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Office of the Environmental Monitor

Report for Channel Deepening Independent Audit

Activity No. 2 Audit No. 2

Targeted audit of EMP requirements for Management of Contaminated Sediments

March 2009

INFRASTRUCTURE | MINING & INDUSTRY | DEFENCE | PROPERTY & BUILDINGS | ENVIRONMENT

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Executive Summary

The Channel Deepening Project is being implemented by the Port of Melbourne Corporation (PoMC). Its aim is to deepen shipping channels in Port Phillip Bay and the lower reaches of the Yarra River by dredging to enable ships up to 14 m draught to access the Port of Melbourne.

Victorian and Commonwealth Government environmental approvals for the Project set conditions that the PoMC must adhere to. These include arrangements set out in an Environmental Management Plan (EMP). The EMP sets out 58 "Project Delivery Standards", which are rules about where, when and how the Project must be delivered.

The Office of the Environmental Monitor (Office) has appointed Peter Nadebaum of GHD Pty Ltd (the Auditor) to undertake a series of independent audits of the implementation of the Environmental Management Plan for the Channel Deepening Project (Project). The audits are to meet the requirements of the Office and the Commonwealth for the audit of the Port of Melbourne's annual report on performance.

This report outlines the findings of one of these audits, comprising *a focussed audit of selected EMP requirements to target specific Project features or processes. This audit includes a detailed analysis of those Project Delivery Standards and monitoring programs relevant to the management of contaminated sediments and, in particular:*

- *Removal of contaminated sediments;*
- *Placement of contaminated sediments; and*
- *Containment of contaminated sediments.*

The audit commenced on 27 October 2008, and considered information available to 16 October 2008.

The Project Delivery Standards

PDSs have been identified for the CDP to address key environmental risks, effects and legal requirements. The PDSs are a collation of the management and mitigation measures, environmental performance monitoring and contingency plans for the project. The CDP PDSs are:

- Construction management (all activities);
- Marine-based works (all areas);
- Land-based works;
- Dredging and plume;
- Dredging schedule;
- Dredged material management;
- Entrance dredging;
- Hydrohammer use and marine-based pile driving.

It should be noted that the EMP formally defines 8 PDSs, listed above. Within those 8 standards are 58 environmental rules. However, the general convention through the delivery of the CDP has been to refer to the environmental rules individually as PDSs. This convention is continued in these audits and any reference to the 58 PDSs will by definition include the 58 environmental rules.

Methodology for the Audit

The audit methodology was consistent with ISO 19011 and was implemented to meet the specific requirements of the Office and the Commonwealth.

The audit adopted a graded assessment of compliance, involving Full Compliance, "Critical", "Major" and "Minor" Non-Compliance, Not Applicable and Undetermined.

In carrying out the audit, the auditor was supported by a team of specialist staff from GHD.

Findings

PoMC has a well-developed system for documenting information relating to the CDP that is relevant to confirming compliance with the EMP and the PDSs. PoMC responded to the many requests by the audit team for information and evidence, and a large body of information was made available to the audit team.

Table 1 presents an overview of the findings for the 11 PDSs identified as being relevant to the management of contaminated sediments.

Table 1 Overview of compliance with the management of contaminated sediments PDSs

Project Delivery Standard	Full Compliance	Minor Non-Compliance	Undetermined	Not Applicable
24 Dredging	Yes (part)			Yes (part)
25 Management of pipeline between TSHD and spreader or diffuser pontoon during transfer of sediments	Yes			
27 Dredging of unconsolidated contaminated sediments	Yes			
28 Dredging of contaminated clays	Yes			
29 Monitoring removal of contaminated sediments – TSHD	Yes			
30 Monitoring removal of contaminated sediments – backhoe and grab dredges	Yes			
31 Dredging schedule	Yes (part)			Yes (part)
33 Consideration of	Yes (part)			Yes (part)

Project Delivery Standard	Full Compliance	Minor Non-Compliance	Undetermined	Not Applicable
seasonal sensitivities				
34 Dredged material placement	Yes (part)			Yes (part)
35 PoM DMG – bund	Yes (part)			Yes (part)
36 PoM DMG – containment of contaminated material	Yes			

Overall, the audit concluded that there were no areas of non-compliance with the PDS requirements.

There were some components of PDS requirements that were assessed as “not applicable” as they either had not yet fallen due in the audit period or were not applicable to the management of contaminated sediments. These will be assessed in subsequent audits.

1. Introduction

The Office of the Environmental Monitor (Office) has appointed Peter Nadebaum from GHD (auditor) to undertake a series of independent audits of the implementation of the Environmental Management Plan (EMP) for the Channel Deepening Project (CDP).

This report outlines the findings of one of these audits:

> **Activity 2: a focused audit of selected EMP requirements to target specific Project features or processes. This audit includes a detailed analysis of those Project Delivery Standards (PDSs) relevant to the management of contaminated sediments.**

1.1 Background

The Office was established by the Victorian Government in December 2007 as a requirement for the Project.

The Office's objectives are to:

- Be accessible to all stakeholders and the community;
- Scrutinise, report and advise on the CDP's environmental performance in an independent and transparent way; and
- Communicate all available information on the CDP's environmental performance in a meaningful and timely way to stakeholders and the community.

The CDP is being implemented by the Port of Melbourne Corporation (PoMC). Its aim is to deepen shipping channels in Port Phillip Bay and the lower reaches of the Yarra River by dredging to enable ships up to 14 m draught to access the Port of Melbourne. Dredging operations commenced in February 2008. The operational stage of the project, which includes dredging and ancillary works, is scheduled for completion in late 2009. Some of the monitoring programs will continue for a further two years.

Victorian and Commonwealth Government environmental approvals for the CDP set conditions that PoMC must adhere to, including arrangements set out in an EMP, approved ancillary documents covering Turbidity, Underwater Noise and Airborne Noise detailed designs, approved EMP Work Method Statements, and EMP and Environment Protection and Biodiversity Conservation (EPBC) Act approval requirements for independent and external audits. The principal environmental approvals are approvals under Victoria's Coastal Management Act and the Commonwealth's EPBC Act.

The EMP sets out 58 PDSs, which are rules about where, when, and how the Project must be delivered. It established four monitoring mechanisms to inform compliance and performance against these standards. It also sets out quarterly, annual, and other reporting obligations for the four-year period 2008 to 2012.

This audit is one of a series of independent audits of the implementation of the EMP and includes a detailed analysis of those PDSs relevant to Contaminated Sediments.

1.2 Scope of the Independent Audits

1.2.1 Overview

The independent audits form an element of the CDP's governance, in terms of environmental assurance mechanisms and provide an independent and transparent assessment for use by the Office. The audit reports will also form part of the public documentation on PoMC's compliance with the EMP and the environmental performance of the project. Should the need for an investigation emerge from an audit, the Office will consider the audit findings and determine the need, scope, and means by which such an investigation would be conducted.

The purposes of the independent audits are:

» To undertake audits that meet the provision for the external audit contained in the EMP and which:
  – independently assesses the implementation of the EMP
  – independently gathers such information necessary to verify the veracity of information arising from the monitoring program commissioned by PoMC – this may include field verification, sampling and measurement.
» To advise the Office of any non-conformances with the EMP; and
» To provide regular reports to the Office.

The audit program is divided into two stages, with audit activities as follows:

1.2.2 Stage 1: Operational Stage – early 2008 to early 2010

Activity 1: Undertake four (4) independent audits to assess the implementation of the EMP and compliance with each of the 58 PDSs. It is anticipated that such audits will occur twice annually, with a final audit occurring at completion of the operational stage of the project.

Timing of the audits is to be as follows:

- 1st audit to commence immediately on signing of the contract.
- 2nd audit to be completed by 31 January 2009 (this is to comply with Commonwealth reporting requirements), and will focus on an audit of the PoMC annual report.
- 3rd audit to commence around April/May 2009, but could be subject to change. Timing of this audit to occur within three (3) weeks of the commencement in 2009 of dredging in the South Channel and Port Melbourne Channel.
- 4th audit to commence in late 2009 or early in 2010 based on completion of operational stage of the project. This audit will include auditing of the 58 PDSs and the PoMC annual report.

Activity 2: Undertake focused audits of selected EMP requirements to target significant project features or processes. Timing of these audits is independent of the audits undertaken in Activity 1, but their results should feed into the analysis and assessment of compliance done for Activity 1 audits.

These audits are to include a detailed analysis of those PDSs and monitoring programs relevant to:

1. The Entrance of Port Phillip Bay:
   - The width and depth of dredging
   - Work methods to reduce rock spill
2. The management of contaminated sediment:
   - Removal of contaminated sediment
   - Placement of contaminated sediment
   - Containment of contaminated sediment
3. South Channel:
   - Mechanisms to protect seagrass
4. Mechanisms to monitor environmental performance:
   - Environmental monitoring
   - Process monitoring and inspections
   - Management performance monitoring
   - Bay wide monitoring

It is recognised that work carried out for the Activity 2 audits may overlap work carried out for the Activity 1 audits.

1.2.3 Stage 2: Post-operational Phase – early 2010 to early 2012

A series of independent audits are to be taken in the post-operational phase. These are a separately commissioned activity, and will be reported on separately from this series of audits.

1.3 Deliverables

As part of the project, the auditor is required to provide:

» Immediate reports (within 24 hours) of any non-conformances that may be identified by the audit;

» Reports of independent audits of the implementation of the EMP and the 58 Project Delivery Standards;

» Report on the audit of PoMC's annual report against EMP requirements and Commonwealth project approval conditions; and

» Reports of focused audits on selected EMP requirements.

1.4 Reference Documents

In addition to Victorian and Commonwealth approvals, the following documents are key reference documents for the project:

» **Environmental Management Plan**
http://www.channelproject.com/environment/management.asp

» **EMP Dredging Schedule**
http://www.channelproject.com/schedulelocation/dredging_schedule.asp

» **Approved ancillary documents covering Turbidity, Underwater Noise and Airborne Noise detailed designs**
http://www.channelproject.com/global/docs/EMON_080205_Turbidity.pdf

http://www.channelproject.com/global/docs/EMON_080205_Monitoring_Underwater_Noise.pdf

http://www.channelproject.com/global/docs/EMON_080205_Monitoring_Airborne_Noise.pdf

» **Approved EMP Work Method Statements**

http://www.channelproject.com/global/docs/WMS_080205_Material_Placement_PMDMG.pdf

http://www.channelproject.com/global/docs/WMS_080205_Method_Statement_EMP_Contaminated.pdf

http://www.channelproject.com/global/docs/WMS_080205_Method_Statement_EMP_Entrance.pdf

Note that these documents are subject to periodic review and revisions may be issued during the course of the project.

2. The Channel Deepening Project

2.1 Project description

2.1.1 Overview

The Channel Deepening Project (CDP) includes:

» Capital dredging works associated with the channels, swing basins and berth pockets;

» Management of dredged material; and

» Modifications to existing infrastructure, including the protection of services, berth upgrades, and upgrading and installation of new navigation aids.

The dredging and associated works are expected to take between eighteen months to two years to complete.

The CDP components are as follows:

2.1.2 Capital dredging works

The dredging works will be undertaken largely within the existing channels in the north and south of the bay. The exceptions are the turning area at Hovell Pile, which will be enlarged to accommodate larger vessels and the entrances to the Port Melbourne and Great Ship Channels. The middle of the bay (north of Hovell Pile to south of Fawkner Beacon) is naturally deeper and does not require dredging.

2.1.3 Management of dredged material

Dredged material is to be placed within the Port of Melbourne dredged material ground (PoM DMG) located near the middle of the bay, both within the existing area and in a southern extension to it, as well as in a new DMG in the south east of the bay.

All of the dredged material sourced from the Port Melbourne, Williamstown, and Yarra River Channels and associated berth pockets will be placed in the PoM DMG. The PoM DMG will be extended to the south to provide capacity for material from future maintenance dredging. Part of the PoM DMG will be bunded and capped with sand to contain contaminated sediments from the Yarra River, Williamstown and Port Melbourne Channels, and berth pockets.

Most of the material dredged from the south of the bay is to be stored in the new south east DMG (SE DMG). Sand dredged from the south of the bay will also be used as capping material for the PoM DMG.

2.1.4 Berth works

As a consequence of deepening the shipping channels, a program of structural upgrades to berths is planned at Appleton Dock, Swanson Dock (East and West), Holden Dock, and Gellibrand Pier to stabilise the docks beside the deepened

channels. This will ensure the berths will accommodate larger vessels and the lowered riverbed. The swing basins at Swanson Dock and Gellibrand Pier are being enlarged to accommodate turning movements of larger vessels.

2.1.5 Services

Several utility services crossing the Yarra River and Port Phillip Bay are to be protected from shipping movements. The following services are being protected in their current location:

» The Melbourne Water Hobsons Bay Main Sewer, the Westernport-Altona-Geelong (WAG) oil pipeline, and the GasNet high pressure gas pipeline which all cross the Yarra River downstream of the West Gate Bridge; and

» The Esso ethane pipeline that crosses Port Phillip Bay south of Fawkner Beacon.

The Telstra telecommunication cables and the Jemena electrical power cables that currently cross the Yarra River downstream of the West Gate Bridge are being decommissioned and the services rerouted by the respective utility service providers.

2.1.6 Navigation Aids

To ensure ongoing safe navigation of vessels, some existing navigation aids and in some locations new navigation aids are being installed. The navigation aids include:

» New marine-based piled structures for lateral and lead lights adjacent to the northern channels and South Channel; and

» New land-based lead lights and sector lights at Queenscliff, Port Melbourne, and alongside docks within the port.

2.2 Environmental Management

A comprehensive program determines PoMC's management of the environmental aspects of the project. Important elements of this include:

» An Environmental Policy;

» An Environmental Management System (EMS), consistent with the requirements of *ISO 14001:2004 Environmental management systems – Requirements with guidance for use,* developed for the CDP. The EMS consists of the policies, plans, procedures, and activities that together form a systematic method of managing the environmental aspects of the project.

» An EMP. The EMP is a key component of the EMS and describes the main elements of the EMS and provides direction to detailed procedures and inter-relationships between different processes.

2.3 The Environmental Management Plan

2.3.1 Scope

The EMP details the environmental management requirements to be followed for the CDP. The EMP includes:

» Arrangements to integrate the EMP with PoMC's Environmental Policy and EMS;

» The requirements for environmental management during the planning, implementation, evaluation, and review of CDP construction activities;

» The responsibilities for implementing the EMP;

» The PDSs including environmental controls and limits to ensure that project objectives and targets are achieved;

» An overview of the environmental monitoring programs, contingency plans, and associated management actions;

» Post-construction requirements including monitoring and inspections; and

» The transition arrangements from construction phase to operations.

The EMP generally applies to the capital works described in Section 2.1.2 and environmental monitoring programs. PoMC has overall responsibility for the implementation of the CDP in accordance with the requirements of the EMP.

This audit was conducted against the approved EMP. For the period covered by this audit to 16 October 2008, the approved EMPs were as follows:

» 30 January 2008 EMP (CDP_IMS_PL_004 Revision 1)

» 11 April 2008 EMP (CDP_IMS_PL_004 Revision 2)

» 22 July 2008 EMP (CDP_IMS_PL_004 Revision 3)

» 2 September 2008 EMP (CDP_IMS_PL_004 Revision 4)

2.4 Project Delivery Standards

PDSs have been identified for the CDP to address key environmental risks, effects and legal requirements. The PDSs are a collation of the management and mitigation measures, and environmental performance monitoring and contingency plans for the CDP. The CDP PDSs are:

» Construction management (all activities);

» Marine-based works (all areas);

» Land-based works;

- Dredging and plume;
- Dredging schedule;
- Dredged material management;
- Entrance dredging; and
- Hydrohammer use and marine-based pile driving.

PDSs generally include the following:

- An objective – the performance goal;
- A target – the performance level at which the objective is demonstrated as being achieved;
- Application – the project activities and project areas to which the PDS applies (refer to drawing CDP-Env-50228 in Annexure 7 of the EMP for the location of the project areas);
- Environmental controls – the management and mitigation measures required to support achievement of the objective during the implementation of the project. These include process controls and associated monitoring;
- Environmental limits – the numerical performance standards with which the project must comply;
- Reference to environmental monitoring programs – the environmental monitoring programs applicable to the PDSs; and
- Reference to contingencies – the relevant contingency plans containing management actions, which may be taken in the event of potential exceedence of the environmental limit or response level.

It should be noted that the EMP formally defines 8 PDSs, listed above. Within those 8 standards are 58 environmental rules. However, the general convention through the delivery of the CDP has been to refer to the environmental rules individually as PDSs. This convention is continued in these audits and any reference to the 58 PDSs will by definition include the 58 environmental rules.

3. Audit Methodology

3.1 Standards

This audit was undertaken adopting a methodology consistent with ISO 19011 to meet the specific requirements of the Office for the audit of PoMC's implementation of the EMP requirements for Contaminated Sediments.

ISO 19011 *Guidelines for Environmental Auditing* provides a systematic approach to defining the requirements of the audit, planning, interpreting the elements of the EMP, collecting audit evidence, objectively assessing the evidence, and reporting in a clear and accurate manner. It also ensures that the audit has been conducted in accordance with an established and recognised audit methodology.

3.2 Audit Preparation

3.2.1 Overview

The audit methodology used in the preparation of this audit is presented schematically in Figure 1. Brief descriptions and dates for key activities are described in greater detail below.

Prior to the audit, the Office had identified those elements that it considered were particularly significant, and specified these in the tender brief as requiring focused audits. These are the subjects of what are described as Activity 2 audits. This audit report is pertinent to the requirements of the EMP that are relevant to Contaminated Sediments; subsequent audits focus on the implementation of the EMP as set by the 58 PDSs.

3.2.2 Audit Plan and Scope

The requirements of the audit were outlined in a brief that the Office issued for this work (http://www.oem.vic.gov.au/Independentaudits), and a draft audit plan and preliminary methodology for the audit were outlined in the tender submission. To ensure that the audit requirements and the brief were addressed, the scope of the audit was confirmed with the Office and the audit plan and methodology was further refined in subsequent meetings with the Office, Victorian regulators, and the Commonwealth.

The audit plan extended to the series of audits required under this commission; the methodology outlined in this report is common to all of the audits, but the details of meetings and interviews outlined in the following sections of this report are pertinent to the focused audit of the requirements of the EMP and PDSs relating to Contaminated Sediments.

This audit was one of the series of audits.

The scope of this audit was to undertake a detailed analysis of compliance with those components of the EMP relevant to the removal, placement, and containment of contaminated sediment.

This audit is to be based on the information available to 16 October 2008. PoMC advises that hydraulic placement of contaminated sediments (soft silts) in the PoM DMG was concluded on 5 October 2008.

Note that the placement of sand capping is not included in the scope of this audit.

This audit was focused on aspects of the EMP that relate to the management of contaminated sediments; this audit did not seek to review and confirm compliance with aspects of the PDSs that relate to other aspects such as on-ship or on-shore occupational health and safety, or structural or geotechnical considerations.

In assessing compliance of CDP activities and procedures with requirements of the EMP and PDSs, check sheets were prepared by GHD and used to assist in identifying and obtaining evidence relevant to assessing compliance. The audit team met with PoMC-nominated environmental representatives and sought relevant evidence. If requested evidence was deemed by PoMC to be unavailable or not relevant to the audit at that stage, the auditor sought evidence from PoMC to support that claim.

PDSs relevant to this audit are identified in Table 3. Together, they form the findings described in Section 4.

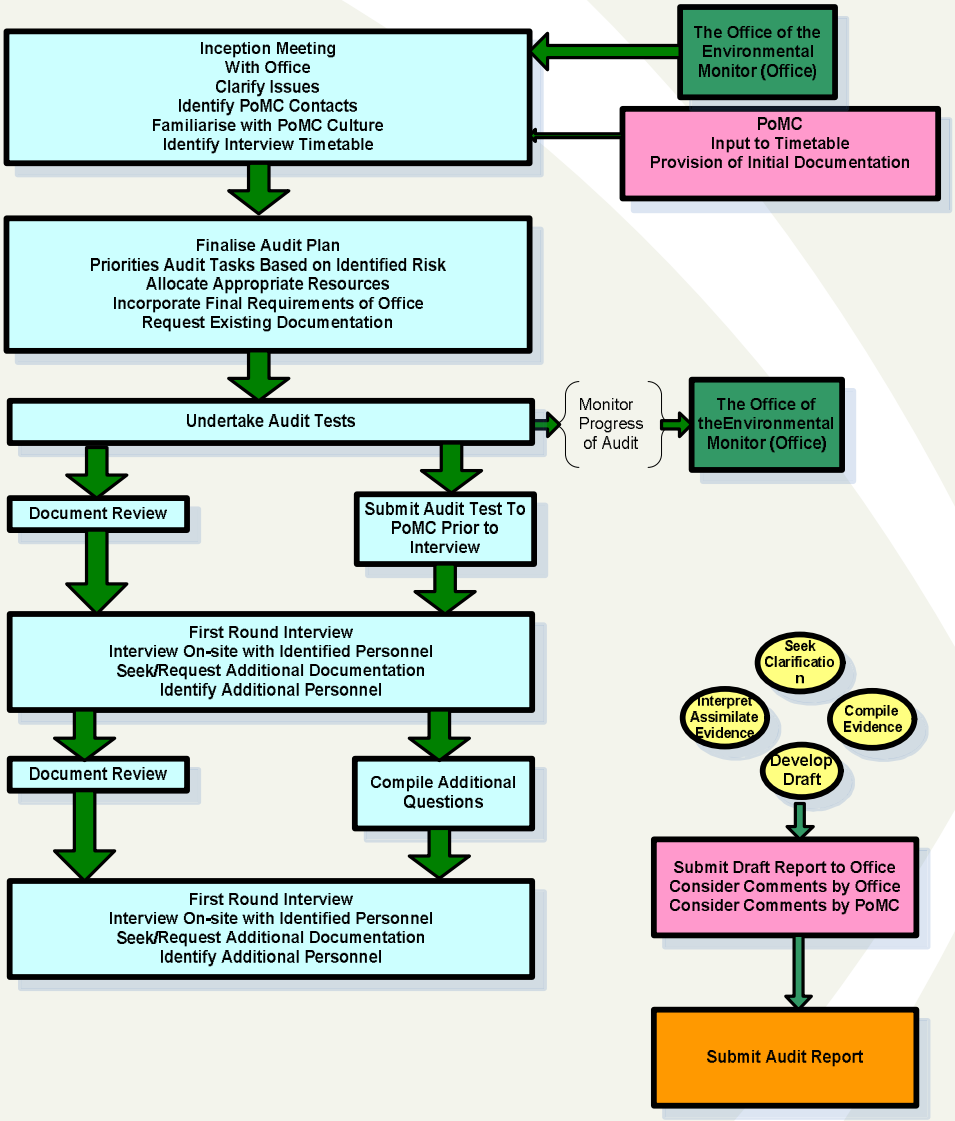
In general, the audit comprised a desk review of documentation provided by PoMC and other information available from the Office, the Commonwealth and media reports. This review was supported by an inspection by the audit team of the main dredge vessels and interviews with key project personnel.

In particular, this audit considered the available information in more detail than the Activity 1 audit of the EMP PDSs, and carried out additional cross-checks of information to confirm that the data and reporting is consistent and supports the conclusions that the requirements of the PDSs are being complied with. In particular, the additional more detailed analysis of data has been carried out, as follows:

- Review of data to verify that the appropriate equipment, as specified by PDS 27, was used to dredge unconsolidated sediment in the Yarra River, Williamstown Channels, and southern section of the Port Melbourne Channel.
- Review of data to verify that the appropriate equipment, as specified by PDS 28, was used to dredge contaminated clays at Appleton Dock and near Webb Dock.
- Review of transition notifications to verify that the necessary process, as specified by PDS 29, was undertaken when determining the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels, with the TSHD.
- Review of transition notifications to verify that the necessary process, as specified by PDS 30, was undertaken when determining the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels, with the backhoe and grab dredges.

- Review of data to verify that dredging was being undertaken in accordance EMP Table 16 ‘Dredging Summary’, as specified by PDS 31.
- Review of data to verify that placement of contaminated materials was undertaken in accordance with Section 4.3 of Method Statement EMP – Port of Melbourne Dredged Materials Ground (CDP_ALL_MS_410), as specified by PDS 34.
- Review of data to determine whether contaminated clay was used in PoM DMG bund construction, as specified by PDS 35.
- Review of bund transition notifications and hydrographic surveys to verify that the containment of contaminated material at the PoM DMG was undertaken, as specified by PDS 36.

Figure 1 : Summary of Audit Methodology



3.2.3 Inception Meetings

A comprehensive listing of all elements of the EMP, audit questions, and a preliminary set of requirements for evidence were prepared and submitted to the Office and PoMC. A meeting was held with the Office and PoMC on 9 September 2008 to consider each of the requirements, to allow PoMC to provide background on each element of the EMP and determine the evidence that was available, and to agree on the evidence that would be provided to the auditor. This meeting was focused on the first Activity 1 audit of the EMP, however, the knowledge and information gathered at this meeting has also informed the focused Activity 2 audits.

A primary objective of these meetings was for the auditor and audit team to develop working relationships, mutual understandings, and expectations relating to the requirements and process of the audit and to provide an opportunity for the PoMC to present an overview of the dredging works, organisational background, overview of compliance, and to arrange inductions for inspecting the dredge vessels.

As part of the preparation of the audit plan, the requirements of the brief and expectations relating to the focused audit of Contaminated Sediments were reviewed and discussed in a meeting with the Office on 27 October 2008.

3.2.4 Audit Tests and Ranking of Compliance

The requirements for determining compliance were discussed with the Office, DSE, and the Commonwealth, and it was agreed that compliance would be graded in terms of full compliance, critical non-compliance, major non-compliance, minor non-compliance, not applicable, and undetermined. The definition of these terms is outlined in Table 2. This grading was drawn from the method of grading compliance outlined in guidelines to auditors[1] under the Victorian Government *Safe Drinking Water Act 2003*.

Table 2 Summary Compliance Grades

Compliance Grade	Description
Full compliance	There is sufficient evidence to confirm that actions have been undertaken, prepared, and/or implemented in full compliance with the requirements of the auditable element.
Critical non-compliance	The evidence shows that actions are not in full compliance with the requirements of the auditable element and this gives rise to a serious or imminent risk to the environment.
Major non-compliance	The evidence shows that actions are not in full compliance with the requirements of the auditable element and this gives rise to a high potential that the environment will be seriously affected if the non-compliance is not rectified.
Minor non-	The evidence shows that actions are not in full compliance with the

[1] Victorian Government Department of Human Services, Water Regulatory Audit Guidance Note November 2007

Compliance Grade	Description
compliance	requirements of the auditable element but it is unlikely that this will cause the environment to be seriously affected.
Not applicable	The auditable element falls outside the scope of the audit, eg work relevant to the project delivery standard has not yet commenced.
Undetermined	There is insufficient evidence to make a judgement on compliance.

Audit tests were developed for all requirements within the scope of the audit. These tests were designed to establish compliance with each element of the EMP. Evidence was sought from PoMC to establish whether the element has been complied with.

In order to maximise the efficiency with which the audit was carried out and to ensure the audit effort was directed to the most important issues, an assessment of the risk to the environment associated with each element of the EMP was determined and used to target issues and the level of effort put into each element.

3.2.5 Inspection of sites and vessels

PoMC provided an induction to the auditor and his team on 23 September 2008. The auditor and his team held a land-based inspection of the berthing sites and the Queen of the Netherlands and Cornelis Zanen (CoZa) on 25 and 26 September 2008.

3.3 Report on findings

The findings of the audit are presented in Section 4 of this report. Section 4.1 presents a discussion of the findings as they relate to each of the activities associated with management of contaminated sediments. Table 4 contains the detailed findings of the report for each of the PDSs relevant to Contaminated Sediments, as they are listed in the EMP Revision 4. The listing and findings are not presented in a “prioritised order” nor “order of significance”.

4. Audit Findings

4.1 Summary of Findings

4.1.1 Overview

PoMC has a well-developed system for documenting information relating to the CDP that is relevant to confirming compliance with the EMP and the PDSs.

Table 3 presents an overview of the findings for the 11 PDSs relevant to Contaminated Sediments based on data available to the 16 October 2008.

Table 3 Overview of findings for Contaminated Sediments PDSs

Project Delivery Standard	Full Compliance	Minor Non-Compliance	Undetermined	Not Applicable
24 Dredging	Yes (part)			Yes (part)
25 Management of pipeline between TSHD and spreader or diffuser pontoon during transfer of sediments	Yes			
27 Dredging of unconsolidated contaminated sediment	Yes			
28 Dredging of contaminated clays	Yes			
29 Monitoring removal of contaminated sediments - TSHD	Yes			
30 Dredging schedule	Yes			
31 Dredging schedule	Yes (part)			Yes (part)
33 Consideration of seasonal sensitivities	Yes (part)			Yes (part)
34 Dredged material placement	Yes (part)			Yes (part)
35 PoM DMG - bund	Yes (part)			Yes (part)
36 PoM DMG – Contaminant of contaminated material	Yes			

Overall, the audit concluded that there were no areas of non-compliance with the PDS requirements.

There were some components of the PDS requirements that were assessed as “not applicable” as they either had not yet fallen due in the audit period or were not

applicable to the management of contaminated sediments. These will be assessed in subsequent audits.

An overview of the findings of the audit is presented in Sections 4.2 and 4.3. Detailed findings of the audit relating to compliance with the requirements of each of the PDSs are summarised in Table 4.

4.2 Removal of Contaminated Sediments

4.2.1 Use of specialised equipment

PDS 27 and 28 set requirements for dredging of unconsolidated contaminated sediments and dredging of contaminated clays.

PDS 27 requires dredging of unconsolidated contaminated sediment in the Yarra River and Williamstown Channels and the southern section of the Port Melbourne Channel to be conducted with TSHD (operating in non-overflow mode with a silt draghead) and/or grab dredge and backhoe dredge.

PDS 28 requires dredging of contaminated clays in two locations within Appleton Dock and near Webb Dock, and batter walls to be dredged with the TSHD (operating in non-overflow mode with a clay draghead) and/or grab dredge and backhoe dredge.

The auditor notes that dredging of the contaminated clays at Appleton and Webb Docks had not occurred at the time of this audit and will be assessed in future audits.

The auditor concludes that the requirements relating to the use of specialised equipment has been complied with.

4.2.2 Limits on area dredged

PDS 24 sets limits on the lateral extent of dredging in each project area, including Williamstown Channel and Port Melbourne Channel.

PDS 24 requires that no dredging is to take place within 65 m of the outside edge of the Port Melbourne Channel construction zone.

The auditor concludes that the requirements relating to limits on the area to be dredged have been complied with.

4.2.3 Monitoring removal of contaminated sediment

PDS 29 and 30 outline the process required for monitoring the removal of contaminated sediments (soft silts) with the TSHD, backhoe, and grab dredges. PDS 29 and 30 also require the number of passes of the equipment to dredge the full depth of contaminated sediments (soft silts) to be nominated; the x,y,z coordinates of draghead tracks while dredging to be recorded; and the number of draghead passes recorded in each grid cell within an area to be calculated.

The auditor concludes that the requirements relating to limits on the dredged depth have been complied with.

4.2.4 Limits on the volume of sediment that can be dredged

PDS 24 specifies that the maximum total in-situ volume of contaminated sediments (soft silts) to be dredged is 1.72 million cubic metres ± 15 percent and the maximum total in-situ volume to be dredged is 22.92 million cubic metres ± 15 percent.

The auditor concludes that the requirements relating to these maximum volume limits have been complied with.

4.2.5 Limits on the time that dredging can occur

PDS 33 relates to the considerations of seasonal sensitivities in the Bay and restrict dredging activities accordingly. With respect to this audit and the period it covers, PDS 33 requires that no dredging occur using the TSHD in the Yarra River or Williamstown Channels between 15 October to 30 November; dredging using the TSHD in Yarra River between 1 April and 31 July be restricted to no more than two calendar months (or equivalent in days); and, in preparing the dredging schedule, consideration will be given to seasonal sensitivities and preferred seasons identified in the EMP's Table 17 *Key Seasonal Sensitivities and Preferred Seasons.*

The auditor concludes that dredging complied with the seasonal sensitivities.

4.2.6 Requirement to provide notifications

Completion of dredging of contaminated sediments within an area

The EMP's Table 6 *Notification and reporting requirements* outlines what needs to be reported, the relevant government authority, and the required timeframe. It is required that the DSE, EPA, DEWHA, and the independent environmental monitor be notified within 12 hours (any time of day) of determining that requirements for commencement of dredging of underlying uncontaminated material within an area have been met.

The auditor concludes that the notification and reporting requirements have been complied with.

4.3 Placement and Containment of Contaminated Sediments

4.3.1 Placement of contaminated sediments

Use of specialised equipment

PDS 34 requires compliance with EMP Table 16 Dredging Summary as well as the use of specialised equipment for dredging and placement, including the diffuser to be used for all transfers of contaminated sediments (soft silts) dredged by a TSHD to the bund.

PDS 25 requires the pipeline between the TSHD and the pontoon to be lit at night.

The auditor concludes that these requirements have been complied with.

Placement of sediment

PDS 34, 35, and 36 relate to the placement and containment of contaminated material deposits, including placement of contaminated sediments (soft silts) within the confines of the bund and placement of materials used for bund construction.

Dredging of contaminated clays from Webb and Appleton Docks had not occurred in the audit period (to 16 October 2008), and hence the requirements outlined in PDS 35 relating to the appropriate placement and covering of contaminated clays in the bund wall are not applicable in this audit. It is noted that any contaminated clays removed from within the batter walls were disposed of within the confines of the bund.

The auditor concludes that this requirement has been complied with.

Removal requirements – contaminated clays

PDS 34 and 35 includes the requirement for sand placement after being used to clean out clay (including contaminated clay) from the TSHD hopper. PDS 34 requires placement in accordance with EMP Table 16 Dredging Summary and EMP Method Statement.

It is noted that dredging of contaminated clay had not occurred within the audit period, although small amounts of contaminated clays were dredged from batter walls with the grab/backhoe dredges and transported by barge and disposed of in the PoM DMG within bund.

The auditor concludes that this requirement has been complied with.

4.3.2 Containment of contaminated sediments

Use of specialised equipment

PDS 34 refers to EMP Table 16: Dredging Summary that describes the equipment used for bund construction. Table 16 requires that placement of material to construct the bund be directly from the hopper for jumbo or mid-sized TSHDs and directly from a barge for dredging of clay by backhoe or grab dredge.

The auditor concludes that this requirement has been complied with.

Bund construction

PDS 35 requires that the bund be constructed in accordance with design specifications.

The bund has been constructed within the PoM DMG. While hydrographic surveys indicate that the as-built bund differs in alignment to that of the design, the auditor has sighted a letter from SKM to PoMC that verifies the as-built bund is in accordance with the design's intentions and it has been concluded that this requirement has been met. The Alliance advised that the difference between the "design" and the partially constructed bund is associated with the northern portion of the bund, with the eastern and western bund walls not extending as far north.

Advice was received from PoMC in October 2008 that contaminated clay has not been dredged in the audit period; hence the section of PDS 35 that relates to construction with contaminated clay is not applicable to this audit.

The auditor concludes that this requirement has been complied with. A more detailed audit of the construction of the bund will occur in a future audit.

Bund capacity

PDS 34 and 36 require a minimum capacity and crest height of the partially complete bund for the placement of contaminated sediment (soft silts).

The audit determined that the bund is being constructed to design specifications and meets the minimum capacity and crest height requirements, and is being monitored through bathymetric surveys that demonstrate that the bund is stable.

The auditor concludes that the requirements have been complied with.

Removal requirements – uncontaminated clays

PDS 34, 35 and Work Method Statement for PoM DMG specify the requirements for sand placement after being used to clean out clay (including uncontaminated clay) from the TSHD hopper. The auditor concludes that this requirement has been complied with.

Requirement for surveys (during construction)

The Work Method Statement and PDS 36 requires hydrographic surveys to be conducted during the bund construction. The auditor concludes that the frequency of surveys complies with this requirement.

Requirement to provide notifications

The EMP's Table 6 *Notification and reporting requirements* outlines what needs to be reported, the relevant government authority, and the required timeframe.

One item detailed in the Table is specific to the management of contaminated sediments, and deals with the placement of contaminated material in the bund.

It is required that the DSE, EPA, and the independent environmental monitor be notified within 12 hours (any time of day) of determining that requirements for placement of contaminated material in the bund has been met.

The auditor concludes that this requirement has been complied with.

4.4 Acknowledgement

The auditor wishes to acknowledge that PoMC responded to the many requests by the audit team for information and evidence, and a large body of information was made available to the audit team for the purposes of the audit.

4.5 Details of Compliance

Details pertaining to the requirements, evidence and compliance for each of the 11 PDSs are provided in Table 4.

Table 4 Details of compliance

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
24 Dredging			
Design depths are to be achieved as a minimum in all areas. Due to dredging tolerance, actual construction depth will exceed design depths. Design depths are as follows: **Great Ship Channel / layby** | **Sth Channel (fairway / channel / Hovell Pile)** | **Port Mel & W'town Channels** | **Yarra River Channel** Design depth (m): 17.3 / 14.3 | 16.8/ 15.8 / 16.3 | 15.8 | 16.1 / 15.8 / 15.25	Design depth requirements are not applicable to this audit.	Not applicable	
Dredging must remain within the maximum total in-situ volume, width constraints and construction depth constraints identified below: » Maximum total in-situ volume to be dredged is 22.92 million m^3 ± 15%, and	The October 2008 Alliance Monthly report was reviewed. The October Alliance Monthly Report provides evidence as to whether dredging (which includes contaminated material) remains within maximum total in-situ volume, width constraints and construction depth constraints. This Report indicates: » An in-situ volume of 11.273 million m^3 in total has been dredged to the end of October and is below the maximum total in-situ volume of 22.92 million m^3 ± 15%. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	CDP_ALL_REP_303-08-10 Rev 01 Alliance Monthly Report October 2008.
» Maximum in-situ volume to be dredged in the Entrance is 0.55 million m3 ± 15%, and	Dredging requirements for the Entrance are not applicable to this audit.	Not applicable	

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
» Maximum in-situ volume of contaminated sediments (soft silts) to be dredged is 1.72 million m3 ± 15% (dredging volume to be finalised following pre-construction bathymetry survey), and	The October 2008 Alliance Monthly report was reviewed. The October Alliance Monthly Report provides evidence as to whether dredging remains within the maximum total in-situ volume. This Report indicates: » The October Monthly Report indicates that 1.307 million m3 of contaminated sediment (soft silts) have been dredged to the end of October and it is within the maximum total permissible in-situ volume of contaminated sediments (soft silts) of 1.72 million m^3. A review of the CDP Weekly Updates and the Alliance October Monthly Report indicates that dredging of contaminated sediment occurred progressively from the time dredging of silts commenced on 24 April 2008. These updates include tallies of contaminated sediment volumes dredged. The pattern of volumes is consistent with the works program and supports the conclusion that there are no omissions in the dredge volumes reported. PoMC advised that hydraulic placement of contaminated sediments (soft silts) in the PoM DMG was concluded on 5 October 2008, signifying the completion of dredging of contaminated sediments (soft silts) by the CoZa. This indicates that the majority of contaminated sediments (soft silts) have now been dredged, and any remaining volumes will be completed by the Goomai and/or Storken dredges. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	CDP_ALL_REP_303-08-10 Rev 01 Alliance Monthly Report October 2008. CDP Weekly Updates #1-38 provided for regulators (15 February 2008 to 3 November 2008) PoMC advice “TSHD completion of contaminated sediment.txt”
» A minimum of 50% of the area to be dredged and within toe lines is to be within 0.9 m of the design depth (sands and clays) and within 1.3 m of the design depth (Entrance). This does not apply to the sand waves within South Channel.	The focus of this audit is on dredging of contaminated sediments from the channels. Therefore design depths would not be reached during the time frame of this audit. Auditing of design depths will occur in a future audit.	Not applicable	
» A minimum of 90% of the area to be dredged and within toe lines is to be within 1.8m of the design depth (19.1 m total depth) as determined following completion of dredging (Entrance only), and	Dredging requirements for the Entrance and South Channel are not applicable to this audit.	Not applicable	

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
» For areas to be dredged, final channel width to be no greater than 25 m outside of the Williamstown Channel, Port Melbourne Channel, and South Channel design toe lines and 15 m of Entrance design toe line. 50% of the delivered toe line is to be within 15 m of the Williamstown Channel, Port Melbourne Channel, and South Channel design toe lines and 9 m of Contaminated Sediments design toe line. This does not apply to the sand waves within South Channel, and the north-west side of Nepean Bank (where the minimum amount to achieve a design depth of 17.3 m is to be dredged).	The October 2008 Alliance Monthly Report was reviewed (CDP_ALL_REP_303-08-10 Rev 01 Alliance Monthly Report October 2008) as well as transition notifications within the audit period. This information indicates: » The current channel width is no greater than 25 m outside of the Williamstown and Port Melbourne Channels design toe lines and complies with the requirement. » More than 50% of the currently delivered toe lines of the Williamstown and Port Melbourne Channels are within the 15 m design toe lines, as illustrated by Transition Notifications for those areas. This complies with the requirement. The auditor concludes that compliance has been achieved with this requirement. Dredging requirements for the Entrance and South Channel are not applicable to this audit.	Full compliance	CDP_ALL_REP_303-08-10 Rev 01 Alliance Monthly Report October 2008. Transition Notifications (PoMC Targeted CDP EMP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008).
Construction zone – construction zones have been identified to limit the footprint of dredging activities. Construction areas are identified in drawings listed below.	The EMP Annexure 7 drawings 35328 to 35334 outline the construction zones to limit the footprint of dredging activities.	Not applicable (for information)	Construction zones are shown on survey screens onboard dredge vessels, as noted by auditor during onboard inspection of CoZa (26 September 2008)
All dredging activities to take place within the construction zones. No dredging (as a subset of dredging activities) is to take place within 65 m of the outside edge of the construction zone (Port Melbourne Channel, South Channel and Entrance only, except to the extent necessary to achieve a design depth of 17.3 m along the north-west side of Nepean Bank). This is to be confirmed through draghead tracking (in dredging mode only) and validated by bathymetry survey (where draghead tracking indicates that dredging in this area has potentially occurred).	Alliance provided the auditor with an onsite demonstration of its BayVista vessel and equipment tracking system Review of a selection of dates detailing draghead tracking records while in dredge mode show that there are no instances of the vessels dredging (as a subset of dredging activities) within 65 m of the outside edge of the construction zone for the Port Melbourne Channel. The auditor concludes that compliance has been achieved with this requirement. Dredging requirements for the Entrance and South Channel are not applicable to this audit.	Full compliance	Tracking data, BayVista screen plots and Daily Trip Reports for Queen, CoZa and Goomai – selection of dates (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008). Also tracking data for the CoZa (21 May, 30 May, 4 June, 20 June, 10 July, 17 July, 21 July 29 July, 2 August, 10 August, 21 August and 2 September 2008) Bathymetric surveys (in-surveys). Alliance demonstration of the tracking data on BayVista Database (8 October 2008 at Alliance office Fisherman's Wharf).

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Dredging equipment and associated support vessels will be required to manoeuvre outside construction areas, including transit between construction areas.	Vessel tracking information provided by the Alliance indicated movement outside of construction zones such as sailing to and from DMGs, bunkering, anchoring or moving out of shipping channels to allow passing by other vessels. Review of tracking data from a selection of dates confirmed that dredging equipment and associated support vessels were manoeuvred outside construction areas and no dredging occurred during those times. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Alliance demonstration of the tracking data on BayVista Database, Alliance office Fisherman's Wharf (8 October 2008) Tracking data for CoZa (21, 29 & 30 May 2008; 4, 10 & 20 June 2008; 2, 3, 10, 16, 17, 21 &29 July 2008; 2, 10, 21 & 26 August 2008; 2, 23 & 29 September 2008)
Toe lines and construction zones are identified on: Drawing 35328 – Channel Deepening Project – Port of Melbourne – Coastal Management Consent Scope of Works Drawing 35329 – Channel Deepening Project – Port of Melbourne – South – Coastal Management Consent Scope of Works Drawing 35330 – Channel Deepening Project – Port of Melbourne – North – Coastal Management Consent Scope of Works Drawing 35331 – Channel Deepening Project – Port Phillip Entrance – South Channel – Coastal Management Consent Scope of Works Drawing 35332 – Channel Deepening Project – Port Phillip Entrance – South Channel – Coastal Management Consent Scope of Works Drawing 35333 – Channel Deepening Project – South Channel – West - Coastal Management Consent Scope of Works Drawing 35334 – Channel Deepening Project – South Channel – East - Coastal Management Consent Scope of Works Drawing CDP-ENV-50254 – Construction Areas – Heritage significance (Drawings are included in Annexure 7)	Toe lines and construction zones are provided in the EMP Annexure 7's drawings 35328 to 35334, and CDP-ENV-50254.	Not applicable (for information)	Toe lines provided in EMP drawings (above). Bathymetric surveys (in-surveys)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Dredging to be undertaken in accordance with EMP Method Statement for Dredging works North – Contaminated (CDP_ALL_MS_408)	Compliance for this PDS requires compliance with the following EMP PDSs: » 27 – full compliance; » 28 – full compliance; » 29 – full compliance; » 30 – full compliance; and » 33 – full compliance The EMP Method Statement for Dredging works North – Contaminated also requires compliance with EMP Table 6. Completion of dredging of contaminated sediments within an area requires reporting or notification to the designated Government agencies within 12 hours of determining that requirements for commencement of dredging of underlying uncontaminated material with that area have been met. Comparison of the reporting and notification dates with the dates that the final surveys were undertaken (attached to PoMC's targeted CDP EMP Audit Reports). This supports the conclusion that this requirement is being met. Furthermore the PoMC Bund Notification Letters sent to agencies contains the date and time of "fulfilment" of dredge requirement. The accompanying email confirms this notification was sent within the specified 12-hour period. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Transition Notifications (PoMC targeted CDP EMP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008). PoMC Bund Notification Letters and accompanying emails (18 April 2008, 2 June 2008, 28 July 2008 and 19 September 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Tracking of equipment activity as follows: **Equipment** / **Time** / **Date** / **Co-ordinates** / **Other** TSHD / P / P / Dredging - x,y,z (northing, easting, depth to Chart Datum) Sailing & placement of dredged material – x,y,z (northing, easting) / Status of cycle (i.e. dredging, sailing, placement of dredged material) Backhoe Dredge & Grab Dredge (contam. Material only) / P / P / x,y,z bucket (northing, easting, depth to Chart Datum) / Nil Split hopper barges / P / P / x,y (northing, easting) / Nil Spreader pontoon / P / P / x,y (northing, easting) / Nil Diffuser pontoon / P / P / x,y,z (northing, easting depth to Chart Datum) / Nil	Vessel tracking data for the Adventure, CoZa, Discovery, Endeavour, Goomai, PoMBAA, Resolution, and Storken were reviewed. This provided evidence of an automated data collection system whereby the equipment activity is tracked and recorded every thirty seconds. While equipment type is not specifically stated, the vessel name indicates what equipment has been used. For example, the Goomai is a grab dredge, while the CoZa is a mid-sized TSHD. The extent of tracking provided by the Alliance's BayVista system was explained and demonstrated to the auditor at a meeting in the Alliance's office between the audit team and the Alliance on 8 October 2008. In addition, the operation of the tracking system was demonstrated to the auditor on board during a vessel inspection of the CoZa on 26 September 2008; this included a demonstration of the system by the Alliance Vessel Master. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Tracking data, BayVista screen plots and Daily Trip Reports for CoZa and Goomai (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008). Tracking data (23, 24, 27 July 2008) for Adventure, CoZa, Discovery, Endeavour, Goomai, PoMBAA, Resolution and Storken. Onboard inspection of CoZa by auditor (25 September 2008) Demonstration of the tracking data system at Alliance office, Fisherman's Wharf (8 October 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Use of green valve at all times when using overflow.	The Vessel Master confirmed, during an onboard inspection of the CoZa on 26 September 2008, that the green valve is automated for use when the overflow is used. Review of a selection of CoZa's daily trip reports indicated that the green valve was closed at all times when operating in non-overflow mode. This is evidenced by a row on each report under the heading entitled *"Turbiditys operational (Y/N/C)".* This corresponded with *"C"* in each trip column, indicating that the green valve was closed when operating in non-overflow mode. Review of selected dredge cycle times for the CoZa during dredging of unconsolidated contaminated sediment indicate that the TSHD is operating in non-overflow mode with green valve closed, illustrated by the shortened trip lengths. These cycle times can be viewed in conjunction with the transition notification dates to provide corroborating evidence of TSHD operating on non-overflow mode. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Daily Trip Reports for CoZa – selection of dates (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008). Onboard inspection of CoZa by auditor (26 September 2008) Dredge cycle times (evidence of equipment used – TSHD operating on non-overflow mode and green valve closed) for CoZa during dredging of unconsolidated contaminated sediments (dates from 5 May 2008 to 5 October 2008). Overview of Transition Notifications in Yarra River and Williamstown Channel (Drawing CDP-Env-50739v6) Transition Notifications (PoMC targeted CDP EMP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008).
The overflow valve of the TSHD will be closed when sailing.	As documented in EMP Audit No. 1, the CoZa's Vessel Master confirmed that the overflow valve is always closed while sailing, during an onboard interview and inspection by the auditor on 26 September 2008. Review of a selection of Daily Trip Reports from the CoZa indicates that the overflow valve is closed while sailing. This is evidenced by a row on each report under the heading entitled *"Turbidity during sailing (O/C)".* In all cases, this corresponded with *"C"* in each trip column, indicating that the overflow valve was closed when sailing. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Daily Trip Reports for CoZa – selection of dates (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008). Notes taken during CoZa onboard inspection (26 September 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
25 Management of pipeline between TSHD and spreader or diffuser pontoon during transfer of sediments			
Pipeline will be lit at night.	PoMC advises that the pipeline was lit at night. In support of this: » PoMC supplied a digital photograph depicting a lamp fixed to the pipeline. However, the auditor notes that this is a daytime picture and does not confirm that the lamp is used at night, nor the extent of lamp fittings along the length of the pipeline; and » A tax invoice from Sealight Pty Ltd, dated 11 January 2008, indicates that 30 *Solar Marine* Lights were purchased by Boskalis Australia. PoMC advised that these are attached to the pipeline and support the conclusion that the pipeline is lit at night. Review of complaint/incident reports indicate no incidents were recorded within the audit period. The auditor accepts the advice by PoMC that the pipeline was lit at night.	Full compliance	Digital photograph "Lamps mounted on floating pipeline.jpg" Sealight Tax Invoice (11 January 2008) Complaint / incident records relating to pipeline (no incidents recorded to date)
Support vessels will maintain a watch for non-project vessels.	Vessel inspection by the audit team revealed that a sign on the bridge of each vessel warns to watch for non-project vessels within the *"600m safety zone established around the major dredging equipment"* as stated in the PoMBAA Restricted Access Areas Procedure. EMP induction slides also advise of the safety zone. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	EMP Induction slides Support vessel training / induction records (induction PowerPoint slide show) Sign on bridge warning of exclusion zones, noted during on board inspection of CoZa (26 September 2008) and Queen (25 September 2008)
Pumping will cease if an unauthorised vessel encroaches within 100 m of the pipeline, or if the integrity of the pipeline is compromised.	PoMC has advised that no incidents relating to the integrity of the pipeline being compromised have occurred during the audit period. Review of Alliance Incident / Hazard Report Forms dated up to 13 October 2008 confirms this. Quarterly Reports 1, 2 and 3 indicate that no public complaints involving the pipeline have been made. Review of media clippings provided by the Office of the Environmental Monitor also revealed no pipeline-related incidents. Review of Alliance Toolbox Talk / Pre-Start Meeting record for "Connection of pipeline at spoils ground" dated 4 August 2008,	Full compliance	Restricted Access Areas Procedure (Alliance Document No CDP_ALL_PR_405) for PoMBAA Quarterly Reports 1, 2 and 3 Media file provided by OEM Alliance Toolbox Talk / Pre-Start Meeting record for Connection of Pipeline at Spoils ground (4 August 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	indicates a *"standard operating procedure" is to "keep a watch for non project vessels"*. It is concluded that effective management of the pipeline between TSHD and diffuser pontoon during transfer of sediments has occurred. The auditor concludes that compliance has been achieved with this requirement.		Alliance Incident / Hazard Report Forms dated up to 13 October 2008
27 Dredging of unconsolidated contaminated sediment			
Contaminated sediment exists in the Yarra River and Williamstown Channels and the southern section of the Port Melbourne Channel. Dredging of contaminated sediment to be conducted with the following equipment: – TSHD operating in non-overflow mode with a silt draghead. – Grab dredge. – Backhoe dredge	Review of CDP Targeted EMP Audit Reports (dating from 8 May 2008 to 3 October 2008) indicates what equipment was used for the dredging of contaminated sediment in the Yarra River and Williamstown Channels and the southern section of the Port Melbourne Channel. Transition Notifications in Yarra River and Williamstown Channel indicate that the CoZa (TSHD) and Goomai (grab dredge) and Storken (backhoe dredge) were utilised in the dredging of contaminated sediment. Review of selected dredge cycle times for the CoZa during dredging of unconsolidated contaminated sediment indicate that the TSHD is operating in non-overflow mode, illustrated by the shortened trip lengths. These cycle times can be viewed in conjunction with the transition notification dates to provide corroborating evidence of TSHD operating on non-overflow mode. The targeted Audit Reports confirm that the following equipment has been used: » CoZa – TSHD; » Goomai – Grab Dredge; and » Storken – Backhoe Dredge. No other equipment has been listed as being used. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Overview of Transition Notifications in Yarra River and Williamstown Channel (Drawing CDP-Env-50739v6) Transition Notifications (PoMC targeted CDP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008). Dredge cycle times (evidence of equipment used – TSHD operating on non-overflow mode) for CoZa during dredging of unconsolidated contaminated sediments (dates from 5 May 2008 to 5 October 2008).

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
28 Dredging of contaminated clays			
Contaminated clays in the two locations within Appleton Dock and near Webb Dock (identified in Annexure 7, Drawing CDP-Env-50383), and batter walls will be dredged with the following equipment to design depth: – TSHD operating in non-overflow mode with a clay draghead. – Grab dredge. – Backhoe dredge	According to email correspondence between Alliance QA/QC Manager and PoMC, dredging of contaminated at Appleton Webb Docks had not commenced in this audit period. The same email provides evidence of the equipment used for dredging of the batter walls, as it states that the CoZa (TSHD) and the Goomai (grab dredge) were used. No other equipment has been listed. Further evidence that dredging of contaminated clays at Appleton and Webb Docks had not commenced can be found in Weekly CDP Updates and Dredge Schedules. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Email from Alliance QA/QC Manager to PoMC indicating equipment used for batter walls (15 December 2008) Dredging Schedule Rev 1 Update 9 Weekly CDP Updates provided for regulators (up to 16 October 2008)
29 Monitoring removal of contaminated sediments – TSHD			
The following process is to be used to determine the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels. This process applies to the TSHD. 1. The thickness of the contaminated sediments will be determined based on: a. pre-dredge hydrographic survey. b. estimated top of underlying uncontaminated clay, based on the combined interpretation of boreholes and seismic investigation.	Review of PoMC's targeted CDP EMP Audit Reports (dating from 8 May 2008 to 3 October 2008) outlines the process used to determine the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels using TSHD. Each of PoMC's 15 targeted CDP EMP Audit Reports were reviewed and found to be consistent. The 27 August 2008 report and its associated drawings has been selected as an example to demonstrate steps in PDS 29 and 30. Each targeted Audit Report indicates which dredge vessel was used in each area and indicates that the CoZa is the only TSHD used to remove contaminated sediment within Yarra River and Williamstown Channels. Reports comprise a section indicating that dredge areas (shown on overview drawing CDP-Env-50739v6) have undergone an *"assessment of conformance with EMP requirement"*. Under this section, each of the of the PDS 29 process steps are noted and whether they have been conformed to.	Full compliance	Transition Notifications (PoMC targeted CDP EMP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008). Overview of Transition Notifications in Yarra River and Williamstown Channel (Drawing CDP-Env-50739v6) Onboard inspection of CoZa (26 September 2008) Meeting and demonstration of the process applied to determine the transition from dredging

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	The targeted Audit Reports that include TSHD works state that *"the thickness of contaminated sediments was determined based on pre-dredge hydrographic surveys, and the estimated top of underlying uncontaminated clay, based on the combined interpretation of boreholes and seismic investigation (as per work method statement)"*. Supporting drawings were provided by the Alliance. These were listed in the Cont Silt transition report drawing CDP-ALL-DWG-220052 identifying depth of contaminated sediment prior to dredging. A meeting and demonstration of sample intermediate steps for TSHD by Alliance Engineering Manager (31 January 2009) outlined this step in the process, including an illustration of the pre-dredge hydrographic survey and explanation of the determination of the layer distinction. The Vessel Master of the CoZa has also outlined the process during vessel inspection by the auditor. The auditor concludes that compliance has been achieved with this requirement.		contaminated to uncontaminated sediment by Alliance Engineering Manager (31 January 2009) Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" which illustrates multiple snapshots of a small section from POMC's targeted CDP EMP Audit Report dated 27 August 2008. For the 27 August, PoMC provided detailed drawings in addition to: CDP-ALL-DWG-220052 CDP-ALL-DWG-220050 CDP-ALL-DWG-220053 CDP-ALL-DWG-220054 CDP-ALL-DWG-220055
2. Nominate the number of passes of the TSHD draghead required to dredge the full depth of unconsolidated contaminated sediments. This is to be based on the excavation thickness of a single pass of the TSHD draghead. Part passes will be rounded up to the nearest whole number.	The 27 August 2008 PoMC targeted CDP EMP Audit Report indicates that *"the number of passes of the TSHD draghead required to dredge the full depth of unconsolidated contaminated sediments was nominated based on a draghead pass depth of 43 cm"*. The number of passes required of the TSHD draghead to dredge the depth of unconsolidated contaminated sediments is supplied in drawing CDP-ALL-DWG-220050. The Alliance Engineering Manager demonstration (31 January 2009) described how the nominated number of passes of the TSHD draghead is calculated, which generates the second drawing (CDP-ALL-DWG-220050) that illustrates that the hydrographic survey is converted into the number of passes. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
3. Identify areas of similar depth that can be practicably dredged with the same number of passes. This means localised shallower or deeper pockets of contaminated sediment that are too small to practicably be dredged separately will be incorporated into adjoining areas.	Drawing CDP-ALL-DWG-220050 shows the number of passes in a system similar to the hydrographic surveys, with the number of required passes (ranging from 0 to 7) on a coloured legend. The Alliance Engineering Manager demonstration (31 January 2009), and the Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge", illustrates multiple snapshots of a small section from the POMC targeted CDP EMP Audit Report dated 27 August 2008. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above
4. Apply a grid over each area for comparison of nominated and completed draghead passes. The grid cell size will be determined based on draghead width and draghead position accuracy.	The POMC'S CDP EMP audit findings state, *"a 4m grid was applied over each area for comparison of nominated and completed draghead passes. A 1m x 1m sub-grid within the 4m grid was applied as a measure of verifying compliance with the 4m grid cell size nominated in the WMS".* The Alliance Engineering Manager demonstration explained that originally a 4m grid was selected as it coincided with the draghead width, however this was broken down further to a 1m grid to improve spatial resolution when monitoring the grid cells being dredged. Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" shows zoomed in grid cells and demonstrates the system working as the passes are completed. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above
5. Record x,y,z coordinates of draghead tracks while dredging.	Review of draghead tracking data for the CoZa on 26 August 2008 indicates that x,y,z coordinates of the draghead are being recorded while dredging is undertaken. The PoMC CDP Targeted EMP Audit Reports state *"The recorded x,y,z co-ordinates of the draghead tracks were recorded and no fewer than the nominated number of dredging passes were recorded in each grid cell except for those further dredged by the Goomai".* The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above CoZa tracking data (example 26 August 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
6. Calculate the number of draghead passes recorded in each grid cell within an area.	A review of drawing CDP-ALL-DWG-220053 identifies areas where the minimum number of passes has been achieved by TSHD. The number of draghead passes was illustrated on the bottom of the drawing; the colour codes indicate the number of passes required. The Alliance Engineering Manager's explanation of the transition snapshot demonstrated in the Alliance document "Cont Silt transition – sample of intermediate steps by TSHD draghead and grab dredge" demonstrated that, each pass of the draghead through the same 1m x 1m grid cell progressively reduces the number of draghead passes required within that grid cell. By observing the paths the TSHD draghead takes it can be seen that the passes were tracked to a point where it was clear that only small isolated areas of contaminated sediment (soft silts) remained, which were then dredged by grab or backhoe as per PDS 30. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above
7. Dredging of underlying uncontaminated material will only commence when no fewer than the nominated number of dredging passes (minimum of 1 pass) has been recorded in each grid cell within an area.	The POMC targeted CDP EMP Audit Report drawings indicate that dredging of underlying uncontaminated material commenced only when no fewer than the nominated number of dredging passes has been recorded in each grid cell within an area. Review of the targeted Audit Reports indicate all TSHD dredging was followed by further dredging by backhoe or grab dredge so as to pick up small areas of contaminated sediment that were not dredged by the TSHD. This supports the conclusion that dredging of underlying uncontaminated material did not commence until after the backhoe or grab dredge were finished in the area. Also refer to PDS 30 for monitoring removal of contaminated sediments using backhoe and grab dredges.	Full compliance	See above Tracking data, BayVista screen plots and Daily Trip Reports for the CoZa and Goomai – selection of dates (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008).

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	Supporting this, the Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" illustrates that as the TSHD removes the bulk of the material, the remaining isolated areas are left to the backhoe and grab dredges to complete. The intermediate snapshots make it easy to recognise any areas where fewer than the nominated number of dredging passes (minimum of 1 pass) have been recorded in each grid cell, and thus enabling the backhoe and grab dredges to locate and complete. The auditor concludes that compliance has been achieved with this requirement.		
30 Monitoring removal of contaminated sediments – backhoe and grab dredges			
The following process is to be used to determine the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels. This process applies to the backhoe/grab. 1. The thickness of the contaminated sediments will be determined based on: a. pre-dredge hydrographic survey b. estimated top of underlying uncontaminated clay, based on known maintained levels.	The PoMC's targeted CDP EMP Audit Reports (dating from 8 May 2008 to 3 October 2008) outline the process used to determine the transition from dredging contaminated to uncontaminated material within the Yarra River and Williamstown Channels using backhoe/grab dredge. Each of PoMC's 15 targeted CDP EMP Audit Reports were reviewed and found to be consistent, however the 27 August 2008 report and its associated drawings has been selected as an example to demonstrate steps in PDS 29 and 30. Each Audit Report indicates which dredge vessel was used in each area, the Goomai (grab dredge) and Storken (backhoe dredge) are the backhoe/grab dredges used to remove contaminated sediment within Yarra River and Williamstown Channels. Reports comprise a section indicating that dredge areas (shown on CDP-Env-50739v6) have undergone an *"assessment of conformance with EMP requirement"*. Under this section, each of the PDS 30 process steps is noted and whether they have been complied with. Audit Reports that include backhoe/grab dredge works state, *"the thickness of contaminated sediments was determined based on pre-dredge hydrographic survey and the estimated top of underlying uncontaminated clay, based on known maintained levels"* (following prior works carried out by the CoZa as outlined in PDS 29).	Full compliance	Transition Notifications (PoMC targeted CDP EMP Audit Reports) and associated drawings (dated 8 and 29 May 2008; 23 and 30 June 2008; 7, 9, 10 and 25 July 2008; 12, 27 and 29 August 2008; 2, 5, 18 and 19 September 2008; 3 October 2008). Meeting and demonstration by Alliance Engineering Manager (31 January 2009) Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" which illustrates multiple snapshots of a small section from POMC'S targeted CDP EMP Audit Report dated 27 August 2008. For the 27 August, PoMC provided detailed drawings in addition to: CDP-ALL-DWG-220052 CDP-ALL-DWG-220050

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	Supporting drawings are provided by the Alliance. These are listed in the targeted Audit Reports, stating *"CDP-ALL-DWG-220054 identifying depth of contaminated sediment overlying the uncontaminated material within areas requiring dredging by Goomai"*. The Alliance Engineering Manager demonstration (31 January), and the Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge", illustrated the transition from TSHD to backhoe or grab dredges through intermediate steps. The displayed hydrographic survey is equivalent to a zoomed in section of drawing CDP-ALL-DWG-220054. The auditor concludes that compliance has been achieved with this requirement.		CDP-ALL-DWG-220053 CDP-ALL-DWG-220054 CDP-ALL-DWG-220055.
2. Apply a grid over the area for determination of area coverage. The grid cell size will be determined based on backhoe/grab width and position accuracy.	The PoMC targeted CDP EMP Audit Reports state, *"a 1m x 1m grid was applied over the area for determination of area coverage".* Alliance Engineering Manager demonstration explains the adoption of a 1m grid to improve accuracy when monitoring the cells being dredged and displays by stepping through "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge". The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above
3. Remove full thickness of contaminated sediments to top of uncontaminated clay.	The PoMC targeted CDP EMP Audit Reports state *"the full thickness of contaminated sediment has been removed to the top of uncontaminated clay"* and review of *"drawing CDP-ALL-DWG-220055 detailing the depth of remaining contaminated sediments as determined by a reconciliation of the x,y,z coordinates of the Goomai bucket against grid cells defining the top of the uncontaminated layer"* indicates compliance. Drawings of this nature were reviewed by the auditor and this indicated that the contaminated sediments had been removed in accordance with the requirement.	Full compliance	See above

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	Based on Alliance Engineering Manager's explanation of the transition snapshot demonstrated in the Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" it is determined that the backhoe and grab dredges are removing the required thickness of contaminated sediments, with the zoomed in section updating the grid cells after dredge works. The auditor concludes that compliance has been achieved with this requirement.		
4. Record x,y,z coordinates of backhoe or grab.	The PoMC targeted CDP EMP Audit Reports state: *"The recorded x,y,z co-ordinates of the Goomai have been recorded and removal of contaminated sediments to the full thickness has been recorded in each cell"*. Review of draghead tracking data on 26 August 2008 for the Goomai indicates that x,y,z coordinates of the draghead are being recorded while dredging is undertaken. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above Goomai tracking data (example 26 August 2008)
5. Dredging of the underlying uncontaminated material will only commence when removal of contaminated sediment to the full thickness has been recorded in each grid cell within an area.	The PoMC targeted CDP EMP Audit Reports state, *"the above assessment confirms that EMP requirements for the transition from dredging contaminated to uncontaminated material in the Yarra River using TSHD and grab dredge have been meet"*. Review of the Audit Reports indicates that dredging of underlying uncontaminated material did not begin until after the backhoe or grab dredge were finished in the area and EMP criteria were complied with. Audit Report drawings indicate that dredging of underlying uncontaminated material commenced only when removal of contaminated sediment to the full thickness had been recorded in each grid cell within the area. The Alliance document "Cont Silt transition – sample of intermediate steps by TSHD and grab dredge" illustrates that as the backhoe and grab dredges complete an area it is recognisable on the snapshot. The intermediate step through suggests that the backhoe and grab dredges take a conservative approach, dredging more than required to ensure adequate thickness is achieved. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	See above Backhoe/grab dredge schedule (FINAL Rev1Upd7 CDP Schedule_DO10 As-built Dredging – All Plant 07Oct08) Tracking data for the backhoe and grab dredges: Goomai (1, 4, 10, 18 & 19 June 2008; 3, 4, 23, 24, 27 & 29 July 2008; 2, 26 & 27 August 2008) Storken (23, 24 & 27 July 2008; 2, 10, 14 & 21 August 2008; 2 September 2008) Daily report for Goomai 26 August 2008 Tracking screen print for Goomai 26 August 2008

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
31 Dredging schedule			
The initial dredging schedule to be submitted to DSE before implementation.	As noted in the EMP Audit No. 1, the auditor has concluded that compliance has been achieved with this requirement.	Full compliance	As provided in EMP Audit No. 1
Subsequent revisions of the dredging schedule and monthly updates will be submitted to DSE within 2 working days of approval by CDP management.	Review of the Dredge Schedules, PoMC Matter for Decision documents, as well as Notification to Agencies letters and email records indicate that subsequent revisions of the dredging schedule and monthly updates were submitted to DSE within 2 days of approval by CDP management. Approvals by CDP management were sighted in the form of signatures on the Matter for Decision documents and as a name in the "approved" column on revisions of the EMP Dredge Schedules. All dates in Notification to Agency letters and emails correspondence are within 2 working days of approval dates by CDP management. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	EMP Dredging Schedules (All revisions and updates up to Revision 1 – Update 7 dated 8 October 2008). Matter for Decision (documents from January to 8 October 2008). Notification to Agencies letters and email records (to various DSE contacts dated from 7 February to 8 October 2008).
Dredging to take place as summarised in Table 16 'Dredging Summary'.	Data reviewed regarding dredging indicates that dredging took place in accordance with Table 16; including tracking data and the EMP Dredging Schedule that indicates the location of dredge location, technology and DMG. The auditor concludes that the requirement is being complied with, and has assigned full compliance with the requirement for the work to date.	Full compliance	EMP Table 16 EMP Dredging Schedules (All revisions and updates up to Revision 1 – Update 7, 8 October 2008)
Dredging schedule to include: » dredging technology » dredging configuration (i.e. number and location of dredges, use of interval dredging) » timing, duration and sequence of dredging in Project Areas.	Review of revisions of the EMP Dredging Schedule indicates that the revisions of the schedules include dredging technology, dredging configuration, timing, duration and sequence of dredging in the project areas.	Full compliance	All revisions of EMP Dredging Schedules (All revisions and updates up to Revision 1 – Update 7 dated 8 October 2008).
Capping layer to be placed around 140 days after completion of the hydraulic placement of contaminated sediment to allow the sediment sufficient time to gain enough strength to support the capping layer.	The capping layer had not yet been placed at the time of this audit and hence this requirement is not applicable to this audit.	Not applicable	
Capping will be completed before 31 December 2009.	This requirement falls outside the audit period and scope of this audit.	Not applicable	

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
33 Consideration of seasonal sensitivities			
No dredging permitted between 18 December and 31 January in the South of bay to mitigate impacts on the recreation and tourism activities during the holiday season.	N/A	Not applicable	
Restrict dredging in Williamstown Channel (within Hobsons Bay) to less than 50% of key anchovy spawning period from 1 December to 28 February. A two weeks on/two week off sequence will be applied to this period.	Outside audit period.	Not applicable	
No dredging using the TSHD in the Yarra River or Williamstown Channels between 15 October to 30 November to protect migration of the endangered Australian grayling species (relates to EPBC Act / NES matters – refer to Annexure 8).	Although the majority of this period falls outside the audit period (ending October 16 2008), the dates of 15 and 16 October fall within the period. EMP Dredge Schedule Revision 2 – Update 1 (4 February 2009) indicates that dredging using a TSHD in the Yarra River or Williamstown Channel stopped on 12 October 2008 and was not active over the 15 October 2008 to 30 November 2008 Australian grayling migration period. Supporting evidence is found in the Port of Melbourne Watchkeepers log for 15 October 2008, stating the Cornelis Zanen left for Singapore. Further evidence is PoMC Media release "Dredging vessels to leave Melbourne for reconstruction and routine maintenance" dated 15 October 2008, indicating that the CoZa was due to leave Port Phillip Bay for Singapore that day. It is noted in the evidence that the Queen was also leaving for Singapore on the 17 October, although she was not involved in dredging the restricted areas. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	EMP Dredging Schedule Revision 2 – Update 1 (4 February 2009) Port of Melbourne Watchkeepers log for 15 October 2008 (and 17 October 2008 for Queen) PoMC Media Release "Dredging vessels to leave Melbourne for reconstruction and routine maintenance" dated 15 October 2008
Dredging using the TSHD in Yarra River between 1 April and 31 July restricted to no more than two calendar months, or equivalent in days to protect Australian grayling larval drift.	Review of EMP Dredging Schedules indicates that dredging using TSHD in Yarra River between 1 April and 31 July was restricted to no more than two calendar months, or equivalent in days to protect Australian grayling larval drift. The EMP Dredge Schedule Rev 1 Update 7 indicated 30 days of TSHD operation in the Yarra during the 1 April to 31 July period. This is considerably less than the 2 calendar months or equivalent days allowed. Review of CDP Weekly Updates over the period covering 1 April	Full compliance	EMP Dredging Schedules (All revisions and updates up to Revision 1 – Update 7 dated 8 October 2008). Weekly CDP Updates provided for regulators (dates covering 1 April to 31 July). PoMC Matter for Decision (documents from January to 8 October 2008).

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	to 31 July indicated the actual number of days dredged during this time. While there are some differences (of the order of three days) between the dates of dredging (as indicated in the dredging schedule) and the reported days of dredging (as indicated from the CDP Weekly Updates), the total of 33 days indicated from the CDP Weekly Updates is well within the two calendar month limit. The auditor concludes that compliance has been achieved with this requirement.		
In preparing the dredging schedule, consideration will be given to seasonal sensitivities and preferred seasons identified in Table 17 'Key Seasonal Sensitivities and Preferred Seasons'. The decision process, including how seasonal sensitivities were considered, will be documented.	The revisions and updates of the EMP Dredging Schedule and PoMC Matter for Decision documents up to the most recent, dated 8 October 2008, indicates that in preparing the dredge schedule, consideration was given to seasonal sensitivities and preferred seasons as identified in EMP Table 17 'Key Seasonal Sensitivities and Preferred Seasons'. The EMP Dredge Schedule includes information on *"Dredging Constraints"* in the section dealing with the time schedule. A Table and legend entitled *"Environmental and Social Preferences"* is also presented, indicating preferred dredging periods in each area and any non-dredging or dredging restricted periods (as indicated in the first 4 dot points of this PDS). The Schedule also notes that *"Environmental limits and seasonal sensitivities have been considered during the development of the EMP Dredging Schedule".* The information provided indicates that consideration was also given to seasonal activities for changes in the Dredging Schedule. Documentation is included in document series of *Matter for Decisions,* which includes a Table indicating the *Status of EMP Dredging Schedule* against the *EMP Requirements* as well as continually updated schedule changes to reflect EMP Table 17 requirements. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	EMP Dredging Schedules (All revisions and updates up to Revision 1 – Update 7 dated 8 October 2008). Matter for Decision - Revision/update to CDP schedule and conformance with EMP requirements
34 Dredged material placement			
DMGs – all dredged material placement activities to take place within the specified DMGs (including associated construction areas) set out in:	Checks were undertaken of PoM DMG disposal practices, including selected tracking data dates and daily reports. Vessel tracking data for dates that include dredging of contaminated	Full compliance	Tracking data for the following vessels and their corresponding dates:

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
» Drawing 35328 – Channel Deepening Project – Port of Melbourne – Coastal Management Consent Scope of Works (Drawings are included in Annexure 7)	materials and disposal in the PoM DMG, indicated that the contaminated sediment placements were within the constructed bund. Review of CoZa Disposal Plans (24 May, 12 July and 20 September 2008) as well as the Alliance PoMC Disposal Plan email, dated 15 November 2008, indicates that a process is in place to provide accurate and well recorded data for the disposal of contaminated sediments within the DMG. The auditor concludes that compliance has been achieved with this requirement.		CoZa (21, 29 & 30 May 2008; 4, 10 & 20 June 2008; 2, 3, 10, 16, 17, 21 &29 July 2008; 2, 10, 21 & 26 August 2008; 2, 23 & 29 September 2008) Discovery (19 June & 4 July 2008) Endeavour (18 & 19 June 2008; 26 August 2008) Goomai (4, 10 & 18 June 2008; 3 & 29 July 2008; 2, 26 & 27 August 2008) PoMBAA (17 July 2008; 10, 14 & 28 August 2008; 11 September 2008) Resolution (19 June & 26 August 2008) Storken (2, 10, 14 & 21 August 2008; 2 September 2008) Daily report for Goomai 26 August 2008 Tracking screen print for Goomai 26 August 2008 CoZa Disposal Plans dated 24 May, 12 July and 20 September 2008 Internal Alliance email “PoMC Disposal Plan” dated 15 November 2008 (from Alliance Engineering Manager to Alliance QA/QC Manager) PoMC hydrographic survey 9 – 11 September 2008 EMP Dredging Schedule (Rev 1 Update 7) Alliance Monthly Report (September 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
» Drawing 35331 – Channel Deepening Project – Port Phillip Entrance – South Channel – Coastal Management Consent Scope of Works (Drawings are included in Annexure 7)	N/A	Not applicable	
Dredged material placement – All dredged material to be placed in accordance with Table 16 'Dredging Summary'.	Review of selected tracking data for CoZa and barges confirmed that placement of dredged contaminated material was compliant, in terms of DMG and disposal method. Alliance drawing "Sandloads in PoM DMG bund – separating clay shown for close sand dumps" identifies the location of the sand loads in the PoM DMG placed during the audit period. Sand loads have been identified and the separating clay dumps highlighted and labelled so that tracking data is able to confirm the location of the dump. This indicated that no two sand loads sit directly next to, or on top of, one another. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Tracking data and dates as outlined above. "Sandloads in PoMDMG bund – separating clay shown for close sand dumps"
Dredged material placement including capping – to be undertaken in accordance with EMP Method Statement for material placement in PoM DMG (CDP_ALL_MS_410).	Capping of DMG has not yet been undertaken, and is to be undertaken after 140 days' settling time. It will be assessed in later audits. The transport and placement of contaminated sediment from Williamstown Channel and Yarra River to the PoM DMG was assessed as follows: • Review of selected tracking data and Daily Trip Reports for CoZa and barges confirmed that material was transported to the PoM DMG. • Review of selected tracking data for barges and Disposal Plans confirmed that material was discharged from the barges within the bund. • Review of dredge cycle times and daily logs for the CoZa and tracking data for the PoMBAA confirmed that contaminated sediment (soft silts) from the CoZa was only pumped through the pipeline and discharged into the bund through the diffuser. • Analysis of dredge loads for the CoZa indicated that sand loads from South Channel were only dredged following	Full compliance	Tracking data and dates as outlined above. Daily Trip Reports for the CoZa and Goomai – selection of dates (1 June 2008, 10 June 2008, 19 June 2008, 4 July 2008 and 26 August 2008). CoZa Disposal Plans dated 24 May, 12 July and 20 September 2008 Barge Disposal Plans for 11, 12 and 13 September 2008 Dredge cycle times for CoZa during dredging of unconsolidated contaminated sediment (dates from 5 May 2008 to 5 October 2008). "Sandloads in PoMDMG bund – separating clay shown for close sand dumps"

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	dredging of clay and placement of the clay on the bund wall. "Sandloads in PoMDMG bund – separating clay shown for close sand dumps" details sand loads, which have been crosschecked with corresponding CoZa tracking data. This is supporting evidence that contaminated sediments (soft silts) were placed only within the bund. The auditor concludes that compliance has been achieved with this requirement.		
Dredging and disposal locations to be recorded as per tracking of equipment table (refer to Table 11 – Dredging and plume PDS).	Vessel tracking data has been reviewed. As per PDS 24 above, the review confirmed that it includes information that accords with Table 11. While equipment type is not specifically stated, the vessel used indicates what equipment has been used. For example, the Goomai is a grab dredge, while the CoZa is a mid-sized TSHD. Tracking data for the PoMBAA was also reviewed. This showed the same regularity of coordinate logging and indicated that the PoMBAA was correctly located within the bunded area during placement of contaminated sediments (soft silts). An email, dated 9 December, advises diffuser depths recorded relate to the top of the diffuser and that an additional 1.62 m should be added to establish the RL of diffusion. Table 11 stipulates that the diffuser pontoon's *depth to Chart Datum* is recorded. The diffuser was located at least 1m below the (at that moment) minimal crest level of the bund. Evidence of the extent of tracking was also confirmed during the Alliance's BayVista demonstration to the auditor on 8 October 2008. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Email from Alliance QA/QC Superintendent to Alliance QA/QC Manager (9 December 2008) Tracking data for PoMBAA (17 July, 10 August, 14 August, 21 August, and 11 September 2008) BayVista demonstration to audit team at Alliance office (8 October 2008)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Volumes are to be calculated from hydrographic survey data.	Interim bund notifications (CDP Targeted EMP Audit Report: PoM DMG Interim bund) from 18 April, 2 June, 28 July, and 19 September were reviewed. The DredgeView program's calculation screen prints were sighted for April and June, confirming that these were the same volumes and bund height figures provided in the corresponding interim bund notifications, and correspond to the volumes calculated from the hydrographic survey data. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	CDP targeted EMP Audit Report: PoM DMG Interim bund 18 April. CDP targeted EMP Audit Report: PoM DMG Interim bund 2 June. CDP targeted EMP Audit Report: PoM DMG Interim bund 28 July. CDP targeted EMP Audit Report: PoM DMG Interim bund 19 September pomDmgVolume17.pdf. FillVolume1850.pdf.
Dredged material placement will not commence if a whale is sighted within 300 m of the TSHD placing material into a DMG. If a whale is sighted, placement can commence if the whale has been seen to move beyond 300m, or has not been sighted within 300m for at least 15 minutes.	Analysis of cetacean logs, as required by PDS 14 and accepted by the auditor in EMP Audit No. 1 as a complete set, indicates that no whales were sighted within 300 m of the PoM DMG at any time in the audit period.	Full compliance	32 cetacean logs
35 PoM DMG - bund			
Bunds to be constructed in accordance with design specifications (Drawings C001, C002 and C003). (Drawings are included in Annexure 7)	The "as built" alignment of the east, south and west bund walls is consistent with the design specifications. The northern extent of the east and west walls has been truncated at a local topographical high. A bund wall has been built along this high. A letter from SKM to PoMC verifies that the as-built alignment of the bund with the truncated northern extent ''...still achieves its purpose of providing a credible lateral barrier for the NDM (new dredge material)...". Further review of Interim Bund Notifications and PoM DMG hydrographic surveys shows that the bund is being constructed according to location, height and width design specifications. The Alliance file note "PoM DMG bund alignment" outlines the difference between the "design" and partially constructed bund, resulting in a "smaller footprint" with a northern wall being constructed between the eastern and western arms where natural topography does not provide required containment. Further clarification is provided in drawing "CDP-Env-50952v0 – PoM DMG Bund – incl EMP centreline Spec.pdf" where the partially constructed bund is overlayed on the specified EMP centreline.	Full compliance	Letter from SKM to PoMC (8 November 2008) Alliance File Note "PoM DMG bund alignment" dated March 2009 Drawing "CDP-Env-50952v0 – PoM DMG Bund – incl EMP centreline Spec.pdf" PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 18 April 2008 PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 2 June 2008 PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 28 July 2008

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	The auditor concludes that the partially-completed bund complies with design specifications, and that compliance has been achieved with this requirement. A more detailed audit of the construction of the bund will occur in a future audit.		PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 19 September 2008 Hydrographic surveys of the PoM DMG: 090122m01 – 13-09-2008 Daily and Weekly 090122m02 – 16-09-2008 Daily and Weekly 090122m03 – 21-09-2008 Daily 090122m06 – 21-09-2008 Weekly 090122m04 – 23-09-2008 Daily 090122m05 – 24-09-2008 Daily Hydrographic survey 9 to 11 September 2008
» Bunds to be constructed using: » consolidated sediments (clays) dredged from Port Melbourne Channel. » uncontaminated clays dredged from Yarra River and Williamstown Channels (this is due to a deficit of clay from the Port Melbourne Channel), contaminated clay from Appleton Dock, near Webb Dock and batter walls. The contaminated clays will be covered with uncontaminated clays or by capping, effectively isolating the contaminated clay from the marine environment » sand from South Channel used for cleaning the TSHD hopper.	Review of tracking data for the CoZa identifies that 3 sources of material for bund construction have been utilised within the audit period. These are consolidated sediments (clays) dredged from Port Melbourne Channel, uncontaminated clays dredged from Yarra River and Williamstown Channels, and sand from South Channel used for cleaning the TSHD hopper. The Dredging Schedule indicates the sources used for bund construction however the Schedule does not provide a breakdown to one trip accuracy, and hence will not show for example a single sand dump by a TSHD from South Channel. However, this level of detail is provided in the tracking data. As a check of this, CoZa tracking data for the 15 – 16 July was reviewed. This showed that, following dredging of uncontaminated clay in the Yarra River, the CoZa dredged three loads of sand from South Channel and disposed of it at three different locations within the partially-constructed PoM DMG bund. This was also confirmed by looking at the "Sandloads in the PoMDMG bund" drawing.	Full compliance	PoMC advice to the auditor (6 October 2008) CoZa tracking data (15 – 16 July 2008) "Sandloads in PoMDMG bund – separating clay shown for close sand dumps" Dredge Schedule Rev 1 Upd 7 Alliance "Batter contaminated material" email 13 October 2008 (from Alliance QA/QC Superintendent to Alliance QA/QC Manager)

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
	The Dredge Schedule also indicates that no contaminated clays from Appleton Dock or near Webb Dock have been dredged, this is supported by advice from PoMC in October 2008, indicating there would be no dredging in these areas until early 2009. The advice indicates that contaminated clays removed from within the batter walls were disposed of within the confines of the bund.		
Once the main bund (Stage 1) is constructed, the remainder of consolidated sediments (clays) will be placed in the DMG extension (Stages 3 and 4). This clay will be used to construct bunds for future maintenance requirements in accordance with design specifications.	N/A	Not applicable	PoMC advice to the auditor (6 October 2008)
36 PoM DMG – containment of contaminated material			
Contaminated unconsolidated sediments will require dredging and disposal into the DMG prior to completing the bund. As a result, contaminated unconsolidated sediments will be placed within the partially constructed bunded DMG. Therefore, before the placement of the contaminated unconsolidated sediments the following information is required: – Confirmation that the partially constructed bund has been constructed in accordance with design specifications. – Confirmation of bund capacity and volume of contaminated unconsolidated sediments to be dredged.	Four interim bund audit notifications were reviewed. These notifications included tabulated details of the interim bund's crest width, bunded capacity with calculations, the volume and source of dredged material to be disposed of, confirmation of bund stability, and relevant drawings. Each notification had been approved and accepted by CDP senior management on 18 April, 2 June, 28 July, and 19 September successively. Emails, corresponding with the above dates, were sighted and these confirmed that PoMC notified DSE, EPA, and OEM within 12 hours of determining that requirements had been met. It has been determined that the partially constructed bund has been constructed in accordance with design specifications, according to results under the first part of "35 PoM DMG – bund" (see above) where full compliance has been assigned. This information provided to the auditor supports the conclusion that this requirement has been complied with, and full compliance has been assigned.	Full compliance	PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 18 April 2008 PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 2 June 2008 PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 28 July 2008 PoMC targeted CDP EMP Audit Report: PoM DMG Interim bund 19 September 2008 Emails from PoMC to DSE, EPA and OEM on 19 September, 28 July, 2 June, and 18 April 2008

Project Delivery Standard	Audit Findings (to 16 October 2008)	Compliance	Supporting Evidence
Daily during TSHD disposal (weather permitting) and weekly during barge disposal, hydrographic surveys required during placement of contaminated sediments to monitor depth contours and confirm DMG capacity and bund freeboard.	Review of Alliance document "Overview 2 weeks material placement and surveys at PoM DMG" and it's linked hydrographic surveys 090122m01 to 090122m06, illustrate a two week period of TSHD and barge disposal activity at the PoM DMG from 10 September 2008 to 24 September 2008. The document confirms that where weather permitted, hydrographic surveys were undertaken daily for TSHD and weekly for barges when disposing in the PoM DMG. Included in the document is a "weather report" that details weather conditions that prevented any hydrographic surveys being undertaken on a daily basis for TSHD disposal. A selection of hydrographic surveys were examined to determine that depth contours were monitored and bund freeboard was calculated. Supplementary evidence is seen in the internal Alliance email "PoMC Disposal Plan" dated 15 November 2008, that outlines the procedure for placement of uncontaminated sediments including the process for surveying daily. The auditor concludes that compliance has been achieved with this requirement.	Full compliance	Alliance document "Overview 2 weeks material placement and surveys at PoMDMG CONFIDENTIAL" and linked hydrographic surveys: 090122m01 – 13-09-2008 Daily and Weekly 090122m02 – 16-09-2008 Daily and Weekly 090122m03 – 21-09-2008 Daily 090122m06 – 21-09-2008 Weekly 090122m04 – 23-09-2008 Daily 090122m05 – 24-09-2008 Daily Internal Alliance email "PoMC Disposal Plan" dated 15 November 2008 (from Alliance Engineering Manager to Alliance QA/QC Manager)

GHD

180 Lonsdale Street
Melbourne, Victoria 3000
T: (03) 8687 8000 F: (03) 8687 8111 E: melmail@ghd.com.au

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Document Status

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