reclamation.

The proponent has identified a zone of 'high impact' (Figure 4) and from the modelling is confident that it can manage dredging impacts to within the zone of 'high impact'. The proponent's modelling indicates that the zone of 'influence' may extend north to within proximity to the proposed Dampier Archipelago Marine Park. The proponent cites the practical experience of the Pluto dredging program in support of its position that there would be no impacts on the proposed Marine Park.

The EPA recommends condition 5 be applied to ensure that implementation of the proposal does not cause the mortality of, or long-term serious damage to coral communities outside of the zone of 'high impact'. The recommended condition requires the preparation of a monitoring plan, water quality trigger levels for coral health, and baseline surveys of the health of coral communities prior to dredging followed by surveys of coral health at the completion of dredging.

In relation to baseline surveys of coral health, the EPA notes that the DPA will use data available from the Pluto project. It is also noted that the DPA is proposing to use real time telemetered water quality monitoring instruments along with data loggers to monitor the plume and its extent in order to manage dredging impacts. This approach is supported. The DPA also proposes to stop overflows from the reclamation area and dredging in the event that monitoring of water quality indicates the plume has extended beyond the model's predictions.

Dredging and reclamation activities need to be managed to reduce potential impacts on critical environmental windows such as mass coral spawning events. The EPA has thus recommended a condition that requires the DPA to have in place procedures to prevent adverse impacts during these mass coral spawning events.

Cumulative impacts

There have been a number of previous dredging campaigns within the Dampier Port, and capital and maintenance dredging campaigns will be required into the future. The EPA notes the DPA is responsible for management within its port boundary. While there have been various estimates of the historical loss of Benthic Primary Producer Habitat it is not evident that a definitive estimate of historical loss has been determined upon which the potential environmental impacts of future development can be evaluated. Given its overall responsibility within the Port boundary, the DPA is best placed to determine and maintain reference data on the historical loss of Benthic Primary Producer Habitat. In view of the above, the EPA has recommended condition 6 to ensure that historical loss of Benthic Primary Producer Habitat is determined and documented for the Dampier Port.

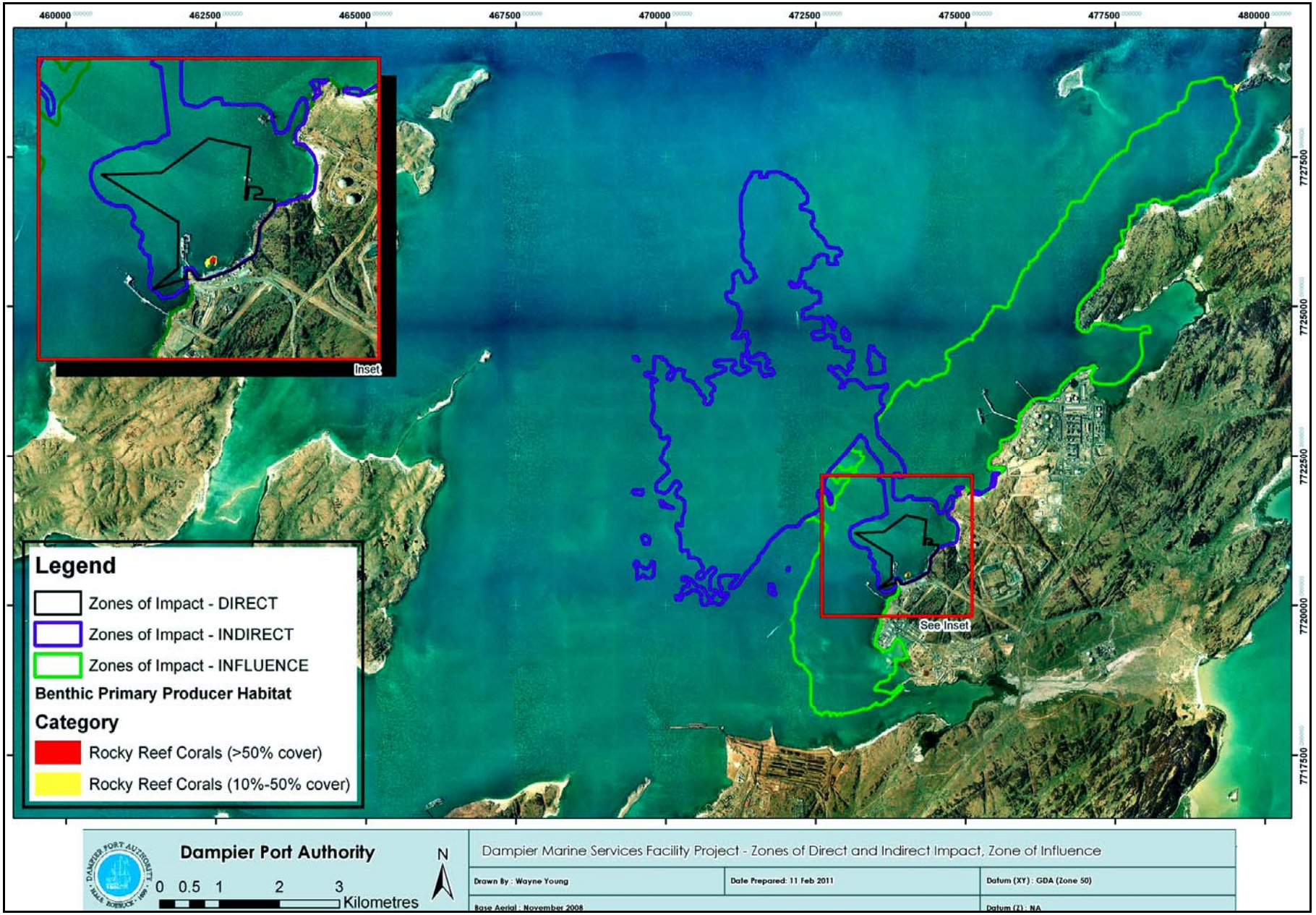

Figure 4: Zones of impact

Summary

Having particular regard to the:

- predicted losses of coral communities within the zone of 'high impact';
- monitoring and management to ensure there is no coral mortality or long term serious impacts outside of the 'high impact' zone; and

- the recommended conditions,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided conditions are applied to ensure that implementation of the proposal does not cause the mortality of, or long-term serious damage to coral communities outside of the zone of 'high impact'.

4.2 Flora and Vegetation

Description

The proposal would disturb 5 ha of land of which up to 2 ha of terrestrial vegetation would be removed.

Flora surveys of the impact area, conducted by Astron Environmental Services (Astron), found no Declared Rare Flora (DRF) or Threatened Ecological Community (TEC). Two Priority 3 species, *Terminalia supranitifolia* and *Rhynchosia bungarensis*, were identified. The proponent asserts that these species are common throughout the Burrup Peninsula but restricted in distribution elsewhere. One Priority Ecological Community (PEC), the Burrup Peninsula Rock Pile Community (Priority 1: Poorly Known Ecological Community), was also identified within the survey area.

A vegetation association, referred to by Astron as CP2, was identified in the flora survey. This association has been previously referred to by botanist Malcolm Trudgen as PtTe due to its primary composition of *Pluchea tetranthera* and *Triodia epactia*. Whilst this assemblage has no official conservation status, Trudgen described it as having high conservation value. At the time of Trudgen's identification, the occurrence of this assemblage at the site of the DPA's proposed development may have been one of around 4 found within the Burrup Peninsula. Since that time the proponent believes that developments on the Peninsula have resulted in the association surveyed by Astron being the last known occurrence. Advice from Malcolm Trudgen suggests that whilst the species which make up this assemblage may be common within and outside the Burrup Peninsula, the assemblage itself is restricted to the Peninsula and, seemingly, the DPA's proposed development area.

Assessment

The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographic distribution and productivity of flora at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

It is noted that flora surveys did not identify any DRF or TEC that are likely to be impacted by the proposal.

In relation to the PEC and restricted vegetation association, the EPA notes the decision by the DPA to reclaim land has resulted in significantly reduced impacts on the terrestrial environment than otherwise would have been the case if the DPA had sought to develop on land.

In view that the species within this PEC and restricted vegetation association are well represented elsewhere on the Burrup Peninsula, the EPA considers that that the proponent has taken reasonable measures to reduce its impacts on vegetation and flora. The land based component of this proposal is up to 5 ha in area. Within this area, the extent of clearing allowed would be limited to a maximum of 2 ha as proposed by the proponent. The EPA recommends that the amount of clearing be identified in the key characteristics table along with an appropriate figure.

Summary

Having particular regard to the:

- terrestrial impacts being minimised through land reclamation; and
- no DRF or TECs being identified by the flora surveys within the proposal area,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

4.3 Comment on other factors

Site contamination

The area proposed to be dredged has been examined to determine if contaminated sediments are present. A sampling analysis plan was prepared in consultation with the Department of Environment and Conservation (DEC). Sediment sampling was conducted throughout the area proposed for dredging. Of the metals tested, only chromium exceeded the Ecological Investigation Levels. Subsequent leachate testing indicated that chromium was below practical quantification levels and that chromium was present in an immobile form. The DEC has previously found chromium in naturally elevated levels in the region.

Some potential acid forming (PAF) material was found in samples however, the proponent has indicated that the sediments have a high natural buffering capacity which should mitigate any risk of acid production during reclamation activities. The DEC has advised that the sampling conducted by the proponent was sufficient and the material is suitable for disposal onshore, as landfill, in a bunded reclamation area, with no active management of PAF. The reclaimed area will also subject to consideration under the *Contaminated Sites Act 2003* before it can be developed.

Noise

The DPA's noise screening assessment indicated that the expanded DMSF is expected to meet the assigned levels in the *Environmental Protection (Noise) Regulations 1997* when operational. The EPA's aspirational objective for the Hearson Cove recreational area may be exceeded by around six decibels during piling activities undertaken for construction, however this activity would only occur during the day and for a limited time.

Indigenous heritage

The proponent has identified five archaeological sites within the area of the proposal (Section 6.4 DPA, 2011). The sites identified are along the coastline. The proponent has indicated that it does not intend to disturb these sites. The EPA notes that a section 18 of the *Aboriginal Heritage Act 1972* application would be required if additional sites are uncovered during construction.

Turtles

The EPA notes the measures proposed by the proponent to reduce impacts on turtles during the dredging campaign. The EPA also notes that the proposal itself would not result in a significant increase in shipping movements. However, as the port continues to expand, increased shipping movements represent a threat to turtles within the port and its approaches. The DPA has confirmed with the EPA that it will continue to give attention to this matter through its port management plans and in particular, managing shipping speeds to reduce the potential for collisions with turtles.

5. Recommended Conditions

5.1 Recommended conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by the DPA to expand the existing Dampier Port facility is approved for implementation. These conditions are presented in Appendix 2. Matters addressed in the condition set include:

- ensuring that implementation of the proposal does not cause the mortality of, or long- term serious damage to coral communities outside of the zone of 'high impact';
- ensuring dredging and reclamation activities are managed to prevent adverse impacts on mass coral spawning events;
- establishing the historical loss of Benthic Primary Producer Habitat for the Dampier Port; and
- specifying the maximum amount of native vegetation clearing in the key characteristic table.

6. Conclusions

The EPA has considered the proposal by the Dampier Port Authority to expand the existing Dampier Port facilities to construct a land backed wharf, jetty, lay down areas and associated infrastructure. The land backed wharf and lay down areas would be constructed from dredged material.

The key environmental factors relevant to the proposal are:

a) Benthic Primary Producer Habitat - the loss of habitat through reclamation and indirect impacts from dredging; and
b) Flora and Vegetation – loss of up to 2 ha of vegetation within a 5 ha area to be developed on land.

The proponent has made predictions about the extent of the potential impacts in the marine environment from dredging. These predictions were informed by further refinement of modelling undertaken for the Pluto project and practical experience of the impacts of dredging during the dredging campaign associated with the Pluto project.

The DPA has identified a zone of 'high impact' where it predicts coral mortality, or long-term serious damage to coral communities would occur and these coral communities would be lost. This zone of 'high impact' covers those areas where coral communities would be lost as a result of the direct and indirect impacts of dredging. The majority of the loss is associated with the reclamation area. The EPA has recommended conditions to ensure that implementation of the proposal does not cause the mortality of, or long- term serious damage to coral communities outside of the zone of 'high impact'.

Baseline reference data on the extent of historic loss of Benthic Primary Producer Habitat is important to inform decisions on future development and ongoing maintenance within the Dampier Port. The DPA is best placed to determine and maintain reference data for the historical loss of Benthic Primary Producer Habitat.

The proposal would result in the clearing of up to 2 ha of vegetation within an area of 5 ha of land to be developed. The EPA considers that that the proponent has taken reasonable measures to reduce its impacts on the vegetation and flora. Clearing of native vegetation would be limited to the 2 ha as proposed by the proponent. The EPA has defined this in the key characteristics table of the recommended condition set.

The EPA has therefore concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.

7. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. That the Minister notes that the proposal being assessed is for the Dampier Port Authority to expand the existing Dampier Port facilities to construct a land backed wharf, jetty, lay down areas and associated infrastructure;
2. That the Minister considers the report on the key environmental factors as set out in Section 3;
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2; and
4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

References

EPA (2010). *Environmental Assessment Guideline 3: Protection of Primary Producer Habitats in Western Australia's Marine Environment.* Environmental Protection Authority, Government of Western Australia, December 2009.

EPA (2010). *Draft Environmental Assessment Guideline 7: Marine Dredging Proposals.* Environmental Protection Authority, Government of Western Australia, Draft released for public comment, October 2010.

DPA (2011). *Dampier Marine Services Facility - Assessment on Proponent Information*. Prepared for Dampier Port Authority by Worley Parsons, March 2011.

Appendix 2

Identified Decision-making Authorities
and
Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of the EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Lands	Transfer of Lot 565 to DPA
2. Minister for Indigenous Affairs	Section 18 - *Aboriginal Heritage Act 1972*
3. Department of Environment and Conservation	*Contaminated Sites Act 2003*

Note: In this instance, agreement is only required with DMAs # 1 & 2 since these DMAs are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED
(PURSUANT TO THE PROVISIONS OF THE
ENVIRONMENTAL PROTECTION ACT 1986)

Dampier Marine Services Facility

Proposal: The proposal involves dredging of not more than 2.2 million cubic metres of material which will be used to reclaim a 22 hectare area and create a new land-backed wharf. A new jetty will extend approximately 300 metres from the land-backed wharf. The proposal will also require disturbance of approximately 5 hectares of land for a lay down area and an access road.

The proposal is further documented in schedule 1 of this statement.

Proponent: Dampier Port Authority

Proponent Address: MOF Road
Burrup Peninsular
Dampier WA 6713

Assessment Number: 1870

Report of the Environmental Protection Authority: Report 1389

The proposal referred to in the above report of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Office of the Environmental Protection Authority of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.

3-2 The proponent shall provide the Chief Executive Officer of the Office of the Environmental Protection Authority with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

4-2 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

1 the frequency of compliance reporting;

2 the approach and timing of compliance assessments;

3 the retention of compliance assessments;

4 the method of reporting of potential non-compliances and corrective actions taken;

5 the table of contents of compliance assessment reports; and

6 public availability of compliance assessment reports.

4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.

4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the Chief Executive Officer of the Office of the Environmental Protection Authority.

4-5 The proponent shall advise the Chief Executive Officer of the Office of the Environmental Protection Authority of any potential non-compliance within seven days of that non-compliance being known.

4-6 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the first compliance assessment report fifteen months from the date of issue of this Statement addressing the twelve month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

1 be endorsed by the proponent's Managing Director or a person approved in writing by the Chief Executive Officer of the Office of the Environmental Protection Authority, delegated to sign on the Managing Director's behalf;

2 include a statement as to whether the proponent has complied with the conditions;

3 identify all potential non-compliances and describe corrective and preventative actions taken;

4 be made publicly available in accordance with the approved compliance assessment plan; and

5 indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Coral Communities

5-1 The proponent shall ensure that the implementation of the proposal does not cause the mortality of, or long-term serious damage to, the coral communities outside the zones of Direct and Indirect impact shown on Figure 4.

5-2 The proponent shall identify any critical windows for key mass coral spawning events and have in place procedures to ensure that implementation of the proposal does not adversely impact on these events.

5-3 To verify that the requirements of condition 5-1 and 5-2 are met, the proponent shall:

a) at least two months prior to the commencement of dredging, submit a monitoring plan for water quality and coral health to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority. The monitoring plan shall include water quality trigger levels for protecting coral health;
b) undertake appropriate management actions during dredging should trigger levels in the monitoring plan be reached;
c) provide baseline data on the health of coral communities prior to the commencement of dredging;
d) undertake a coral health survey within two months of the completion of dredging; and

e) at least two months prior to the commencement of dredging, submit management procedures for mass coral spawning events to the requirements of the Chief Executive Officer of the Environmental Protection Authority.

5-4 The proponent shall submit a report of any management actions undertaken as required by condition 5-3 b) and e), and the coral health data required by conditions 5-3 c) and d) to demonstrate that the requirements of condition 5-1 and 5-2 have been met. This report shall be submitted to the Chief Executive Officer of the Office of the Environmental Protection Authority within three months of completion of the survey required by condition 5-3 d).

5-5 Should the report required by condition 5-4 show that the requirements of condition 5-1 have not been met, the proponent shall undertake further annual coral health surveys to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority. These surveys shall be required until the coral has recovered, is within natural variation, or the Dampier marine Services Facility is no longer demonstrated to be the impacting activity.

6 Cumulative loss of benthic primary producer habitats

6-1 Prior to implementation, the proponent shall document the location and spatial extent of the following intertidal and subtidal benthic primary producer habitats to be impacted by the proposal:

- coral communities;
- macroalgae communities; and
- sandy (benthic microalgal) habitat.

6-2 Within 12 months of commencement of construction of the proposal, the proponent shall submit a report to the Chief Executive Officer of the Environmental Protection Authority which describes the cumulative loss of each benthic primary producer habitat referred to in condition 6-1 that has resulted from human activities and developments in the Dampier Port local assessment unit. The Report shall:

- estimate the historical distribution and extent of the benthic primary producer habitats referred to in condition 6-1 in the Dampier Port Authority local assessment unit, prior to European impact; and
- estimate the cumulative loss of the benthic primary producer habitats resulting from post European settlement human activities and developments in the Dampier Port Authority local assessment unit up to the time of implementation of the proposal. This should be provided as; a best, a most probable, and a worst-case estimate for each habitat type, along with the assumptions used for each estimate.

6-3 Within five months of completion of the dredging and reclamation components of the proposal, the proponent shall submit a report to the Chief Executive Officer of the Office of the Environmental Protection Authority which describes the additional cumulative loss of benthic primary producer habitat that has resulted from implementation of the proposal.

Note: The Dampier Port local assessment unit is shown in Figure 3 above.

Schedule 1

Dampier Marine Services Facility (Assessment No. 1780)

The project is the expansion of the Dampier Port facility to increase port capacity, cater for larger ship sizes, and provide expanded laydown/storage areas. Components of the expansion include:

- the dredging of not more than 2.2 million cubic metres of material.
- reclamation of a 22 hectare area to create a new land-backed wharf.
- a jetty which will extend approximately 300 metres from the land-backed wharf.
- a laydown/storage area.
- an access road.

The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in sections 2.1 to 2.5 of the project referral document, *Dampier Marine Services Facility*, prepared by Worley Parsons, Perth, Western Australia (March 2011).

Table 1: Summary of key proposal characteristics

Element	**Description**
Dredging area:	up to 47 hectares.
Reclamation area:	up to 22 hectares.
Land disturbance area:	up to 5 hectares.
Area of native vegetation to be cleared:	up to 2 hectares.
Loss of coral:	direct removal of up to 5 hectares of reef, possible indirect impact on up to a further 3.6 hectares.
Constructed facilities and infrastructure:	land-backed wharf including roll-on roll-off facility, barge ramp, small vessel mooring area, outer bund wall, lay down areas and an access road.

The regional location is shown in Figure 1 above.

The location of the various project components is shown in Figure 2 above.

The Dampier Port local assessment unit is shown in Figure 3 above.

The zones of impact are shown in Figure 4 above.