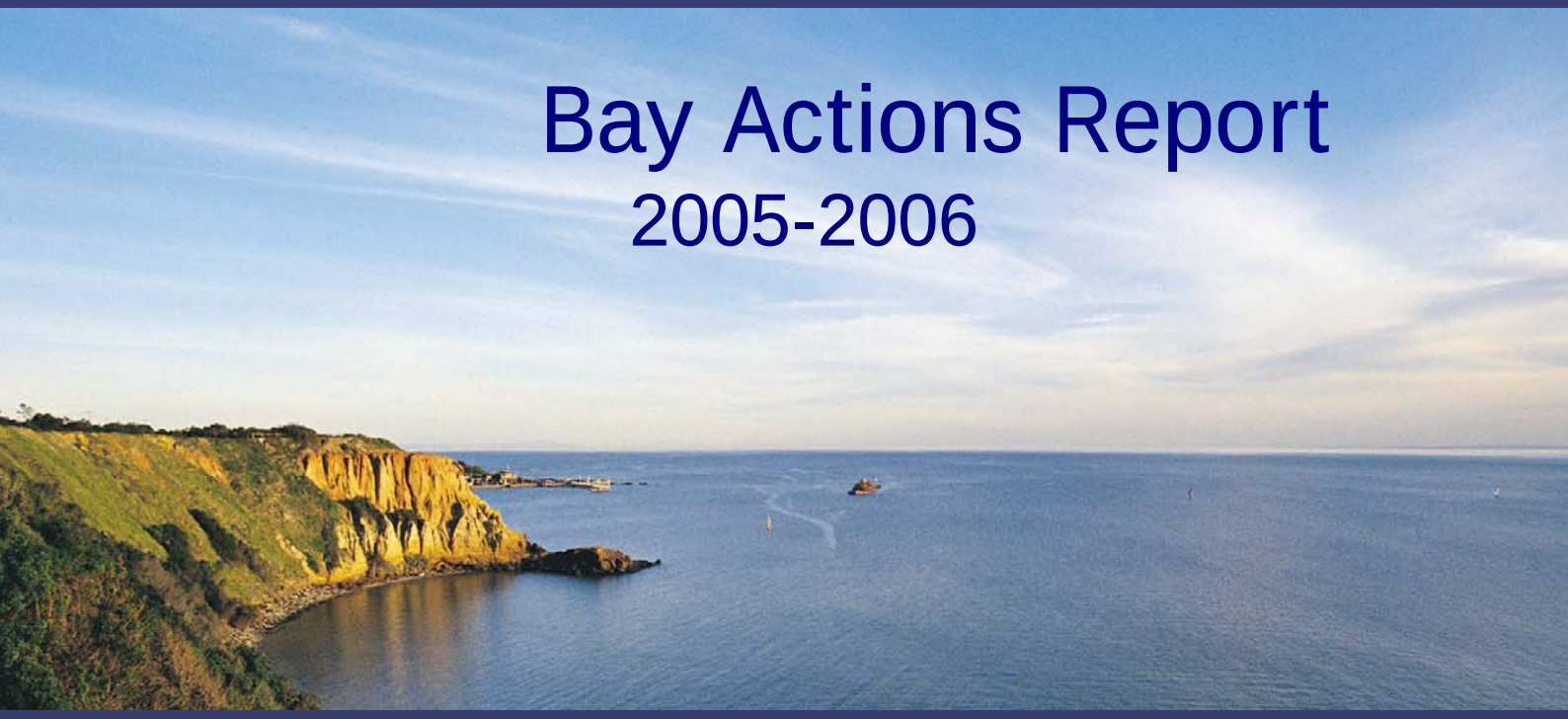
Department of Sustainability and Environment

Port Phillip Bay
Environmental Management Plan

Bay Actions Report
2005-2006



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This report should be read in conjunction with the Port Phillip Bay Environmental Management Plan (EMP). It is a key element of the EMP's performance reporting framework.

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Introduction

The Port Phillip Bay Environmental Management Plan (EMP) [1] is a key element for implementing the State Environment Protection Policy (Waters of Victoria) - Schedule F6 (the Waters of Port Phillip Bay) (Bay SEPP schedule). The EMP provides a framework for the identification of issues, coordination of management efforts, determination of priorities and development of actions to implement the objectives of the Bay SEPP schedule. The EMP has identified *nutrients* and *marine pests* as the two priority risks to be addressed in Port Phillip Bay (PPB). It also establishes broad programs for mitigating these risks and the environmental management framework surrounding these programs. The Bay Actions Report (BAR) is the EMP framework's key tool for reporting on progress of these programs and achievement of the programs' objectives. The EMP Background Document[2] provides further information on the context for the EMP and its programs, including references to more detailed technical documents.

Each of the EMP's programs has a series of sub-programs and includes:

- objectives for risk mitigation, at program and contributing sub-program levels; and
- sub-program tasks to address the objectives, which range from planning and implementation to coordination, monitoring, reporting and review.

The sub-program tasks are predominantly high-level and long-term, with implementation often involving further planning stages and actions over a number of years. Frameworks are in place for the coordinated monitoring, review and reporting on progress relevant to the objectives of the sub-programs and progress towards mitigating the key risks to the Bay's environment.

The BAR was introduced in the EMP as the tool for reporting on progress with EMP tasks *relevant to the Bay itself or to activities or inputs that either affect or enter the Bay directly or are transmitted to the Bay via the oceans.* However, for each BAR to date, it also reports on tasks directly relating to waterway and atmospheric Bay inputs[3].

The EMP's Nutrient and Marine Pest Management Programs have different reporting frameworks. This is partly due to differences in the nature of these risks, but particularly due to differences in the developmental status of their risk management programs.

Nutrient inputs have long been recognised as an important risk to the Bay's environment, and are a management focus and research issue for the Bay. Marine pest management has a much more recent history, and the EMP's Marine Pest Management Program is acknowledged as developmental.

The understanding of Bay nutrient cycling processes has been built through research culminating in the Port Phillip Bay Environmental Study. The established management of and research on nutrient input into the Bay, provides for a much more comprehensive nutrient monitoring and reporting approach than is possible for marine pests. However, understanding of the complex nutrient cycling processes is not complete. Progressive improvement in the understanding of nutrient cycling is recognised among the EMP's key tasks required to mitigate the Bay nutrient risk[4].

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[1] Department of Natural Resources and Environment 2002a. *Port Phillip Bay Environmental Management Plan: Plan and Critical Programs to 2003.* Department of Natural Resources and Environment, Melbourne, Australia (available at www.dse.vic.gov.au).

[2] Department of Natural Resources and Environment 2002b. *Port Phillip Bay Environmental Management Plan: Background Document.* Department of Natural Resources and Environment, Melbourne, Australia (available at www.dse.vic.gov.au).

[3] It was anticipated in the EMP that reporting on actions addressing catchment nutrient inputs via waterways and drains would also be addressed by *A Catchment Actions Report* (within the Port Phillip and Westernport Catchment Management Authorities (PPWCMA) annual report) and that atmospheric inputs would be addressed under the EPA's *Air Quality Improvement Plan (AQIP)* Reporting System. The PPWCMA's annual report does cover some nutrient input actions in a broader context, but they are presented more succinctly here. The AQIP has not yet been finalized, so the relevant actions are reported here. See Department of Natural Resources and Environment 2002a for further detail, particularly section 3 – Performance Reporting Framework.

[4] Department of Natural Resources and Environment 2002a, *Section 1 – Nutrient Program* and Department of Natural Resources and Environment 2002b.

Nutrient Reporting Framework

The EMP's nutrient reporting framework is based broadly on a pressure-state-response approach (see EMP Figure 3.1)

Nutrient 'pressures' targeted in the EMP include:

- the Western Treatment Plant;
- other direct nutrient loads;
- catchment waterways (Yarra, Patterson and Mordialloc); and
- atmosphere.

Other risks to cycling are also taken into account where identified.

Information about the levels of these pressures in 2005-06 is described in the grey boxes in the relevant subsections of this report.

'State' refers to the condition of the assets we are aiming to protect which, in this case, are the nitrogen cycling processes in PPB. Information about the state of nitrogen cycling processes in 2005-06 is summarized in the report *Port Phillip Bay Environmental management plan: monitoring the State of the Bay nitrogen cycling (2005-06)*[5].

'Response' refers to progress with implementing the EMP's tasks, which aim to reduce the pressures above. This report documents the achievements (responses) of the numerous agencies and their partners during 2005-06 in implementing the Nutrient Program tasks of the EMP. These are described in Appendix 1, where the tasks and their intended reporting outputs are paraphrased. The EMP should be consulted for a full description (page 11).

Marine Pest Reporting Framework

The marine pest reporting framework focuses on progress with implementing the EMP pest framework tasks, which include development of environmental monitoring approaches. The review of the EMP in 2003 found that the tasks were still relevant, and recommended that this approach continue. It was intended that this framework will again be reassessed in the next review of the EMP. Appendix 2 lists Marine Pest Management Program actions and summarises their implementation in 2005-06. The EMP should be consulted for a full description (page 18).

Changes to Institutional and Reporting Arrangements since the EMP

There have been a number of changes to the roles or responsibilities of various organisations since publication of the EMP in 2002. In 2003, the former Department of Natural Resources and Environment (NRE) was split into two separate departments; Department of Sustainability and Environment (DSE) and Department of Primary Industries (DPI). Also, in 2003, the former Catchment and Land Protection Board (CALP) became known as the Port Phillip and Western Port Catchment Management Authority (PPWCMA), with slightly different roles than anticipated in the EMP. These developments should be borne in mind when reading this report in conjunction with the EMP.

The development of a regional Water Quality Improvement Plan for Port Phillip and Western Port, known as Better Bays and Waterways (BBW), jointly funded by Melbourne Water (MW), the Environmental Protection Agency (EPA) and the Natural Heritage Trust's (NHT) Coastal Catchments Initiative, was initiated in late 2004. MW and the EPA are leading development of the plan, in partnership with DSE, the PPWCMA and other organisations.

BBW is fulfilling the EMP's original planning tasks in relation to catchment and waterway nitrogen inputs (see section 1.3 and Appendix 1) and it is anticipated that its implementation will provide for continuation of many of the EMP's Nutrient Program tasks into the future and introduce new tasks as appropriate.

Structure of this Report

This BAR should be read as a companion document to the EMP, reporting directly on progress with the sub-program tasks making up the EMP Nutrient and Marine Pest Management Programs. The tasks and

[5] Available at www.dse.vic.gov.au.

their intended reporting outputs are paraphrased here, but the EMP should be consulted for full descriptions (pages 11 and 18).

Most of the EMP's tasks are long-term. Many are also defined at a high-level and their implementation will involve planning and actions over many years. Each consecutive BAR will therefore provide an update on their implementation. Once a task is completed, it will not be discussed further in subsequent reports.

Both the EMP Background Report[2] and previous BAR's provide further background information relevant to the EMP programs, sub-programs and tasks. Linkages are also provided throughout this report to websites with further information relevant to the implementation of tasks within the various EMP sub-programs.

1 Nutrient Program

The Nutrient Program is the nutrient reduction plan referred to in the Bay SEPP schedule. The program focuses on nitrogen, which is the key limiting nutrient for biological processes in the Bay. The sub-programs are described below. Appendix 1 lists the key tasks under each of the Nutrient Program's sub-programs and summarises progress on their implementation in 2005-06.

1.1 Direct Bay Inputs - Western Treatment Plant

The tasks in this sub-program relate to nitrogen discharges from the Western Treatment Plant (WTP). The WTP was upgraded in 2004-05 to achieve a 500 tonne (t) nitrogen reduction.

'PRESSURE' INDICATORS - INFORMATION FOR LONG-TERM ASSESSMENT

Over 2005-06, the WTP's estimated nitrogen load to the Bay over its four licensed outlets, based on results of this monitoring program, was 1969t, with a three year rolling average of 2484t. The 2005-06 load is considerably lower than in previous years, which MW attribute to low rainfall during the reporting period, as well as the completion of works in 2004-05. Load reductions are expected to vary inter-annually depending on inflows into the plant (affected by rainfall) and may also be reduced by any increase in the use of recycled water from the plant, however human population increases will lead to increased nitrogen inputs over the longer term. When the maximum annual nitrogen load of 3,100t (as required in the plant's discharge license) is reached, further augmentation or additional recycling will be needed. Because of these variables, a long time series of data will be required to confidently determine the magnitude of the load reduction relative to the agreed 1991-1995 baseline. It is estimated that this data will be available in 2010[6].

1.2 Direct Bay Inputs – Proposals for New or Increased Nitrogen Loads

The tasks in this sub-program relate to changes to existing discharges of nitrogen or any new proposals that involve the discharge of nitrogen that require approval and/or licensing under the *Environment Protection Act 1970* (EP Act), *Fisheries Act 1995* (FM Act) or *Coastal Management Act 1995* (CM Act).

In reporting on any new nitrogen discharge approvals, it is important to first emphasize that discharge of waste to the environment remains the last choice in Victoria's hierarchy of waste management options, to be considered only after waste avoidance and reuse opportunities have been fully explored. Existing licence holders operate within a context of continual improvement in environmental performance.

EPA works approvals and licences:

New discharges: No works approvals were issued for new licensed Bay nitrogen discharges.

Existing discharges: The EPA licence for the Altona Treatment Plant (ATP) required an upgrade of the plant, resulting in a reduction in nitrogen discharged to PPB from approximately 116t per year to less than 80t per year.

Fisheries licences and permits:

No new licences or permits were issued under the FM Act in 2005-06 that would influence nitrogen loads discharged to the Bay.

CM Act consents:

A list of CM Act consents with the potential to affect nitrogen loads to PPB is given in Appendix 1(B).

[6] Parslow, J, Sokolov, S. and Murray, S. 1999. Port Phillip Bay: Baseline, monitoring and analysis for nitrogen load reductions. CSIRO Marine Research.

1.3 Catchment Waterways

The catchment waterways sub-program aims to reduce annual waterway nitrogen load to the Bay by 500t (350t from Yarra/Maribyrnong Rivers; 150t from other surface waters focusing on the Patterson River system) by 2006, particularly focusing on storm event loads where feasible. Due to the many and varied activities contributing to waterway nitrogen loads, and range of management agencies involved, the sub-program is coordinated across three key management themes: Rural Land Management, Stormwater Management and Licensed Waste Discharges.

1.3.1 Rural Land Management

This theme is led by DSE and DPI, in partnership with industry, local government and PPWCMA. It aims to contribute to reducing the waterway nitrogen load by working with agricultural industries to develop and encourage the implementation of sound environmental practices and procedures that will reduce nitrogen inputs from land used for cropping, grazing and horticulture.

Reporting for this theme also occurs through the PPWCMA Annual Report[7] in a broader management context, but more specific detail on nitrogen inputs is presented in Appendix 1.

1.3.2 Stormwater Management

Management of stormwater has been led by MW, with a focus on contributing to the waterway 500t reduction target (against the agreed baseline) and preventing, reducing and/or compensating for the future increases in stormwater nitrogen loads (above the designated baseline for the nitrogen reduction target[8]) expected from ongoing urban development within the catchment. The anticipated development within the next 20 years is expected to lead to annual load increases of 247t, or 136t if accompanied by Water Sensitive Urban Design (WSUD) best management practices[9].

It was envisaged in the EMP that MW would lead the planning of stormwater actions. Since the development of the EMP, the BBW planning process has taken over this role, led jointly by MW and the EPA. BBW is scheduled for completion in late 2009.

Reporting on implementation and estimated stormwater load reductions has been provided by MW to DSE. Targets for future load reductions can be found in the *Melbourne Water Annual Sustainability Report 2005-06*[10].

1.3.3 Licensed Waste Discharges

This theme is lead by EPA Victoria. Its planning framework is guided by the EP Act and SEPP's developed under the EP Act (particularly the Yarra and Bay SEPP schedules). It is also guided by EPA's Corporate and Business planning processes. The BBW plan will provide a key tool for work program development.

It was envisaged in the EMP that the PPWCMA would coordinate the reporting of the planning and implementation of these tasks. This has not occurred, and reporting has been through the Bay Actions Report.

'PRESSURE' INDICATORS - INFORMATION FOR LONG-TERM ASSESSMENT

Nitrogen load reductions from sewerage treatment plant upgrades and water recycling are relatively predictable, at least for waterway inputs, and are reported in Appendix 1(A), section 1.3.3. For other tools aiming to facilitate and encourage environmentally sustainable waste management, including reduced point-source and diffuse waste discharges, nitrogen load reductions are diffuse and, as for rural land management actions, cannot be meaningfully estimated.

Environmental monitoring is in progress that will, in the long term, provide for assessment of progress with nitrogen reduction targets for the Yarra/Maribyrnong and Patterson/Mordialloc inputs to the Bay (see Appendix 1(A), section 1.3.4).

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[7] PPWCMA (2006) Port Phillip and Westernport Catchment Management Authority 2005/06 Annual Report. Available at www.ppwcma.vic.gov.au.

[8] The Bay nitrogen baseline was established by EPA consistent with the Bay SEPP schedule and consists largely of 1991–5 input loads. More information on the Bay nitrogen baseline is available from EPA.

[9] Sturgess and Associates 2000.

[10] Melbourne Water (2006). Annual Sustainability Report 2005/06. Available at www.melbournewater.com.au.

1.3.4 Overarching Tools and Mechanisms

This section focuses on tasks within the catchment waterways sub-program, which overarch all three of its key management themes. Several of these tasks require long term strategic actions that are difficult to assess in the short term. A number of reporting tasks are not possible because insufficient data is available at this stage.

While general waterway monitoring data are included on the data warehouse, there are no current plans to include storm event data as envisaged in the EMP. A model is required to translate these data into storm load estimates for the major waterway inputs. When enough storms have been sampled to inform such a model, MW will report on this, with an overview included in the relevant BAR. Data from the monitoring program will be reviewed and interpreted for outcomes in 2005-06. Data will also be used to develop an improved estimate of the nitrogen load to the Bay from the Bay's catchment.

1.4 Atmosphere

This sub-program is led by the EPA. The EPA prepares annual air monitoring reports that assesses society's compliance with the air quality policy. This enables assessment of air quality relative to objectives, informs the development of air quality management strategies and allows evaluation of the effectiveness of air quality management activities.

1.5 Bay Nitrogen Cycling Processes

Tasks under this sub-program relate to monitoring the state of PPB nitrogen cycling and the interpretation of monitoring results. DSE leads most of these tasks and the reporting on their implementation, with the exception of fixed site monitoring (led by the EPA) and any project specific monitoring.

1.6 Reporting on Progress

Tasks and reporting embedded within the previous sub-programs.

1.7 Progressively Improving Understanding

Tasks and reporting embedded within the previous sub-programs.

1.8 Review

The Central Coastal Board's (CCB) review of the EMP's implementation was scheduled to commence later in 2006 and was at the planning phase during the period covered by this report. DSE is now responsible for the EMP review, which is scheduled to commence in 2009.

2 Marine Pest Management Program

The risks of marine pests to the Bay cannot be managed by just focusing on the Bay itself – some of the vectors that can lead to introduction of pests to the Bay operate at scales far larger than the Bay. Consequently, marine pests are most effectively addressed by statewide and national programs. The program for the Bay focuses on key Bay-focused tasks, and forms an additional layer to relevant statewide and national programs.

Marine pest management is the subject of a national management system (National System for Prevention and Management of Introduced Marine Pests), for which arrangements are currently being finalised, and are likely to be implemented in 2009 in domestic ports around Australia. Implementation of the national system will comprise regulations to manage ballast water and rollout of best practice guidelines to key stakeholders to manage biofouling vectors. Victoria is helping to develop the guidelines through representation on the National Introduced Marine Pests Coordinating Group (NIMPCG) and its various working groups. Once finalised, these arrangements will facilitate the implementation of many actions in the Bay EMP.

In the interim, Victoria has worked towards the resolution of some of these issues at the local level through programs such as its own ballast water management protocols, the 6Ds campaign and the aquaculture translocation protocols.

Consistent with the principles of marine pest management[11], this program emphasises prevention of new incursions through management of vectors, but also includes sub-programs on early detection and ongoing management of marine pests.

The Marine Pest Management Program is at an early stage of development relative to the Nutrient Program. Reporting for this program focuses primarily on the implementation of EMP tasks, as opposed to the Pressure-State-Response approach of the Nutrient Program. The sub-programs are described below. Appendix 2 lists the key tasks under each of the Marine Pest Management Program's sub-programs and summarises progress on their implementation in 2005-06.

2.1 Vector Management - Ballast Water

The major task under this sub-program, the development of a ballast water waste management regime, has been in place since 2004, with subsequent changes to the regulations to provide full cost recovery in 2005-06.

Ballast water arrangements are proposed for implementation in all jurisdictions under the National System in 2009.

2.2 Vector Management - Fouling of Large Ships

The major task under this sub-program is to improve management of biotic fouling of large ships and associated infrastructure to reduce the risk of introduction and dispersal of marine pests.

The existing arrangements for hull fouling continued in 2005-06.

The management of hull fouling is being addressed through NIMPCG. In 2005-06 a study was completed to better understand the risks associated with hull fouling, particularly in "niche" areas of the hulls of large ships[12]. Based on this report, a set of national best practice guidelines are being developed in consultation with industry to manage this risk.

2.3 Vector Management - Fouling of Small Vessels

The major task under this sub-program is to improve management of biotic fouling of small vessels and associated infrastructure to reduce the risks of introduction and dispersal of marine pests.

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[11] The three major principles of pest management are, in order of priority:

1. Prevention: systems to reduce the risk of introduction and translocation of marine pests (including management arrangements for ballast water and biofouling);
2. Emergency response: a coordinated emergency response to new incursions and translocations; and
3. Ongoing control and management: managing introduced marine pests already in Australia, where eradication is not feasible.

[12] Australian Shipowners Association (2006), Assessment of Introduced Marine Pest Risks Associated with Niche Areas in Commercial Shipping Draft Final Report.

Victoria continued its educational campaign for recreational boaters. Best practice guidelines to manage fouling on other small vessels (e.g. commercial fishing boats, ferries, charter boats) are being developed under a National System in consultation with relevant stakeholders.

The Australian Quarantine and Inspection Service (AQIS) recently introduced regulations to manage risks posed by fouling of small international vessels arriving in Australia[13].

2.4 Vector Management - Aquaculture

This sub-program covers the movement of live organisms for aquaculture purposes as well as the incidental movement of pest species on aquaculture equipment.

The management framework surrounding aquaculture translocations includes the *Victorian Guidelines for Assessing Translocations of Live Aquatic Organisms 2003*. Protocols developed under these guidelines include: the Victorian Protocol for the Translocation of Blue Mussels; the Victorian Abalone Aquaculture Translocation Protocol; and the recently developed Management Plans for quaculture reserves declared under the FM Act. These arrangements are administered by DPI. Blue mussels were the only species under aquaculture in the waters of PPB in 2005-06.

Under the National System, national best practice guidelines are being developed for management of pest issues in aquaculture translocations. These will be consistent with Victorian arrangements.

2.5 Early Detection

The key task under this sub-program is to monitor priority locations within the Bay for new marine pest introductions. Early detection provides the best opportunity for eradication or control of a newly established pest species. To date, detection of new incursions has relied on reports from marine biologists working in the field and by the general public.

A port monitoring program is proposed under the National System. This monitoring will target marine pests of national concern, and is also likely to detect other potential ship-vectored pest species close to their point of introduction. The primary purpose of this monitoring is to inform a decision support system on ballast water risk; however, it will also assist in the detection of new pest incursions inside ports.

2.6 Mitigate Effects of Introductions

This sub-program incorporates rapid responses to new incursions, targeted research to better understand pest populations and actions to mitigate impacts of established pests.

Control plans for other pests of concern are currently under development under the national system for marine pest management. Species will include the Northern Pacific sea star *(Asterias amurensis)* (the current plan will be replaced), European green crab *(Carcinus maenus),* Japanese kelp *(Undaria pinnatifolia)*, and European fan worm*.(Sabella spallanzani).*

2.7 Reporting on Progress

Tasks and reporting are embedded within the previous sub-programs.

2.8 Progressively Improving Understanding

Tasks and reporting are embedded within the previous sub-programs.

2.9 Review

The CCB completed the interim review of the EMP's implementation in 2003. This review highlighted the complexity of assessing progress in addressing the pest risks to the Bay and provided a timely articulation of the challenges involved in implementing the EMP towards its statutory timelines and into the longer term.

The CCB's review of the EMP's implementation was scheduled in the EMP to commence in 2006. DSE is now responsible for the EMP review which is scheduled to commence in 2009.

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[13] Under the National System, a number of nationally agreed best practice guidelines have been developed (by Department of Agriculture, Forestry and Fisheries) to encourage small boat operators keep their vessels free of pests and thus reduce the risk of translocations.

Appendix 1: Nutrient Program Actions

Appendix 1(A) – Summary of Nutrient Program Actions 2005-06

This table should be read in conjunction with the EMP's Nutrient Program. Sub-program numbers refer to the relevant sub-program from the EMP. Task numbers are for reference purposes within this document only.

Sub-program 1.1: Direct Bay Inputs - Western Treatment Plant

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.1.1	Reduce load from WTP by 500t by 2006.			MW		2006	Implementation: Completed
		Report on implementation and predicted nitrogen load reduction.	BAR			Ongoing Annual (October)	2005-06 nitrogen load estimate = 1969t. Low load attributed to WTP upgrades as well as low rainfall during reporting period. Outcome for nitrogen loads is scheduled to be assessed in 2010 as per EMP.
1.1.2	Monitor WTP nitrogen load to enable comparison with baseline[1].	Data	To DSE	MW		Ongoing Annual	Data is held at MW. MW maintains a monitoring program based on its discharge licence. This data will be used to demonstrate the long-term reduction (comparison with baseline) and is used to prepare MW's annual report to EPA Victoria.
		Estimate of WTP loads	BAR	MW		2006	The estimated load to Port Philip Bay for 2005-06 was 1969t, with a three year rolling average of 2484t.
		Comparison with baseline		MW		2010	N/A
		Report on results	BAR	DSE	MW	Ongoing annual	On track

Sub-program 1.2: Direct Bay Inputs - Proposals for New or Increased Nitrogen Loads

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.2.1	Ensure works approvals and licences consistent with Nutrient Program objectives.	Collate approvals and licence amendments. Include predicted load implications.		EPA	DSE, DPI	Ongoing annual (October)	New: none reported Existing: The EPA licence for the Altona Treatment Plant required an upgrade of the plant to: o achieve a tertiary standard treated wastewater; and o maximise denitrification and minimise nitrogen discharge from the

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
							premises to Port Philip Bay. Upgrade on track for August 2006.
1.2.2	Ensure CM Act consents & Fisheries Licenses consistent with Nutrient Program objectives.	Collate approvals and predicted load implications.		DPI	EPA	Ongoing annual (October)	CM Act consents: see detailed list in Appendix 1(B). There are no load estimates due to the difficulty of prediction. Fisheries Licenses: none new issued
1.2.3	Investigate nitrogen offset system – technical basis & implementation.	Report on progress; potential guideline.	Separate report with summary in BAR	MW, EPA	DSE, PPWCMA	2008	This project is now a part of the BBW planning process, due date revised to 2009. During 2005-06, the EPA continued the work investigating the potential for the use of offsets to achieving pollutant reductions within the Port Phillip catchment. This project aims to explore the feasibility of an offsets scheme to assist in achieving Water Quality Improvement Plan load targets for Port Phillip and Western Port and will consider nitrogen inputs as a potential pilot project. The project will be run over approximately three years.
1.2.4	Review Assessment criteria (after investigation).	Updated criteria.		MW, EPA	DSE, PPWCMA	Dependent on 1.2.3 outcomes	This project is now part of the BBW planning process, completion date revised to 2009.
1.2.5	Scope post-investigation tasks.	Work plan.		MW, EPA	DSE, PPWCMA	Dependent on 1.2.3 outcomes	This project is now part of the BBW planning process, completion date revised to 2009.
1.2.6	Annually compile and report on key implemented actions.	Publish report.	BAR	DSE		Ongoing annual (October)	This report

Sub-program 1.3: Catchment Waterways

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.3.1	**Rural Land Management** Contribute to reducing the waterway nitrogen load to the Bay by 500 tonnes by working in partnership with agricultural industries to develop and enourage the implementation of sound environmental practices and procedures that will reduce nitrogen inputs to waterways from land use for cropping, grazing and horticulture.	Identification of priority land management actions to reduce nitrogen & phosphorous inputs to waterways across the catchment.	Separate reports	MW, EPA	DSE, PPWCMA	2002	Replaced by a 5-year integrated Better Bays and Waterways project (BBW). Started development in 2002; completion expected 2009. **<u>Continuing projects</u>** **Improving water quality from the Werribee Irrigation District.** *Load Implications*: Estimated nitrogen reduction of 1.3t per year. **Improving the environmental performance of the Victorian Strawberry Industry**. *Load implications:* Not available. Research is scheduled in the 2006/07 year. **Identification, evaluation and implementation of agricultural and rural management practices to reduce suspended sediment and**

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
							nutrient loads to Port Phillip Bay and Western Port. *Load implications:* Not yet available. Modelled loads will be available upon conclusion of the study, due June 2007. **Grow West landscape change project** located in the Upper Werribee catchment continued to gain community and corporate support during 2005-06. The aim of the project is to restore degraded land and reduce nutrient accessions to waterways through revegetation and works to reduce erosion of the local landscape. There are a number of partners involved in this integrated project (see http://www.ppwcma.vic.gov.au/grow-west/ for more information). **The Swan Bay Integrated Catchment Committee** (in partnership with Corangamite CMA) continued erosion mitigation works along waterways flowing into Swan Bay and Port Phillip Bay during 2005-06. This included fencing and revegetating waterway to improve in-stream water quality reaching Swan Bay and Port Phillip Bay.
		Develop & review 1-3 year action plan including (where possible) load estimates.	PPWCMA annual report			Ongoing annual (July)	Replaced by a 5-year integrated BBW. Started development in 2002; completion expected 2009.
		Implementation of action plan including (where possible) load estimates.	PPWCMA annual report			Ongoing annual (July)	Being implemented as the BBW Project to be finalised in 2009.
1.3.2	**Stormwater management** Reduce waterway nitrogen load through stormwater action.	Development and review of 1-3 year action plan including (where possible) load estimates	PPWCMA annual report[14]	MW	DSE, DPI, EPA local government, CMA's.	2006 Ongoing annual (July)	Stormwater planning is spread across the BBW Plan, Yarra Action Plan, Werribee River Catchment Nutrient Plan and local council stormwater plans. Targets for future load reductions from construction of wetlands can be found in the Melbourne Water Annual Sustainability Report 2005-06. New wetlands developments were reported directly to DSE by MW. An additional 6 wetlands were completed at Blackburn Lake, Edwards Park Lake, Campbellfield Ck, in the Hallam Valley corridor, Monahans Rd and on Monbulk Ck.

[14] This was the intention in the EMP, but has been reported in the BAR to date.

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
							Load implications: Total calculated load reduced through the construction of wetlands is 52.1 tonnes.
		Report on the action plan implementation including (where possible) load estimates.	PPWCMA annual report			Ongoing annual (July)	MW reports to the Board annually on progress towards reduction target.
1.3.3	**Licensed waste discharges** Reduce waterway nitrogen load through regulation of licensed waste discharges (ie licence requirements and cleaner production).	Development and review of 1-3 yr action plan including (where possible) load estimates.	PPWCMA annual report	EPA	MW	2006 Ongoing annual (July)	No license changes/new license reported in PPWCMA annual report or reported by EPA.
		Implementation of action plan including (where possible) load estimates.	PPWCMA annual report			Ongoing annual (July)	Works commenced in 2003 to provide for 100% reuse of effluent at Whittlesea sewage treatment plant were completed in 2005-06 (reduction of 1.6t nitrogen per year).
1.3.4	**Overarching tools and mechanisms**						
	a) Encourage water sensitive urban design.	N/A. Ongoing strategic		MW, local government		Ongoing	MW has continued to promote Water Sensitive Urban Design (WSUD) including: • maintaining the WSUD website; • promoting enhanced planning scheme requirements for development (clause 56 of planning schemes); • implementing an offset process for developers who cannot provide on-site achievement of stormwater quality objectives (during 05/06 approximately one million dollars was received from developers to offset their site stormwater quality impacts); • providing education and awareness on WSUD; and • working with Local Government to implement works in their areas using funds from the Yarra River Action Plan.
	(b) Consider nitrogen risk in strategic planning.	N/A. Ongoing strategic	Melbourne Metropolitan strategy	DSE (DOI)		Ongoing	Strategic Action that is difficult to assess in short term (refer to Melbourne 2030).
	(c) Compile key implemented actions affecting nitrogen load,		PPWCMA	DSE, DPI			N/A

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
	including predictions.		Annual report				
	(d) Oversee the implementation of the Regional Catchment Strategy (RCS), particularly nitrogen risk.	N/A. Strategic coordination role.	PPWCMA Annual report	PPWCMA	many	Ongoing	An overview of the implementation of Regional Catchment Strategy actions in the PPWCMA annual report did not specifically relate to nitrogen risks.
	(e) Coordinate development of work plans that reduce waterway nitrogen load.		PPWCMA Annual report	PPWCMA	many	Ongoing annual (July)	Coordination for future planning will occur through the BBW. Annual report prepared but does not include detail of actions to address nitrogen load to the Bay.
	(f) Report against the Werribee River Catchment Nutrient plan and the Yarra Catchment plan.			PPWCMA			These plans are superseded by BBW, although some projects that were ongoing in 2005–06, such as the Yarra for Life and Grow West evolved from these earlier plans.
	(g) Provide coordinated oversight of programs affecting waterway nitrogen in the catchment.	N/A. Strategic coordination role		PPWCMA, CCMA		Ongoing	Strategic Action that is difficult to assess in short term.
	(h) Monitor waterway load to enable comparison with baseline for Yarra-Maribyrnong and Patterson-Mordialloc.	Provide data.	Electronic data warehouse	MW		Ongoing annual	Contact MW directly for raw data. MW's storm monitoring program was reviewed during 2005-06. Recommendations from the review included an increase in the number of sites and these will be implemented during 2006-07. The enhanced monitoring will provide data to update the catchment model being developed to estimate loads under BBW.
		Estimate waterway loads	BAR	MW	DSE, DPI, EPA local government, CMA's.	2003, 2006	There have not been enough storm events since the monitoring program began to make valid estimates of load. Data collection will take longer than expected.
		Comparison with baseline	BAR	MW	EPA, DSE,DPI, CMA's	2014 or 2016	N/A
		Provide report on results and interpretation	BAR	MW	EPA, DSE, DPI, CMA's	Ongoing annual. (October)	N/A. Too early to interpret.

Sub-program 1.4: Atmosphere

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.4.1	Refine atmospheric nitrogen load estimate.		BAR and or Air Quality Improvement Plan (AQIP)	EPA			Completed in 2001-02.
1.4.2	Oversee AQIP implementation including actions relevant to long term nitrogen load reduction.		AQIP reporting	EPA		Ongoing, as per AQIP	N/A as AQIP not finalised. The AQIP is still in draft form and there is no immediate timeline for its completion.
1.4.3	Collate relevant works approvals and licenses, including load implications.		BAR &/or AQIP	EPA		Ongoing annual (October)	None reported.

Sub-program 1.5: Bay Nitrogen Cycling Processes

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.5.1	Develop and implement nutrient monitoring program. Establish interagency nutrient monitoring technical coordinating committee. Review nutrient monitoring program. Through research, reduce monitoring uncertainties.	Publish agreed program Provide data as annual summary of any key results	BAR Electronic data warehouse	DSE, DPI	MW, EPA	Ongoing annual. (October)	Nutrient monitoring program is on DSE website. Data held by DSE and Primary Industries Research Victoria (PIRVic), but not yet available on electronic data warehouse. Committee ceased to operate in 2005. As a part of the BBW planning process, integrated catchment modelling and bay condition modelling have been undertaken. (NB. this does not take into account projects completed for Channel Deepening Project). The nutrient monitoring review has been scheduled.
1.5.2	Maintain fixed site monitoring contributing to integrated program.	Publish data annually.	Electronic data warehouse	EPA	DSE, MW	Ongoing annual	Data published on electronic data warehouse. EPA data publicly available on request
		Provide summary.	BAR	EPA	DSE, MW	Ongoing in technically appropriate years. (October)	Report currently in review, summary not available.
		Publish interpretive reports.	Separate report	EPA	DSE, MW	As technically appropriate	A report has been prepared and is currently in review.

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.5.3	Review and interpret Bay nutrient monitoring data (other than fixed site data).	Summary reports	BAR	DSE	MW, EPA	Ongoing in technically appropriate years (October)	Report for 2005-06 is now available on DSE website. The project "Monitoring the State of Port Phillip Bay Nitrogen Cycling" has continued to meet its milestones. Monitoring of denitrification efficiency was carried out at the two key sites in spring and autumn. Continuous water column monitoring has been carried out at three key sites. Failed instrumentation has been replaced with more robust instrumentation, which should provide much more effective and reliable data capture from now on.
		Detailed interpretive reports	Separate report	DSE	MW, EPA	As technically appropriate	The interpretive report *Monitoring the State of the Bay – nitrogen cycling 2005-2006* is available on the DSE website.
1.5.4	Implement complementary, peer-reviewed project-specific monitoring programs as relevant.	Public report	Separate public report	Project proponents	Relevant agencies	As appropriate	No relevant projects in 2005-06.
		Summary of any key results	BAR	Project proponents	Relevant agencies	As appropriate	No relevant projects in 2005-06.
1.5.5	Investigate effects of marine pests on nitrogen cycling.	Summary reports	BAR	DSE, University of Melbourne		2005	Research completed in 2005. Overview report close to finalisation.
		Detailed technical reports	Separate report				Overview report close to finalisation.

Sub-program 1.6: Reporting on Progress

See reporting tasks within subprograms above

Sub-program 1.7: Progressively Improving Understanding

Intended to be addressed as an integral component of the sub-programs outlined above.

Sub-program 1.8: Review

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
1.8.1	Review progress on Nutrient Program in 2003 (interim) & 2006.	Publish revised critical programs	Separate reports	CCB	DSE, DPI, MW, EPA, CMA, interested parties	2003, 2006	Not yet commenced, review planning in progress.

Appendix 1(B) – Coastal Management Act consents affecting Bay nutrient loads

The following is a list of consents that were issued during 2005-06 that may have potential implications for nutrient loads to PPB. The net implications for nutrients cannot be accurately predicted; however, their effect on overall nutrient loads to PPB is likely to be negligible.

- Reconstruction of Moorabool St Stormwater Drain Outfall Adjacent Cunningham Pier
- Maintenance dredging of Tootgarook Boat Ramp
- Abalone Ranching Research and Development Trials Kirks Point Werribee Aquaculture Fisheries Reserve
- Trial Sand By-Pass Dredging Program - Patterson River Mouth
- Queenscliff Harbour Redevelopment
- Construction of pipe bridge and pump station at Dodds Creek
- Tootgarook Boat Ramp Channel – 10 Year Maintenance Dredging
- Dredging of Rosebud Motor Boat Squadron
- Drainage Works at Beach Road
- Stage 1 Rehabilitation works to Cowderoy St Main Drain
- Altona Safe Boat Harbour Annual Maintenance Dredging
- Maintenance dredging under two hardstand cranes, Royal Yacht Club
- Channel deepening trial dredge geotechnical investigations, Seabed of Port Phillip Bay
- Sewerage contingency tank in ass. with existing sewerage pump station at Scout Shire Hall Beach Mornington & Canadian Bay Foreshore
- Proposed realignment of Wreck Creek & associated vegetation
- One off dredging of St Kilda Harbour for Commonwealth Games Triathalon
- Groyne and Beach, Western Treatment Plant
- Aquaculture Fisheries Reserves -development of 9 aquaculture fisheries reserves
- Rehabilitation works to Cowderoy Street Main Drain
- Blanket Coastal Consent for Geotechnical & Environmental Investigations required to inform the Supplementary Environment Effects Statement (EES) for Channel Deepening Project
- Maintenance Dredging, Beaumaris Motor Yacht Squadron
- Riviera Street Flood Control Structure, internal repairs
- New Sewer Line, Truganina Ammunition Site, Queens Street
- Proposed minor maintenance dredging campaign in Port Waters of Melbourne
- Proposed dredging, Half Moon Bay Boat Ramp

Appendix 2: Marine Pest Management Program Actions

These tables should be read in conjunction with the Bay EMP's Marine Pest Management Program. Sub-program numbers relate to sub-programs from the EMP. Task numbers are for reference purposes in this document only.

Sub-program 2.1: Vector Management – Ballast Water

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.1.1	Establish ballast water management regime to reduce risks from ballast water proposed for discharge to the Bay.	Annually collate progress	BAR	EPA	DOI, VCA, DSE	Ongoing annual	The Waste Management Policy (Ships' Ballast Water) continued in 2005-06. 100% of ships complied with the key policy objective preventing the discharge of high-risk ballast in 2005-06. During 2005-06 EPA Victoria developed Environment Protection (Ships Ballast Water) Regulations that included the development and release of a Regulatory Impact Statement. These regulations support the existing policy and include cost recovery arrangements and new enforcement provisions. These requirements will enter into force in July 2006.
2.1.2	Consider marine pest risks in long-term strategic planning processes affecting port development and shipping patterns in the Bay.			DOI	EPA, DSE, VCA	Ongoing	Marine pest issues considered in the Channel Deepening EES, including recommendations to reduce the risks of introducing or translocating marine pests associated with the project[15] should it proceed.
2.1.3	Advocate action by port and ship managers that helps reduce risks from marine pests.			DOI	EPA, DSE, VCA	Ongoing	The Department of Infrastructure (DOI) engages in discussions on regulation of ballast water at the National System level. DOI will be a partner in the rollout of national best practice guidelines for port operators, when they become available.
2.1.4	Finalise and implement an EMP to address risks associated with marine pests arising from operation of Port of Geelong.	Publish plan (and periodic reports on implementation)	Separate report	DOI	EPA, DSE, VCA		Port of Geelong Safety and Environmental Management Plan completed 2005. Coverage of marine pest issues is cursory. Plan published on Toll Ports website.
2.1.5	Finalise and implement an EMP to address risks associated with marine pests arising from operation of Port of Melbourne.	Publish plan (and periodic reports on implementation)	Separate report	MPC	EPA, DSE, VCA		Port of Melbourne Safety and Environmental Management Plan completed 2005, available on Port of Melbourne website. Plan published on Port of Melbourne Web Site.

[15] Hart S. and Edmunds, M. (2004) Port Phillip Bay Channel Deepening Environmental Effects Statement – Marine Ecology Specialist Studies. Volume 15: Introduced Species – Impact and Risk Assessment. Report to Port Of Melbourne Corporation and Parsons Brinckerhoff. Australian Marine Ecology Report 173, Melbourne, 43 pp.

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.1.6	Investigate and trial appropriate and cost-effective indicators and approaches for monitoring the effectiveness of these tasks at improving management of ballast water.	Report on progress	BAR	DSE	EPA	Ongoing annual (October)	This report. The identification of effective risk indicators will be assisted by the National System for the Prevention and Management of Marine Pest Incursions which, in the coming years, will address monitoring arrangements for marine pests in Australian ports.

Sub-program 2.2: Vector Management – Fouling of Large Ships

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.2.1	Assess the feasibility of establishing a hull fouling management regime.	Report on assessment and summarise in BAR	BAR	EPA	DOI, VCA, DSE	Ongoing annual	In 2005-06, the risk associated with fouling of large ships continued to be managed through the application of antifoulants and by the ban on in-water hull cleaning under the *Marine Act 1988*. Existing arrangements for antifoulants continued to be applied. A hull fouling management regime has been examined as part of the National System. National best practice guidelines are under development, and rollout is expected in 2009..
2.2.2	Investigate and trial appropriate and cost-effective indicators and approaches for monitoring the effectiveness of these tasks at improving management of fouling of large ships.	Report on progress	BAR	DSE	EPA	Ongoing annual	The identification of effective risk indicators will be assisted by the National System for the Prevention and Management of Marine Pest Incursions which, in the coming years, will address monitoring arrangements for marine pests in Australian ports.

Sub-program 2.3: Vector Management – Fouling of Small Vessels

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.3.1	Establish risk management to reduce the risk that small vessels and associated gear introduce marine pests to and transfer them within the Bay.	Report on Progress	BAR	DSE		Ongoing annual	DSE's "6 D's" campaign to educate for small boat operators on simple steps to avoid translocating marine pests continued in 2005-06.
2.3.2	Investigate and trial appropriate and cost-effective indicators and approaches for monitoring the effectiveness of these tasks at	Report on progress	BAR	DSE		Ongoing annual	No information

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
	improving management of fouling of small vessels.						

Sub-program 2.4: Vector Management - Aquaculture

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.4.1	Ensure that aquaculture of translocated aquatic biota within the Bay conforms to Victoria's translocation policy.	Annually report on consents issued, conditions & compliance	BAR	DPI		Ongoing annual	No breaches of the protocol were reported in 2005-06. Aquaculture in the waters of PPB consists entirely of mussel farming. Translocation of aquatic biota for aquaculture is carried out in accordance with the Victorian protocol for translocation of blue mussels, developed under the translocation policy.
2.4.2	Ensure marine farming equipment introduced to the Bay is treated to ensure freedom from marine pests.	Annually report on consents issued, conditions & compliance	BAR	DPI		Ongoing- annual	No breaches of the protocol were reported in 2005-06. Introduction of farming equipment to PPB is carried out in accordance with the Victorian protocol for translocation of blue mussels, developed under the translocation policy.
2.4.3	Investigate and trial appropriate and cost-effective indicators and approaches for monitoring the effectiveness of these tasks at improving management of fouling of aquaculture.	Report in progress	BAR	DSE/DPI		Ongoing annual	In December 2005, Aquaculture Fisheries Reserve Management Plans were declared under the FM Act for all offshore aquaculture reserves in PPB, which incorporated the translocation protocol. These include environmental performance indicators, management triggers and actions, including suspected diseases and aquatic pests. No suspected exotic pests were reported under these plans in 2005-06.

Sub-program 2.5: Early Detection

Tack Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.5.1	Design and trial a monitoring system that maintains the currency of information on the status of "target-species".	Report on progress and any new target or exotic species detected.	BAR	DSE	EPA, VCA, MPC	Ongoing annual	No new exotic species were recorded in 2006-06. (Note that during this year reporting of new pest introduction relied on general observations by the public rather than a systematic program dedicated to detecting the introduction of a new pest species). DSE in collaboration with Australian State and Commonwealth Governments, CSIRO and the Bureau of Rural Sciences is developing practical monitoring guidelines for the early detection of marine pests. This project was completed in 2005. The practical monitoring guidelines have not been trialled to date.

Sub-program 2.6: Mitigate Effects of Introductions.

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.6.1	Mount rapid response to the introduction of new pest species to the Bay where feasible & beneficial.	Report on action taken.	BAR	DSE	EPA, VCA, MPC	As required	N/A. No incursions reported in 2005-06.
2.6.2	Implement and support targeted research to better understand existing pest populations, in particular impacts on nutrient cycling processes.	Annually review program & modify if necessary.	BAR		DSE, University of Melbourne	2005	Project completed in 2005, overview report available[16].
2.6.3	Implement actions to mitigate impact of established pests, where feasible & beneficial.	Report on action taken.	BAR			Ongoing annual	Control efforts are focused on preventing spread of pest marine species. This is achieved by the vector management measures described above.

Sub-program 2.7: Reporting on Progress

See reporting tasks within subprograms above

Sub-program 2.8: Progressively Improve Understanding

Intended to be addressed as an integral component of the sub-programs outlined above

Sub-program 2.9: Program Review

Task Number	Task	Reporting output	Report	Lead	Key Partner	Target date	Status, end 05-06
2.9.1	Review progress on these critical programs in 2003 (interim) & 2006.			CCB	DSE, DPI, EPA, DOI, VCA.	2003, 2006	Not yet commenced, review planning in progress. DSE now responsible for the EMP review which is scheduled to commence in 2009.

[16] Keough, M.J.*et al.* 2007 Building effects of marine pests into nutrient studies: overview report for the Department of Sustainability and Environment. University of Melbourne.

Appendix 3: List of Acronyms

ATP	Altona Treatment Plant
AQIP	Air Quality Improvement Plan
AQIS	Australian Quarantine and Inspection Service
BAR	Bay Actions Report
Bay SEPP schedule	State Environment Protection Policy (Waters of Victoria) - Schedule F6 (the Waters of Port Phillip Bay)
BBW	Better Bays and Waterways
CALP	Catchment and Land Protection Board
CCB	Central Coastal Board
CM Act	*Coastal Management Act 1995*
CCMA	Corangamite Catchment Management Authority
CMA	Catchment Management Authority
DOI	Department of Infrastructure
DPI	Department of Primary Industries
DSE	Department of Sustainability and Environment
EES	Environment Effects Statement
EMP	Environmental Management Plan
EPA	Environment Protection Authority
EP Act	*Environment Protection Act 1970*
FM Act	*Fisheries Management Act 1995*
MPC	Melbourne Ports Corporation
MW	Melbourne Water
N	Nitrogen
NIMPCG	National Introduced Marine Pests Coordinating Group
NHT	Natural Heritage Trust
NRE	(Department of) Natural Resources and Environment
PIRVic	Primary Industries Research Victoria
PPB	Port Phillip Bay
PPWCMA	Port Phillip and Western Port Catchment Management Authority
RCS	Regional Catchment Strategy
SEPP	State Environment Protection Policy
t	tonne
VCA	Victorian Channels Authority
WSUD	Water Sensitive Urban Design
WTP	Western Treatment Plant