Dredging & Spoil Management Plan - Dampier
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1. INTRODUCTION

The Dampier Port Authority (DPA) is a State Government owned corporation that operates under the Port Authorities Act 1999. The DPA’s functions as required by this Act can be summarised as (Section 30 (1) (a) to (f), Port Authorities Act 1999):

“To facilitate trade within and through the port and plan for future growth and development of the port;

To undertake or arrange for activities that will encourage and facilitate the development of trade and commerce generally for the economic benefit of the State through the use of the port and related facilities;

To control business and other activities in the port or in connection with the operation of the port;

To be responsible for the safe and efficient operation of the port;

To be responsible for the maintenance and preservation of vested property and other property held by it; and

To protect the environment of the port and minimise the impact of port activities on that environment.”

In this role, the DPA manages multi user port assets, including shipping channels, berths, laydown areas and spoil grounds to facilitate the efficient handling of products to and from the Port of Dampier.

The DPA has prepared this Dredging and Spoil Management Plan (DSMP) to assist and guide proponents and contractors to manage dredge spoil resulting from capital works and maintenance programmes within Port limits. The main objectives of the DSMP are to:

- ensure that dredging and disposal works are performed in a manner that minimises negative impacts on the environment and port activities; and
- conduct regular monitoring to ensure the dredging and disposal activities within the Port Limits comply with current legislation and meet industry best practices.

2. SCOPE

This document relates to management of the dredging activities and Spoil Grounds located within the Dampier Port Authority (DPA) limits (Figure 1).

This plan provides the requirements to be complied with by proponents and contractors prior to, during and post mobilisation and dredging works. It also covers requirements for disposing of dredged material to ensure the impacts on the marine environment are minimised.
Figure 1: Port of Dampier Port Waters and Current Spoil Grounds
3. TECHNICAL ADVISORY AND CONSULTATIVE COMMITTEE

The DPA has established a Technical Advisory and Consultative Committee (TACC) to assist in the management of dredging and dredged material placement activities within the Port of Dampier. This group has been established in line with the National Assessment Guidelines for Dredging (SEWPAC 2009). Membership of the group is drawn from a variety of stakeholders including:

- Dampier Port Authority (Chair)
- Community representative
- Commonwealth Department Of Sustainability, Environment, Water, Population And Communities (SEWPAC)
- Western Australian Department Of Environment and Conservation (DEC)
- Western Australian Department Of Fisheries (DoF)
- Western Australian Department Of Indigenous Affairs (DIA)
- Western Australian Department Of Transport (DoT)
- Western Australian Department Of Planning (DoP)
- Mermaid Marine Australia (MMA)
- Rio Tinto (RTO)
- Water Corporation (WC)
- Woodside (WEL)

The role of the TACC is to provide a single point of reference for dredging planning and management in the Port of Dampier, and to facilitate the flow of information from these groups/agencies to and from Port of Dampier stakeholders.

The TACC is a forum:

- for information to flow to stakeholders, such as forward dredging plans and opportunities to combine resources;
- where a proponent can seek comment on a proposal, such as under the national assessment guidelines for dredging. Comment would be collated by the TACC chair, conflicts resolved and provided back to the proponent for submission to SEWPAC;
- where members can have input to the forward planning of dredging issues within the port such as spoil ground utilisation; and
- where opportunities to combine resources can be captured, such as joint research.

A copy of the TACC Terms of Reference is attached in Appendix A.

4. DREDGING APPROVAL PROCESS

Approval to undertake dredging and material placement will be required from the Dampier Port Authority by way of a Development Approval and potentially an EPA approval, under the Environmental Protection Act 1986. The DPA has Development Approval Guideline to assist proponents (see www.dpa.wa.gov.au). The use of DPA’s resources and knowledge, especially during pre-lodgement discussions is strongly encouraged.
Disposal of dredge material with the Port of Dampier will require approval under the Environment Protection (Sea Dumping) Act 1981 from the federal Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). Additional approvals may also be required from State and Federal regulators.

Discussion with the DPA at an early stage is strongly encouraged to ensure:

- existing available information is made accessible;
- coordination and consistency between approvals is achieved; and
- single point engagement with stakeholders.

The approvals process, including data inputs and outcomes is shown in Figure 2.

It should be noted that DPA has adopted a sustainable development policy of reuse of dredged spoil wherever possible. Dredging developments within the Port of Dampier needs to factor in this DPA sustainable development policy by:

- giving first preference to material use for reclamation; and
- depositing material into a spoil ground in such a way that it can be re-dredged and used for reclamation at some later date.

Details of how material is managed within individual spoil grounds to facilitate later recovery, is outlined in Section 6 below.
Figure 2: Dredging Approvals Process
5. DREDGE SPOIL MATERIAL CLASSIFICATIONS

To facilitate potential future recovery and reuse, dredge material within this plan is broadly categorised into five basic categories (Table 1).

Category 1 is material generally unsuitable for such subsequent recovery and reuse. Category 2-5 material is considered broadly suitable for onshore reclamation/engineering uses.

Separation of material within the Spoil Grounds will follow the information presented in Section 6 of this plan.

Material to be placed in the Spoil Grounds will meet the requirements of National Assessment Guidelines for Dredging (SEWPaC 2009) for either unconfined or confined sea disposal.

Table 1: Dredged Material Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Suitable for Recovery and Reuse?</th>
<th>Material Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No</td>
<td>Material unsuitable as engineering grade fill and/or reclamation projects such as high moisture content marine silts and ooze with varying proportions of silts, sand and clay. This may include material with an inherent structural strength (e.g. cut stiff to hard clays, ripped rock or rocklike material granular material with varying percentages of fines) but is discounted due to the propensity of the material to break down into colloidal material when handled causing excess turbidity and environmental concerns. This category may also include material with other properties which make it unsuitable for onshore disposal, such as high potential acid sulphate soils.</td>
</tr>
<tr>
<td>2</td>
<td>Yes</td>
<td>Fine to Median ((D_{50} 0.05 – 0.2\text{mm})) sands.</td>
</tr>
<tr>
<td>3</td>
<td>Yes</td>
<td>Coarse ((D_{50} 0.2 – 2\text{mm})) sands.</td>
</tr>
<tr>
<td>4</td>
<td>Yes</td>
<td>Crushed rock and rock-like material.</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>Boulders and Blasted Rock.</td>
</tr>
</tbody>
</table>

1 Material with nominal 90%+ coarser than 75 microns. This material is generally suitable for use onshore as a reclamation or engineered fill material.

6. CURRENT SPOIL GROUNDS

The Port of Dampier contains three current Spoil Grounds. These are East Lewis, A/B and the 2B spoil grounds, as shown on Figures 3, 4 and 5 respectively. These figures also provide the characteristics and operational parameters of these spoil grounds.

As outlined in Section 5, material will be placed within the spoil grounds according to its median grain size characteristic to facilitate future recovery and reuse. This material placement strategy will be determined in consultation with the Dampier Port Authority (via the TACC where required) and outlined in the resultant Development Approval issued by the DPA.

Material separation is undertaken at Spoil Ground 2B and Spoil Ground A/B. Material separation has not historically been undertaken at East Lewis Island Spoil Ground. It is important for proponents to ensure that contradictory conditions are not applied in their applications to federal agencies.
The East Lewis Island and A/B spoil grounds are effectively full, and are no longer used for large capital dredging projects. Material from projects of this nature is placed at the 2B Spoil Ground.

The remaining capacity in the East Lewis and A/B spoil grounds is retained for smaller dredging projects, especially where dredging plant cannot safely use the offshore grounds such as hopper barges.

The capacity within Spoil Ground A/B is also retained for future emergency dredging campaigns. This ground is suitable for this use due to its proximity to Port infrastructure facilitating short cycle times and rapid clearance.

If new spoil grounds are to be developed, the Proponent will be required to demonstrate the stability of the proposed new spoil grounds to the DPA and EPA. Development of the proposed new spoil grounds will follow the NAGD framework (SEWPaC 2009).
Dredging & Spoil Management Plan - Dampier

Figure 3: East Lewis Spoil Ground – Area Set-out and Summary Characteristics.
Figure 4: Spoil Ground A/B – Area Set-out and Summary Characteristics

NOTE: Placement of dredged material to ensure minimum depth clearance of -13.5 mCD is maintained to dredged material. Spoil Ground cleared to -16.5 mCD. Volume between -13.5 mCD and -16.5 mCD held in reserve for emergency campaigns.

Survey to include 200m buffer from Spoil Ground Boundary.
Figure 5: Spoil Ground 2B – Area Set-out and Summary Characteristics

NOTE: Placement of dredged material to ensure minimum depth clearance of -23.5 mCD is maintained to at all times.
Survey to include 500m buffer from Spoil Ground Boundary.
7. REFERENCES

Appendices
APPENDIX A: Dampier Technical Advisory & Consultative Committee 
Terms of Reference

Note – This version (Rev 7) of the TACC ToR is current at October 2012. Contacts have been removed from Schedule 1 for the purposes of this document only.

1. SCOPE

The Technical Advisory and Consultative Committee (TACC) will have an interest in all dredging and disposal activities within the port limits of the port of Dampier (Figure 1). These activities may include:

- Capital dredging projects
- Maintenance dredging projects
- Dredged material placement within approved spoil grounds
- Strategic and administrative issues relating to the above, such as long term dredge management plans, spoil ground capacity management and allocation, new spoil ground site selection or other similar issues as they arise.

In accordance with the National Assessment Guidelines for Dredging (2009), the intent of the TACC is to:

- Provide continuity of direction and effort in protecting the local environment of the port of Dampier in relation to dredging and material placement;
- Aid communication between stakeholders and provide a forum where points of view can be discussed and conflicts resolved;
- Assist in the establishment, as appropriate, of longer term permitting arrangements through activities such as the provision of comments, review of plans and integration of activities;
- Review ongoing management of dredging and dumping activities in accordance with the guidelines and permitting arrangements; and
- Make recommendations to the Dampier Port Authority, State agencies and/or relevant Commonwealth agencies as necessary in direct relation to the above as appropriate.

The role of the TACC is not to duplicate the responsibilities of existing State or Federal agencies. Further, it is not to duplicate or be a substitute for focused consultative groups established for a particular dredging project, such as a dredging environmental management group established under a ministerial approval.

It is to provide a single point of reference for dredging planning and management in the Port of Dampier, and to facilitate the flow of information from these groups/agencies to and from Port of Dampier stakeholders.

It is envisaged that the TACC will be a forum:

- For information to flow to stakeholders, such as forward dredging plans and opportunities to combine resources;
- Where a proponent can seek comment on a proposal, such as under the national assessment guidelines for dredging. Comment would be collated by the TACC chair, conflicts resolved and provided back to the proponent for submission to SEWPAC;
Where members can have input to the forward planning of dredging issues within the port such as spoil ground utilisation.

Where opportunities to combine resources can be captured, such as joint research.

2. TACC MEMBERSHIP

Membership is drawn from relevant Commonwealth, State and local government and non-government organisations with expertise, responsibilities or interest in the dredging in the port.

The stakeholders represented on the TACC are:

- Commonwealth Department Of Sustainability, Environment, Water, Population And Communities
- Community representative
- Dampier Port Authority (Chair)
- Mermaid Marine Australia
- Rio Tinto
- Water Corporation
- Western Australia Department of State Development
- Western Australian Department Of Environment And Conservation
- Western Australian Department Of Fisheries
- Western Australian Department Of Indigenous Affairs
- Western Australian Department Of Planning
- Western Australian Department Of Transport
- Woodside

Principal, seconds and current contact details are shown in Schedule 1 attached, which will be updated as required. The principal from the stakeholder organisation will be responsible for circulating material within their respective organisation and providing consolidated feedback as required.

The principal will be responsible for nominating a second and keeping contact details up to date. The chair will maintain the contacts list in schedule 1.

In addition to the above stakeholders, the chair may invite specialist consultants in areas such as dredging or marine ecology, to attend meetings and provide input to the TACC on specific issues. Advice may also be sought from specialist consultants through the chair outside TACC meetings.

Organisational membership can be changed from time to time as required, either for specific in-port projects, or identified gaps in stakeholder representation. A request will be made through the chair and considered by the TACC.

Organisations will be responsible for selection of representative staff on the TACC.

3. MEETINGS

The TACC will meet twice annually, nominally in October and April. Depending on circumstances, additional meetings may be held outside these nominal times.

The Dampier Port Authority will be responsible for providing secretariat services and meeting facilities.
4. QUORUM

A minimum of the chair (or delegate) and five member stakeholders must attend a meeting to obtain a quorum.

Attendance of a meeting may be in-person or via suitable electronic means.

5. AGENDA

The chair will call for agenda items four weeks before the proposed meeting date. This will advise of the proposed meeting date, time and location.

The chair will collate agenda items and circulate an agenda two weeks before the meeting date.

Where an agenda item requires presentation material at the meeting, the chair will make all attempts to source this material and provide to stakeholders attending the meeting via electronic means at least one week prior to the meeting.

6. MINUTES

Minutes of the meeting will be taken on behalf of the chair or delegate. These will be circulated to all stakeholders within two weeks of a meeting occurring, allow two weeks for comments, and a final provided within 2 weeks (6 weeks post meeting).

The DPA will be responsible for retaining meeting minutes, and providing these to member stakeholders upon request.

7. OUT OF SESSION ITEMS

Where an issue arises that cannot be dealt with at a meeting, but does not necessitate calling an additional meeting, the chair may circulate the required material out-of-session by whatever means are appropriate (e-mail, hardcopy).

The chair will provide the material, allow sufficient time for consideration (nominally two weeks), collate information and then circulate a summary of the responses and, where appropriate, an outcome.

Out of session material will be limited as much as possible, recognising the value of collective discussions via the TACC meetings.

8. REVIEW OF TERMS OF REFERENCE

A review of these Terms of Reference will be undertaken by members of the TACC within 1 year of inception, and then every 3rd year.

9. VERSION CONTROL

A record will be maintained of changes to this document (Schedule 2). Administrative changes will be made as required. Substantive changes will be circulated to the TACC membership for review and acceptance.
## TACC Membership Contact Details

Last Updated 3 October 2012.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Principal</th>
<th>Contact</th>
<th>Second</th>
<th>Contact</th>
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<tr>
<td>Dampier Port Authority (Chair)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dampier Port Authority (Harbour Master)</td>
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<tr>
<td>Department of Environment and Conservation</td>
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<td>Department of Indigenous Affairs</td>
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<td>Department of State Development</td>
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<td>Department of Sustainability, Environment, Water, Population and Communities.</td>
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<td>Rio Tinto</td>
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<tr>
<td>Mermaid Marine Australia</td>
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<tr>
<td>Community Representative</td>
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## Schedule 2
### Version History

<table>
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<th>Date</th>
<th>Description of Change</th>
<th>Was the change administrative or substantive?</th>
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<tr>
<td>1</td>
<td>28 June 2010</td>
<td>Final draft version of ToR developed via TACC and circulated for comments. Accepted at Meeting # 12.</td>
<td>Substantive</td>
</tr>
<tr>
<td>2</td>
<td>August 2010</td>
<td>Department of State Development formally added to TACC Membership list Section 2.0 of ToR. DSD had been in correspondence and attended meetings. Previous omission in membership list in error.</td>
<td>Administrative</td>
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<tr>
<td>3</td>
<td>April 2011</td>
<td>Updated Schedule 1 Contacts</td>
<td>Administrative</td>
</tr>
<tr>
<td>4</td>
<td>September 2011</td>
<td>Updated Schedule 1 Contacts. Inclusion of Version History formally in document as Schedule 2 and Section 9.</td>
<td>Administrative</td>
</tr>
<tr>
<td>5</td>
<td>November 2011</td>
<td>Updated Schedule 1 contacts with changes to Rio Tinto and Woodside representatives.</td>
<td>Administrative</td>
</tr>
<tr>
<td>6</td>
<td>March 2012</td>
<td>Sorted members by alphabet in Section 2, update contacts Watercorp and DSD.</td>
<td>Administrative</td>
</tr>
<tr>
<td>7</td>
<td>3 October 2012</td>
<td>Update contacts for SEWPaC and WaterCorp Schedule 1</td>
<td>Administrative</td>
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APPENDIX B: Hydrographic Survey & Channel Clearance Requirements for Work Undertaken in the Port of Dampier

1. GENERAL REQUIREMENTS

Proponents and Contractors shall be responsible for providing suitable personnel, software, equipment, methodology and quality assurance for the accurate and precise execution and processing of survey related works.

All surveys shall be carried out with a high resolution Multi Beam Echo Sounder (MBES) system capable of achieving the required accuracy, precision, bottom coverage and object detection specifications. MBES operations are to be undertaken in combination with simultaneous Single Beam Echo Sounder (SBES) works in order to provide continuous verification of the MBES results.

All equipment for hydrographic surveys shall be state of the art and fully bench tested prior to mobilisation and capable of operating at not less than the manufacturer’s published performance specifications. Equipment older than five (5) years shall not be accepted unless it can be proved to have recently been upgraded with the latest modifications. Any equipment that has not been recently bench tested or calibrated shall not be accepted.

All software systems used on this project are to be state of the art and be compliant with the current upgrades.

All surveys shall be undertaken by personnel capable of operating and maintaining the MBES systems for the duration of the project. The principal operator must have completed a recognised MBES course and in addition have recent field experience with the MBES model being operated.

1.1. MULTIBEAM ECHO SOUNDER SYSTEMS

MBES includes those systems that are based on multi-beam technology only. Systems based on interferometry are not acceptable unless it can be demonstrated that true shoal biased depths can be produced. The operator is required to obtain written approval from the DPA should an interferometry based system be proposed for use.

For clearance surveys the maximum acceptable swath beam width is 90 degrees. The pulse repetition rate of the MBES shall be set to the highest possible rate available for that depth of water and swath width. The operator shall prepare (and supply to the DPA upon request) documentation that clearly demonstrates that for a given vessel speed and water depth, full coverage of the bottom in the direction of travel is obtained.

The survey system shall be capable of real time correction for motion of the survey vessel, thus ensuring that full bottom coverage is maintained during pitch motions of the vessel.

The operating frequency of the MBES shall be in the order of 200 kHz. It is recognized that currently available systems may differ, however the Contractor should be aware that frequencies significantly higher than 200 kHz may be affected by suspended sediments in the water column and turbulence that may be encountered in the survey area. The Contractor is required to obtain the written approval from the DPA should a frequency significantly different than 200 kHz be proposed for use. The Contractor shall provide certifiable proof of past experience with the proposed particular frequency during similar dredging projects.
1.2. SINGLE BEAM ECHO SOUNDER

A modern survey quality Single Beam Echo Sounder (SBES) is to be used simultaneously in conjunction with the MBES to allow continuous verification of MBES nadir depths. The single beam, dual frequency echo sounder (SBES) to be deployed shall be of a type designed for high accuracy hydrographic survey work.

The SBES shall use a transducer with a frequency in the range of 200Khz ± 10%. The SBES transducer shall be mounted as close as possible to the MBES transducer. The Subcontractor is required to resolve any interference problems between MBES and SBES transducers prior to mobilisation.

2. PERFORMANCE REQUIREMENTS

All hydrographic surveys must, as a minimum, comply with Ports Australia specifications (refer Appendix A) and meet the requirements for Special Order surveys in accordance with IHO Standards for Hydrographic Surveys, Special Publication No. 44. Pre-dredge and progress Surveys shall meet or exceed Ports Australia Class B specifications. Clearance surveys shall meet or exceed Ports Australia Class A specifications.

The minimum requirement for vertical accuracy of all hydrographic surveys shall be ±0.1m at the 95% confidence level, and the minimum requirement for horizontal accuracy shall be ±1.0m at the 95% confidence level.

Special Order surveys require the use of closely spaced sounding lines in conjunction with high resolution MBES systems to obtain full sea floor search and object detection requirements. In areas where thin and dangerous obstacles may be encountered, the use of a Side Scan Sonar (SSS) may be required in addition to the MBES.

3. HORIZONTAL AND VERTICAL DATUMS

3.1. HORIZONTAL DATUM

Surveys will be conducted in GDA94 utilising the appropriate correction for the year in which the survey is conducted. This information can be obtained from the Auslig website www.ga.gov.au.

All charts and datasets shall show the geodesy metadata as used in the survey.

3.2. VERTICAL DATUM

The vertical datum shall be reduced to Admiralty Chart Datum Dampier (ACDD). The vertical datum for onshore surveys is Australian Height Datum (AHD).

The relationship of ACDD to AHD at the PWD BM A958 (located on the concrete base block of the bollard adjacent to the northern end of the King Bay Supply Base Wharf) is ACDD =RL 7.477m and AHD = RL 4.709m.

Note: Access to the King Bay Supply Base Wharf requires authorisation from Woodside KBSB Security and is a designated Maritime Security Area.

Hydrographic surveys carried out in Mermaid Sound shall be reduced to ACDD as defined below:
4. **SURVEY AREAS**

The areas to be covered during hydrographic surveys shall be determined on a project basis, however typically the areas shall include, but not be limited to:

- the entire dredge area including the berth pockets, approach basins, swing basins and departure channels. Where possible, berth pocket surveys shall extend to the tops of batters under wharf structures. The survey areas shall be extended perpendicular to the channel centreline 200m beyond the toelines wherever this requirement can be physically achieved;

- disposal ground(s). The survey areas shall cover the nominated disposal site as well as the nominated surrounding buffer zones. These are 200m for the East Lewis and Spoil Ground A/B, and 500m for Spoil Ground 2B beyond the perimeter edges of the disposal ground; and

- all transit routes proposed and traversed by the dredge(s) on the way to and from the disposal ground(s).

5. **CHART PRODUCTION AND DATA PROVISION**

For surveys completed within the Dampier Port Authority limits, the following information is to be provided to the DPA Harbour Master immediately upon completion of the survey(s).
The DPA is to be provided with a CD/DVD copy of all raw data, calibration reports and logs. The DPA is also to be provided with a CD/DVD containing all processed data and any other information required or used to create plots, volumes, sections, reports or calculations.

The DPA is to be provided with the following information for all clearance surveys:

- one (1) paper chart;
- one (1) digital copy in ASCII CSV format (X,Y,Z) of the depth BINs used to create the chart;
- one (1) copy of the Chart in AutoCAD DWG format; and
- one (1) digital copy in PDF format.

Survey Charts shall:

- conform with the same sheet layout as that shown on the Contract Drawings;
- be plotted on A1 size sheet format;
- be scaled at 1:2,500;
- consist of depth clashed labels from the (nominal) 1 metre x 1 metre minimum depth BIN;
- contain depth labels rounded to the nearest decimetre;
- contain contours at appropriate intervals; and
- address all of the requirements outlined in AAPMA Requirements to Achieve Class A or Class B Survey.

All Final Clearance Sounding Charts shall be of a suitable standard for submission by the Contractor to the Hydrographer (RAN HO) for updating of AUS Charts applicable to the area.