
South of Embley Draft Dredge Management Plan – Port Independent Peer Review

Document Reviewed: South of Embley Project: Draft Dredge Management Plan – Port (Initial Capital Dredging), August 2015.

Independent Peer Reviewer: Dr James Stoddart

The following table provides a peer review of the document specified above (hereafter called the DMP) against terms of reference approved by the Commonwealth Department of Environment and supplied in a letter from RTA Weipa, dated 4 December 2014. The individual terms of reference are set out below with my comments.

While monitoring programs for turbidity and coral health are not explicitly referenced in conditions addressed in these terms of reference, I have reviewed those sections on the basis that:

- the DMP offers these in part as mitigation measures for impacts on turtles and marine mammals (ToR1), and
- Section 4.4 of the National Assessment Guidelines for Dredging contains specifications on the need for monitoring and management (ToR3).

Comments are included under ToR 3 – Compliance with NAGD provisions.



James A Stoddart
13 August 2015

TABLE 1: Review comments by Section of the DMP

Comment	Relevant Report Section	RTA Response
<i>1: identifies avoidance and mitigation measures for impacts associated with capital dredging activities on the Commonwealth Marine Area, listed turtle species, listed dolphin species, Dugong and Bryde's Whale;</i>		
In general, the DMP describes appropriate management (avoidance and mitigation) measures to protect turtles and dolphin species of relevance to the area, as well as Dugong and Bryde's Whale. However, two sections below are identified as requiring revision.	Various	Noted
<p>Section 5.2, describing the marine mega-fauna of the area, does not list Bryde's Whale. That species is identified in the EIS (Section 6.2) as potentially occurring in the project area. While the EIS suggests there is unlikely to be significant impact on this species, it should be listed in Section 5.2 of the DMP as potentially occurring in the project area.</p> <p>Section 5.2 lists 3 potential mechanisms by which the initial capital dredging might impact on protected species, but fails to list the potential impact of vessels and dredging, which receives the most attention in the management section (S 6.3).</p> <p>Point 3 of Section 5.2 states that it is unlikely dredging operations will occur during the peak nesting season of August – September. However, Section 2.3 of the DMP, Schedule, states dredging will occur March to September.</p>	Section 5.2	<p>Information on Bryde's Whale has been added to the Section 5.2</p> <p>Section 5.2 has been revised and information on potential impacts of vessels and dredging on these species</p> <p>This statement has been removed.</p>

Comment	Relevant Report Section	RTA Response
<p>The first dot point of Section 6.3.1 appears contradictory in that the first sentence suggests marine wildlife protection will be fitted only 'where appropriate' while the second sentence states that it must be demonstrated to have been fitted for the whole dredging period.</p> <p>A number of management responses are proposed in response to varying levels of impact on turtle deaths. The responses appear sound; however, there is little information as to how turtle deaths will be monitored. Hydraulic dredging has the potential to intake turtles and deposit the pieces in the dredge hopper: where they could easily be missed. Unless there is a specific prescription as to how and who will monitor turtle deaths, these are likely to be underestimated.</p> <p>The action trigger of 2 dead turtles in 24 hrs in Sect. 6.3.1 appears to conflict with trigger levels in Sect. 6.3.4. It is not clear if these triggers relate to different causation and if so how one would distinguish between dredging activity and vessel strike as a cause of death.</p>	Section 6.3	<p>Sentence amended to remove contradiction.</p> <p>Marine fauna observers will check for injured or dead turtles around the vessel and within the dredge hopper and drag heads. The likelihood of entrainment is very low. The implementation of fauna exclusion devices on TSHDs where possible (may not be feasible in very shallow waters) and exclusion zones will minimise the risk further.</p> <p>The action triggers are consistent in both sections, the trigger levels in Sect. 6.3.4 include implementing appropriate management measures at lower incident levels to try to prevent hitting the action trigger required by the Queensland State Government Environmental Authority condition of 2 dead turtles in 24 hrs.</p>
2: is consistent with relevant management measures contained in relevant threat abatement plans published by the Department of Environment;		
<p>The only approved relevant threat abatement plan on the DotE website is the <i>Threat Abatement Plan for the impacts of marine debris on vertebrate marine life</i>, May 2009. The area of relevance for this plan would be primarily in waste management practices.</p> <p>Section 6.7 contains a thorough treatment of waste management. The one addition suggested would be in Section 6.7.3 where dredge</p>	Section 6.7	<p>Noted</p> <p>Noted, daily inspection logged added to Section 6.7.3</p>

Comment	Relevant Report Section	RTA Response
personnel should undertake and log a daily inspection for oil and grease coming from cutter or drag heads.		
3: has been prepared in accordance with the most current version of the Australian Government National Assessment Guidelines for Dredging (2009);		
<p>The most current version of the Australian National Assessment Guidelines for Dredging remains the 2009 publication as presented on the DoE website.</p> <p>The DMP presents the results of sediment sampling and analysis undertaken to comply with sediment quality guidelines of the NAGD. The adequacy of that process has been recognised by the grant of a Sea Dumping permit under the <i>Environment Protection (Sea Dumping) Act 1981</i>.</p> <p>Other areas where the DMP could be improved to address other general and specific requirements of the NAGD are listed below:</p>	Section 3	Noted
<p><u>Water Quality Monitoring:</u> The first stated aim of the water quality monitoring is to monitor the “spatial extent of predicted plumes”. Fixed monitoring stations proposed will not be capable of meeting that aim. A simple program using freely available MODIS data (uncalibrated to TSS) throughout the life of the program would provide such a test and be useful in many other parts of this program (see following).</p> <p>Last paragraph p. 37: States that loggers will measure turbidity, PAR</p>	Section 6.1.2	<p>The use of satellite imagery (MODIS data) has been added to monitor the spatial extent of plumes in Section 6.1.2</p> <p>Only turbidity sensors will be used during dredge monitoring.</p>

Comment	Relevant Report Section	RTA Response
<p>(concern sites) and sedimentation (concern sites) – however, the methods on p. 39 suggest loggers will have only turbidity sensors.</p> <p>Text and the flow chart suggest that after identification of an exceedence, the validity of that assessment may be reversed if QA/QC procedures are found to be inadequate. QA review of input data should always occur prior to acceptance and use of any data – not after using that data and not only where an exceedence is identified. Once an exceedence is identified QA should not be an issue.</p> <p>Evaluating whether an exceedence is dredging related is always problematic. The current text on how that will occur is confusing. In some text, there needs to be positive evidence that dredging is the cause, in others there is need for negative evidence that dredging is not the cause. The most appropriate test used in many recent projects is ‘would this have occurred if dredging was not occurring?’. If the answer can be shown to be “Yes” then the exceedence is not dredging-related.</p> <p>In assessing the cause of point exceedences, experience shows that two information sources are critical: 1) MODIS imagery: This is free and available twice daily (although that is weather dependent); as a native colour format it is informative, even without expensive calibration to TSS; 2) Metocean data: Wind, waves and currents are strong drivers of turbidity: there should be a source of such data available to help assess the cause of exceedences.</p>		<p>Sub heading Water Quality Monitoring Method has been changed to Dredge Monitoring Water Quality Monitoring Method</p> <p>Data quality will be checked prior to triggers but a second QA/QC check will be completed after a trigger is identified to confirm no issues were overlooked.</p> <p>Noted</p> <p>Noted: use of MODIS imagery has been added as above.</p> <p>Data analysis and interpretation section preceding Figure 12 lists one of the assessment factors: Meteorological and ocean conditions now added to Figure 12</p>

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<p><u>Coral Health Monitoring:</u> Given the patchy/sparse nature of corals in the area, the management triggers suggested here seem excessive. At present, the monitoring program is unlikely to deliver the stated capacity to test listed triggers (see below): however, I believe the management triggers should be made less stringent rather than increasing the monitoring complexity. In these nearshore coral systems, often subject to frequent disturbance from strong metocean events, less prescriptive triggers should be able to be developed without risk to the local ecology.</p> <p>With coral communities described as being patchy and existing at 4-6% cover in this area (p.20), coral monitoring using non-fixed sites is likely to be subject to extreme variability. It is highly unlikely that the claim of a high power of detecting a 15% change can be met with the suggested methods (N.B. a 15% change in 4-6% cover means detecting a 0.75% change in real cover).</p> <p>The trigger “adverse change in health” is not described in any testable form and the criteria indicated for its assessment may be quite difficult to derive from diverless images in turbid water.</p> <p>The trigger of “detectable net mortality” is not described. In the patchy coral communities described here, small variations in the area surveyed are likely to result in significant changes in cover estimates, making this a problematic test.</p> <p>With the spatial patchiness described for the baseline and the demonstrated propensity of coral community demographics to respond</p>	<p>Section 6.2</p>	<p>Total coral area in the survey area was 4 and 6 percent respectively. This Section 4.3 has been amended to prevent confusion. Hard coral was recorded ranging from 5-100% at locations where it was present. If coral cover is found to be exceptionally low when completing baseline surveys the number of stills per transect and sampling intensity (overlying point count) will be increased to provide appropriate precision.</p> <p>Amended to “<i>Detectable adverse change in health of coral assemblages directly attributable to dredging operations with change greater than 15%.</i>” Changes in coral health are described in the document</p> <p>Amended to “<i>Detectable net mortality of coral directly attributable to dredging operations greater than 10%.</i>”</p> <p>Due to the ambiguity in the text at Section 4.3. the patchiness of the coral has been interpreted incorrectly. While total cover in the survey area is low coral cover in the survey areas ranged from 5-100%. Suitable transects will be chosen in each location.</p>

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<p>to local impacts, a single reference site would be inadequate for the program suggested. To have confidence in the tests of the suggested triggers, 4-5 reference sites would be required.</p> <p>The present, reactive monitoring program suggests that if there is a water quality exceedence, targeted coral monitoring would occur at the exceedence site only. If a coral trigger is found to be exceeded, there is no way to compare that to recent change in other sites (as required by the DMP) with this methodology.</p> <p>I make the same comment on QA/QC as for water. Apply these before using data, not after.</p>		<p>The use of underwater video provides a considerable advantage which enables the data to be reanalysed if necessary. The number of stills extracted from a transect and sampling intensity (overlying point count) can be increased to provide the necessary precision based on the level of cover (Stoddard et al 2005).</p> <p>Given the type and area of reef RTA do not believe that five reference locations are necessary. Sites R1 and R2 provide two reference locations one north and one south of the zone of concern. Investigation surveys will be completed at reference locations prior to baseline monitoring to confirm the sites are suitable for reference locations. Prior to the baseline surveys statistical analysis will be completed to confirm the reference locations are adequate, and if not additional reference location(s) will be sought if possible.</p> <p>It is also important to note that while Thud Point (I4) is identified as a potential Concern site it is unlikely the impacts will extend to that site and therefore it may be used as a supplementary reference location.</p> <p>This is incorrect the coral reactive monitoring requires targeted coral survey at the impacted site and reference locations.</p> <p>As per water quality, QA/QC practices will be applied before and after to confirm no oversight errors</p>

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<i>4: addresses requirements of the permit, and the conditions of the permit, obtained under the Environment Protection (Sea Dumping) Act 1981:</i>		
Paragraphs 4 & 5 of Section 6 of the DMP should be revised to recognise the specific Sea Dumping Permit obtained for this project. At present they seem inconsistent with the approved project.	Section 6	This text has been revised to recognise the specific Sea Dumping Permit.
Permits containing compliance requirements and the specific conditions for compliance are listed and shown within this document. Table 1 in Section 1 contains cross references between conditions and sections of the DMP. Items below list where these might be improved:	Section 1	
11 – Compliance with the limit of 2.6 Mt of spoil dumping from the port dredging is noted, however, it might be useful to list monitoring of cumulative dredge spoil in Section 6.9 as a specific monitoring program to ensure strict compliance.	Section 6.9	Compliance with Condition 11 is detailed in Section 2 of the DMP, with Section 2.2 specifying the requirement for the dredge contractor to log each load of dredged material to be dumped. Section 6.9 is related to specific environmental monitoring programs.
16- Table 1 does not list Condition 16 requiring access for observers.	Section 1	The condition has been added to table 1 and information has been added to Section 8
19 – This condition requires reporting to the Department any “environmental incident” – which includes injury or death to marine mammals or turtles – that occurs during dumping within 24 hours. That is not explicitly contained in relevant sections of the DMP and is not consistent with sections in Table 9 which suggest reports would be made only to the Queensland system.	Section 8, Table 9	Amended Table 9 for DoE reporting number for cetaceans.
Several conditions in Table 1 cross reference Section 7. These actually seem to refer to Section 8 Reporting.		Amended

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<i>5: includes the approach employed to ensure compliance with the requirements of permits obtained under the Environment Protection (Sea Dumping) Act 1981 including any conditions attached to the permits;</i>		
Permits containing compliance requirements and the specific conditions for compliance are listed and shown within this document.		Noted
The flow charts in Figures 14 & 15 are not strictly compliant with the Sea Dumping Condition 18a. That condition states that dredging or disposal cannot start until at least <u>20 minutes after</u> the last cetacean/dugong or turtle leaves the monitoring zone.	Section 6.3.4	The Flow Charts are compliant with Condition 18 as the Condition is (a) or (b). The Flow Charts show the approach using Condition 18 (b), allowing dredging provided there is a minimum distance of 300m between the animal and the vessel.
Table 9 summarising the various management measures and responsibilities is a useful tool within the document.	Section 6	Noted
<i>6: details Traditional Owner employment opportunities, and mechanisms for reporting the number of local indigenous person/s actually employed in the implementation of the River Dredge Management Plan as per EPBC Approval Condition 42);</i>		
Opportunities for employment of Traditional Owners and reporting mechanisms for the results are described.	Section 10	Noted
<i>7: adequately identifies publication requirements as per EPBC approval condition 59; and,</i>		
The commitment to publish the DMP on the RTA website in accordance with Condition 59 is described. It may be worth expanding the current text to mimic that of Condition 59 to provide clarity on what	Section 8	The Plan clearly states the Port DMP will be published on the web site as required by Condition 59.

Comment	Relevant Report Section	RTA Response
will be published (e.g. documents other than just the DMP) and by when.		
<p><i>8: the review is consistent with the EPBC Approval Definitions: Independent/ly Peer reviewed/ Independent Peer Reviewer – assessment of the assumptions, calculations, extrapolations, alternate interpretations, methodologies, performance goals and performance criteria, and conclusions pertaining to the management plans/strategies/programs by a person/organisation/technical committee, independent of the approval holder and/or employed in any subsidiary company of the approval holder. This person/organisation/technical committee must have demonstrated expertise in the matter of national environmental significance being reviewed and be approved by the Minister prior to commencement of the review.</i></p>		
The second sentence of Section 8.1 describing the content of the independent peer review would be more accurate if it referred to the actual terms of reference of the review. These could be presented in an appendix.	Section 8.1	As per Condition 59, the independent peer review and associated criteria will be published online. .
NOTES		
This review addresses issues of management and monitoring contained within the DMP. Calculations of the EIS, its models and supporting data, underpinning the DMP have not been reviewed.	Term of Reference #8	Noted
No evaluation of the validity of the predictions of impact contained in the DMP has been made. It is assumed that all predictions of impact in the DMP are consistent with those developed and agreed during the Qld and Commonwealth EIS process.	Term of Reference #8	Noted
Review of compliance of the DMP with conditions imposed by the Queensland Government was not within the terms of reference of this review.		Noted