STORMWATER MANAGEMENT PLAN FOR CITY OF PORT PHILLIP

Report Prepared for

City of Port Phillip

By

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1 EXECUTIVE SUMMARY

This document provides a Stormwater Management Plan for the City of Port Phillip. The plan will provide a direction for the environmental management of stormwater within Port Phillip.

This plan presents an integrated approach to stormwater management, which maintains the traditional function of preventing adverse flooding, but also places emphasis on improving water quality and environmental amenity of stormwater systems.

The water bodies of the Port Phillip stormwater system have many important values and uses. In addition to the beneficial uses outlined in the State Environment Protection Policy (SEPP), they provide habitat for a diverse flora and fauna, add interest and variety to the urban landscape, contribute to the protection of life and property from flooding and provide recreational opportunities for residents and visitors.

The values of the waterways and the Bay are under threat from numerous activities and pollutants both within City of Port Phillip and in the broader catchment. The priority activities include:

- presence of litter in the City's waterways and stormwater drains from litter generating activities such as rubbish collection and disposal and littering by residents and visitors in key recreational and business nodes.
- external catchment activities impacting on Port Phillip's stormwater system.
- sedimentation generated through runoff from redevelopment and land use changes.

Within the municipality, major requirements for integrated stormwater management include:

- recognition of stormwater management as an important issue and commitment to improve performance
- internal integration of policies, programs and activities dealing with stormwater
- coordination and cooperation with EPA and MWC
- awareness of measures for improved environmental management of stormwater

The primary goal for stormwater management in the City of Port Phillip is:

To develop and maintain ecologically sustainable waterways including Albert Park Lake and the Bay and protect recognised 'values' associated with these waterways whilst minimising adverse flooding

This plan establishes an innovative and cost effective framework for achieving this goal.

Recognising the value of Port Phillip Bay to the economy and amenity of the City, and the impact of urban stormwater from all councils in the Bay catchment, the City of Port Phillip will;

- Advocate and strongly support improved environmental management of stormwater by all Melbourne Councils
- Adopt best practices in urban stormwater management as an example to other Melbourne Councils
- Target litter generated in Port Phillip as a particular priority due to its direct impact on use and enjoyment of the Bay and Albert Park Lake

Encompassed within this goal are a number of specific objectives

- to minimise adverse flooding
- to protect and improve water quality by managing point source and non point source pollutant loadings

- to enhance the environmental and recreational amenity of Port Phillip waterways and associated open space
- to protect and maintain ecological processes in waterway corridors, associated wetlands and the bay
- to improve resident, business and community awareness of values of the stormwater system and potential impact of their activities and participation in, the management of stormwater

A number of strategies and actions have been developed to achieve these objectives and meet the requirements of integrated stormwater management.

Strategy 1: Improve coordination of stormwater management between councils and relevant authorities

Strategy 2: Reduce litter entering receiving waterways

Strategy 3: Improve the planning framework to enable integrated stormwater management

Strategy 4: Increase awareness of stormwater management and facilitate community participation in stormwater management

Strategy 5: Refine and update a monitoring program

Strategy 6: Improve site management of construction activities

Strategy 7: Promote water sensitive design principles

An implementation plan is outlined in Section 6. This includes:

- responsibility of council and other agencies for implementing strategies and actions
- priorities
- funding opportunities
- monitoring and review

2 INTRODUCTION

2.1 Why Have a Stormwater Management Plan

The City of Port Phillip's stormwater system is composed of modified waterways, constructed drains, lakes, retarding basins and the Bay. The system has primarily been developed to minimise the threat of flooding. The environmental impact of development and of polluted stormwater runoff on waterways has previously been largely overlooked. Despite this, the Bay, foreshore and open space of Port Phillip are some of the cities greatest assets. They have many important values and uses, which enhance the livability of the city and attract many visitors. Values and uses range from the provision of habitat for wildlife, a place for passive and active recreation and they play a vital role in the receipt and transport of stormwater. These values are threatened by the many impacts associated with urban stormwater including; changes to the amount and timing of runoff, beach scour, erosion and the potential input of pollutants such as nutrients and heavy metals. Improved environmental management of stormwater is required to minimise these threats and enhance and maintain the values of the City's waterways.

As the population of the city increases and development continues, the pollutant loads and impacts associated with stormwater are expected to increase.

The need for improved environmental management of stormwater has been identified in many government policies and strategies such as the Port Phillip and Westernport Regional Catchment Strategy and State Environment Protection Policies (SEPPs). These policies are statutory government documents that express the environmental values and uses (beneficial uses) of water environments, as well as specifying the environmental quality objectives needed to protect them. SEPPs provide guidance and a statutory basis for the development and implementation of environmental programs/strategies that address water and catchment issues, being administered by government agencies and the wider community. The Port Phillip Bay SEPP (Schedule F6) and clauses 15.01/15.02 & 18.09 of the State Policy Framework requires a large reduction in the nitrogen loads to the Bay. Improved stormwater management will be required to achieve this. Water pollution, waterway degradation and urban growth impacts are identified as priority issues in the Port Phillip and Westernport Regional Catchment Strategy. The Strategy and its supporting catchment action plans, recommend the development of stormwater management plans by all councils within the region.

An increase in the community's environmental awareness and recognition of the recreational, amenity and environmental value of the City's waterway's reinforces the need to manage urban stormwater to minimise the environmental effects on receiving waters. Protection and enhancement of water quality and water environments in City of Port Phillip and in Port Phillip Bay will require cooperation of upstream municipalities and regional authorities. A change in the existing approach to stormwater management is needed to achieve a more integrated and ecologically sustainable approach. This integrated approach to stormwater management will maintain the traditional function of flood control, but also provide the means to improve quality and environmental amenity of the City's stormwater system.

2.2 Stormwater Initiative

The Environment Protection Authority (EPA), Melbourne Water Corporation (MWC) and municipalities have specific roles, responsibilities and powers with respect to stormwater management. Until recently, each organisation has performed its functions largely in isolation. A need to work together lead to the establishment of a Stormwater Committee. The Stormwater Committee was appointed by the EPA to develop a more effective partnership between the EPA, MWC and local government (through the Municipal Association of Victoria, MAV) to improve the environmental management of urban stormwater and protect the environmental quality of our urban waterways and bays. The Stormwater Committee is made up of representatives from the EPA, MWC, MAV and local government and other stakeolders such as the development industry.

The Stormwater Committee has developed a tripartite approach to stormwater management which has resulted in a Stormwater Initiative for improving environmental management of stormwater systems. The Initiative consists of three key components:

1. A Stormwater Agreement which outlines a shared vision and agreed stormwater management roles and responsibilities for these organisations.

2. Stormwater Management Plans that will facilitate the incorporation of an environmental best practice approach.

3. Best Practice Environmental Management Guidelines for Urban Stormwater which will support the development and implementation of the plans and the agreement.

The key strength of the Stormwater Agreement is that it establishes a common approach to stormwater management across municipalities and within the EPA and MWC.

2.3 Context and purpose of this document

In spite of increasing populations and levels of development in urban catchments, many streams and waterways still retain significant natural values and provide important environmental and recreation benefits. However, a major issue emerging in recent State Environment Protection Policy revisions, for major catchment and receiving waterbodies, is the management of urban stormwater. Improved environmental management of urban stormwater is considered to be an essential aspect of protecting our aquatic ecosystems.

Stormwater management plans are currently being developed for five Melbourne councils as part of the Stormwater Committee's Initiative. AWT Victoria was commissioned to assist with the development of a Stormwater Management Plan for City of Port Phillip. The plan comprises two volumes. Volume I details the plan whilst Volume II is essentially a supporting document which details the process adopted to develop the plan and background supporting information upon which the plan was based.

In line with the Stormwater Initiative the key contributors to this report have been City of Port Phillip, Melbourne Water, the Environment Protection Authority and the Municipal Association of Victoria.

The Port Phillip Stormwater Management Plan is has been developed with reference to relevant legislation and various state and regional documents, strategies and plans such as the Port Phillip Bay SEPP, Werribee Water Quality Strategy and Port Phillip and Westernport Bay Regional Catchment Strategy and local strategies and policies such as Sustainable Development Strategy, City of Port Phillip Drainage Policy and Port Melbourne Strategy (Figure 1).

For the stormwater management plan to be effective, its implementation will require its integration into existing council strategies, plans and policies such as the Municipal Strategic Statement (MSS), Corporate Plan and other local strategies (Figure 1).

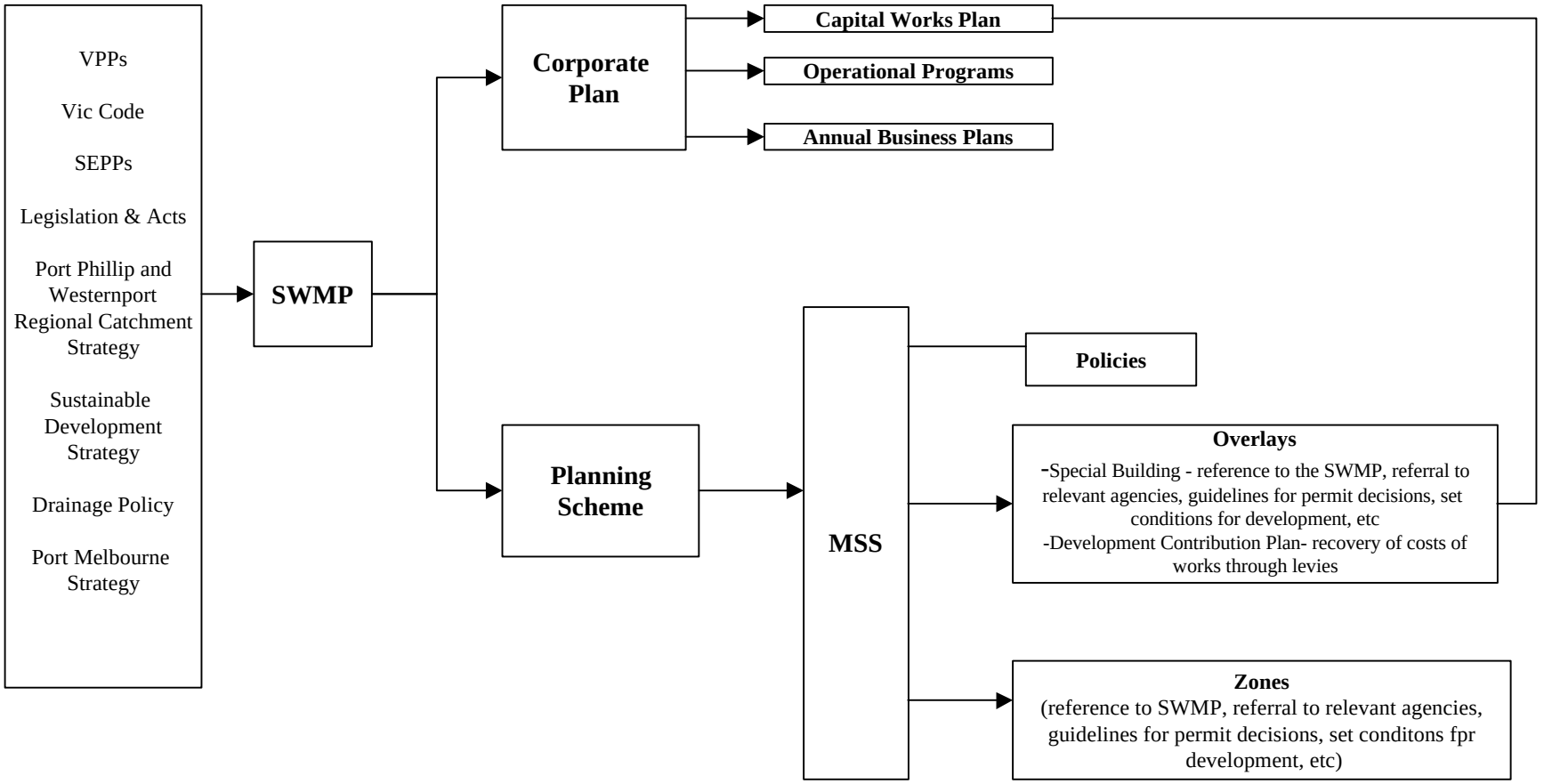


Figure 1: Context of the Stormwater Management Plan

2.4 Approach/method adopted to develop the plan

The process for developing the stormwater management plan is composed of three key stages (Figure 2):

- information collation to gain a broad understanding of the current stormwater system and issues
- apply information gained to a broad risk assessment
- assessment of priorities and development of management strategies

A workshop was conducted during each stage. Workshop attendees included the stormwater project team within council, MWC, EPA and MAV. A detailed description of the process is found within Volume II.

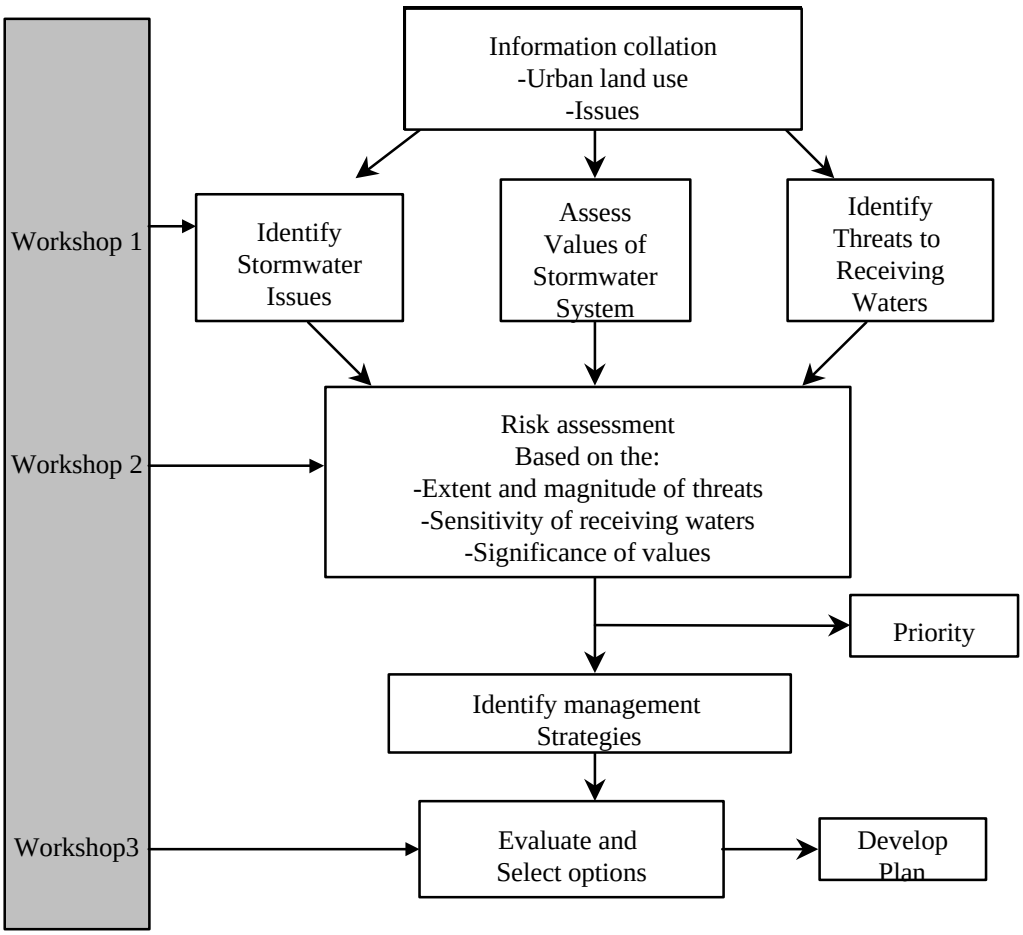


Figure 2: Stormwater Planning Process

3 PORT PHILLIP STORMWATER SYSTEM

3.1 Waterways and Drains

The stormwater system of Port Phillip is composed of stormwater channels, stormwater drains and constructed waterways such as Albert Park Lake (Figure 3). The receiving waters associated with the City of Port Phillip include Elwood Canal, Albert Park Lake and the Bay. The City of Port Phillip is largely developed and does not have any natural waterways. The predominant feature of the city is the foreshore that stretches nine kilometres from Webb Dock to Elwood and includes the popular beaches of St Kilda, Port Melbourne, Elwood and South Melbourne. The major natural waterbody and predominant feature of the city is Port Phillip Bay.

The recognised environmental values of the waterways include statutory environmental outcomes declared as beneficial uses of the environment outlined in SEPPs:

- Waters of Victoria (overarching policy)
- Waters of Port Phillip Bay (Schedule F6 to Waters of Victoria)
- Waters of Yarra Catchment (Schedule F7 to Waters of Victoria) DRAFT

The City of Port Phillip has 370 hectares of open space (including Albert Park Reserve which is 225 hectares) making up 11% of the municipal area. Port Phillip has 25 hectares of restored remnant indigenous vegetation and more than 140 species of native flora have been observed in the city.

Albert Park is a major recreational and tourist destination and is visited by more than 3,500,000 people annually. The park is a sporting and recreational park that caters formal and informal recreation. Albert Park has four wetland areas, the Lake itself being the largest. Two native vegetation communities are found in Albert Park including the Grassy Wetlands and Grassy Woodlands. Islands at the north end of the lake provide habitats for native wildlife such as wetland and migratory birds. Over 100 bird species have been recorded including significant wetland species such as the Cattle Egret, Common Tern, Eastern Curlew, Great Egret, Pomarine Jaeger and White-throated Needletail. Native mammals, reptiles and amphibians in the park include Common Bent-wing bats, Common Brushtail Possums, Glossy Grass Skinks and Common Froglets. Aboriginal sites of importance include a large River Red Gum Tree, thought to be the site of corroborees. The tree is estimated to be over 300 years old, the oldest remnant tree in the Port Phillip area (Parks Victoria, 1999).

Port Phillip's nine-kilometre foreshore is one of the most intensively used stretches of coastline on Port Phillip Bay. The beaches and foreshore of Port Phillip are a major metropolitan and state visitor destination and a valued natural and recreational resource of Victoria. It is also frequently used by local residents for recreational purposes such as walking, swimming, cycling, roller-blading and fishing. The area has a high economic value hosting numerous restaurants and cafes in particular along the foreshore.

There are over 10,000 individually significant heritage buildings in the municipality which are among the most significant in Melbourne and a popular destination for tourists. Port Phillip's major tourist attractions are concentrated primarily in the St Kilda and Port Melbourne foreshore areas and Albert Park Reserve. Popular tourist places in Port Phillip include Acland and Fitzroy Streets, Luna Park, St Kilda Pier, the Palais Theatre, the Sunday Esplanade Market, cafes, cycling paths and walkways, the Linden Art Gallery, Kerferd Road and Station Pier.

The values and functions of Port Phillip's receiving waters such as Albert Park Lake, the Bay and Elwood Canal are under threat from numerous activities, which affect the quality and quantity of urban stormwater. The City of Port Phillip is largely developed and has a high population density - 34.5 persons per hectare (18.5 dwellings per hectare). After declining for many years, the population of Port Phillip has increased from 70, 930 in 1991 to 73, 092 in 1996. (City of Port Phillip,1998). The city has one of the highest proportions of flats and apartments in metropolitan Melbourne. The residential neighbourhoods of Port Phillip are among Melbourne's most attractive and sought after living environments. These high building and population densities increase pressures on the stormwater system and result in quite high generation rates for many pollutants. Many established residential areas are undergoing change and experiencing pressure from new development. The City supports numerous activities which contribute pollutants to urban runoff and, hence, receiving waters of the stormwater system. These include, but are not limited to residential activities, recreational activities and construction and development activities.

The very nature of the stormwater system means that all municipal activities have the ability to impact on stormwater quality and quantity.

Stormwater impacts are related to the major land uses and key activities undertaken within the municipality (Figure 3 and Table 1). Key activities therefore vary throughout the municipality according to landuse (threats) and values of the waterways and the bay. Habitat values of Albert Park Lake and the Bay are under threat from construction and development activities occurring in the City of Port Phillip. The recreational values of Albert Park Lake and the Bay are threatened by activities causing an increase in litter, affecting the amenity and visual/landscape values.

The issues of litter within the Stormwater system apply to the entire municipality. Littering from recreational activities, rubbish collection and disposal, business activities and illegal dumping all contribute to the impacts from littering in Port Phillip. These impacts include degradation of habitat values, impacts on the recreational experience of visitors and the decreased hydraulic capacity of the stormwater system.

As all stormwater drains and waterways discharge to the bay, any activity within the municipality of Port Phillip such as a new housing estate, disposal of wastes, applying fertiliser to the garden and walking the dog will have an impact on the Bay.

Within Port Phillip there is a considerable subdivision activities. Economic activity is strongly influenced by perceptions of quality and health of environments such as Albert Park Lake and the Bay and foreshore. Therefore, as the number of residents increase the impacts from residential activities affecting stormwater will also rise.

Projected population increases in parts of Port Phillip and initiatives aimed at increasing the level of tourism and employment will place additional demands on the foreshore and Albert Park as tourist destinations. Risks associated with this include an increase in litter which will affect habitat, water quality and amenity values of the foreshore and Albert Park Lake.

The values of Port Phillip's stormwater system are strongly influenced by activities in neighbouring Councils. All external activities will affect the quality of Stormwater within Port Phillip and eventually the Bay. The municipality of Port Phillip is located within the Yarra Catchment therefore, stormwater management must involve communication and coordination of activities with neighbouring councils and regional bodies, such as the Bayside Councils Association, Central Coastal Board, Port Phillip CALP Board, MWC and the EPA (Figure 4).

The main centres for growth in the Yarra catchment are in the outlying areas of Nillumbik, Hume and Whittlesea, which are expected to grow by 30% over the next 15 years. This rise in population of neighbouring councils will increase the risks including impacts on hydrology, water quality and ecology of the receiving waters of Port Phillip and the Bay.

Figure 3 Catchment Map

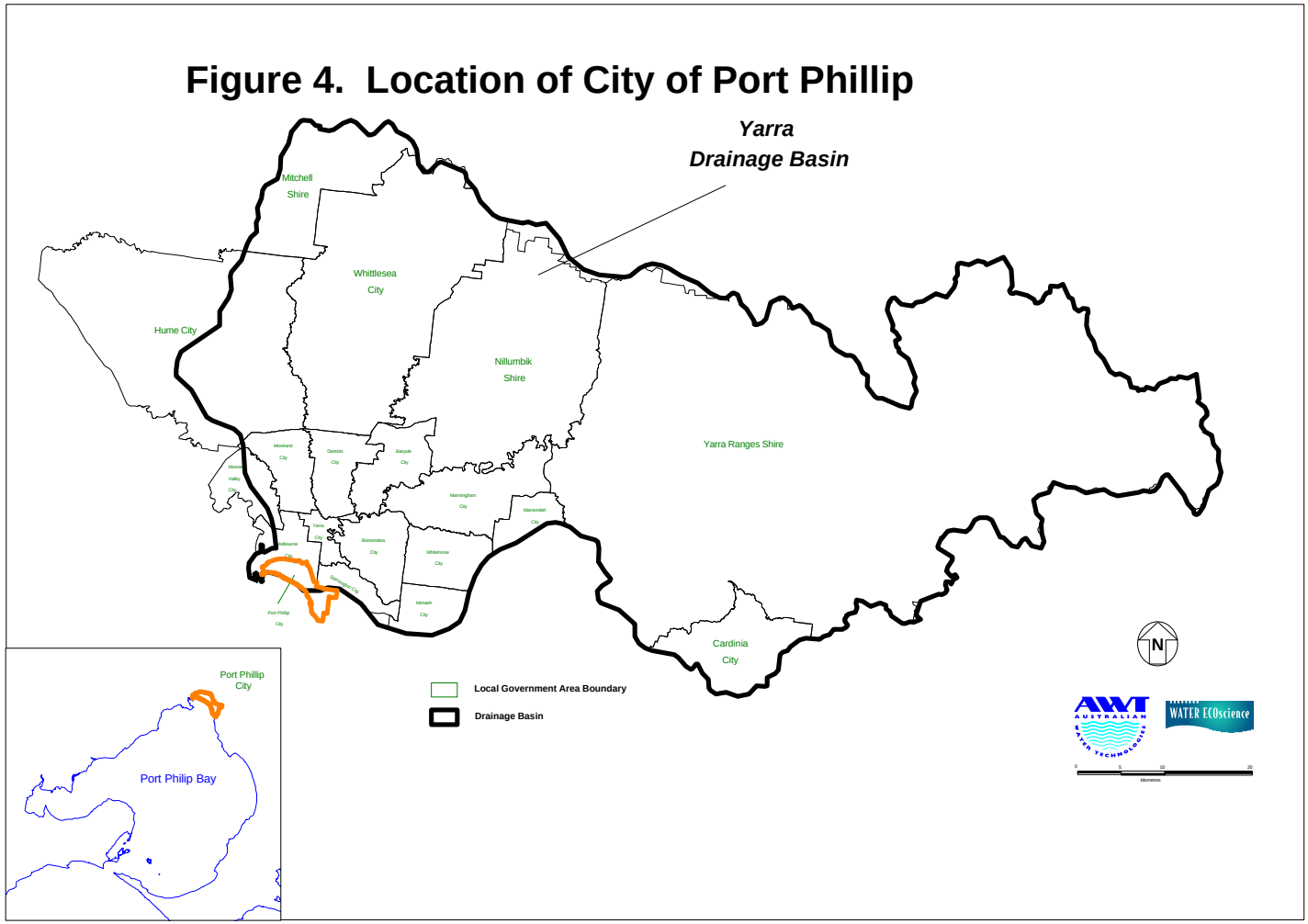
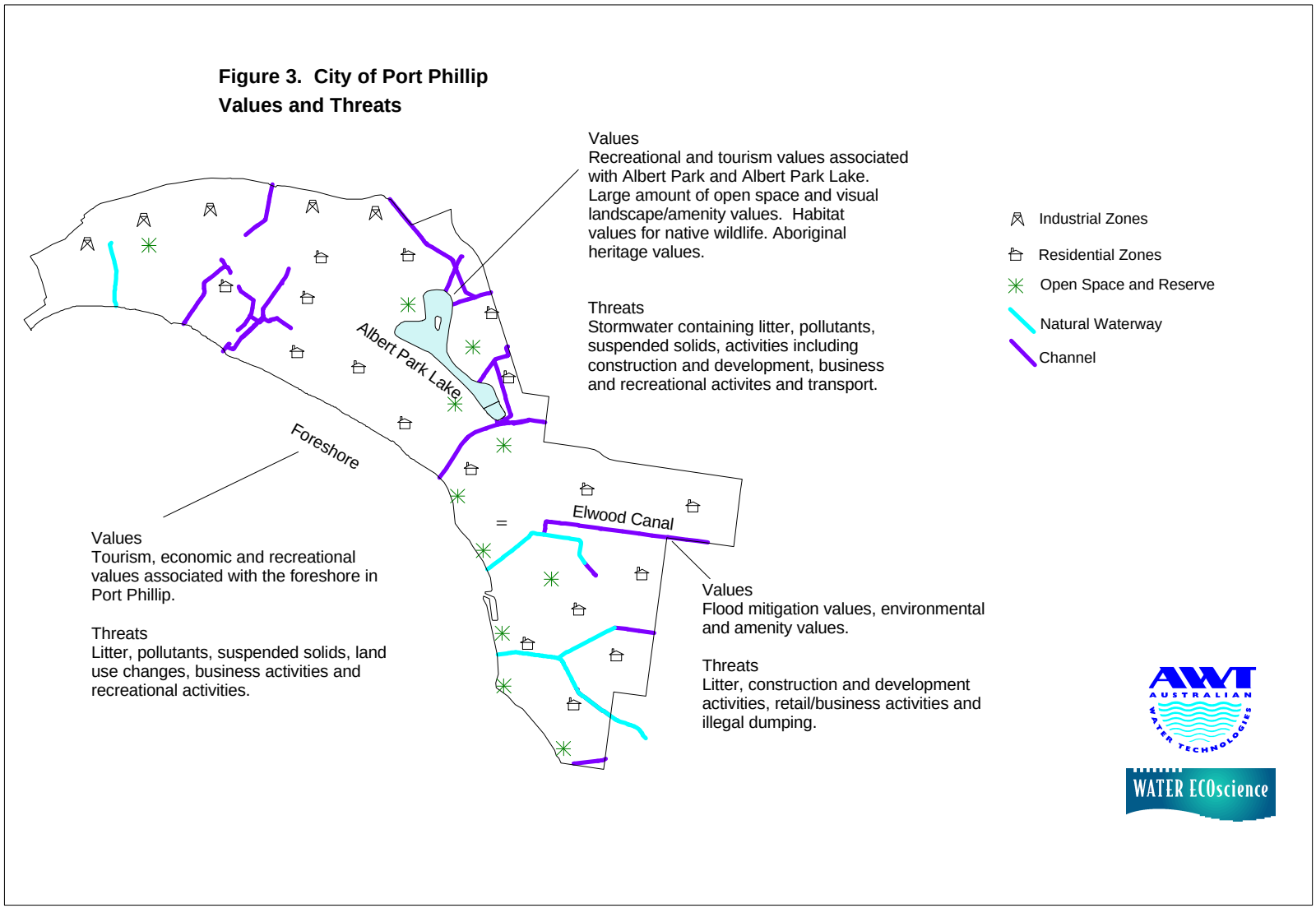


Figure 4 Values and Threats map



3.2 Significant risks and key issues

All activities within Port Phillip and neighbouring municipalities may impact on receiving waters. The allocation of priorities for action were determined via a risk assessment which considered the potential threats from activities, the values of the receiving waters and their sensitivity and the risk of damaging the values posed by the threats.

Priority activities and associated stormwater issues within the City of Port Phillip vary according to geographic location and are summarised in Table 1 (Refer to Volume II for supporting information). Key activities include recreational activities, external catchment activities and construction and development activities.

Litter impacts on many values, including recreational/tourism and health and safety values. Whilst litter is a municipal wide issue and all litter is unsightly, litter which is transported to the popular tourist attractions such as Albert Park and the Bay and the litter that has health and safety implications, such as syringes, pose the greatest threat and therefore have been rated as a high priority.

Redevelopment in the City of Port Phillip will increase the amount of impervious areas of an already highly developed area. An increase in suspended solids is also a result of construction and development activities and may affect water quality and habitats of Albert Park Lake, Elwood Canal and the Bay.

External catchment activities were rated as a high priority due to Port Phillip being located at the bottom of the Yarra catchment. New urban development and poor management of stormwater in the Yarra catchment may increase the threat to the values of Port Phillip's stormwater system.

Activities such as dog walking and garden activities contribute nutrients to the stormwater system, however, in comparison with other activities such as littering and construction and development, the risk from them is minor. They are therefore, not a high priority within the municipality of Port Phillip.

To manage the risks associated with litter, construction and development and external catchment activities council needs to:

- improve the planning framework
- improve coordination of stormwater management between councils and relevant authorities
- manage runoff from construction sites within the City of Port Phillip
- adopt the treatment train approach to manage litter as outlined in the Best Practice Environment Management Guidelines for Urban stormwater

The main actions council needs to undertake to manage the stormwater system as identified above and in the following section do not require significant capital works and funding. The benefits will be numerous including:

- maintenance and enhancement of significant areas of habitat
- minimising the risk to property and public safety from flooding
- enhancement of the environmental and recreational amenity of Port Phillip and associated economic and employment benefits associated with key tourist areas

Table 1: Activities impacting on the values of receiving waters in Port Phillip as determined by the risk assessment (Volume II).

Activity	Pollutant generated	Source / location	Affect on Value	Risk rating
Littering				
Rubbish collection and disposal	Litter	Entire municipality	Decrease in visual quality due to general unsightliness and poor aesthetics associated with litter. Decreased water quality. Decrease in the recreational values of the Bay in areas where swimming is allowed due to health and safety issues associated with litter.	1
Business activities	Litter	Acland St	General unsightliness and poor aesthetics associated with litter may decrease tourism and therefore, impact on economic values. Reduction in stormwater channel carrying capacity.	3
	Litter	Fitzroy St	General unsightliness and poor aesthetics associated with litter will decrease amenity values for visitors. Reduction in stormwater channel carrying capacity.	3
	Litter	Sth Melbourne Market	General unsightliness and poor aesthetics associated with litter will decrease amenity values. Reduction in stormwater channel carrying capacity.	3
Recreation				
Dog walking	Dog poo- nutrients, in particular nitrogen and phosphorus and bacteria, pathogens and potentially viruses	Major recreational parks and beaches including the Bay , foreshore and Albert Park Lake	A reduction in visual and amenity values due to the presence of wastes. An increase in bacteria increasing health and safety issues. An increase in nutrients can lead to increase in aquatic plant growth leading to the possibility of algal blooms impacting on habitat and recreational values of the Bay and elements of the stormwater system including Albert Park Lake.	4
Littering	Litter (in particular syringes)	Albert Park	A threat to public health and safety and decrease in recreational and tourism values and therefore economic values. General unsightliness and poor aesthetics decreasing visual/landscape amenity values. Habitat values may be affected from littering in Albert Park.	1

Activity	Pollutant generated	Source / location	Affect on Value	Risk rating
		Foreshore	A threat to public health and safety and decrease in recreational and tourism values. General unsightliness and poor aesthetics decreasing visual/landscape amenity values.	2
External catchment activities				
All external activities impacting on stormwater system	Litter, suspended solids, nutrients and pollutants	External councils such as Melbourne City Council, Yarra City Council, Glen Eira Council, Bayside Council and Stonnington City Council	Ecological, recreational and amenity impacts on the Bay and into Albert Park Lake through stormwater drains from external councils leading into the City of Port Phillip.	2
Transport				
	Toxicants such as heavy metals, hydrocarbons, surfactants, oils)	Beaconsfield Parade	Transport of toxicants into the Bay may decrease the recreational value by impacting on health, safety and visual amenity. Toxicants will also decrease water quality and habitat values.	4
		Queens Parade	The transport of toxicants into Albert Park Lake may decrease inlake water quality and habitat value and decrease the recreational value by impacting on health, safety and visual amenity.	4
	Toxicants such as heavy metals, hydrocarbons, surfactants, oils	St Kilda Rd	St Kilda Rd is heavily used and the risk of a spill occurring from an accident (from a truck or tanker) is high. Road runoff impacts on water quality within Albert Park Lake and the Bay.	4
Residential (see rubbish collection and disposal)				
Garden activities e.g. fertilisers	Nutrients (nitrogen and phosphorus)	Throughout residential areas in municipality	Transport of nutrients into receiving waters may increase aquatic plant growth leading to the possibilities of algal blooms and associated decrease in recreational and habitat values.	-*

Activity	Pollutant generated	Source / location	Affect on Value	Risk rating
Car washing	Detergents (surfactants and depending on detergent used, phosphorus) Dirt, oil and toxicants washed off the car	Throughout municipality	Elevated concentration of nutrients can increase algal concentrations resulting in an algal bloom posing health and safety risks and reduce the diversity of aquatic fauna. An increase in suspended solids can reduce light penetration and will reduce substrate habitat values.	-*
Construction and land development				
	Suspended solids (silts, dust, colloidal substances)	Webb Dock	Transport of adsorbed pollution such as nutrients and heavy metals may affect recreational values of the Bay. Reduction in stormwater channel carrying capacity. Increase in amount of impervious areas alter amount and timing of runoff.	3
	Suspended solids (silts, dust, colloidal substances)	Beacon Cove	An increase in suspended solids into the Bay, reducing the quality of water. Transport of adsorbed pollution such as nutrients and heavy metals will affect both health and safety values and water quality values of the Bay.	3
	Suspended solids (silts, dust, colloidal substances)	Subdivision in St Kilda	Entry of suspended solids into Albert Park Lake and the Bay. Transport of adsorbed pollution such as nutrients and heavy metals will affect both health and safety values and water quality and therefore habitat values. Decline in amenity will decrease the recreational experience of visitors to Albert Park and the beach. Decline in amenity due to decreased water clarity will decrease the recreational experience. Reduction in stormwater channel carrying capacity. Increased nutrients may lead to increased plant growth and algal blooms posing health and safety risks and a threats to flora and fauna.	4

Activity	Pollutant generated	Source / location	Affect on Value	Risk rating
	Suspended solids (silts, dust, colloidal substances)	Subdivision in Port Melbourne	Transport of adsorbed pollution such as nutrients and heavy metals affect recreational values by impacting on health and safety. Decline in amenity will decrease the recreational values of the Port Melbourne foreshore area. Reduction in stormwater channel carrying capacity.	4

* Identified in risk assessment workshop, however wasn't identified as a high priority issue

In order for priority stormwater issues to be managed, the strategy must address major requirements for the integrated management of stormwater. Major requirements outlined below have been identified by examining the main impediments to stormwater management within the City of Port Phillip.

Major requirements include:

1. Co-operation and communication

Stormwater management would benefit from improved communication and integration between organisations involved in stormwater management and between neighbouring councils. The stormwater initiative has been established to overcome this impediment, actions within the council strategy are also needed.

2. Planning

Integrated stormwater management requires commitment at the senior level and incorporation of stormwater into the planning scheme. The environment has been covered in some detail in the MSS and Corporate Plan. The MSS does not identify specific issues relating to the natural environment and infrastructure (drainage and flooding). The corporate plan is divided into seven areas and one of the three year objectives being to develop controls and guidelines to promote environmental design and management. One of the priorities identified in the corporate plan includes developing alternative strategies for on site management of additional water resulting from runoff. The actions required for 1998/99 include the investigating the use of incentives to promote on site retention of stormwater.

3. Increase in awareness

Whilst the community are placing increased demands for open space and a desire for improved environmental amenity, improved awareness regarding how the stormwater system works and how the actions of residents, visitors and businesses may impact on water quality within the City's Creeks, wetlands and the Bay is a major requirement of integrated stormwater management.

4. Support

For it to be effective, the stormwater management plan must be supported by the allocation resources, provision of local policies, guidelines, controls and regulations. Strategies and actions that address requirements 1, 2 and 3 together with education of all council staff will address this requirement.

4 OBJECTIVES

The primary goal for stormwater management in the City of Port Phillip is:

> *To develop and maintain ecologically sustainable waterways including Albert Park Lake and the Bay and protect recognised 'values' associated with these waterways whilst minimising adverse flooding.*

This plan establishes an innovative and cost effective framework for achieving this goal.

Encompassed within this goal are a number of specific objectives

- to minimise adverse flooding
- to protect and improve water quality by managing point source and non point source pollutant loadings
- to enhance the environmental and recreational amenity of Port Phillip's receiving waters and associated open space
- to protect and maintain ecological processes of receiving waters, including Albert Park Lake and the Bay
- to improve resident, business and community awareness of values of the stormwater system and potential impact of their activities and participation in, the management of stormwater
- to incorporate stormwater objectives in planning and development

5 STRATEGIES AND ACTIONS

This section provides a description of the implementation strategies developed to address the major requirements of stormwater management and to manage the key activities and the associated impacts on the values of the stormwater system summarised in Section 2. The strategies integrate the management of water quality and quantity issues. This approach recognises that if Council is to successfully manage water quality; it can not be done in isolation from the management of water quantity. The strategies also adopt the treatment train approach to stormwater management outlined in the Best Practice Environmental Management Guidelines for Urban Stormwater. This strategy does not directly require significant capital works. However, the outcomes of the strategy for example put something in will require considerable capital works to be undertaken.

Strategy 1 - Improve coordination of stormwater management between councils and relevant authorities

Objective
Increase communication and integration between organisations involved in stormwater management and between neighbouring councils.

Actions
1.1 Sign and adhere to the Stormwater Agreement.
1.2 Liaise closely with the Port Phillip Catchment and Land Protection Board and the Catchment Implementation Committee (CIC) for Werribee and Maribyrnong to ensure consistency in decision making over catchment and waterway issues.
1.3 Assist in the implementation of the Port Phillip and Westernport Regional Catchment Strategy.
1.4 Advocate and support improved environmental management of stormwater by Melbourne Councils.
- **1.4.1** Participate in development of planning and regulatory tools for adoption by other councils e.g. model permit conditions, local laws.
- **1.4.2** Participate in forums to support stormwater management e.g. Bayside Councils, Central Coastal Board, CaLP Board.

1.5 Liaise closely with neighbouring councils and formalise strategies to minimise the impact of activities within neighbouring councils on stormwater quality within Port Phillip.
1.6 Council to nominate key contact person for EPA and MWC liaison**.**
1.7 MWC and EPA to nominate 'client manager' for Port Phillip.
1.8 MWC and EPA to provide list of key organisational contacts**.**

Area: Councils that Port Phillip must work with include Melbourne City Council, Stonnington City Council, Yarra City Council and Maribyrnong City Council.

Performance Measures
- Signing of Stormwater Agreement
- Development of a liaison strategy
- Contact person/client manager nominated

Strategy 2 – Reduce litter entering receiving waterways

Objective

Reduce litter in the City's waterways and stormwater drains to minimise impacts

Actions

2.1 Operations

- **2.1.1** Review and adopt best practice street cleaning and bin collection methods. Contract specifications to include performance provisions related to spillages and clean up etc.
- **2.1.2** Review bin design and distribution.
- **2.1.3** Investigate opportunities for primary treatment (litter and gross pollutant traps). This will involve determining the approach to treatment, location and type of traps required for each subcatchment according to Section 5 of the Best Practice Environment Management Guidelines for Urban Stormwater.

2.2 Education and awareness

- **2.2.1** Prepare and promote a range of educational awareness material targeting:

  i) Business operators in high litter generation areas of St Kilda and Port Melbourne
  ii) Resident regarding presentation of rubbish and recyclables for collection

2.3 Liaise with EPA, MWC, and Ecorecyle to coordinate development of awareness programs

Area: 2.1.1- 2.1.3: Entire municipality, 2.2.1: Entire Municipality, in particular Acland St, Fitzroy St and Sth Melbourne Market.

Performance Measures:

- Review of current council activities including contract specification
- Primary treatment plan for each sub-catchment
- Education material prepared and a program for implementation developed

Strategy 3 - Improve the planning framework to enable integrated stormwater management

Objective
Increase recognition of stormwater issues and incorporate reference to stormwater in planning schemes.

Actions
3.1 Planning.
Implement the proposed changes to the Municipal Strategic Statement (MSS), State Planning Policy Framework (SPPF), a local stormwater policy and conditions outlined in Appendix 1 Sections A1 to A5 inclusive.
3.2 Modify VPPs to incorporate direct reference to BPEMGS

Area: Entire Municipality

Performance Measures
- MSS revised and altered accordingly
- SPFF altered
- Stormwater Policy added to section 22 of the planning scheme.
- VPPs modified

Strategy 4 – Increase awareness of stormwater management and facilitate community participation in stormwater management

Objective
Increase awareness of stormwater to minimise activities by individuals that have potential to contaminate stormwater such as washing the car in the street, the application of fertilisers to gardens etc.

Action
4.1 Undertake stormwater awareness programs for key council areas.
4.2 Support established friends groups.
4.3 Encourage community participation in environmental monitoring programs including:
i) assist monitoring the quality of receiving water via Waterwatch
ii) involvement of Waterwatch and Streamwatch groups in business audits
4.4 Involve the community and established friends groups in the implementation of council environment plans and various regional strategies via activities such as revegetation, clean up day activities etc.

Area: Albert Park Lake, foreshore area in the municipality in particular StKilda beach.

Performance Measures:
- Educational material prepared
- Community groups and local schools involved in monitoring
- Support of local community groups

Strategy 5 - Refine and up-date a monitoring program

Objective
To ensure an environmental monitoring program is in place to determine the health of receiving waters and any significant changes over time.

Actions
5.1 Liaise with MWC and EPA to ensure the continuation of agency monitoring programs on waterways in City of Port Phillip.
5.2 Support waterwatch activities to collect quality environmental monitoring data

Area: Entire municipality

Performance measures
- Ongoing water quality and biological monitoring program established
- Involvement of Waterwatch groups in providing useful environmental reporting

Strategy 6 - Improve site management of construction activities

Objective
To minimise pollution of stormwater by improving the management of land development and construction activities.

Actions

6.1 Planning
- **6.1.1** Modify planning scheme to incorporate improved site management controls.
- **6.1.2** Incorporate requirements for site management plan in planning permit.
- **6.1.3** Incorporate requirements for a site management plan in Local Stormwater Management Policy as outlined in A5.3.2.
- **6.1.4** Insert statements A5.3.1, A5.3.3 and A5.3.7 in section 22 of the planing scheme.

6.2 Monitoring / enforcement
- **6.2.1** Develop audit program for construction sites and implement specific strategies to address identified problems.
- **6.2.2** Review and modify local laws to regulate land development and construction activity impacts

6.3 Education and awareness
- **6.3.1** Ensure staff who assess and regulate development receive appropriate training on best practice stormwater management techniques.
- **6.3.2** Develop and promote best practice educational material for sediment control in the development and construction industry.
- **6.3.3** Liaise with EPA and MWC to support development of suitable training programs for council staff and development industry.
- **6.3.4** Promote examples of local developments that successfully undertake best practice stormwater management.

Area: Webb Dock, Beacon Cove, Sub-divisions in St Kilda and Port Melbourne.

Performance Measures:
- Stormwater Policy implemented into section 22 of the planing scheme
- Site management plan developed for all new developments
- 100 percent of construction sites audited
- Training program developed
- A number of council staff attending training programs
- Educational package developed
- On an annual basis one well managed local development identified and promoted

Strategy 7 – Promote water sensitive design principles

Objective
To minimise the impact from increased run-off and pollution loads from new urban development.

Actions
7.1 Planning
- **7.1.1** Modify planning scheme to incorporate principles of water sensitive design and requirements for improved site management controls outlined in the Appendix 1.
- **7.1.2** Insert statements A5.3.4 – Design into a stormwater management policy within section 22 of the planing scheme.

7.2 Operations
- **7.2.1** Adopt appropriate water sensitive design principles into planning of new urban developments

7.3 Education and awareness
- **7.3.1** Promote water sensitive design principals through educational initiatives and the promotion of the Best Practice Environmental Guidelines for Urban Stormwater.
- **7.3.2** Trial and promote water sensitive drainage design at suitable council developments across the City.
- **7.3.3** Ensure planning staff receive training in water sensitive design principles.

Area: Entire municipality including areas mentioned above under (construction and development).

Performance Measures:
- Planning scheme modified
- Within development corridors, open space areas planned with efficient water and energy use principles
- Educational program developed
- Awareness in council of Best Practice Environmental Guidelines for Urban Stormwater
- Locations to trial water sensitive design identified
- Major new urban developments incorporating elements of water sensitive design
- Planning staff having received appropriate training
- Council developments incorporating elements of water sensitive drainage desgin

5.1 Linkages

Stormwater management is a complex task. One strategy will not address all stormwater issues, therefore there is a need to adopt a variety of strategies and actions to ensure all priority stormwater issues within the City of Port Phillip are addressed. The recommended strategies and actions seldom work in isolation and the efficiency of a strategy may be improved by the adoption of another strategy. For example, gross pollution traps may be considered secondary practices and their efficiency at preventing litter from entering waterways may be improved by a reduction in litter entering waterways brought about by increased community awareness and knowledge. The main stormwater issues each strategy addresses and the links are illustrated in Table 2.

Table 2: Stormwater issues addressed by the strategy (= strategy will directly address the stormwater issue. = indirect)

Strategy	1. Improve coordination of stormwater management between councils and relevant authorities	2. Reduce litter entering receiving waterways	3. Improve the Planning framework to enable integrated stormwater management	4. Increase awareness and facilitate community participation in the management of stormwater quality	5. Refine and up date a monitoring program	6. Improved site management of construction activities	7. Promote water sensitive design principals
Dissolved pollutants							
Particulate pollutants							
Gross pollutants							
Change in flow regime and associated flooding							
Change in flow regime, associated Beach scouring and bed/bank erosion							
Lack of communication							
Lack of integration of activities							
Commitment at a senior level							
Links	3	4	1, 2,4,5,7	3,5,	4	1	1,6

6 IMPLEMENTATION PLAN

The implementation plan attributes relevant action items to responsible departments in council and organisations that have a role in stormwater management including the EPA, MWC and MAV. The plan also allocates corresponding priorities, potential funding opportunities and a process by which the implementation can be monitored and reviewed.

6.1 Assigning responsibilities and priorities for actions

Table 3 details the roles and responsibilities of the key contributors and identifies the priority and timing of each action.

It is important to note that strategies and actions have been developed only for the highest priority stormwater issues and actions, which impact on the stormwater system (refer to Volume II).

6.2 Funding options

The are a number of potential funding opportunities to assist in the development of, implementation and monitoring associated with the Stormwater Management Plan. The main avenue of funding is through councils funds generated from general rates, special rates or levies and developer charges. Ecorecycle provide infrastructure grants and the Federal National Heritage Trust Funding (NHT) and Better Cities program provides a significant opportunity for funding for plan implementation. At present, there are no funding programs provided by MWC and the EPA.

Table 3: Implementation plan

Strategy / Action	Responsibility		Priority	Timing
	Primary	**Secondary**		
Strategy 1 Improve coordination of stormwater management between councils and relevant authorities				
1.1 Sign and adhere to the Stormwater Agreement	Council, EPA, MWC, MAV		High	1 yr
1.2 Liaise closely with the Port Phillip Catchment and Land Protection Board and the CIC for Werribee and Maribyrnong to ensure consistency in decision making over catchment and waterway issues	Council – Strategic Planning & Facilitation	EPA, MWC, MAV, DOI	Medium	Ongoing
1.3 Assist in the implementation of the Port Phillip and Westernport Regional Catchment Strategy	PPCALP	Council, MWC, MAV, EPA	Low	Ongoing
1.4 Advocate and support improved environmental management of stormwater by Melbourne Councils	Council – Strategic Planning & Facilitation	MWC	High	Ongoing
1.4.1 Participate in development of planning and regulatory tools for adoption by other councils e.g. model permit conditions, local laws	Council – Strategic Planning & Facilitation	MWC, EPA	Medium	2-4 years
1.4.2 Participate in forums to support stormwater management e.g. Bayside Councils, Central Coastal Board, Port Phillip CaLP Board	MWC, EPA	Council	Medium	Ongoing
1.5 Liaise closely with neighbouring councils and formalise strategies to minimise the impact of activities within neighbouring councils in stormwater quality within Port Phillip	Council		High	Ongoing
1.6 Council to nominate key contact person for EPA and MW liaison	Council – Strategic Planning & Facilitation	EPA, MWC	High	Ongoing
1.7 MW and EPA to nominate 'client' manager for Port Phillip	MWC, EPA		High	1 yr
1.8 MW and EPA to provide list of key organisational contacts	MWC, EPA		High	1 yr

Strategy 2 –Reduce litter entering receiving waterways.				
2.1 Operations				
2.1.1 Review and adopt best practice street cleaning and bin collection methods. Contract specifications to include performance provisions related to spillages and clean up etc.	Council – Infrastructure		Low	2 – 5 yrs
2.1.2 Review bin design and distribution	Council – Infrastructure		Low	2 – 5 yrs
2.1.3 Investigate opportunities for primary treatment (litter and gross pollutant traps)	Council – Infrastructure	MW, EPA, ECO Recycle Victoria.	Medium	2-4 yrs
2.2 Education and awareness **2.2.1** Prepare and promote a range of educational awareness material targeting: i) Business operators in high litter generation areas of St Kilda and Port Melbourne ii) Residents regarding presentation of rubbish and recyclables for collection	EPA, Eco recycle Victoria, council	MWC, Stormwater Committee	High	1 yr
Strategy 3 Improve the planning framework to enable integrated stormwater management				
3.1 Implement the proposed changes to the MSS, State Planning Policy Framework (SPPF) and local stormwater policy	Council – Strategic Planning & Facilitation	MAV, DOI	High	1 yr
3.2 Modify VPPs to incorporate direct reference to BPEMGs	Council – Strategic Planning & Facilitation	Stormwater Committee	Medium	2-4yrs
Strategy 4 – Increase awareness of stormwater management and facilitate community participation in stormwater management				
4.1 Undertake stormwater awareness programs for council areas	Council – Environmental Services & Parks	MWC	High	Ongoing
4.2 Support established friends groups	Council – Environmental Services & Parks	MWC	High	Ongoing

4.3 Encourage community participation in environmental monitoring programs including: i) assist in monitoring the quality of receiving water via Waterwatch ii) involvement of Waterwatch and Streamwatch groups in business audits	Council – Environmental Services & Parks	MWC, DNRE, EPA	Medium	2 yrs (ongoing)
4.4 Involve the community and established friends groups in the implementation of council environment plans and various regional strategies via activities such as revegetation, clean up day activities etc.	Council – Environmental Services and Parks		High	Ongoing
Strategy 5 Refine and up-date a monitoring program				
5.1 Liaise with MWC and EPA to ensure the continuation of agency monitoring programs on waterways in the City of Port Phillip	MWC	Council	High	Ongoing
5.2 Support Waterwatch activities to collect quality environmental monitoring data	Council		Medium	Ongoing
Strategy 6 Improved site management of construction activities				
6.1 Planning				
6.1.1 Modify planning scheme to incorporate improved site management controls	Council – Strategic Planning & Facilitation	MAV, DOI	High	1 yr
6.1.2 Incorporate requirements for site management plan in planning permit	Council – Strategic Planning & Facilitation	MAV, DOI	High	1 yr
6.1.3 Incorporate requirements for a site management plan in Local Stormwater Management Policy as outlined in A5.3.2	Council – Strategic Planning & Facilitation		High	1 yr
6.1.4 Insert statements A5.3.1, A5.3.3 and A5.3.7 in section 22 of the planing scheme	Council – Strategic Planning & Facilitation		High	1 yr
6.2 Monitoring / enforcement				

6.2.1 Develop audit program for construction sites and implement specific strategies to address identified problems	Council – Strategic Planning & Facilitation	EPA	Medium	2 yrs
6.2.2 Review and modify local laws to regulate land development and construction activity impacts	Council – Strategic Planning & Facilitation	EPA	Medium	2 – 4 yrs
6.3 Education and awareness				
6.3.1 Ensure staff who assess and regulate development receive appropriate training on best practice stormwater management techniques	Council – Strategic Planning & Facilitation	EPA	High	2-4 yrs
6.3.2 Develop and promote best practice educational material for sediment control in the development and construction industry	MWC, EPA	Council – Strategic Planning & Facilitation	Low	4 – 5 yrs
6.3.3 Liaise with EPA and MWC to support development of suitable training programs for council staff and development industry	MWC, EPA	MAV, DOI, Council	Medium	2-4 yrs
6.3.4 Promote examples of local developments that successfully undertake best practice stormwater management	Council – Environmental Services & Parks	MWC, EPA		
Strategy 7 – Promote water sensitive design principles				
7.1 Planning				
7.1.1 Modify planning scheme to incorporate improved site management controls	Council – Strategic Planning & Facilitation	MAV, DOI	High	1 yr
7.1.2 Insert statements A5.3.4 – Design into a stormwater management policy within section 22 of the planing scheme	Council – Strategic Planning & Facilitation	MAV, DOI	High	1 yr
7.2 Operations				
7.2.1 Adopt appropriate water sensitive design principles into planning of new urban developments	Council – Environmental Services and Parks		High	Ongoing
7.3 Education and awareness				

7.3.1 Promote water sensitive design principals through educational initiatives and the promotion of the Best Practice Environmental Guidelines for Urban Stormwater	MWC, Stormwater Committee	Council – Strategic Planning & Facilitation	Medium	Ongoing
7.3.2 Trial water sensitive drainage at suitable developments across the City	Council – Strategic Planning & Facilitation	MWC	Low	4 – 5 yrs
7.3.3 Ensure planning staff receive training in water sensitive design principles				

6.2 Monitoring and Review of plan

The Stormwater Management plan must be an adaptive document. Strategies and actions have been developed to deal with only the highest priority issues. As these strategies are implemented, the plan should be reviewed and new strategies progressively developed to deal with other issues identified during the planning process and as they arise.

Water quality and biological monitoring is necessary to determine the changing status of the health of the water environments in the City of Port Phillip required and to enable an evaluation of stormwater actions on the quality of stormwater. Such monitoring is best undertaken as part of Melbourne Waters' existing healthy waterways monitoring program. Monitoring will also involve monitoring the plan progress via performance indicators.

A complete review of the plan and its implementation should take place after 3 to five years. The complete review will involve:

- A repeat of the risk assessment workshop process to accommodate changes in values and threats over time. Following this, priority risk areas will be reassessed and strategies and actions amended accordingly.
- Examination of water quality and biological data to identify changes (if any)in the health of the water environment
- Examination of plans progress.

Implementation of the plan should be regularly reported. A report should be prepared annually. The annual report should be based on the attainment of performance indicators outlined in section 4 of the plan.

7 REFERENCES

Parks Victoria (1999) http://www.parks.vic.gov.au

City of Port Phillip (1998) Port Phillip Municipal Strategic Statement

8 APPENDIX 1 : PROPOSED CHANGES TO MUNICIPAL STRATEGIC STATEMENTS, LOCAL POLICY AND CONDITIONS

A1 Introduction

A review of Municipal Strategic Statement (MSS), Corporate plan, and local policies in relation to stormwater management was undertaken, and as a result recommendations have been identified and are outlined in the following pages. The outcomes of the review of the MSS, Corporate plan and other council documents, is outlined in Volume II.

The following has been discussed in further detail on the following pages:

- Recommendations for Municipal Strategic Statement (MSS)
- Recommendations for the State Planning Policy Framework (SPPF)
- Recommendations for the Public Use Zone
- Proposed additions to Port Phillip MSS

The management of stormwater and the associated infrastructure has been largely constructed to minimise property damage as a result of flooding. Little attention has been given to the quality of water that is discharged to wetlands, rivers, creeks and Port Phillip Bay. This has resulted in the degradation of water quality and increase in the velocity of runoff causing in erosion and destruction of habitat.

The purpose of a Stormwater Management Plan (SWMP) is to improve stormwater quality that is discharged into the environment. All Municipal Strategic Statements should therefore examine and identify the major issues relating to the natural environment of the Port Phillip Bay catchment and the respective sub catchments.

With the completion of the *Port Phillip and Westernport Regional Catchment Strategy*, environmental information is now readily available to all Councils within the metropolitan region. All MSS's can now examine and identify the major issues relating to their particular catchment. This information can be included within the MSS, followed by an examination of the issues relating to the relevant sub-catchments of each municipal area, that comprise the Port Phillip Bay Region (Werribee, Maribyrnong, Yarra and Dandenong).

Information to be inserted through an amendment to the MSS would include: -
Strategic framework plan of the Port Phillip catchment with objectives, and strategies to be achieved for all planning schemes.
Strategic framework plan for each relevant sub catchment (Yarra, Maribyrnong, Werribee, and Dandenong). These sub catchments would include the rationale of introducing new zones, overlays, local polices
Introduce new local policies relating to stormwater within municipal catchments, development policies and conditions, open space and natural environment

Sub clause 21.1 Natural Environment describes the Port Phillip Bay catchment and the issues that are important to the catchment. Objectives, strategies and implementation methods have also been specified. This clause would be inserted into all pilot schemes.

Sub clause 21.2 Yarra, Maribyrnong and Werribee also describe the issues associated with the sub catchments of Port Phillip Bay. Objectives, strategies and implementation methods have also been specified

The relevant clause would be inserted into the following planning schemes: -

Port Phillip = Yarra
Hobsons Bay = Werribee
Port Phillip = Maribyrnong

Local policies have also been developed which address the issues of infrastructure, stormwater management plans and standard conditions for approval.

Such an amendment to the planning schemes would provide Councils with more appropriate measures to address issues associated with the environment and give a statutory basis for the implementation of controls such as Stormwater Management Plans and new local policies.

A2 Stormwater Management policy recommendation for the SPPF

Section 18 of the State Planning Policy Framework (SPPF) deals with Infrastructure. Sub clause 18.09 deals specifically with Water supply, sewerage and drainage. This section deals with stormwater and the need to: -

- consider catchments
- implement best environmental practice
- protect areas from litter and
- encourage the recycling and re-use of runoff

Section 15 Environment of the SPPF requires acknowledgment of stormwater issues. This section has two relevant clauses:-

- 15.01 Protection of catchments, waterways and groundwater:
- 15.08 Coastal areas.

Minor amendments to the Geographic sub-clauses of sections (15.01-3, 15.08-3, and 18.09-3) are needed to include reference to the:-

- Draft Best Practice Environmental Guidelines for Urban stormwater (EPA, Melbourne Water, DNRE & MAV 1998) and
- Council Stormwater Management Plans

A3 Recommended schedule for the Public Use Zone

Clause 36 of the Victoria Planning Provision relates to the Public Use Zone. Sub clause 36.01-5 Permit not required states that, *a permit is not required to use land, or to construct a building or construct or carry out works on land, listed in a schedule to this zone, provided any condition in the schedule is complied with.*

The schedule to the zone is tabled below. It is recommended that the schedule be modified by allowing works in accordance with a Council Stormwater Management Plan

SCHEDULE TO THE PUBLIC USE ZONE

Public land	Use or development	Conditions
all land	Buildings and works	in accordance with approved Stormwater management plans adopted by the Responsible Authority or Melbourne Water

A4 Recommended Amendments to the Port Phillip Municipal Strategic Statement

A4.1 Yarra sub-catchment

Almost half of the Port Phillip regions population live within the Yarra catchment which, covers more than 400,000 hectares. It encompasses a diverse area, stretching from the Dandenong Ranges and Yarra Valley to inner Metropolitan Melbourne.

Port Phillip is located at the bottom of the Yarra catchment, between the coastline of Port Phillip Bay and suburban development that characterises the metropolitan area.

A4.2 Issues

Water pollution

Water pollution throughout the catchment affects both the Yarra River and Port Phillip Bay. The level of bacterial contamination in a number of sections of the Yarra frequently exceeds objectives set by the State Environment Protection Policy (SEPP). This also contributes to pollution of the bay beaches affecting recreational use. A reduction in nitrogen levels is particularly important to help meet the overall reduction target for the bay of 1000 tonnes/year.

Improvements to stormwater management, sewerage treatment systems and agricultural practices throughout the catchment are required to reduce water pollution.

Changing land use

The main centres for growth in the catchment are in the outlying areas of Nillumbik, Hume and Whittlesea, which are expected to grow by 30% over the next 15 years. Urban consolidation in a number of suburban areas is also increasing pressure on existing stormwater management systems. These changes need to be balanced by a corresponding improvement in catchment management, if there is not to be a reduction in the overall quality of natural resources.

A4.3 Objectives

1. To improve the on site retention of stormwater

2. To reduce the effects of stormwater discharge, in terms of pollution and flooding.

3. To improve the water quality of all stormwater discharged to Port Phillip Bay

A4.4 Strategies

Strategy 1: Improve coordination of stormwater management between councils and relevant authorities

Strategy 2: Reduce litter entering receiving waterways

Strategy 3: Improve the planning framework to enable integrated stormwater management

Strategy 4: Increase awareness of stormwater management and facilitate community participation in stormwater management

Strategy 5: Refine and update a monitoring program

Strategy 6: Improve site management of construction activities

Strategy 7: Promote water sensitive design principles

A4.5 Implementation

Applying the following zones and overlays:-

- Environmental Significance Overlays to protect the environs of the Yarra River and the foreshore areas of Port Phillip Bay
- Public Conservation and Resource Zone and Public Park and Recreation Zone to public land
- Special Building Overlay - to identify land subject to inundation so as to protect urban areas from the flooding effects of the stormwater systems.

A5 Stormwater management policy

This policy applies to all land within the municipality.

A5.1 Policy basis

The treatment, storage and management of stormwater is a vital component in all urban communities. Stormwater management has been directed towards flood control and minimising property damage. Council now seeks to implement best management practice, which involves controlling not only the flow but also the quality of water. The flow of water along drains, streets, and from paved areas within urban areas has to be managed to ensure that the environmental values of wetlands, beaches and watercourses are not degraded. This will require development plans being submitted to Council in accordance with Councils stormwater management plan.

A5.2 Objectives

- To improve the quality of all surface water
- To improve the environmental values of all areas that receive stormwater (watercourses, wetlands, beaches and marine ecosystems
- To improve erosion control and soil conservation of watercourses
- To reduce stormwater flows, velocity and frequency

A5.3 Policy

A5.3.1 Compliance with Stormwater management plan.

It is policy that

- use and development that discharges water into the environment shall comply with the requirements of Council's stormwater management plan
- a report detailing compliance with the Stormwater management plan shall be submitted with all planning applications

A5.3.2 Environmental Management Plans

Environmental Management Plans shall be submitted for large construction sites which identify:-

- the extent of disturbed areas and the proposed method of revegetation
- proposed onsite treatment for stormwater (during construction) prior to it being discharged into a watercourse or drain
- location of all cut off drains and sediment ponds to treat stormwater runoff
- areas for the storage of sand, gravel and other materials, with cut off drains and sediment ponds to reduce sediment run off

A5.3.3 Rubbish collection

- The proposed method of garbage collection during and after construction must be identified
- The capacity, type and location of garbage facilities to service the site must be identified

A5.3.4 Design

In designing new developments:

- Wherever possible, new developments should be designed to minimise runoff and improve water quality through the incorporation of water sensitive urban design elements in accordance with the Best Practice Environmental Management Guidelines.
- Minimise development impacts in areas prone to flooding or inundation, through appropriate design and location
- Ensure that floor levels are 300mm above flood levels

A5.3.5 Infrastructure

- To require contributions towards the upgrading of stormwater infrastructure
- Ensure that development is connected to reticulated sewerage

A5.3.6 Open space and recreation areas

Open space and recreational areas must:

- minimise water runoff, through reuse, retardation and storage.
- reduce dependence on nitrogen fertilisers through the application of bio dynamic fertiliser systems

A5.3.7 Planning permit conditions

- All development must comply with Councils adopted Municipal Stormwater Management Plan.
- All use and development of land that discharges stormwater must enter into an agreement with the relevant drainage authority for the provision of drainage infrastructure to the site.
- Prior to the issue of a Statement of compliance, the applicant shall enter into and comply with an agreement with Melbourne Water Corporation under Section 269A of the Melbourne and Metropolitan Board of Works Act 1958, for the provision of drainage works and the acceptance of surface and stormwater from the subject land directly or indirectly into the Melbourne Waters Drainage System
- No polluted water or sediment laden runoff is to be discharged directly into any Melbourne Water or Council drain or watercourse.
- Separate application direct to Melbourne Water or Council must be made for any new storm water connection to Melbourne Water or Council drains or watercourse.
- Prior to certification, any plan of subdivision must be referred to Melbourne Water, in accordance with Section 8 of the Subdivision Act 1988.

F: labs/1521/ppnew1